## 3.5 SHADOWS

### INTRODUCTION

According to the *CEQR Technical Manual*, an adverse shadow impact is considered to occur when the shadow from a proposed project falls on a publicly accessible open space, historic landscape, or other historic resource if the features that make the resource significant depend on sunlight, or if the shadow falls on an important natural feature and adversely affects its use and/or important landscaping and vegetation. In general, shadows on city streets and sidewalks or on other buildings are not considered significant under CEQR. In addition, shadows occurring within one and one-half hours of sunrise or sunset generally are not considered significant under CEQR.

This chapter assesses the Reasonable Worst Case Development Scenario (RWCDS), on a site-specific basis, for potential shading effects on existing light-sensitive resources, and discloses the range of shadow impacts, if any, which are likely to result from the proposed action. The analysis considers:

- The physical bulk of projected and potential development on all sites where future development may potentially occur as a result of the proposed action (see Figure 3.5-1), including those adjacent to existing natural resources, historic resources, and/or publicly accessible open spaces, and those located in areas that are not susceptible to shadow impacts; and,

- The potential effect of shadows from future buildings on development sites identified in the RWCDS (both projected and potential development sites) on publicly accessible open spaces, light-sensitive natural resources, or light-sensitive historic resources, with the effects described through shadow diagrams and text.

The area affected by the proposed action covers 30 blocks in the Mott Haven neighborhood of The Bronx. According to the *CEQR Technical Manual,* the longest shadow that a structure will cast, except for periods close to dawn or dusk, is 4.3 times its height. Projected and potential development building heights would range from 80 feet up to 400 feet in portions of the area. Accordingly, the shadows cast by potential or projected new development would extend from 344 feet up to 1,720 feet in length. Preliminary assessment of future buildings on projected and potential development sites and the shadows they would cast found that several would cast shadows that would be long enough to reach open spaces and historic resources. Therefore, a shadow screening analysis was undertaken for the projected and potential development sites to determine whether the proposed action has the potential to result in significant shadow impacts, thereby requiring a detailed shadow analysis.

Development that would result from the proposed action would cast additional shadows within the study area. However, these shadows effects would not constitute significant adverse impacts. The resources that would incur additional shadows include the following twelve open space resources -- Franz Sigel Park, Deegan Rock, Colonel Charles Young Playground, Garrison Playground, Harlem River Driveway, Ryan Triangle, Borinquen Court Senior Center plaza facing Third Avenue, Graham Triangle, Esplanade Gardens, Bronx Terminal Market Waterfront Park - Gateway Center Parkland, and the Harlem River Greenway. Because the creation of the proposed Lower Concourse Park is part of the proposed action, the effect of project-generated shadows on the proposed park is not considered to be a significant adverse impact regardless of coverage or duration. The future park is therefore included in the analysis for illustrative purposes only.

The Harlem River is a significant natural feature in the study area. Shadows from potential and projected new buildings would reach the Harlem River throughout the year in the morning hours. Consequently, incremental shadows on this resource are examined in the detailed analysis. The effects of incremental shadow on the Harlem River are also examined in the "Natural Resources" chapter of this DEIS.

**Methodology**

Computer-generated simulations of the shadows under Future No-Action and Action conditions were prepared for representative times on four analysis days: March 21st, May 6th, June 21st, and December 21st. Since the CEQR methodology does not consider the effect of shadows within one and one-half hours of sunrise or sunset to be significant, the analysis period on each analysis day considers only the shadows that begin one and one-half hours after sunrise and end one and one-half hours before sunset. Daylight savings time was assumed for the analysis times on the March 21st, May 6th and June 21st analysis dates. In general, shadows on city streets and sidewalks, or on other buildings, are not considered significant under *CEQR Technical Manual* guidelines.

The uses and vegetation in an open space determine its sensitivity to shadows. Uses that rely on sunlight include passive uses, such as sitting or sunbathing, and such activities as gardening or wading in fountains or pools. Vegetation requiring sunlight includes tree canopy and flowering plants. In open spaces where lawns are actively used, the grass also requires extensive sunlight. Four to six hours a day of sunlight is generally a minimum requirement, particularly in the growing season. Sun-sensitive features of historic resources may include large windows admitting light into interior spaces, stained glass windows in churches, deeply sculpted façade ornamentation, and historic landscapes.

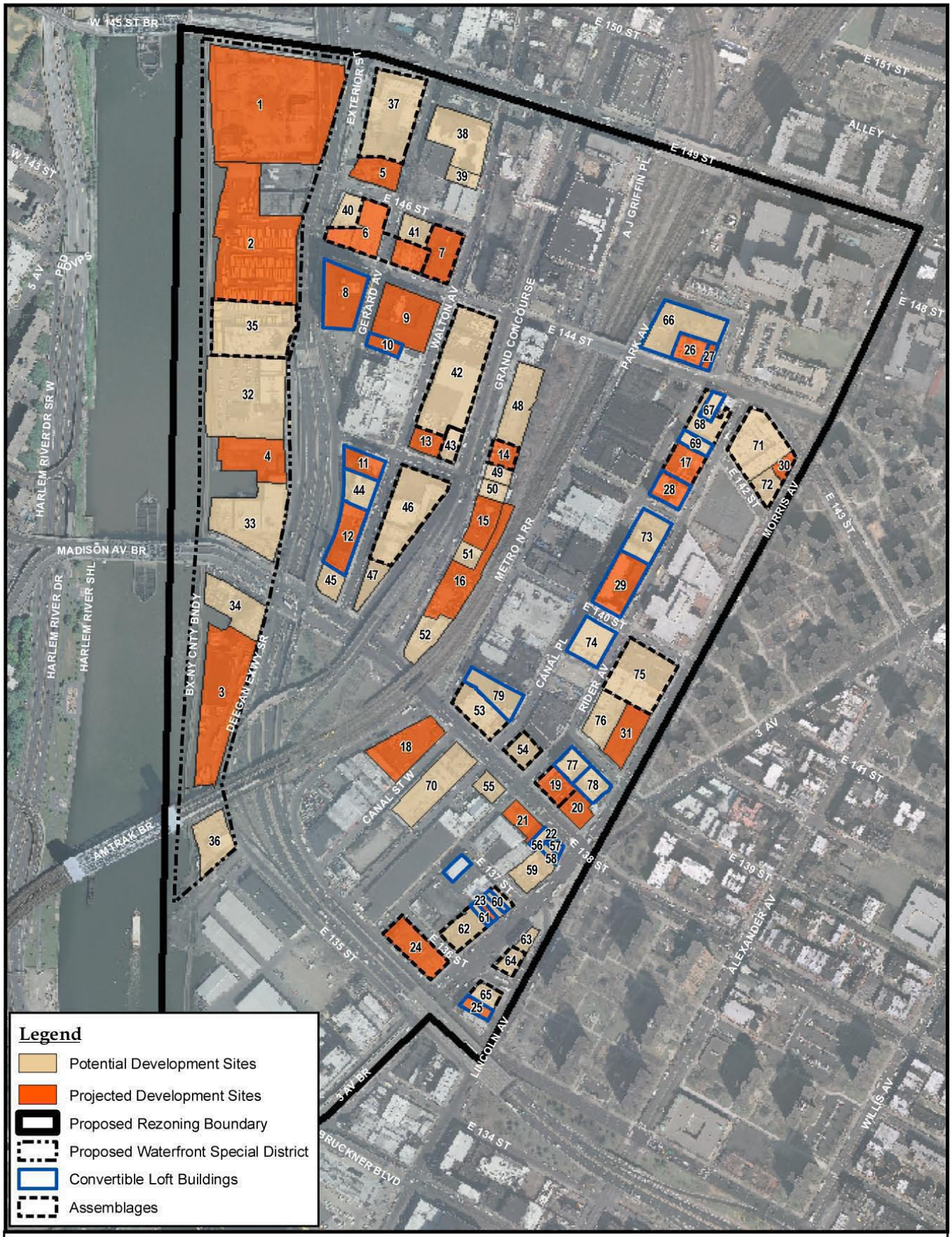



*Figure 3.5-1: Projected and Potential Development Sites*

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Lower Concourse Rezoning and Related Actions EIS*

*NYC Department of City Planning*

Following the guidelines of the *CEQR Technical Manual,* the analysis focuses on the incremental or additional shadows cast by the projected development program in the future with the zoning action as compared to the shadows cast by structures that could be built under the Future No-Action development scenario. The analysis examines the potential impact of the incremental shadow, taking into account the uses and users of open space, landscaping and vegetation of open space, as well as the characteristics of any significant natural feature or historic resource with qualities or details that are sunlight-dependent and may make such impacts significant. The *CEQR Technical Manual* identifies the following conditions when a proposed development program may result in a significant shadow impact:

- Substantial reduction in sunlight where a sensitive use is already subject to substandard sunlight (e.g, less than the minimum time necessary for plant survival);

- Reduction in sunlight available to a sensitive use from more to less than the minimum time necessary for plant survival;

- Substantial reduction in sunlight to a sun-sensitive use or feature; and,

- Substantial reduction in the usability of the open space.

There may be situations where a very small loss of sunlight is important (e.g., in areas where people sit or in a historic church with stained glass windows) or where a comparatively large loss is not significant (e.g., where vegetative species are shade-tolerant). Although these situations represent a general guideline for determining significant adverse impacts, each case is reviewed on its own merits. Potential impacts were considered based on the coverage and duration of shadows on each sensitive receptor, as well as the presence or lack of sun-sensitive uses, the amount of use in general, and the availability of alternative space within each sensitive receptor.

The shadow diagrams and analysis presented in this chapter were developed using building envelope information derived from the floor area estimates of the RWCDS, as provided by the New York City Department of City Planning. For the purposes of this shadow analysis, projected and potential development sites were modeled assuming a "worst case scenario" bulk condition for each site, using maximum streetwall heights. Projected and potential sites also include a representative bulk volume on top of the highest story. Actual development in the future may involve less bulk.

## 3.5.1 EXISTING CONDITIONS

In accordance with CEQR guidelines, the assessment of potential shadow impacts is limited to new shadows long enough to reach publicly accessible open spaces, historic resources, or important natural features. In coordination with Chapter 3.4, "Open Space," and Chapter 3.6, "Historic Resources", publicly accessible open spaces and architectural resources to the north, south, east, and west of the projected and potential development sites were identified, as shadows created by the proposed action could fall in the direction of these resources. Figure 3.5-2 illustrates all of the sites that were considered. The following sections provide descriptions and analyses for these sites.

### Historic Resources

Twenty-two historic resources were identified as falling within the shadow radius of projected or potential developments sites (the area extending out 4.3 times the maximum height of projected or potential development sites) and may require a detailed technical analysis to identify potential incremental shadow impacts generated under the RWCDS. The following list contains a description of the historical resources in order to determine which resources would be considered sensitive to new incremental shadows caused by the proposed action (see Figure 3.5-3).

An initial listing of all historical resources of concern was compiled for an area of ½-mile surrounding the Lower Concourse rezoning area.

### State/National Register[1]

1. Harlem River Houses (Historic Resource #1)
2. Grand Concourse Historic District (Historic Resource #2)
3. Dunbar Apartments (Historic Resource #3)
4. West 147th – 149th Street Historic District (Historic Resource #4)
5. 145th Street Subway Station (IRT) (Historic Resource #5)
6. Mott Avenue Control House (Historic Resource #6)
7. Bronx Central Annex- US Post Office (Historic Resource #7)
8. St. Nicolas Historic District (Historic Resource #8)
9. 369th Regiment Armory (Historic Resource #9)
10. C. Rieger and Son's Factory (Historic Resource #10)
11. Hertlein and Schlatter Silk Trimmings Factory (Historic Resource #11)
12. Mott Haven Historic District (Historic Resource #12)
13. Saint Ann's Episcopal Church (Historic Resource #13)

[1] Source: www.nationalregisterofhistoricalplaces.com , http://www.nysparks.com/shpo/index.htm.

**Other Historic Resources (NYC Landmarks)[2]**

1. 614 Courtlandt Avenue (Historic Resource #14)
2. Public School 31 (Historic Resource #15)
3. Fire House, Hook and Ladder 17 (Historic Resource #16)
4. Mott Haven East Historic District (Historic Resource #17)
5. Estey Piano Factory (Historic Resource #18)
6. Bertrine Block (Historic Resource #19)

**Historic Resources, Potentially Eligible for Inclusion on the National Register**

1. Building D, Bronx Terminal Market (Historic Resource #20)
2. J. L. Mott Iron Works (Historic Resource #21)
3. North Side Board of Trade Building (Historic Resource #22)

Nine historic resources were identified as having possible light sensitive architectural details and are described below (see Figure 3.5-3). The remaining excluded historic resources are shown on Figure 3.5-4.

- 14th Street Subway Station (IRT), (Historic Resource #5);

145th Street is a local station on the IRT Broadway–Seventh Avenue Line of the New York City Subway. It is located at the intersection of Broadway and 145th Street. This was formerly the northern terminal station of the original IRT subway, which operated from City Hall to 145th Street. The station is underground and therefore not light sensitive.

- Mott Avenue Control House, (Historic Resource #6);

Built for the IRT, the Mott Avenue Control House is one of four surviving structures built as ornamental entrances to the subway. The Mott Avenue Control House is no longer in service. Only the north facade, the main facade, consists of brick. The other facades are all stucco, and therefore not a light sensitive value.

- Bronx Central Annex- US Post Office, (Historic Resource #7);

Located at 558 Grand Concourse, the Bronx Central Annex was designed by Thomas Harlan Ellett and was erected between 1935 and 1937. Street side facades are faced in grey brick punctuated by white marble arched windows. The most noteworthy feature is the series of 12 murals. These Ben Shahn murals are located in the lobby.

[2] Source: http://www.nyc.gov/html/lpc/html/home/home.shtml and http://www.nyc.gov/html/dcp/html/bytes/applbyte.shtml

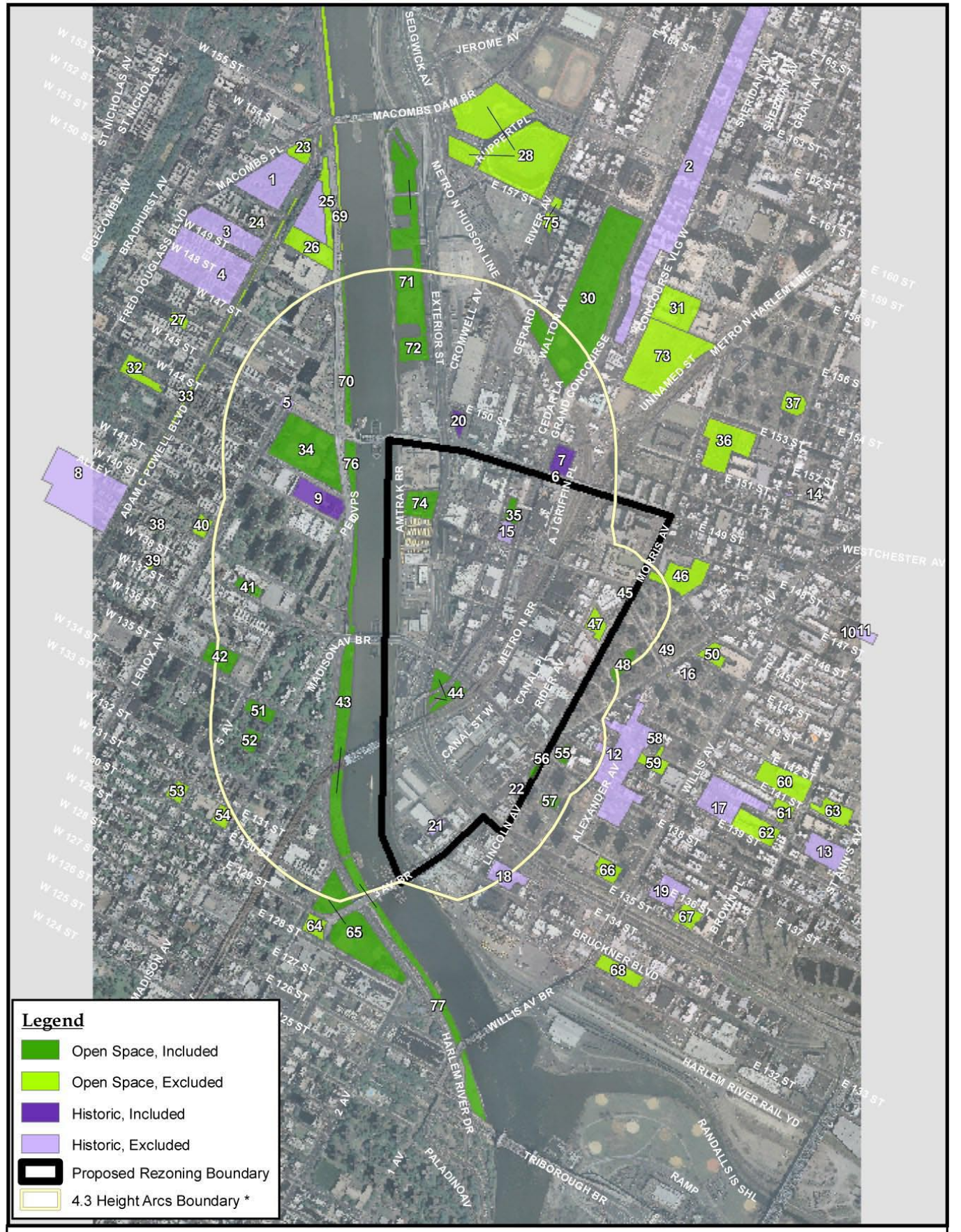



*Figure 3.5-2: All Sites Considered*

*Distance of longest potential project-generated shadows

300 0 300 600 900 Feet

N

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Lower Concourse Rezoning and Related Actions EIS*

*NYC Department of City Planning*

- 369th Regiment Armory, (Historic Resource #9);

Located at 2366 Fifth Avenue, the Armory was constructed around 1920. This was one of the last armories constructed in New York City. The administration building features both the medieval motifs typical of the building type and Art Deco elements typical of the period. It was home to the African-American regiment, the Harlem Hellfighters. A monument that honors the legendary 369th Infantry Regiment, known as the Harlem Hellfighters, is located across the street from the Armory. The black granite monument is a replica of a 1997 memorial that stands in Northern France, where the 369th soldiers distinguished themselves during World War I.

- Public School 31, (Historic Resource #15);

Public School 31 is located at 425 Grand Concourse. This elementary school, designed by C.B.J. Snyder, was one of the first Collegiate Gothic schools constructed in New York City. It was built to accommodate the growing population of The Bronx in this period. Its interior lighting, designed by Louis Comfort Tiffany, has been a topic of research throughout the twentieth century. It is currently undergoing a major renovation project.

- Estey Piano Factory (Historic Resource #18)

Located at 112 Lincoln Avenue, this factory was first built in 1885. The Estey Piano Factory is one of twenty piano factories constructed in Mott Haven. As a result of the Estey Company's success, the building was expanded in 1906 and again in 1926. The factory's size and architectural detailing symbolize the increasing purchasing power experienced by middle-income families after the Civil War. The L-shaped, five-story factory with its seven-and-a-half-story clock tower sits on the corner of Bruckner Boulevard and Lincoln Avenue. The factory's wood-frame structure is typical of 19th century New England mills, featuring load-bearing brick masonry and terra-cotta details. Although the original wooden windows have been replaced and the sandstone belt course has deteriorated, the building remains remarkably similar to its original appearance. The corner tower is a dominant element of the factory's facade, distinguishing the corner site and the factory's orientation toward the Harlem River and the Third Avenue Bridge to Manhattan. The Estey Piano Factory, along with many other similar buildings in the immediate industrial vicinity of Mott Haven, has been recommended for individual designation on both the New York State and National Historic Registers. At this time, only the Estey Piano Factory is listed as a NYC Landmark.

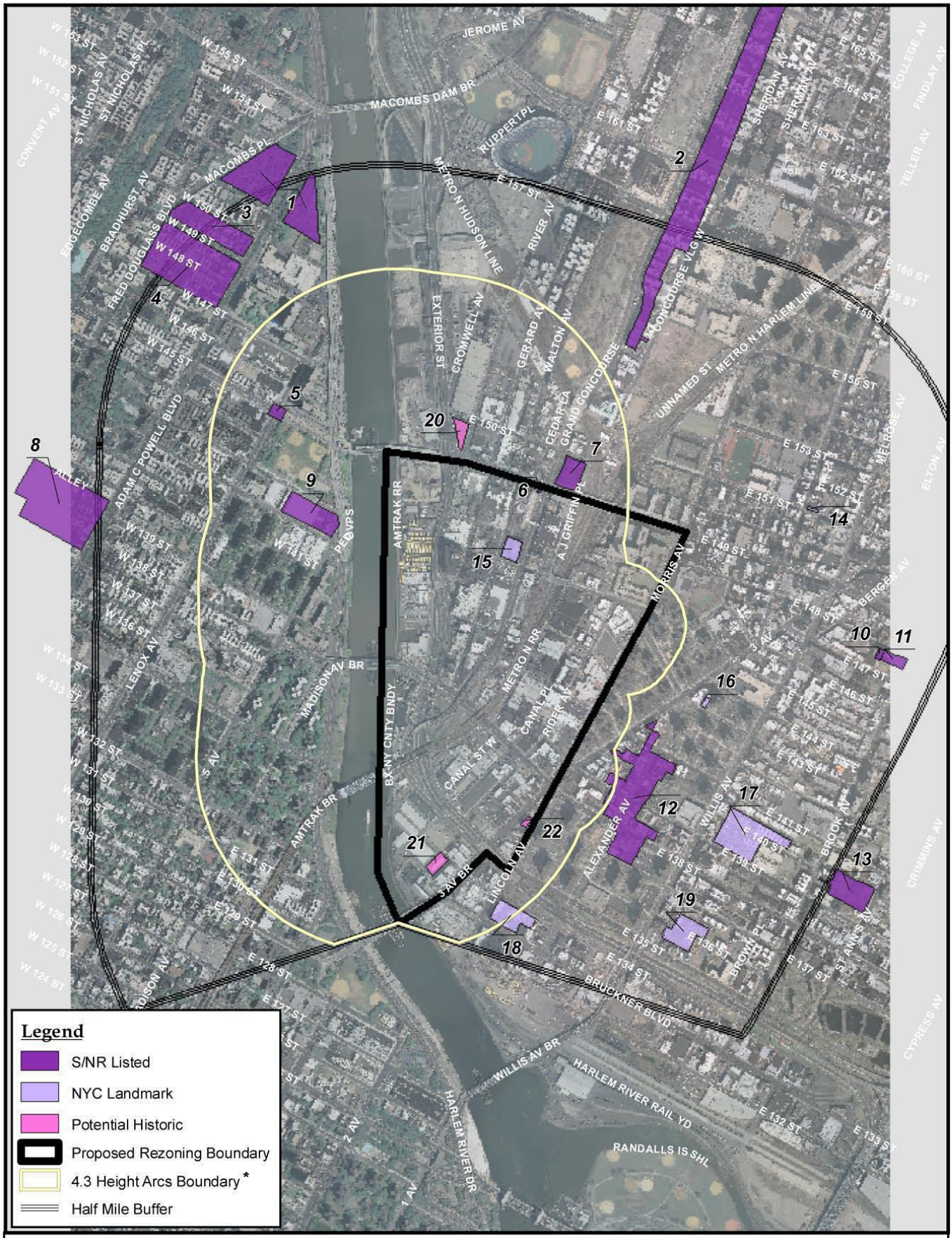



*Figure 3.5-3: All Historic Resources*

*Distance of longest potential project-generated shadows

300 0 300 600 900 Feet

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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

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*NYC Department of City Planning*

- Building D, Bronx Terminal Market (Historic Resource #20)

In the early 1920s, Mayor Hylan had a vision to bring vendors away from Washington Market to this area of The Bronx. Buildings A and J were constructed at this time. Mayor LaGuardia expanded the area along Exterior Street in 1935. Buildings B, D, F, G and H were constructed at this time, while the construction of the Major Deegan Expressway was completed in 1956. With the expressway, demolition of some Bronx Terminal Market buildings was necessary. New York State Office of Parks, Recreation and Historic Preservation (OPRHP) determined that Buildings B and D are eligible for listing on the State and National Registers.

Building D is a two-story stucco building. It is located at the corner of East 149th Street and Exterior Street.

Now in construction, the Gateway Center at Bronx Terminal Market would demolish all the buildings of the Terminal Market except for Building D. Building D is planned to be retained and reutilized for retail uses. A plaza entrance would exist on River Avenue.

Associated with the construction of the proposed Gateway Center at Bronx Terminal Market and now a New York City Department of Parks and Recreation (DPR) project, a two-acre waterfront public open space is also planned to be constructed on waterfront land north of East 150th Street (see Open Space Resource #72).

- J. L. Mott Iron Works (Historic Resource #21)

Similar to the Estey Piano Factory (Historic Resource #18), the J.L. Mott Iron Works building was constructed in Mott Haven. Mott Haven was established in 1828 when Jordan L. Mott purchased a plot of land at the southern-most part of Westchester County. The area was strategically located at the Harlem River and railroad, making it an ideal location for industrial activity. After the New York & Harlem Railroad linked the southeast Bronx to Manhattan in 1840, Mott Haven began to grow as an industrial center. Known for its metal works, saw mills, and stone yards, Mott Haven's industry expanded into the fields of piano factories, lumberyards, furniture manufacturers, and food and ice producers. By the early 20th century, the area had one of the largest concentrations of manufacturing buildings and facilities along the Harlem River. Most of Mott Haven's industrial buildings were load-bearing masonry structures. This area represents the evolution of industry from hand-made, locally manufactured goods to mass production and distribution. It contains physical evidence of the stages of manufacturing development from the beginning of the industrialization in New York City to its demise in the late 20th century.

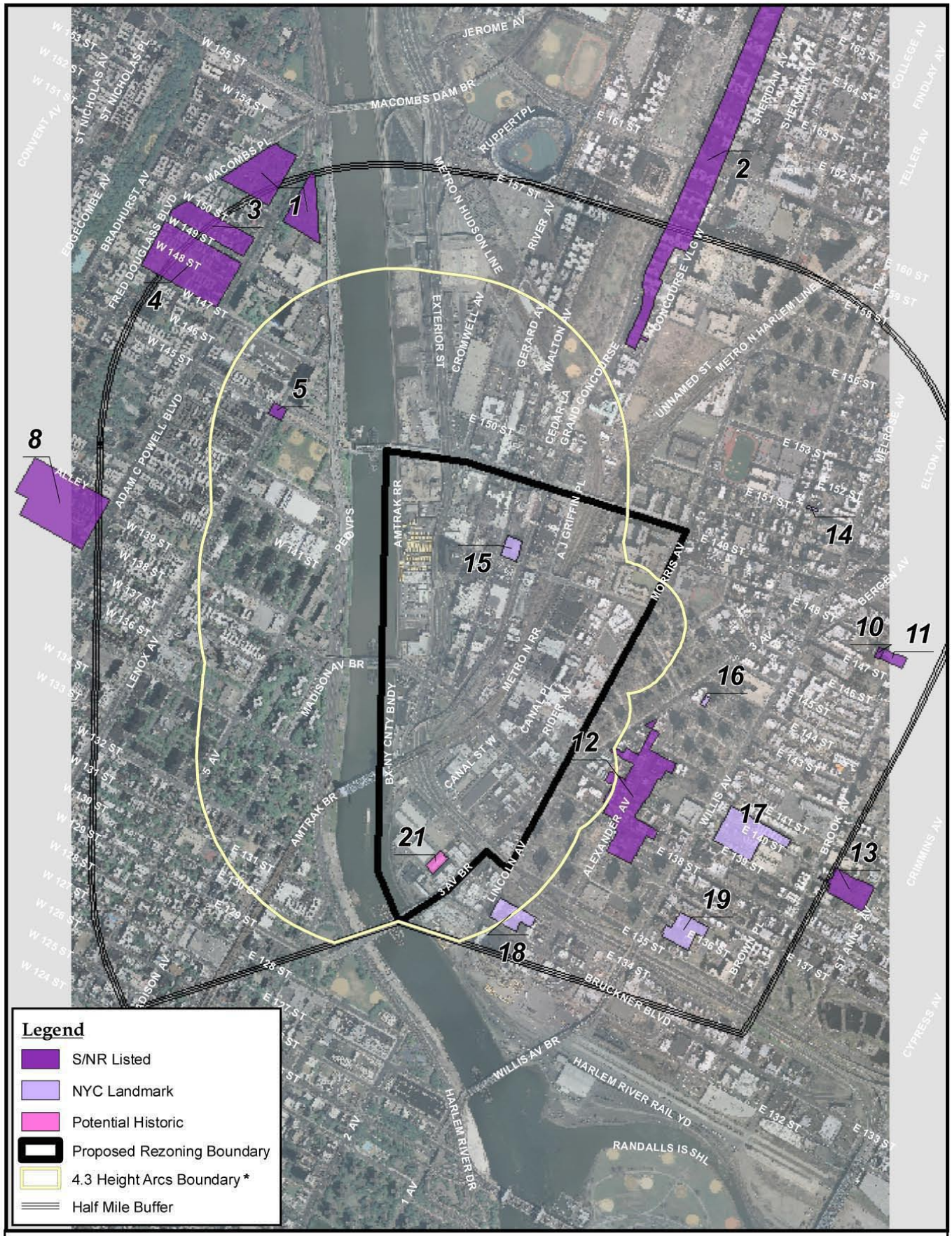



*Figure 3.5-4: Excluded Historic Resources*

*Distance of longest potential project-generated shadows

300 0 300 600 900 Feet

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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Lower Concourse Rezoning and Related Actions EIS*

*NYC Department of City Planning*

- North Side Board of Trade Building (Historic Resource #22).

The North Side Board of Trade building is located at 270 East 137th Street, between Third Avenue and Lincoln Avenue. This structure served as the headquarters of the borough Board of Trade, named for the time when The Bronx was known as the North Side. The building was designed in 1912 by Albert Davis in the Neo-classical style. Based on its location and surrounding street pattern, the building has a unique shape, and the north, east and west facades are faced in stone and terra cotta. This site is identified as potential conversion site #63.

Of the nine potential historic resources identified, none contain light-sensitive architectural details and therefore do not warrant any further analysis for potential shadow impacts.

**Open Space Resources**

According to the *CEQR Technical Manual,* some open spaces contain facilities that are not sensitive to sunlight. These are usually paved, contain no sitting areas, no vegetation, no unusual or historic plantings, or contain only unusual or historic plantings that are shade tolerant. Facilities such as children's playgrounds and sprinklers, swimming pools, sitting or sunning areas, ballfields and other play areas that are covered with turf do require direct sunlight for some part of the day or at some times of the year.

Fifty-five open space resources were identified as falling within the shadow radius of projected or potential developments sites and may require a detailed technical analysis to identify potential incremental shadow impacts generated under the RWCDS. The following contains a list of the fifty-five open space resources in order to determine which resources would be considered sensitive to new incremental shadows caused by the proposed action (see Figure 3.5-5).

**Existing Open Space Resources**

1. Colonel Charles Young Triangle (Open Space Resource #23)
2. Bill 'Bojangle' Robinson Playground (Open Space Resource #24)
3. Harlem Lane Playground (Open Space Resource #25)
4. Frederick Johnson Park (Open Space Resource #26)
5. Bradhurst Urban Renewal Park (Open Space Resource #27)
6. Yankee Stadium, Heritage Field (Open Space Resource #28)
7. Franz Sigel Park (Open Space Resource #30)
8. PS 156 Garden (Open Space Resource #31)
9. Renaissance Playground (Open Space Resource #32)
10. Powell Malls (Open Space Resource #33)
11. Colonel Charles Young Playground (Open Space Resource #34)

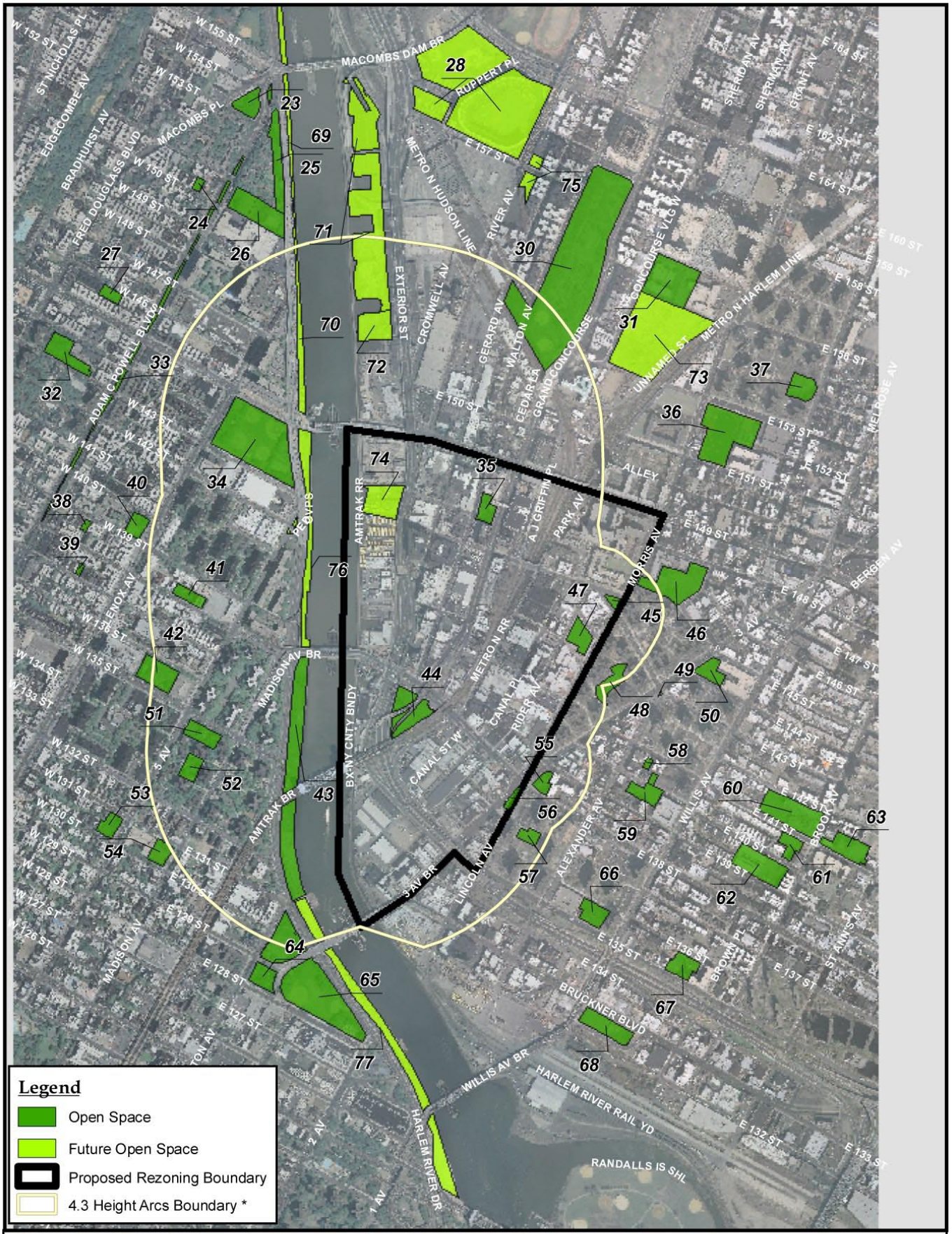



*Figure 3.5-5: All Open Space Resources*

*Distance of longest potential project-generated shadows

300 0 300 600 900 Feet

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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Lower Concourse Rezoning and Related Actions EIS*

*NYC Department of City Planning*

12. Garrison Playground (Open Space Resource #35)
13. Governor Smith Playground (Open Space Resource #36)
14. Melrose Playground (Open Space Resource #37)
15. Abyssinian Tot Lot (Open Space Resource #38)
16. Elizabeth Langley Memorial Garden (Open Space Resource #39)
17. Samuel Playground (Open Space Resource #40)
18. McCray Playground (Open Space Resource #41)
19. Howard Bennett Playground (Open Space Resource #42)
20. Harlem River Driveway (Open Space Resource #43)
21. Deegan Rock (Open Space Resource #44)
22. Ryan Triangle (Open Space Resource #45)
23. Patterson Playground (Open Space Resource #46)
24. Paul Robeson School Playground, AKA M.S. 203 Playground (Open Space Resource #47)
25. Patterson Houses Open Space (Open Space Resource #48)
26. Green Street (Open Space Resource #49)
27. Clark Playground (Open Space Resource #50)
28. Abe Lincoln Houses Playground (Open Space Resource #51)
29. Abe Lincoln Houses Open Spaces (Open Space Resource #52)
30. Courtney Callender Playground (Open Space Resource #53)
31. Moore Playground (Open Space Resource #54)
32. Borinquen Court Senior Center (Open Space Resource #55)
33. Graham Triangle (Open Space Resource #56)
34. Mitchel Houses Playground (Open Space Resource #57)
35. Mott Haven Playground (Open Space Resource #58)
36. Willis Playground (Open Space Resource #59)
37. JHS 139 School Playground (Open Space Resource #60)
38. Brook Park (Open Space Resource #61)
39. Saw Mill Playground (Open Space Resource #62)
40. People's Park (Open Space Resource #63)
41. Alice Kornegay Triangle (Open Space Resource #64)
42. Harlem River Park (Open Space Resource #65)
43. Lozada Playground (Open Space Resource #66)
44. Wanaqua Garden (Open Space Resource #67)
45. Pulaski Park (Open Space Resource #68)

**Future Open Space Resources**

1. Polo Grounds, Future Manhattan Waterfront Greenway (Open Space Resource #69)
2. Esplanade Gardens (Open Space Resource #70)
3. Heritage Field, Yankee Stadium Waterfront Park (Open Space Resource #71)
4. Bronx Terminal Market Waterfront Park, Gateway Center Parkland (Open Space Resource #72)
5. Heritage Field, Yankee Stadium (Open Space Resource #28)

6. Mott Haven School (Open Space Resource #73)
7. Proposed Lower Concourse Park (Open Space Resource #74)
8. Yankee Stadium, River Avenue Pocket Parks (Open Space Resource #75)
9. Harlem River Greenway (Open Space Resource #76)
10. DOT Staging Grounds/Salt Yard (Open Space Resource #77)

Of the fifty-five identified open space resources listed above, thirty-three resources were identified within the initial ½-mile boundary, but not found within the area potentially affected by shadows cast by potential or projected development (4.3 times the height). These resources were not considered further in the analysis (see Figure 3.5-6).

Of the twenty-two open space resources that are found within the potential area of shadow influence, one was identified as not containing light-sensitive elements (listed below and illustrated on Figure 3.5-6) and therefore does not warrant any further analysis for potential shadow impacts.

- Paul Robeson School Playground, AKA M.S. 203 Playground (Open Space Resource #47)

The twenty-one light-sensitive open space resources that are found within the area of potential shadow influence of the proposed and potential buildings, and which have been identified for further analysis, are listed below (see Figure 3.5-7).

- Franz Sigel Park (Open Space Resource #30)

  Franz Sigel Park is a large, 15.99-acre park located between the Grand Concourse and Walton Avenue, between East 151st and East 158th Streets. Franz Sigel Park has a mix of active and passive recreational facilities. Active recreation includes basketball and handball courts, baseball fields, jungle gyms, and a comfort station. Passive recreation facilities include landscaped hills with pathways, as well as open grassed areas.

- Colonel Charles Young Playground (Open Space Resource #34)

  Colonel Charles Young Playground is a 6.42-acre park located in Manhattan on Lenox Avenue and Harlem River Drive between West 143rd and West 145th Streets. This park contains basketball and handball courts, baseball fields, along with accessible play equipment.

- Garrison Playground (Open Space Resource #35)

  Garrison Playground is a 0.70-acre playground located between the Grand Concourse and Walton Avenue, between East 144th and East 149th Streets. The playground features handball and basketball courts, play equipment, concrete play areas, and benches. The playground is surrounded by perimeter landscaping.

- McCray Playground (Open Space Resource #41)

McCray Playground is a small, 0.46-acre park located on West 138th Street between Fifth and Lenox Avenues in Manhattan. William McCray Playground is one of nine playgrounds that was built by the Parks Department through a war memorial fund, and was opened simultaneously on July 15, 1934. This park contains basketball courts along with play equipment.

- Howard Bennett Playground (Open Space Resource #42)

Howard Bennett Playground is a 1.23-acre park located between West 135th Street and West 136th Street, between Fifth and Lenox Avenues in Manhattan. This park contains basketball, tennis and handball courts along with accessible play equipment. The playground is surrounded by perimeter landscaping.

- Harlem River Driveway (Open Space Resource #43)

Harlem River Driveway is a short piece of an existing greenway located between East 135th and East 139th Streets in Manhattan. This area is part of the Manhattan Waterfront Greenway, although it is not currently connected to the larger borough-wide greenway (see Future Open Space Resources #69, 70, 76 and 77 for additional areas to be included within the greenway in the future).

- Deegan Rock (Open Space Resource #44)

Deegan Rock is a small, 0.26-acre park located on East 138th Street between the Grand Concourse and the Major Deegan Expressway. Deegan Rock was named for Major William F. Deegan. A seven-and-a-half-foot foot tall Concord granite boulder with an incised inscription is located within the park, dedicating the expressway to Major Deegan. The park contains fenced and landscaped areas -- some of which abut highway lands and the Metro-North Railroad right-of-way -- as well as a semicircular, publicly accessible paved pathway with benches that abuts the gated area of the monument.

- Ryan Triangle (Open Space Resource #45)

Ryan Triangle is a small, 0.22-acre park located at the intersection of East 143rd Street, East 144th Street and Morris Avenue. Ryan Triangle honors a Bronx native and World War I veteran. Acquired by the City in 1900, the original garden contained a plaque dedicating the space to George Ryan. In the triangle, woodchips create a boundary around landscaped areas. Many species of plantings are represented here. A boulder and flagpoles featuring the flags of the United States, City of New York and Parks Department can be found in the center of the space.

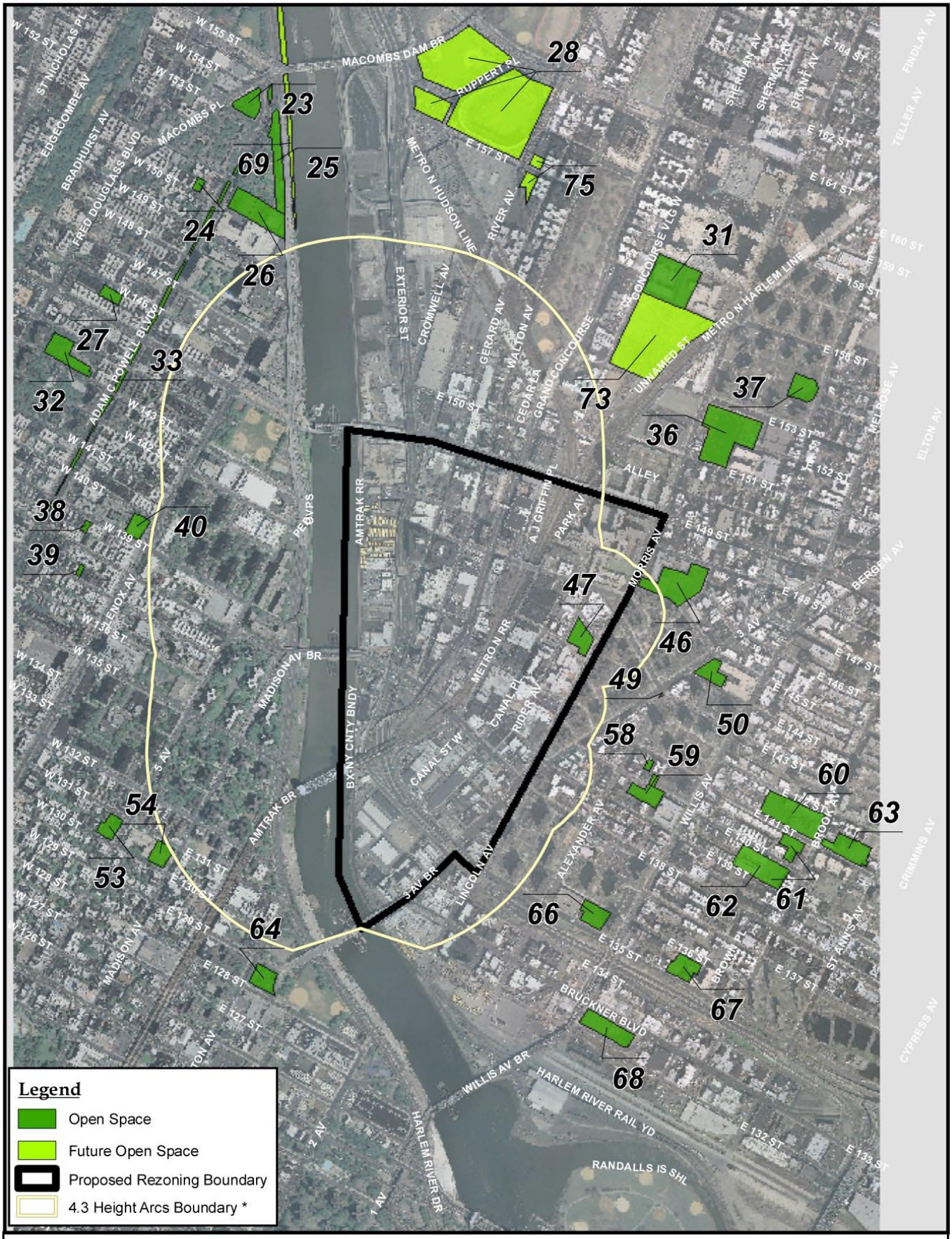



*Figure 3.5-6: Excluded Open Space Resources*

*Distance of longest potential project-generated shadows

300 0 300 600 900 Feet

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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Lower Concourse Rezoning and Related Actions EIS*

*NYC Department of City Planning*

- Patterson Houses Open Space (Open Space Resource #48)

Patterson Houses are located between Morris and Third Avenues, from East 138th to East 143rd Streets, with many open areas located between the building towers. This open space contains a significant amount of landscaping, as well as some active recreation elements, such as playground equipment, basketball courts and passive recreational areas.

- Abe Lincoln Houses Playground (Open Space Resource #51)

Abe Lincoln Playground is a 0.99-acre park located at the Abe Lincoln Housing Complex at Fifth Avenue and East 135th Street in Manhattan. This park contains basketball courts and swimming pools along with accessible play equipment. The playground also contains a significant amount of landscaping.

- Abe Lincoln Houses Open Spaces (Open Space Resource #52)

In addition to the playground above, the Abe Lincoln Housing Complex, located between Fifth Avenue and the Harlem River Drive between East 132nd Street and East 135th Street in Manhattan, contains other open space. Between the housing towers, additional open spaces with play equipment, plaza space and landscaping can be found.

- Borinquen Court Senior Center (Open Space Resource #55)

This senior center, with an outdoor landscaped plaza area, is located between East 138th and East 139th Streets, with the plaza located along Third Avenue. The plaza contains landscaped and grassed areas, with pathways and benches.

- Graham Triangle (Open Space Resource #56)

Graham Triangle is a small, 0.04-acre park located at the intersection of East 137th Street between Third Avenue and Lincoln Avenue. The area contains three different memorials: the Bronx Local Board #2 World War Memorial, the Private David W. Gentle Memorial Flagstaff, and the Spanish War Memorial. The plaza area also contains sidewalks, landscaping and benches.

- Mitchel Houses Playground (Open Space Resource #57)

Mitchel Houses are located between Alexander and Lincoln Avenues from East 135th to East 138th Streets. Mitchel Houses contains many open areas between the building towers. These open spaces contain a significant amount of landscaping, as well as recreational elements, such as playground equipment, plazas, benches, and passive recreational areas.

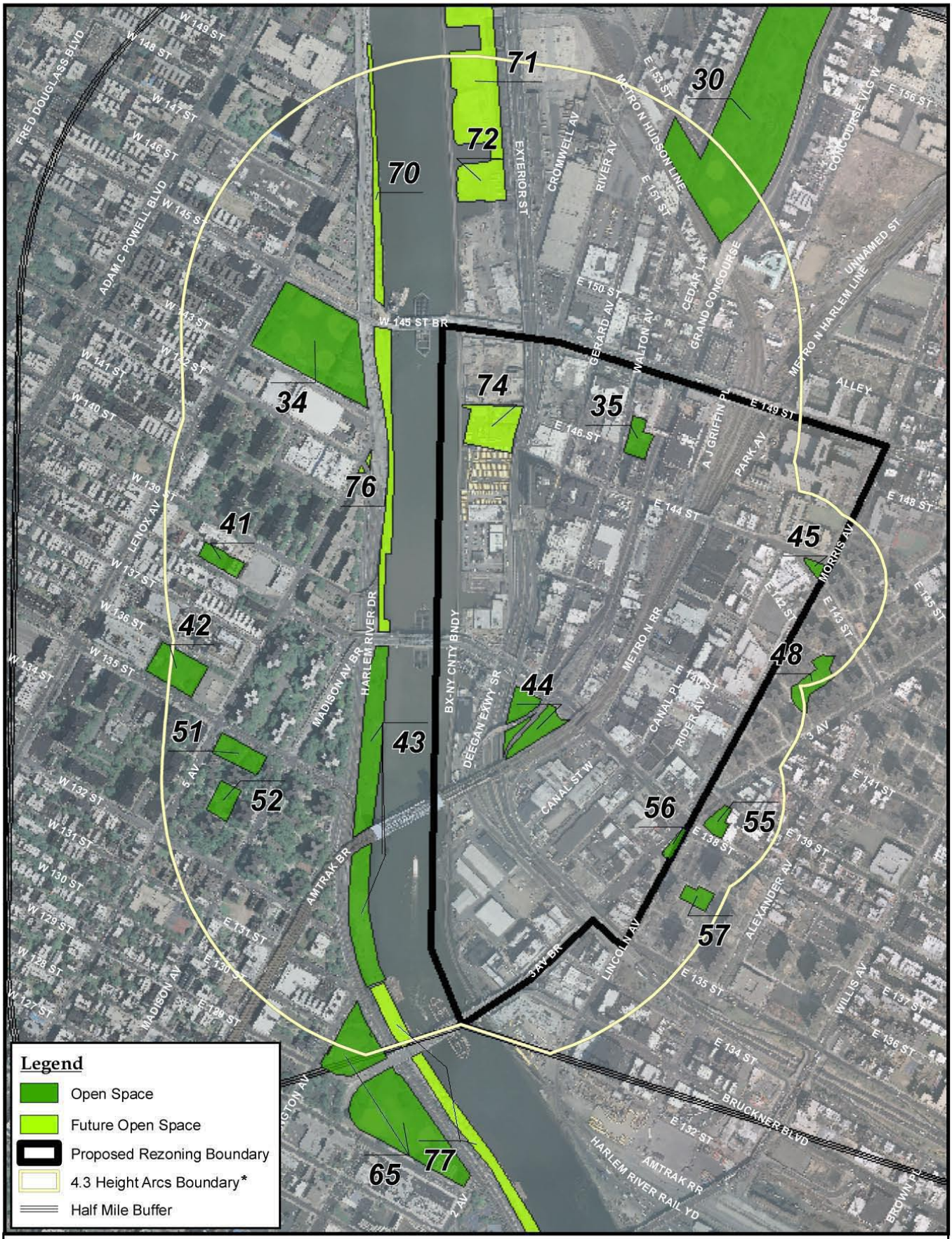



*Figure 3.5-7: Included Open Space Resources*

*Distance of longest potential project-generated shadows

300 0 300 600 900 Feet

N

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Lower Concourse Rezoning and Related Actions EIS*

*NYC Department of City Planning*

- Harlem River Park (Open Space Resource #65)

Harlem River Park is a 5.76-acre park located between Harlem River Drive and East 128th Street between Second and Third Avenues in Manhattan. This park contains basketball and handball courts, along with accessible play equipment. This park also contains open grassed areas and baseball fields. There is a limited amount of perimeter landscaping.

- Esplanade Gardens (Open Space Resource #70)

West 145th Street to West 150th Street along the Harlem River is leased by the City to Esplanade Gardens Housing, which currently uses the waterfront for parking and garbage dumpsters. Though Esplanade Gardens has so far not been amenable to the suggestion of rearranging its parking lot to accommodate a greenway, the City is confident that an agreement can be reached and a shared-use path will be implemented in the near future as part of the Manhattan Waterfront Greenway Long Term Plan.

- Heritage Field, Yankee Stadium Waterfront Park (Open Space Resource #71)

Yankee Stadium is in the midst of a relocation project. Included in this redevelopment is a proposed waterfront park.

- Bronx Terminal Market Waterfront Park, Gateway Center Parkland (Open Space Resource #72)

Phase 1 of this DPR–managed project includes the conversion of Piers 1 through 4 to a park from Exterior Street to the Harlem River waterfront. It will include tennis courts, a waterfront esplanade, event space, a beach, a picnic area and an outdoor classroom. By 2018, Pier 5 will also be redeveloped as part of the park.

- Proposed Lower Concourse Park (Open Space Resource #74)

A new, 2.26-acre park is proposed within the Lower Concourse rezoning area. The park will be located between the Harlem River and Exterior Street, generally south of the prolongation of East 146th Street and north of the prolongation of East 144th Street. The proposed Harlem River waterfront park would provide recreational green space to the new population expected as a result of the project; provide waterfront access to existing residents; and, provide a catalyst for other future redevelopment along the waterfront. Because the creation of this open space is part of the proposed action, shadows cast by other project elements are not considered to be a significant adverse impact. The future park is therefore included in the analysis for illustrative purposes only.

- Harlem River Greenway (Open Space Resource #76)

From East 135th Street to East 139th Street there is a short greenway through Harlem River Park; however, it is not connected to the larger greenway system. The greenway system, Manhattan Waterfront Greenway, is a 32-mile route circumnavigating the borough of Manhattan. The greenway will be improved as soon as it can be extended either northwards or southwards.

- DOT Staging Grounds/Salt Yard (Open Space Resource #77)

Just north of the Triborough Bridge, the Department of Sanitation (DSNY) uses the waterfront for storage of road salt. The salt is to be relocated shortly.

Just north of the salt yards, between East 125th and East 139th streets, the New York City Department of Transportation (DOT) is using the Harlem River shore as a staging ground for its bridge reconstruction. Over the next decade DOT will repair and reconstruct the Third Avenue, Madison Avenue, and Willis Avenue bridges. Until this work is finished, the shoreline is closed to the public.

After the DOT bridge reconstruction is complete, both DSNY and DOT have agreed to cede their land to DPR, which will then incorporate it into the Manhattan Waterfront Greenway. See Open Space Resources #43, 69, 70 and 76 for all additional areas within the project area.

The remaining twenty-one resources have the potential to be affected by incremental new shadows from the projected and potential development sites. As part of the preliminary screening process, these twenty-one resources were further screened for the potential to be affected by shadow impacts of the proposed action. The preliminary screening looked at a shadow sweep of the RWCDS development over the course of four representative seasonal analysis days (December 21st, March 21st, June 21st, and May 6th). This preliminary shadows sweep consisted of shadows from the existing buildings, as well as those expected to be cast from the projected and potential sites under the Future No-Action and Future Action conditions. Of the twenty-one open space resources identified, twelve were determined to experience incremental new shadows cast on the resource from projected or potential development sites and require a detailed shadow assessment. The twelve open space resources that require a detailed shadow assessment are listed below and shown on Figure 3.5-8.

- Franz Sigel Park (Open Space Resource #30)
- Colonel Charles Young Playground (Open Space Resource #34)
- Garrison Playground (Open Space Resource #35)
- Harlem River Driveway (Open Space Resource #43)
- Deegan Rock (Open Space Resource #44)
- Ryan Triangle (Open Space Resource #45)
- Borinquen Court Senior Center (Open Space Resource #55)
- Graham Triangle (Open Space Resource #56)

- Esplanade Gardens (Open Space Resource #70)
- Bronx Terminal Market Waterfront Park, Gateway Center Parkland (Open Space Resource #72)
- Proposed Lower Concourse Park (Open Space Resource #74)
- Harlem River Greenway (Open Space Resource #76)

***Resources of Concern Requiring a Detailed Shadows Assessment***

Based on the preliminary shadow screening, these open space resources would receive incremental new shadows under the Future Action scenario and therefore warrant a detailed shadows assessment in order to identify potential impacts (see Figure 3.5-9). Because the creation of the proposed Lower Concourse Park is part of the proposed action, shadows cast by other project elements are not considered to be a significant adverse impact. The future park is therefore included in the analysis for illustrative purposes only.

**Natural Resources**

The significant natural feature in the study area is the Harlem River. This aquatic resource could be affected by shadows of the buildings that may be developed as a result of the Proposed Action, and was therefore considered. Shadows cast by buildings would be short-lived and diffuse. Diffuse shadows are not considered a significant change to habitat conditions, as they are temporary and unlikely to change the habitat condition. In addition, the aquatic life of the river is continuously carried by strong and tidal currents and would be exposed to these shadows for short periods of time. The building shadows on the river would not create adverse impacts on fish and wildlife species within the river. However, the extent to which the shadow would encroach on the river has been assessed for consideration here and in the Natural Resources chapter.

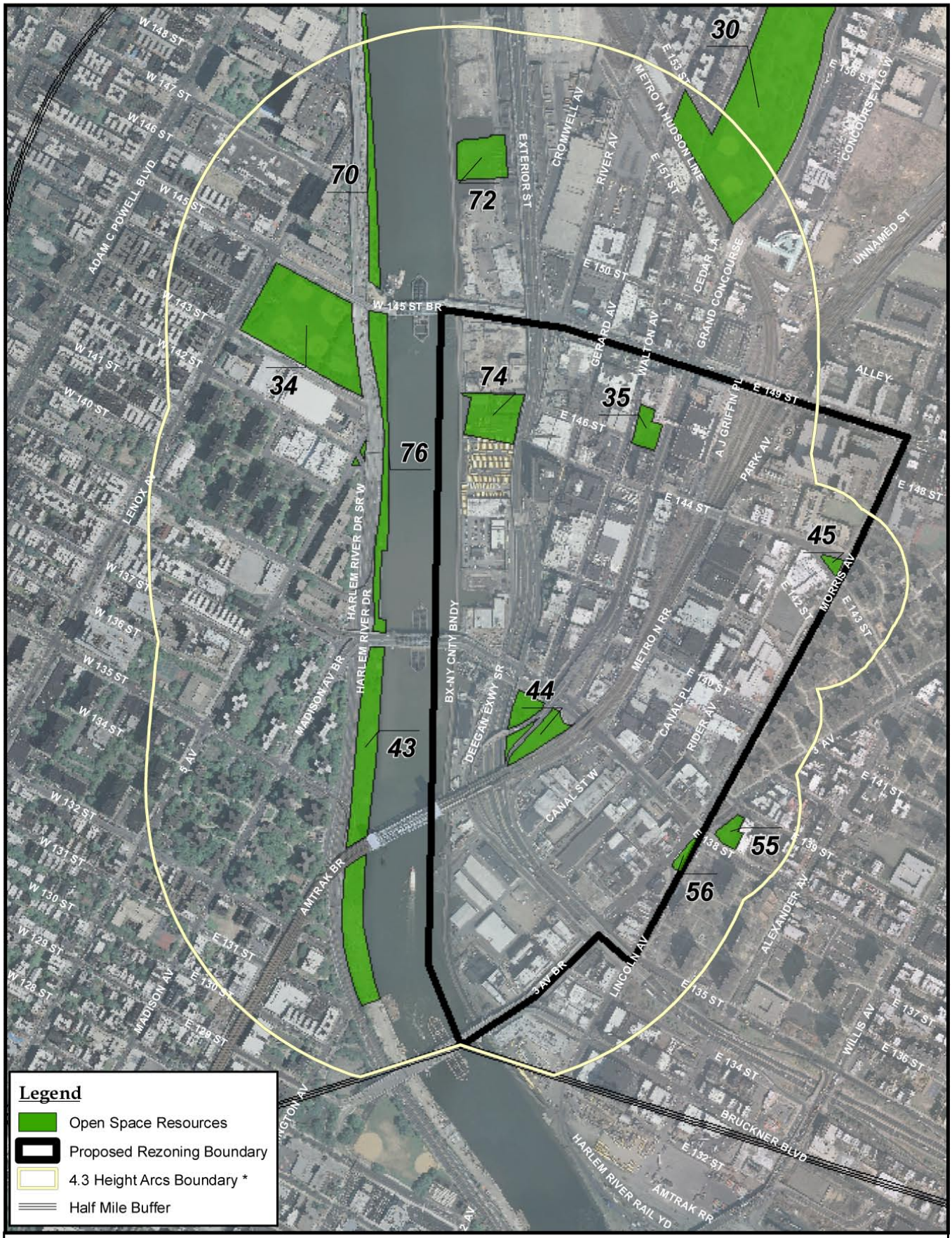



*Figure 3.5-8: Resources Included in Detailed Analysis*

*Distance of longest potential project-generated shadows

300 0 300 600 900 Feet

N

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Lower Concourse Rezoning and Related Actions EIS*

*NYC Department of City Planning*

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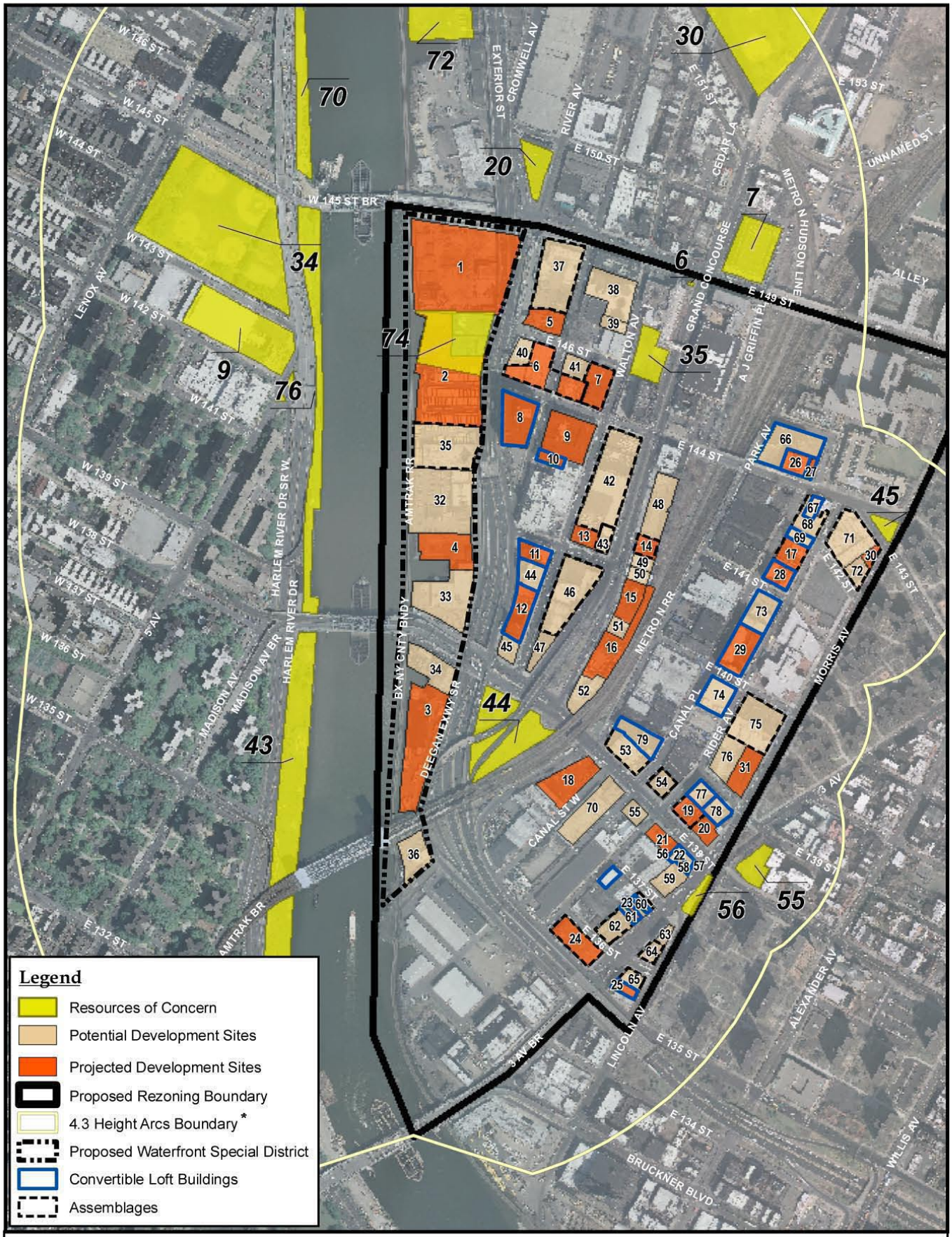



*Figure 3.5-9: Shadow Resources of Concern*

*Distance of longest potential project-generated shadows

300 0 300 600 900 Feet

N

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Lower Concourse Rezoning and Related Actions EIS*

*NYC Department of City Planning*

### 3.5.2 FUTURE WITHOUT THE PROPOSED ACTION

In the future without the proposed action, the majority of the proposed rezoning area, which is currently zoned R6, C4-4, M2-1, and M1-2, would continue to lack height limits, and the maximum height of development would continue to be regulated by sky-exposure-plane and tower regulations.

As identified in Chapter 2.0, "Project Description," under future conditions without the proposed action, the area would experience limited growth in primarily industrial uses. In this scenario, the existing zoning controls would remain in place. It is expected that as-of-right development would be expected to occur on 14 of the 31 projected development sites. Development on the projected development sites is expected to consist of two (existing) dwelling units, or 3,522 square feet (sf) of residential use; 106,358 sf of retail; 598,351 sf of office space; 404,372 sf of industrial space; 90,589 sf of community facility space; 227 parking spaces; and 93,142 sf of vacant space.

There are a total of nine of the projected and potential development sites that would have a building height increase within the future without the proposed action. The following table shows the existing heights, future without the proposed action height, as well as the future with the proposed action height.

| Site | Existing Condition | Future without Proposed Action | Future with Proposed Action |
|---|---|---|---|
| Projected Site #4 | 0 ft | 40 ft | 125 ft |
| Projected Site #5 | 10 ft | 15 ft | 120 ft |
| Projected Site #7 | 10 ft and 45 ft | 80 ft | 120 ft |
| Projected Site # 13 | 20 ft | 40 ft | 120 ft |
| Projected Site #14 | 12 ft | 0 ft | 120 ft |
| Projected Site #21 | 12 ft | 40 ft | 125 ft |
| Projected Site #24 | 0 ft | 20 ft | 15 ft |
| Potential Site #32 | 20 ft | 0 ft | 400 ft |
| Potential Site #70 | 12 ft | 30 ft | 125 ft |

Out of the nine sites with an increase in bulk, only one will potentially incrementally increase the shadows cast on a resource noted above. Two of the sites (4 and 32) are adjacent to the Harlem River and would therefore change the shadow effect on the natural resources within the study area. (Site #32, would have a reduced effect while Site #4 would increase its shading). The additional shadow on the river would occur from 8:46 am until 9:28 am during the winter only. The additional shadows cast during the other times analyzed would not reach this resource.

The future without the proposed action would not result in significant increases in shadow on identified sunlight-sensitive open space resources.

As noted in the above sections, there are numerous projects currently proposed in the future without the proposed action. These developments include the following projects

that are relevant to the shadow analysis.

1. Manhattan Waterfront Greenway

The Manhattan Waterfront Greenway Long Term Plan includes the future development of the entire Harlem River Waterfront within the Lower Concourse area. By 2018, most of this area's future greenway should be in place. See Open Space Resources #43, 69, 70, 76 and 77.

2. Heritage Field, Yankee Stadium

Yankee Stadium is in the midst of a relocation project. A new park with three baseball fields will be created on the site of the existing Yankee Stadium. One will be a regulation-sized field; the two others will be Little League fields. A new park will be constructed on top of Garage A to replace the parkland displaced by the construction of the new Yankee Stadium. It will contain passive and active recreation, including, basketball and handball courts, a 400-meter athletic track with field events, and an artificial turf soccer / football field. Included in this redevelopment is a proposed waterfront park. Two Pocket Parks, at the northeast and southeast corners of River Avenue and East 157th Street, are part of the redevelopment of Yankee Stadium. These parks will contain benches and unique paving landscapes. The northern parcel will feature fitness equipment and the southern site will feature a skate park.

3. Bronx Terminal Market

The Gateway Center at Bronx Terminal Market project will contribute to the revitalization of the South Bronx by converting a large underused site into retail use, with restoration of public access to the Harlem River waterfront.

Now in construction, the Gateway Center at Bronx Terminal Market will create approximately one million square feet of new retail space, featuring well-known, brand-name national retailers. The site will also include space for smaller, neighborhood-oriented establishments, street-level restaurants and on-site parking for 2,800 cars.

As a result of this project, a two-acre public park on the Harlem River waterfront is to be developed by DPR that will reclaim open space for the public's enjoyment. The park will connect to adjacent waterfront recreational facilities and additional open space to be developed as part of the new Yankee Stadium plan.

4. Mott Haven Campus

The Mott Haven School Campus will encompass more than eight acres at 3001

Concourse Village East. The campus will include two high schools and one charter school. Total building area will be approximately 280,000 square feet. Proposed development will include outdoor plaza space and athletic fields, including football. Playing fields would be located on the eastern portion of the site.

### 3.5.3 FUTURE WITH THE PROPOSED ACTION

The proposed action would establish higher density zoning within the Lower Concourse rezoning area. The new zoning is anticipated to provide an incentive for the redevelopment of a number of parcels within this area. In general, the development is predicted to occur on previously developed sites.

The proposed action would facilitate more mixed-use commercial and residential development than would occur in the future without the proposed action. The proposed action would result in a total of 3,416 dwelling units, 677,520 sf of retail space, 164,285 sf of hotel space, 154,289 sf of community facility space, 67,900 sf of parkland and 1,518 parking spaces. Compared to the No Action condition, the proposed action would add a net total 3,414 dwelling units, 571,162 sf of retail space, 164,285 sf of hotel space, 63,700 sf of community facility space, and a decrease of 598,351 sf of office space, a decrease of 308,872 sf of industrial and manufacturing use, as well as an increase of 1,291 parking spaces.

In order to determine the impact of the new shadows created by the proposed action, the incremental difference in shadows cast by the potential and projected development sites was determined for the Future With-Action scenario. The incremental shadow durations under the Future With-Action scenario were determined for each of the following resources of concern.

- Franz Sigel Park (Open Space Resource #30)
- Colonel Charles Young Playground (Open Space Resource #34)
- Garrison Playground (Open Space Resource #35)
- Harlem River Driveway (Open Space Resource #43)
- Deegan Rock (Open Space Resource #44)
- Ryan Triangle (Open Space Resource #45)
- Borinquen Court Senior Center (Open Space Resource #55)
- Graham Triangle (Open Space Resource #56)
- Esplanade Gardens (Open Space Resource #70)
- Bronx Terminal Market Waterfront Park, Gateway Center Parkland (Open Space Resource #72)
- Proposed Lower Concourse Park (Open Space Resource #74)
- Harlem River Greenway (Open Space Resource #76)
- Harlem River

This analysis considers the effects of the incremental shadows cast on the resources of concern during the four representative analyses time periods of the year. The proposed

Lower Concourse Park is included for illustrative purposes only, since it is being created as part of the proposed action. Shadow effects are not considered significant adverse impacts.

As directed by the *CEQR Technical Manual,* shadow analyses were performed for four representative days of the year. June 21st, May 6th and March 21st are representative days for the growing season for vegetation on open space. December 21st is representative of conditions during winter months. Table 3.5-1 provides the start and end time of the incremental shadows cast by the projected and potential developments on the resources of concern and shows the estimated duration of those new incremental shadows. This analysis utilized the massing and maximum building heights of the proposed action developments, as described in the methodology section. The "entering" times shown in the table are the times that the shadows first hit any part of the resource being evaluated, and the "exit" time represents the time that the incremental shadow leaves the resource. Daylight savings time was assumed for the analysis times on the March 21st, May 6th and June 21st analysis dates.

**Table 3.5-1:**
**Durations of Future Action Incremental Shadows on Resources of Concern**

| Resource of Concern | Source of Shadow (Development Site and Height) | Dec 21 | June 21 | March 21 | May 6 |
|---|---|---|---|---|---|
| | | **8:46 AM- 3:01 PM EST*** | **6:54 AM- 7:00 PM EST*** | **8:28 AM- 5:39 PM EST*** | **7:19 AM- 6:27 PM EST*** |
| **Franz Sigel Park (Open Space Resource #30)** | | | | | |
| | Projected Site #1 | Enter: 2:29 PM | - | - | - |
| | 400-ft | Exit: 3:01 PM | - | - | - |
| | | Duration: 0 h 32m | Duration: 0 h | Duration: 0 h | Duration: 0 h |
| | | **Total Duration: 0 h 32m** | **Total Duration: 0 h** | **Total Duration: 0 h** | **Total Duration: 0 h** |
| **Colonel Charles Young Playground (Open Space Resource #34)** | | | | | |
| | Projected Site #1 | - | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 400-ft | - | Exit: 7:48 AM | Exit: 9:00 AM | Exit: 8:05 AM |
| | | Duration: 0 h | Duration: 0 h 54m | Duration: 0 h 32m | Duration: 0 h 46m |
| | Projected Site #2 | Enter: 8:46 AM | - | - | - |
| | 260-ft | Exit: 9:00 AM | - | - | - |
| | | Duration: 0 h 14m | Duration: 0 h | Duration: 0 h | Duration: 0 h |
| | Potential Site #32 | Enter: 8:46 AM | - | - | - |
| | 400-ft | Exit: 9:44 AM | - | - | - |
| | | Duration: 0 h 58m | Duration: 0 h | Duration: 0 h | Duration: 0 h |
| | | **Total Duration: 0 h 58m** | **Total Duration: 0 h 54m** | **Total Duration: 0 h 32m** | **Total Duration: 0 h 46m** |
| **Garrison Playground (Open Space Resource #35)** | | | | | |
| | Projected Site #9 | Enter: 1:41 PM | - | - | - |
| | 120-ft | Exit: 3:01 PM | - | - | - |
| | | Duration: 1 h 20m | Duration: 0 h | Duration: 0 h | Duration: 0 h |
| | Potential Site #38 | - | Enter: 1:44 PM | Enter: 2:30 PM | Enter: 1:51 PM |
| | 120-ft | - | Exit: 7:00 PM | Exit: 5:39 PM | Exit: 6:27 PM |
| | | Duration: 0 h | Duration: 5 h 16m | Duration: 3 h 9m | Duration: 4 h 36m |
| | Potential Site #41 | - | Enter: 4:34 PM | - | Enter: 4:16PM |
| | 120-ft | - | Exit: 5:26 PM | - | Exit: 6:27 PM |
| | | Duration: 0 h | Duration: 0 h 52m | Duration: 0 h | Duration: 2 h 11m |
| | Potential Site #40 | - | - | Enter: 3:41 PM | Enter: 5:16 PM |
| | 120-ft | - | - | Exit: 5:39 PM | Exit: 6:27 PM |
| | | Duration: 0 h | Duration: 0 h | Duration: 1 h 58m | Duration: 1 h 11m |

| Resource of Concern | Source of Shadow (Development Site and Height) | Dec 21 | June 21 | March 21 | May 6 |
|---|---|---|---|---|---|
| | | **8:46 AM- 3:01 PM EST*** | **6:54 AM- 7:00 PM EST*** | **8:28 AM- 5:39 PM EST*** | **7:19 AM- 6:27 PM EST*** |
| | | **Total Duration: 1 h 20m** | **Total Duration: 5 h 16m** | **Total Duration: 3 h 9m** | **Total Duration: 4 h 36m** |
| **Harlem River Driveway (Open Space Resource #43)** | | | | | |
| | Potential Site #34 | - | - | Enter: 8:28 AM | Enter: 7:19 AM |
| | 125-ft | - | - | Exit: 9:04 AM | Exit: 8:11 AM |
| | | Duration: 0 h | Duration: 0 h | Duration: 0 h 36m | Duration: 0 h 52m |
| | Projected Site #3 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 400-ft | Exit: 9:20 AM | Exit: 8:28 AM | Exit: 9:28 AM | Exit: 8:38 AM |
| | | Duration: 0 h 34m | Duration: 1 h 34m | Duration: 1 h 0m | Duration: 1 h 19m |
| | | **Total Duration: 0 h 34m** | **Total Duration: 1 h 34m** | **Total Duration: 1 h 0m** | **Total Duration: 1 h 19m** |
| **Deegan Rock (Open Space Resource #44)** | | | | | |
| | Potential Site #18 | Enter: 8:46 AM | - | Enter: 8:28AM | - |
| | 125-ft | Exit: 1:18 PM | - | Exit: 9:39 AM | - |
| | | Duration: 4 h 32m | Duration: 0 h | Duration: 1 h 11m | Duration: 0 h |
| | Potential Site #70 | Enter: 8:46 AM | - | - | - |
| | 125-ft | Exit: 11:02 AM | - | - | - |
| | | Duration: 2 h 16m | Duration: 0 h | Duration: 0 h | Duration: 0 h |
| | Potential Site #55 | Enter: 8:46 AM | - | - | - |
| | 125-ft | Exit: 11:02 AM | - | - | - |
| | | Duration: 2 h 16m | Duration: 0 h | Duration: 0 h | Duration: 0 h |
| | Potential Site #52 | - | Enter: 6:54 AM | - | - |
| | 120-ft | - | Exit: 7:32 AM | - | - |
| | | Duration: 0 h | Duration: 0 h 38m | Duration: 0 h | Duration: 0 h |
| | Potential Site #34 | - | Enter: 1:49 PM | Enter: 2:53 PM | - |
| | 125-ft | - | Exit: 7:00 PM | Exit: 5:39 PM | - |
| | | Duration: 0 h | Duration: 5 h 11m | Duration: 2 h 46m | Duration: 0 h |
| | Projected Site #3 | - | Enter: 2:03 PM | Enter: 2:00 PM | Enter: 1:48 PM |
| | 400-ft | - | Exit: 7:00 PM | Exit: 5:39 PM | Exit: 6:27 PM |
| | | Duration: 0 h | Duration: 4 h 57m | Duration: 3 h 39m | Duration: 4 h 39m |

| Resource of Concern | Source of Shadow (Development Site and Height) | Dec 21<br>8:46 AM- 3:01 PM EST* | June 21<br>6:54 AM- 7:00 PM EST* | March 21<br>8:28 AM- 5:39 PM EST* | May 6<br>7:19 AM- 6:27 PM EST* |
|---|---|---|---|---|---|
| | | **Total Duration: 4 h 32m** | **Total Duration: 5 h 49m** | **Total Duration: 4 h 50m** | **Total Duration: 4 h 39m** |
| **Ryan Triangle (Open Space Resource #45)** | | | | | |
| | Projected Site #30 | Enter: 10:34 AM | Enter: 1:09 PM | Enter: 11:43 AM | Enter: 11:51 AM |
| | 80-ft | Exit: 3:01 PM | Exit: 2:05 PM | Exit: 4:18 PM | Exit: 5:36 PM |
| | | Duration: 4 h 27m | Duration: 0 h 56m | Duration: 4 h 35m | Duration: 5 h 45m |
| | Potential Site #11 | Enter: 12:40 PM | - | Enter: 2:44 PM | - |
| | 80-ft | Exit: 3:01 PM | - | Exit: 5:00 PM | - |
| | | Duration: 2 h 21m | Duration: 0 h | Duration: 2 h 16m | Duration: 0 h |
| | Potential Site #68 | - | - | Enter: 4:18 PM | Enter: 5:19 PM |
| | 70-ft | - | - | Exit: 5:36 PM | Exit: 6:25 PM |
| | | Duration: 0 h | Duration: 0 h | Duration: 1 h 18m | Duration: 1 h 6m |
| | Projected Site #1 | - | Enter: 6:34 PM | - | - |
| | 400-ft | - | Exit: 7:00 PM | - | - |
| | | Duration: 0 h | Duration: 0 h 26m | Duration: 0 h | Duration: 0 h |
| | Projected Site #2 | - | - | - | Enter: 6:03 PM |
| | 260-ft | - | - | - | Exit: 6:25 PM |
| | | Duration: 0 h | Duration: 0 h | Duration: 0 h | Duration: 0 h 22m |
| | | **Total Duration: 4 h 27m** | **Total Duration: 1 h 22m** | **Total Duration: 5 h 53m** | **Total Duration: 6 h 34m** |
| **Borinquen Court Senior Center (Open Space Resource #55)** | | | | | |
| | Potential Site #59 | - | - | Enter: 4:00 PM | - |
| | 80-ft | - | - | Exit: 5:39 PM | - |
| | | Duration: 0 h | Duration: 0 h | Duration: 1 h 39m | Duration: 0 h |
| | Projected Site #21 | - | Enter: 5:32 PM | - | Enter: 5:19 PM |
| | 125-ft | - | Exit: 7:00 PM | - | Exit: 6:27 PM |
| | | Duration: 0 h | Duration: 1 h 28m | Duration: 0 h | Duration: 1 h 8m |
| | Projected Site #20 | - | Enter: 5:08 PM | - | - |
| | 125-ft | - | Exit: 7:00 PM | - | - |
| | | Duration: 0 h | Duration: 1 h | Duration: 0 h | Duration: 0 h |

| Resource of Concern | Source of Shadow (Development Site and Height) | Dec 21 8:46 AM- 3:01 PM EST* | June 21 6:54 AM- 7:00 PM EST* | March 21 8:28 AM- 5:39 PM EST* | May 6 7:19 AM- 6:27 PM EST* |
|---|---|---|---|---|---|
| | | | 52m | | |
| | Potential Site #62 | - | - | Enter: 5:00 PM | - |
| | 80-ft | - | - | Exit: 5:39 PM | - |
| | | Duration: 0 h | Duration: 0 h | Duration: 0 h 39m | Duration: 0 h |
| | Potential Site #70 | - | - | - | Enter: 5:48 PM |
| | 125-ft | - | - | - | Exit: 6:27 PM |
| | | Duration: 0 h | Duration: 0 h | Duration: 0 h | Duration: 0 h 39m |
| | | **Total Duration: 0 h** | **Total Duration: 1 h 52m** | **Total Duration: 1 h 39m** | **Total Duration: 1 h 8m** |
| **Graham Triangle (Open Space Resource #56)** | | | | | |
| | Potential Site #64 | Enter: 1:55 PM | - | - | - |
| | 80-ft | Exit: 3:01 PM | - | - | - |
| | | Duration: 1 h 6m | Duration: 0 h | Duration: 0 h | Duration: 0 h |
| | Potential Site #59 | - | Enter: 3:02 PM | Enter: 3:14 PM | Enter: 3:14 PM |
| | 80-ft | - | Exit: 7:00 PM | Exit: 5:39 PM | Exit: 6:27 PM |
| | | Duration: 0 h | Duration: 3 h 58m | Duration: 2 h 25m | Duration: 3 h 13m |
| | Potential Site #70 | - | Enter: 6:06 PM | - | Enter: 5:44 PM |
| | 125-ft | - | Exit: 7:00 PM | - | Exit: 6:27 PM |
| | | Duration: 0 h | Duration: 0 h 54m | Duration: 0 h | Duration: 0 h 43m |
| | Potential Site #62 | - | - | Enter: 3:46 PM | - |
| | 80-ft | - | - | Exit: 5:39 PM | - |
| | | Duration: 0 h | Duration: 0 h | Duration: 1 h 53m | Duration: 0 h |
| | | **Total Duration: 1 h 6m** | **Total Duration: 3 h 58m** | **Total Duration: 2 h 25m** | **Total Duration: 3 h 13m** |
| **Esplanade Garden (Open Space Resource #70)** | | | | | |
| | Projected Site #1 | Enter: 8:46 AM | - | Enter: 8:28 AM | - |
| | 400-ft | Exit: 10:05 AM | - | Exit: 9:20 AM | - |
| | | Duration: 1 h 19m | Duration: 0 h | Duration: 0 h 52m | Duration: 0 h |
| | | **Total Duration: 1 h 19m** | **Total Duration: 0 h** | **Total Duration: 0 h 52m** | **Total Duration: 0 h** |

| | | | | | |
|---|---|---|---|---|---|
| **Bronx Terminal Market, Gateway Center Waterfront (Open Space Resource #72)** | | | | | |
| | Projected Site #1 | Enter: 10:19 AM | - | - | - |
| | 400-ft | Exit: 12:55 PM | - | - | - |
| | | Duration: 2 h 36m | Duration: 0 h | Duration: 0 h | Duration: 0 h |
| | | **Total Duration: 2 h 36m** | **Total Duration: 0 h** | **Total Duration: 0 h** | **Total Duration: 0 h** |
| **Proposed Lower Concourse Park (Open Space Resource #74)** | | | | | |
| | Potential Site #40 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 120-ft | Exit: 10:42 AM | Exit: 9:20 AM | Exit: 10:18 AM | Exit: 9:21 AM |
| | | Duration: 1 h 56m | Duration: 2 h 26m | Duration: 1 h 50m | Duration: 2 h 2m |
| | Projected Site #2 | Enter: 8:46 AM | Enter: 10:07 AM | Enter: 8:28 AM | Enter: 8:53 AM |
| | 260-ft | Exit: 3:01 PM | Exit: 3:17 PM | Exit: 4:30 PM | Exit: 3:55 PM |
| | | Duration: 6 h 15m | Duration: 5 h 10m | Duration: 8 h 2m | Duration: 7 h 2m |
| | Projected Site #9 | Enter: 8:46 AM | - | - | - |
| | 120-ft | Exit: 9:30 AM | - | - | - |
| | | Duration: 0 h 44m | Duration: 0 h | Duration: 0 h | Duration: 0 h |
| | Potential Site #32 | Enter: 8:46 AM | - | - | - |
| | 400-ft | Exit: 3:01 PM | - | - | - |
| | | Duration: 6 h 15m | Duration: 0 h | Duration: 0 h | Duration: 0 h |
| | Projected Site #1 | - | Enter: 6:54 AM | - | - |
| | 400-ft | - | Exit: 8:05 AM | - | - |
| | | Duration: 0 h | Duration: 1 h 11m | Duration: 0 h | Duration: 0 h |
| | Projected Site #6 | - | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 120-ft | - | Exit: 7:54 AM | Exit: 9:18 AM | Exit: 8:11 AM |
| | | Duration: 0 h | Duration: 1 h 0m | Duration: 0 h 50m | Duration: 0 h 52m |
| | | **Total Duration: 6 h 15m** | **Total Duration: 7 h 37m** | **Total Duration: 8 h 2m** | **Total Duration: 8 h 36 m** |
| **Harlem River Greenway (Open Space Resource #76)** | | | | | |
| | Projected Site #1 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 400-ft | Exit: 10:19 AM | Exit: 8:36 AM | Exit: 9:28 AM | Exit: 8:41 AM |
| | | Duration: 1 h 33m | Duration: 1 h 42m | Duration: 1 h 0m | Duration: 1 h 22m |
| | Projected Site #2 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 260-ft | Exit: 9:34 AM | Exit: 7:30 AM | Exit: 8:40 AM | Exit: 7:35 AM |
| | | Duration: 0 h 48m | Duration: 0 h 36m | Duration: 0 h 12m | Duration: 0 h 16m |
| | Projected Site #9 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 120-ft | Exit: 10:08 AM | Exit: 8:13 AM | Exit: 9:18 AM | Exit: 8:27 AM |
| | | Duration: 1 h | Duration: 1 h | Duration: 0 h | Duration: 1 h |

| | | | | | |
|---|---|---|---|---|---|
| | | 24m | 19m | 50m | 8m |
| | Potential Site #32 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 400-ft | Exit: 10:16 AM | Exit: 8:24 AM | Exit: 9:28 AM | Exit: 8:39 AM |
| | | Duration: 1 h 30m | Duration: 1 h 30 | Duration: 1 h | Duration: 1 h 20m |
| | Projected Site #6 | Enter: 8:46 AM | - | - | - |
| | 120-ft | Exit: 9:20 AM | - | - | - |
| | | Duration: 0 h 34m | Duration: 0 h | Duration: 0 h | Duration: 0 h |
| | | **Total Duration: 1 h 33m** | **Total Duration: 1 h 42m** | **Total Duration: 1 h 0m** | **Total Duration: 1 h 22m** |
| **Harlem River** | | | | | |
| | Projected Site #1 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 400-ft | Exit: 11:37 AM | Exit: 11:35 AM | Exit: 11:44 AM | Exit: 11:34 AM |
| | | Duration: 2 h 51m | Duration: 4 h 41m | Duration: 3 h 16m | Duration: 4 h 15m |
| | Projected Site #2 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 260-ft | Exit: 11:29 AM | Exit: 11:05 AM | Exit: 11:16 AM | Exit: 10:51 AM |
| | | Duration: 2 h 43m | Duration: 4 h 11m | Duration: 2 h 48m | Duration: 3 h 32m |
| | Projected Site #3 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 400-ft | Exit: 11:54 AM | Exit: 11:38 AM | Exit: 11:58 AM | Exit: 11:37 AM |
| | | Duration: 3 h 8m | Duration: 4 h 44m | Duration: 3 h 30m | Duration: 4 h 18m |
| | Potential Site #32 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 400-ft | Exit: 11:30 AM | Exit: 11:12 AM | Exit: 11:27 AM | Exit: 11:07 AM |
| | | Duration: 2 h 44m | Duration: 4 h 18m | Duration: 2 h 59m | Duration: 3 h 48m |
| | Potential Site #33 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 125 -ft | Exit: 11:08 AM | Exit: 10:20 AM | Exit: 10:54 AM | Exit: 10:26 AM |
| | | Duration: 2 h 22m | Duration: 3 h 26m | Duration: 2 h 26m | Duration: 3 h 7m |
| | Potential Site #34 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 400 -ft | Exit: 11:32 AM | Exit: 10:12 AM | Exit: 11:19 AM | Exit: 10:59 AM |
| | | Duration: 2 h 46m | Duration: 3 h 18m | Duration: 2 h 51m | Duration: 3 h 40m |
| | Potential Site #36 | Enter: 8:46 AM | Enter: 6:54 AM | Enter: 8:28 AM | Enter: 7:19 AM |
| | 400-ft | Exit: 10:51 AM | Exit: 9:53 AM | Exit: 10:30 AM | Exit: 9:59 AM |
| | | Duration: 2 h 5m | Duration: 2 h 59m | Duration: 2 h 2m | Duration: 2 h 40m |
| | | **Total Duration: 3 h 8m** | **Total Duration: 4 h 44m** | **Total Duration: 3 h30m** | **Total Duration: 4 h 18m** |

*Note: Daylight saving time was assumed for the June, March, and May analysis dates. The time shown represents one and one-half hours after sunrise and before sunset for the analysis date.* ***Source: HDR, Inc., 2008***

As detailed in the discussion below, the proposed action would create incremental shadows on 12 sunlight-sensitive open space resources within the study area. Based on the preliminary shadow screening, no other potential sunlight-sensitive resources are expected to experience incremental shadows from the proposed action (projected or potential development sites). The discussion below focuses on the duration, location, and size of the shadows generated from the proposed action development sites, with respect to the sunlight-sensitive resources of concern that would experience the incremental shadows.

**Open Space Resources**

Franz Sigel Park (Open Space Resource #30)

Franz Sigel Park is a large, 15.99-acre park located between the Grand Concourse and Walton Avenue between East 151st and East 158th Streets. Franz Sigel Park has a mix of active and passive recreational facilities. Active recreation includes basketball and handball courts, baseball fields, jungle gyms, and a comfort station. Passive recreation includes landscaped hills with pathways, as well as open grassed areas.

***December 21st***

During the morning hours of December 21st, Projected Site 1 would cast incremental shadows on the resource from 2:29 p.m. until sunset (see Figure 3.5-10), which would result in a total shadow duration of 32 minutes.

***June 21st***

No incremental shadows would be cast on this resource from any projected or potential sites on this date.

***March 21st***

No incremental shadows would be cast on this resource from any projected or potential sites on this date.

***May 6th***

No incremental shadows would be cast on this resource from any projected or potential sites on this date.

Colonel Charles Young Playground (Open Space Resource #34)

Colonel Charles Young Playground is a 6.42-acre park located in Manhattan on Lenox Avenue and Harlem River Drive between West 143rd and West 145th Streets. This park contains basketball and handball courts, baseball fields, and accessible play equipment.

***December 21st***

During the morning hours of December 21st, Projected Site 2 and Potential Site 32

would cast incremental shadows on the resource from sunrise until 9:00 a.m. and 9:44 a.m., respectively (see Figure 3.5-11), which would result in a total shadow duration of 58 minutes.

***June 21st***

During the morning hours of June 21st, Projected Site 1 would cast an incremental shadow from sunrise until 7:48 a.m. (see Figure 3.5-12), which would have a duration of 54 minutes.

***March 21st***

During the morning hours of March 21st, Projected Site 1 would cast an incremental shadow from sunrise until 9:00 a.m. (see Figure 3.5-13), which would have a duration of 32 minutes.

***May 6th***

During the morning hours of May 6th, Projected Site 1 would cast an incremental shadow from sunrise until 8:05 a.m. (see Figure 3.5-14), which would have a duration of 46 minutes.

Garrison Playground (Open Space Resource #35)

Garrison Playground is a 0.70-acre playground located on the Grand Concourse and Walton Avenues between East 144th and East 149th Streets. The playground features handball walls, basketball courts, play equipment, concrete play areas, and benches. The playground is surrounded by perimeter landscaping.

***December 21st***

During the afternoon hours of December 21st, Projected Site 9 would cast incremental shadows on the resource from 1:41 p.m. until sunset (see Figure 3.5-15), which would result in a total shadow duration of 1 hour and 20 minutes. During these afternoon hours, other existing buildings would also be casting significant shadows across the resource. The duration of the shadows cast as a result of the proposed project would cast a shadow on the remaining portion of the resource not already in shadow. During the morning hours, the existing buildings to the south and east cast shadows over almost the entire site.

***June 21st***

On the afternoon of June 21st, Potential Site 38 would cast an incremental shadow from 1:44 p.m. until sunset. Potential Site 41 would also cast an incremental shadow from 4:34 p.m. until 5:26 p.m. (see Figure 3.5-16), resulting in a total duration of 5 hours and 16 minutes. During these afternoon hours, other existing buildings would also be casting significant shadows across the resource. The duration of the shadows cast as a result of the proposed project would cast a shadow on the remaining portion of the resource not already in shadow.

***March 21st***

On the March 21st analysis period, Potential Site 38 would cast an incremental shadow from 2:30 p.m. until sunset. Potential Site 41 would also cast an incremental shadow from 3:41 p.m. sunset (see Figure 3.5-17), resulting in a total duration of 3 hours and 9 minutes. During these afternoon hours, other existing buildings are also casting significant shadows across the resource. The duration of the shadows cast as a result of the proposed project would cast a shadow on the remaining portion of the resource not already in shadow.

***May 6th***

On the May 6th analysis period, the incremental shadows from Potential Site 38 would enter the site at 1:51 p.m. and remain until sunset. During that time, the Potential Site 41's shadow would enter the site and 4:16 p.m., while shadows from Potential Site 40 would enter at 5:16 p.m. (see Figure 3.5-18), remaining until sunset. Therefore, the incremental new shadow would be cast on the resource for the duration of 4 hours and 36 minutes. During these afternoon hours, other existing buildings would also be casting significant shadows across the resource. The duration of the shadows cast as a result of the proposed project would cast a shadow on the remaining portion of the resource not already in shadow.

Harlem River Driveway (Open Space Resource #43)

Harlem River Driveway is a short piece of an existing greenway located between East 135th and East 139th Streets in Manhattan. This area is part of the Manhattan Waterfront Greenway, although it is not currently connected to the larger borough wide greenway.

***December 21st***

During the morning hours of December 21st, Projected Site 3 would cast incremental shadows on the resource from sunrise until 9:20 a.m. (see Figure 3.5-19), which would result in a total shadow duration of 34 minutes.

***June 21st***

During the morning hours of June 21st, Projected Site 3 would cast incremental shadows on the resource from sunrise until 8:28 a.m. (see Figure 3.5-20), which would result in a total shadow duration of 1 hour and 34 minutes.

***March 21st***

On the March 21st analysis period, the incremental shadows from Projected Site 3 would first appear at sunrise and exit at 9:28 a.m., while shadows from Potential Site 34 would first appear at sunrise and would exit at 9:04 a.m. (see Figure 3.5-21). Therefore, the incremental new shadow would be cast on the resource for the duration of 1 hour.

***May 6th***

On the May 6th analysis period, the incremental shadows from Projected Site 3 would first appear at sunrise and exit at 8:38 a.m. while shadows from Potential Site 34 would first appear at sunrise and would exit at 8:11 a.m. (see Figure 3.5-22). Therefore, the incremental new shadow would be cast on the resource for the duration of 1 hour and 19 minutes.

Deegan Rock (Open Space Resource #44)

Deegan Rock is a small, 0.26-acre park located on East 138th Street at the Grand Concourse and the Major Deegan Expressway. Deegan Rock was named for the Major William F. Deegan. A seven-and-a-half-foot tall Concord granite boulder with an incised inscription is located within the park, dedicating the expressway to Major Deegan. The park contains fenced and landscaped areas -- some of which abut highway lands and the Metro-North Railroad right-of-way -- as well as a semicircular, publicly accessible paved pathway with benches that abuts the gated area of the monument. Due to the location of Deegan Rock in the central portion of the project area, shadows will be cast onto the site from buildings to the east and west of the park.

***December 21st***

During the morning hours of December 21st, Potential Sites 18, 70, and 55 would cast incremental shadows on the resource from sunrise until 1:18 p.m., 11:02 a.m. and 11:02 a.m., respectively (see Figure 3.5-23), which would result in a total shadow duration of 4 hours and 32 minutes. No shadows are currently cast on this resource from any existing buildings.

***June 21st***

On the June 21st analysis period, the incremental shadows from Potential Site 52 would first appear at sunrise and would exit at 7:32 a.m. (see Figure 3.5-24), resulting in a morning shadow duration of 38 minutes. The incremental shadows from Potential Site 34 would first appear at 1:49 p.m. and would exit at sunset. Projected Site 3 would cast a shadow from 2:03 p.m. until sunset. The total afternoon duration of shadow would be 5 hours and 11 minutes. The total incremental new shadow would be cast on the resource for the duration of 5 hours and 49 minutes.

***March 21st***

During the morning hours of March 21st, the incremental shadows from Potential Site 18 would first appear at sunrise and would exit at 9:39 a.m. (see Figure 3.5-25), resulting in a shadow duration of 1 hour and 11 minutes. This shadow is contained within a small portion of the eastern side of the park. During the afternoon hours, the incremental shadows from Potential Site 34 and Projected Site 3 would enter at 2:39 p.m. and 2:00 p.m., respectively, and both shadows would remain until sunset, resulting in a shadow duration of 3 hours and 39 minutes. Therefore, the total incremental new shadows cast on the resource

would be for a duration of 4 hours and 50 minutes. A portion of the site would not be affected by this shadow.

***May 6th***

On the May 6th analysis period, the incremental shadows from Projected Site 3 would first appear at 1:48 p.m., and would exit at sunset (see Figure 3.5-26). Therefore, the incremental new shadow would be cast on the resource for the duration of 4 hours and 39 minutes.

Ryan Triangle (Open Space Resource #45)

Ryan Triangle is a small, 0.22-acre park located at the intersection of East 143rd Street, East 144th Street and Morris Avenue. Ryan Triangle honors a Bronx native and World War I veteran. Acquired by the City in 1900, the original garden contained a plaque dedicating the space to George Ryan. In the triangle, woodchips create a boundary around the landscaped areas. Many species of plantings are represented here. A boulder and flagpoles featuring the flags of the United States, City of New York and Parks Department can be found in the center of the space. Due to the location of Ryan Triangle in the central area of the project area, shadows will be cast onto the site from buildings to the east and west of the park.

***December 21st***

During the morning hours of December 21st, Projected Site 30 would cast incremental shadows on the resource from 10:34 a.m. until sunset (see Figure 3.5-27), which would result in a total shadow duration of 4 hours and 27 minutes. Potential Site 11 would cast a similar shadow, entering at 12:40 p.m. and exiting the site at sunset. Any new shadows only minimally increase the amount of shadows already cast by existing buildings inside and outside of the project area.

***June 21st***

On the June 21st analysis period, the incremental shadows from Projected Site 30 would first appear at 1:09 p.m. and exit at 2:05 p.m., resulting in a shadow duration of 56 minutes (see Figure 3.5-28). Additionally, Projected Site 1 would cast a shadow beginning at 6:34 p.m. and lasting until sunset, resulting in a duration of 26 minutes. The total shadow duration cast on this resource is 1 hour and 22 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings inside and outside of the project area.

***March 21st***

On the March 21st analysis period, the incremental shadows from Projected Site 30 would first appear at 11:43 a.m., and would exit at 4:18 p.m. (see Figure 3.5-29). The incremental shadows cast from Potential Site 11 would appear at 2:44 p.m. and would exit at 5:00 p.m. The shadows cast from Potential Site 68 would enter the resource at 4:18 p.m. and would remain until 5:36 p.m. Therefore, the total incremental new shadow would be cast on the resource for the duration of 5

hours and 53 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings inside and outside of the project area.

***May 6th***

On the May 6th analysis period, the incremental shadows from Projected Site 30 would first appear at 11:51 a.m., and would exit at 5:36 p.m. (see Figure 3.5-30). The incremental shadows cast from Potential Site 68 would appear at 5:19 p.m. and would exit at 6:25 p.m. The shadows cast from Projected Site 2 would enter the resource at 6:03 p.m. and would remain until 6:25 p.m. Therefore, the total incremental new shadow would be cast on the resource for the duration of 6 hours and 34 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings inside and outside of the project area.

Borinquen Court Senior Center (Open Space Resource #55)

This senior center, with an outdoor landscaped plaza area, is located between East 138th and East 139th Streets, with the plaza located along Third Avenue. The plaza contains landscaped and grassed areas, with pathways and benches.

***December 21st***

No incremental shadows would be cast on this resource from any projected or potential sites on this date.

***June 21st***

During the afternoon hours on June 21st, incremental shadows would be cast from Projected Site 21 from 5:32 p.m. until sunset and from Projected Site 20 from 5:08 p.m. until sunset (see Figure 3.5-31). Therefore, the incremental new shadow would be cast on this resource for a duration of 1 hour and 52 minutes.

***March 21st***

During the afternoon hours on March 21st, incremental shadows would be cast from Potential Site 59 from 4:00 p.m. until sunset and from Potential Site 62 from 5:00 p.m. until sunset (see Figure 3.5-32). Therefore, the incremental new shadow would be cast on this resource for a duration of 1 hour and 39 minutes. The duration of the shadows cast as a result of the proposed project would cast a shadow on the remaining portion of the resource not already in shadow.

***May 6th***

On the May 6th analysis period, the incremental shadows from Projected Site 21 would first appear at 5:19 p.m., and would exit at sunset. The incremental shadow from Potential Site 70 would first appear at 5:48 p.m. and would remain through sunset (see Figure 3.5-33). Therefore, the incremental new shadow would be cast on the resource for the duration of 1 hour and 8 minutes. The duration of the shadows cast as a result of the proposed project would cast a

shadow on the remaining portion of the resource not already in shadow.

Graham Triangle (Open Space Resource #56)

Graham Triangle is a small, 0.04-acre park located at the intersection of East 137th Street between Third Avenue and Lincoln Avenue. The area contains three different memorials: the Bronx Local Board #2 World War Memorial, the Private David W. Gentle Memorial Flagstaff, and the Spanish War Memorial. The plaza area also contains sidewalks, landscaping and benches.

***December 21st***

During the afternoon hours of December 21st, Potential Site 64 would cast incremental shadows on the resource from 1:55 p.m. until sunset (see Figure 3.5-34), which would result in a total shadow duration of 1 hour and 6 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings inside and outside of the project area.

***June 21st***

During the afternoon hours of June 21st, Potential Site 59 would cast incremental shadows on the resource from 3:02 p.m. until sunset (see Figure 3.5-35); Potential Site 70 would also cast a shadow from 6:06 p.m. until sunset. This would result in a total shadow duration of 3 hours and 58 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings inside and outside of the project area.

***March 21st***

On the March 21st analysis period, Potential Site 59 would cast incremental shadows on the resource from 3:14 p.m. until sunset (see Figure 3.5-36); Potential Site 62 would also cast a shadow from 3:46 p.m. until sunset. This would result in a total shadow duration of 2 hours and 25 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings inside and outside of the project area.

***May 6th***

On the May 6th analysis period, Potential Site 59 would cast incremental shadows on the resource from 3:14 p.m. until sunset (see Figure 3.5-37); Potential Site 70 would also cast a shadow from 5:44 p.m. until sunset. This would result in total shadow duration of 3 hours and 13 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings inside and outside of the project area.

Esplanade Gardens (Open Space Resource #70)

West 145th Street to West 150th Street along the Harlem River is leased by the City to Esplanade Gardens Housing, which currently uses the waterfront for parking and

garbage dumpsters. Though Esplanade Gardens has so far not been amenable to the suggestion of rearranging its parking lot to accommodate a greenway, the City is confident that an agreement can be reached and a shared-use path will be implemented in the near future.

The Manhattan Waterfront Greenway Long Term Plan includes the future development of the entire Harlem River Waterfront within the Lower Concourse area. By 2018, most of this area's future greenway should be in place.

***December 21st***

During the morning hours of December 21st, Projected Site 1 would cast incremental shadows on the resource from sunrise until 10:05 a.m. (see Figure 3.5-38), which would result in a total shadow duration of 1 hour and 19 minutes.

***June 21st***

No incremental shadows would be cast on this resource from any projected or potential sites on this date.

***March 21st***

During the morning hours of March 21st, Projected Site 1 would cast incremental shadows on the resource from sunrise until 9:20 a.m. (see Figure 3.5-39), which would result in a total shadow duration of 52 minutes.

***May 6th***

No incremental shadows would be cast on this resource from any projected or potential sites on this date.

Bronx Terminal Market Waterfront Park, Gateway Center Parkland (Open Space Resource #72)

Phase 1 includes the conversion of Piers 1 through 4 to a park from Exterior Street to the Harlem River waterfront. It will include tennis courts, a waterfront esplanade, event space, a beach, a picnic area and an outdoor classroom. By 2018, Pier 5 will also be redeveloped as part of the park.

***December 21st***

During the late morning hours of December 21st, Projected Site 1 would cast incremental shadows on the resource from 10:19 a.m. until 12:55 p.m. (see Figure 3.5-40), which would result in a total shadow duration of 2 hours and 36 minutes. The shadows cast on this resource are limited to the very southernmost portion of the proposed park. The remainder of the site would not have any shadows as a result of the proposed project.

***June 21st***

No incremental shadows would be cast on this resource from any projected or potential sites on this date.

***March 21st***

No incremental shadows would be cast on this resource from any projected or potential sites on this date.

***May 6th***

No incremental shadows would be cast on this resource from any projected or potential sites on this date.

Proposed Lower Concourse Park (Open Space Resource #74)

A new 2.26-acre park is proposed within the Lower Concourse rezoning area. The park will be located between the Harlem River and Exterior Street, generally south of the prolongation of East 146th Street and north of the prolongation of East 144th Street. The proposed Harlem River waterfront park would provide recreational green space to the new population expected as a result of the project; provide waterfront access to existing residents; and provide a catalyst for other future redevelopment along the waterfront.

***December 21st***

On the December 21st analysis period, Project Site 2 and Potential Site 32 would cast incremental shadows on this resource for the duration of the entire day (see Figure 3.5-41). Potential Site 40 would cast a shadow from sunrise until 10:42 a.m. Projected Site 9 would cast a shadow from sunrise until 9:30 a.m.

***June 21st***

During the morning hours of June 21st, Potential Site 40 would cast incremental shadows from sunrise until 9:20 a.m. (see Figure 3.5-42). Projected Site 1 would cast a morning shadow from sunrise until 8:05 a.m. Projected Site 6 would cast a shadow from sunrise until 7:54 a.m. Projected Site 2 would cast an afternoon shadow from 10:07 a.m. until 3:17 p.m.

***March 21st***

On the March 21st analysis period, the incremental shadows from Projected Site 2 would first appear at sunrise and remain most of the day, exiting at 4:30 p.m. (see Figure 3.5-43). The incremental new shadow would be cast on the resource for the duration of 8 hours and 2 minutes. Potential Site 40 would cast a shadow from sunrise until 10:18 a.m. Projected Site 6 would cast a shadow from sunrise until 9:18 a.m.

***May 6th***

On the May 6th analysis period, the incremental shadows from Projected Site 2

would first appear at 8:53 a.m. and would remain most of the day, exiting at 3:55 p.m. (see Figure 3.5-44). The incremental new shadow would be cast on the resource for the duration of 7 hours and 2 minutes. Potential Site 40 would cast a shadow from sunrise until 9:21 a.m. Projected Site 6 would cast a shadow from sunrise until 8:11 a.m.

Harlem River Greenway (Open Space Resource #76)

From East 135th Street to East 139th Street there is a short greenway through Harlem River Park; however, it is not connected to the larger greenway system. The greenway system, Manhattan Waterfront Greenway, is a 32-mile route circumnavigating the Borough of Manhattan. The greenway will be improved as soon as it can be extended either northwards or southwards.

The Manhattan Waterfront Greenway Long Term Plan includes the future development of the entire Harlem River Waterfront within the Lower Concourse area. By 2018, most of this area's future greenway should be in place.

***December 21st***

During the morning hours of December 21st, incremental shadows on the resource would appear from numerous projected and potential sites at sunrise. The shadow from Projected Site 2 would exit at 9:34 a.m.; the shadow from Projected Site 9 would exit at 10:08 a.m.; the shadow from Potential Site 32 would exit at 10:16 a.m.; the shadow from Projected Site 1 would exit at 10:19 a.m.; and the shadow from Projected Site 6 would exit at 9:20 a.m. (see Figure 3.5-45). The total duration of shadows cast along this resource is 1 hour and 33 minutes.

***June 21st***

During the morning hours of June 21st, incremental shadows on the resource would appear from numerous projected and potential sites at sunrise. The shadow from Projected Site 2 would exit at 7:30 a.m.; the shadow from Projected Site 9 would exit at 8:13 a.m.; the shadow from Potential Site 32 would exit at 8:24 a.m.; and the shadow from Projected Site 1 would exit at 8:36 a.m. (see Figure 3.5-46). The total duration of shadows cast along this resource is 1 hour and 42 minutes.

***March 21st***

During the morning hours of March 21st, incremental shadows on the resource would appear from numerous projected and potential sites at sunrise. The shadow from Projected Site 2 would exit at 8:40 a.m.; the shadow from Projected Site 9 would exit at 9:18 a.m.; the shadow from Potential Site 32 would exit at 9:28 a.m.; and the shadow from Projected Site 1 would exit at 9:28 a.m. (see Figure 3.5-47). The total duration of shadows cast along this resource is 1 hour.

***May 6th***

During the morning hours of May 6th, incremental shadows on the resource would appear from numerous projected and potential sites at sunrise. The shadow from Projected Site 2 would exit at 7:35 a.m.; the shadow from Projected Site 9 would exit at 8:27 a.m.; the shadow from Potential Site 32 would exit at 8:39 a.m.; and the shadow from Projected Site 1 would exit at 8:41 a.m. (see Figure 3.5-48). The total duration of shadows cast along this resource is 1 hour and 22 minutes.

**Assessment of Potential Shadow Impacts**

According to the *CEQR Technical Manual*, a shadow is defined as the circumstance in which a building or other built structure blocks the sun from the land. An adverse shadow impact is considered to occur when the shadow from the projected or potential development falls on a publicly accessible open space, historic landscape, or other historic resource if the features that make the resource significant depend on sunlight, or if a shadow falls on an important natural feature and adversely affects its use and/or important landscaping and vegetation. The uses and vegetation in an open space establish its sensitivity to shadows. Uses that rely on sunlight include passive use, such as sitting or sunning, and such activities such as gardening, or children's wading pools and sprinklers. Vegetation requiring sunlight includes tree canopy and flowering plants. Where lawns, natural or artificial, are actively used, the turf also requires extensive sunlight. For these activities and plants, four to six hours a day of sunlight, particularly in the growing season, is often a minimum requirement. In general, shadows on city streets and sidewalks and on other buildings are not considered significant under CEQR.

The proposed action would not result in significant adverse shadow impacts on sunlight-sensitive resources. The incremental shadow cast on the Proposed Lower Concourse Park, Franz Sigel Park, Deegan Rock, Colonel Charles Young Playground, Garrison Playground, Harlem River Driveway, Ryan Triangle, Borinquen Court Senior Center, Graham Triangle, Esplanade Gardens, Bronx Terminal Market Waterfront Park, and the Harlem River Greenway under the proposed action are not considered significant as described below. The following is a review of the identified resources of concern and assessment of the incremental shadows on the resources created by the proposed action.

**Open Space Resources**

Franz Sigel Park (Open Space Resource #30)

Franz Sigel Park is a large, 15.99-acre park located between the Grand Concourse and Walton Avenue, between East 151st and East 158th Streets. Franz Sigel Park has a mix of active and passive recreational facilities. Active recreation includes basketball and handball courts, baseball fields, jungle gyms, and a comfort station. Passive recreation includes landscaped hills with pathways, as well as open grassed areas.

During the morning hours of December 21st, this resource would receive incremental new shadows from 2:29 p.m. until sunset, which would result in a total shadow duration of 32 minutes. On the other three days analyzed, no incremental shadows would be cast on this resource from any projected or potential sites. Since the incremental increase in shadows is only in the winter, when open space is less utilized, and would allow for adequate sunlight penetration at all times of the year, no significant adverse impacts would occur.

Colonel Charles Young Playground (Open Space Resource #34)

Colonel Charles Young Playground is a 6.42-acre park located in Manhattan on Lenox Avenue and Harlem River Drive between West 143rd and West 145th Streets. This park contains basketball and handball courts, baseball fields, and accessible play equipment.

As this resource is located to the west of the project area, on the other side of the Harlem River, any new incremental shadows would occur directly after sunrise. On December 21st, shadows on the resource would be cast from sunrise until 9:44 a.m., resulting in a total shadow duration of 58 minutes. On June 21st, shadows on the resource would be cast from sunrise until 7:48 a.m., resulting in a total shadow duration of 54 minutes. March 21st would have a shadow duration of 32 minutes, and May 6th would have 46 minutes of new shadows. Since the incremental increase in shadows allows for adequate sunlight penetration, no significant adverse impacts would occur.

Garrison Playground (Open Space Resource #35)

Garrison Playground is a 0.70-acre playground located between the Grand Concourse and Walton Avenue, between East 144th and East 149th Streets. The playground features handball walls, basketball courts, play equipment, concrete play areas, and benches. The playground is surrounded by perimeter landscaping.

During the afternoon hours, existing and potential buildings would be casting significant shadows across the resource. On December 21st, 1 hour and 20 minutes of new shadow would be cast on areas of the playground not already in shadow from existing buildings. On June 21st, 5 hours and 16 minutes of shadow will be added to the site, covering additional areas of the resource already in shadow.

On March 21st and May 6th this resource would receive late afternoon shadow for a duration of 3 hours and 9 minutes, and 4 hours and 36 minutes, respectively. Again, the surrounding buildings already cast significant shadows on this resource. Since the incremental increase in shadows allows for adequate sunlight penetration (greater than six hours) at all times of the year, no significant adverse impacts would occur.

Harlem River Driveway (Open Space Resource #43)

Harlem River Driveway is a short piece of an existing greenway located between East 135th and East 139th Streets in Manhattan. This area is part of the Manhattan Waterfront Greenway, although it is not currently connected to the larger borough wide greenway.

As this resource is located to the west of the project area, on the other side of the Harlem River, any new incremental shadows would occur directly after sunrise. New shadows cast include 34 minutes on December 21st, 1 hour and 34 minutes on June 21st, 1 hour on March 21st, and 1 hour and 19 minutes on May 6th. Since the incremental increase in shadows allows for adequate sunlight penetration in all times of the year, no significant adverse impacts would occur.

Deegan Rock (Open Space Resource #44)

Deegan Rock is a small, 0.26-acre park located on East 138th Street at the Grand Concourse and the Major Deegan Expressway. Deegan Rock was named for Major William F. Deegan. A seven-and-a-half foot tall Concord granite boulder with an incised inscription is located within the park, dedicating the expressway to Major Deegan. The park contains fenced and landscaped areas -- some of which abut highway lands and the Metro-North Railroad right-of-way -- as well as a semicircular, publicly accessible paved pathway with benches that abuts the gated area of the monument. Due to the location of Deegan Rock in the central area of the project area, shadows will be cast onto the site from buildings to the east and west of the park.

On December 21st, new incremental shadows on the resource would be cast from sunrise until 1:18 p.m., which would result in a total shadow duration of 4 hours and 32 minutes. No shadows are currently cast on this resource from any existing buildings. On June 21st, new incremental shadows would first appear at sunrise and exit at 7:32 a.m., resulting in a morning shadow duration of 38 minutes. The afternoon incremental shadows would again first appear at 1:49 p.m. and would exit at sunset. The total afternoon duration of shadow would be 5 hours and 11 minutes. The new incremental shadow would be cast on the resource for a duration of 5 hours and 49 minutes. Although shadows are increased substantially during this period, the use of the open space is minimal during winter and would be considered to have a significant impact.

On March 21st, new incremental shadows would first appear at sunrise and would exit at 9:39 a.m., resulting in a shadow duration of 1 hour and 11 minutes. This shadow is contained within a small portion of the eastern side of the park. During the afternoon hours, new incremental shadows would enter at 2:00 p.m. and would remain until sunset, resulting in a shadow duration of 3 hours and 39 minutes. Therefore, the total incremental new shadows cast on the resource would be for a duration of 4 hours and 50 minutes. A portion of the site would not be affected by this shadow.

On May 6th, new incremental shadows would first appear at 1:48 p.m., and would exit at sunset. Therefore, the incremental new shadow would be cast on the resource for the duration of 4 hours and 39 minutes.

Although shadows on this resource are increased substantially during the winter period, the use of the open space is minimal during winter and would be considered to have a significant impact. At all other times of year an adequate sunlight penetration is maintained, therefore, no significant adverse impacts would occur.

Ryan Triangle (Open Space Resource #45)

Ryan Triangle is a small, 0.22-acre park located at the intersection of East 143rd Street, East 144th Street and Morris Avenue. In the triangle, woodchips create a boundary around landscaped areas. Many species of plantings are represented here. A boulder and flagpoles featuring the flags of the United States, City of New York and Parks Department can be found in the center of the space. Due to the location of Ryan Triangle in the central area of the project area, shadows will be cast onto the site from buildings to the east and west of the park.

On December 21st, new incremental shadows on the resource would result in a total shadow duration of 4 hours and 27 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing and future no action buildings inside and outside of the project area. On June 21st, new incremental shadows would result in shadow duration of 56 minutes. An additional 26 minutes of shadow would be cast just before sunset. The total shadow duration cast on this resource would be 1 hour and 22 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings inside and outside of the project area.

On March 21st, new incremental shadows would be cast on the resource for the duration of 5 hours and 53 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing and potential buildings inside and outside of the project area. On May 6th, new incremental shadows would be cast on the resource for the duration of 6 hours and 34 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings inside and outside of the project area. Since the incremental increase in shadows allows for adequate sunlight penetration, no significant adverse impacts would occur.

Borinquen Court Senior Center (Open Space Resource #55)

This senior center, with an outdoor landscaped plaza area, is located between East 138th and East 139th Streets, with a plaza along Third Avenue. The plaza contains landscaped and grassed areas with pathways and benches.

No incremental shadows would be cast on this resource from any projected or potential sites on December 21st. On June 21st, new incremental shadows would be cast for the last 1 hour and 52 minutes of the day. On March 21st, new incremental shadows would be cast from 4:00 p.m. until sunset. Therefore, the incremental new shadow would be cast on this resource for a duration of 1 hour and 39 minutes. The duration of the shadows cast as a result of the proposed project would cast a shadow on the remaining portion of the resource not already in shadow. On May 6th, new incremental shadows would be cast for a duration of 1 hour and 8 minutes. The duration of the shadows cast as a result of the proposed project would cast a shadow on the remaining portion of the resource not already in shadow. Since the incremental increase in shadows in all times of the year allows for adequate sunlight penetration (greater than six hours), no significant adverse impacts would occur.

Graham Triangle (Open Space Resource #56)

Graham Triangle is a small, 0.04-acre park located at the intersection of East 137th Street between Third Avenue and Lincoln Avenue. The area contains three different memorials. The plaza area also contains sidewalks, landscaping and benches.

On December 21st, new incremental shadows would result in a total shadow duration of 1 hour and 6 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings inside and outside of the project area. On June 21st, new incremental shadows would last for a duration of 3 hours and 58 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings.

On March 21st, new incremental shadows would result in a total shadow duration of 2 hours and 25 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings inside and outside of the project area. On May 6th, new incremental shadows would be cast from 3:14 p.m. until sunset. This would result in a total shadow duration of 3 hours and 13 minutes. Any new shadows only minimally increase the amount of shadows already cast by existing buildings. Since the incremental increase in shadows allows for adequate sunlight penetration (greater than six hours of sunlight) at all times of the year, no significant adverse impacts would occur.

Esplanade Gardens (Open Space Resource #70)

West 145th Street to West 150th Street along the Harlem River is leased by the City to Esplanade Gardens Housing, which currently uses the waterfront for parking and garbage dumpsters. Though Esplanade Gardens has so far not been amenable to the suggestion of rearranging its parking lot to accommodate a greenway, the City is confident that an agreement can be reached and a shared-use path will be implemented in the near future.

The Manhattan Waterfront Greenway Long Term Plan includes the future development of the entire Harlem River Waterfront within the Lower Concourse area. By 2018, most of this area's future greenway should be in place.

As this resource is located to the west of the project area, on the other side of the Harlem River, any new incremental shadows occur directly after sunrise. New shadows include 1 hour and 19 minutes on December 21st, and 52 minutes on March 21st. On the other two days analyzed, no incremental shadows would be cast on this resource from any projected or potential sites. Since the incremental increase in shadows would occur for a short duration only in the winter when open space has a low utilization adequate sunlight penetration would be maintained and no significant adverse impacts would occur.

Bronx Terminal Market Waterfront Park, Gateway Center Parkland (Open Space Resource #72)

Phase 1 includes the conversion of Piers 1 through 4 to a park extending from Exterior Street to the Harlem River waterfront. It will include tennis courts, a waterfront esplanade, event space, a beach, a picnic area and an outdoor classroom. By 2018, Pier 5 will also be redeveloped as part of the park.

During the morning hours of December 21st, this resource would receive incremental new shadows from 10:19 a.m. until 12:55 p.m., which would result in a total shadow duration of 2 hours and 36 minutes. On the other three days analyzed, no incremental shadows would be cast on this resource from any projected or potential sites on this date. Since the incremental increase in shadows is only in the winter, when open space is less utilized, and would allow for adequate sunlight penetration, no significant adverse impacts would occur.

Proposed Lower Concourse Park (Open Space Resource #74)

A new, 2.26-acre park is proposed within the Lower Concourse rezoning area. The park will be located between the Harlem River and Exterior Street, generally south of the prolongation of East 146th Street and north of the prolongation of East 144th Street. The proposed Harlem River waterfront park would provide recreational green space to the new population expected as a result of the project; provide waterfront access to existing residents; and provide a catalyst for other future redevelopment along the waterfront.

This proposed park lies in the midst of the tallest of the projected and potential sites. On December 21st and June 21st, differing portions of the proposed park would be in shadow for the entire day. On March 21st and May 6th, the site would receive 7 hours and 2 minutes of shadow.

Because the creation of the proposed Lower Concourse Park is part of the proposed action, the effects of project-generated shadows on the proposed park are not considered to be a significant adverse impact regardless of coverage or duration. The future park is therefore included in the analysis for illustrative purposes only. Since the incremental increase in shadows allows for adequate sunlight penetration, no significant adverse impacts would occur.

Harlem River Greenway (Open Space Resource #76)

From East 135th Street to East 139th Street there is a short greenway through Harlem River Park; however, it is not connected to the larger greenway system. The greenway system, Manhattan Waterfront Greenway, is a 32 mile route circumnavigating the borough of Manhattan. The greenway will be improved as soon as it can be extended either north or southbound.

The Manhattan Waterfront Greenway Long Term Plan includes the future development of the entire Harlem River Waterfront within the Lower Concourse area. By 2018, most

of this area's future greenway should be in place.

As this resource is located to the west of the project area, on the other side of the Harlem River, any new incremental shadows would occur directly after sunrise. New shadows would extend for 1 hour and 33 minutes on December 21st, 1 hour and 42 minutes on June 21st, 1 hour on March 21st, and 1 hour and 22 minutes on May 6th. Since the incremental increase in shadows allows for adequate sunlight penetration, no significant adverse impacts would occur.

Harlem River

Incremental shadow from proposed buildings would be cast on portions of the Harlem River from the early to late morning on all four analysis days. On March 6th and December 21st incremental shadow would begin moving across areas of the river at 8:28 AM. Shadow would have with an earlier incursion on the June 21st and May 6th analyses periods, with incremental shadows would reaching the edge of the river at 6:54 AM. On all four days the new shadows would fall on relatively small portions of the river, and exit before noon. The duration of the incremental shadow ranges between three hours and four-hours, 45 minutes.

The river current flows swiftly in the Harlem River and would move phytoplankton and other natural organisms quickly through shaded areas. Therefore, project-generated shadow would not be expected to affect primary productivity. As described further in the Natural Resources chapter, shadows from the proposed buildings would not significantly affect aquatic resources (plankton or fish) in the Harlem River, nor would it affect use of the river by recreational boating. Consequently, the project-generated shadow would not cause significant adverse impacts on the Harlem River.

**CONCLUSION**

The proposed action would not result in significant adverse shadow impacts. The new, 2.26-acre park that is proposed within the Lower Concourse rezoning area along the Harlem River generally south of the East 146th Street and north of East 144th Street is located in the midst of the tallest of the projected and potential RWCDS sites, resulting in considerable shadowing effects on the future proposed park. However, because the creation of the proposed Lower Concourse Park is part of the proposed action, and because the natural resources in the Harlem River would not be sensitive to this degree of shading, the effects of project-generated shadows are not considered to be a significant adverse impact regardless of coverage or duration.

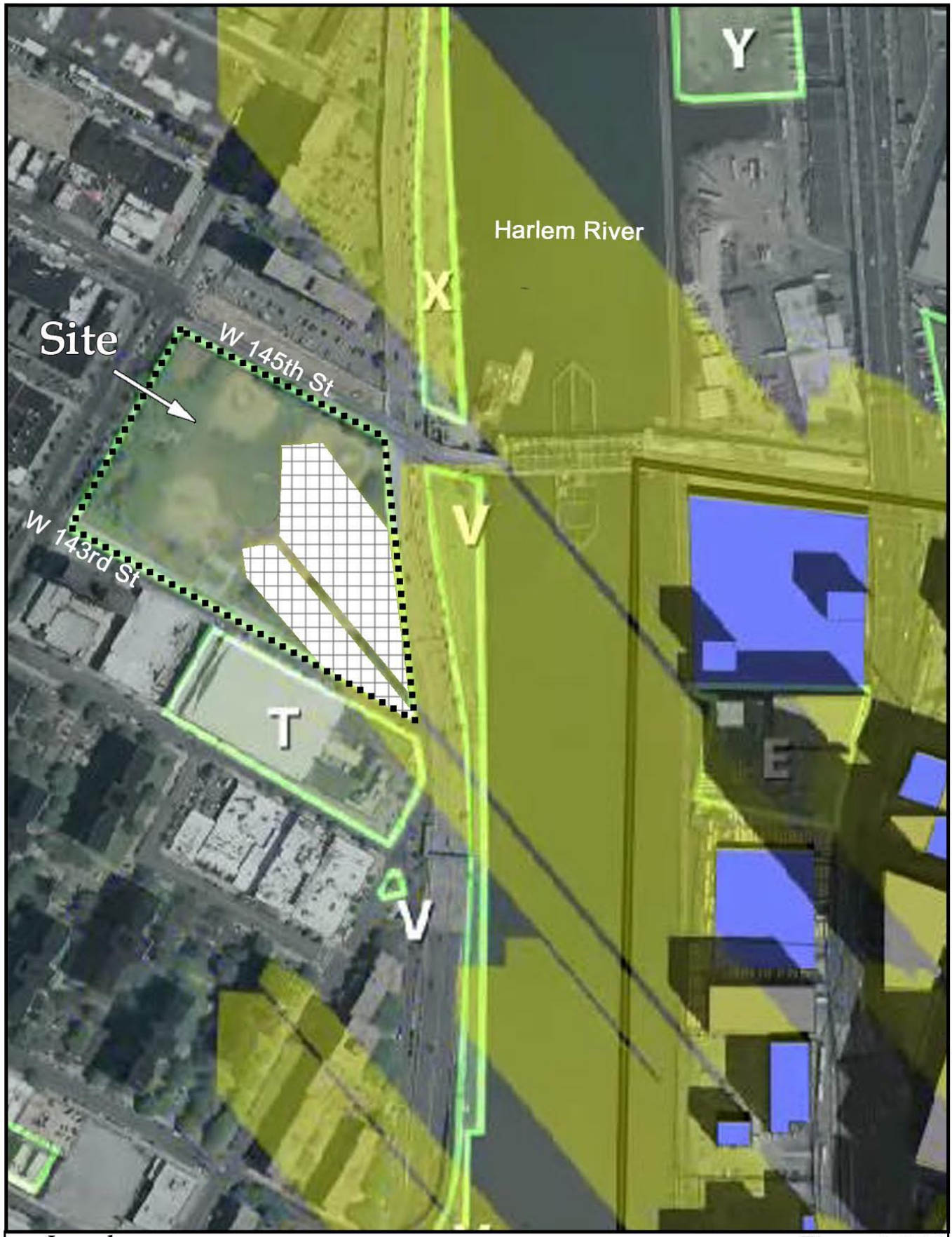
As discussed above, for all of the other public open space resources analyzed, each would continue to receive sufficient sunlight during the growing season and the proposed action would not result in a substantial reduction in sunlight to any sun-sensitive uses or features of either open space or historic resources. As such, the proposed action would not result in significant adverse shadow impacts on those historic and open space resources.




Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-10*
*Open Space Resource #30*
*Franz Sigel Park*
*December 21 - 3pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

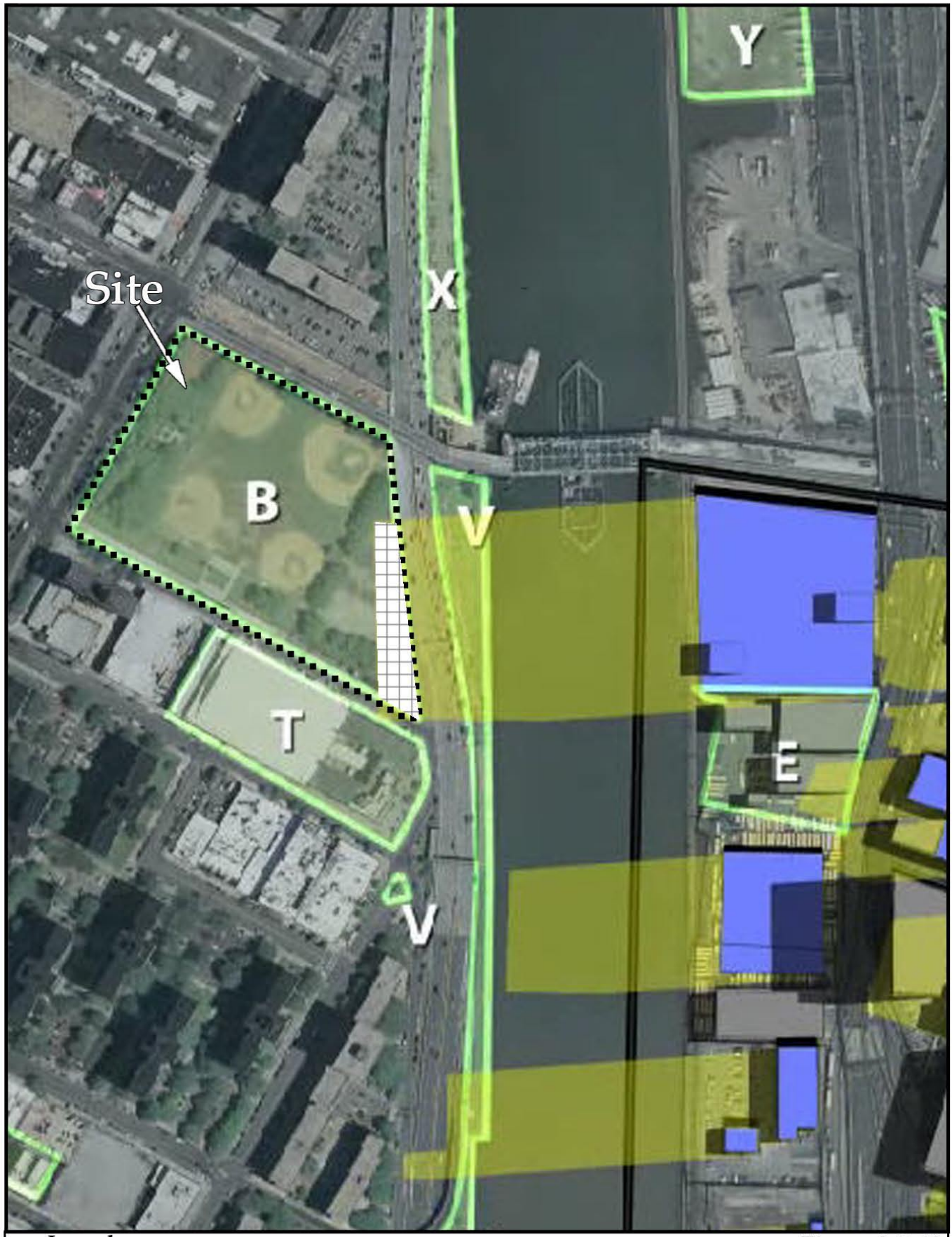
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Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-11*
*Open Space Resource #34*
*Charles Young Playground*
*December 21 - 9am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

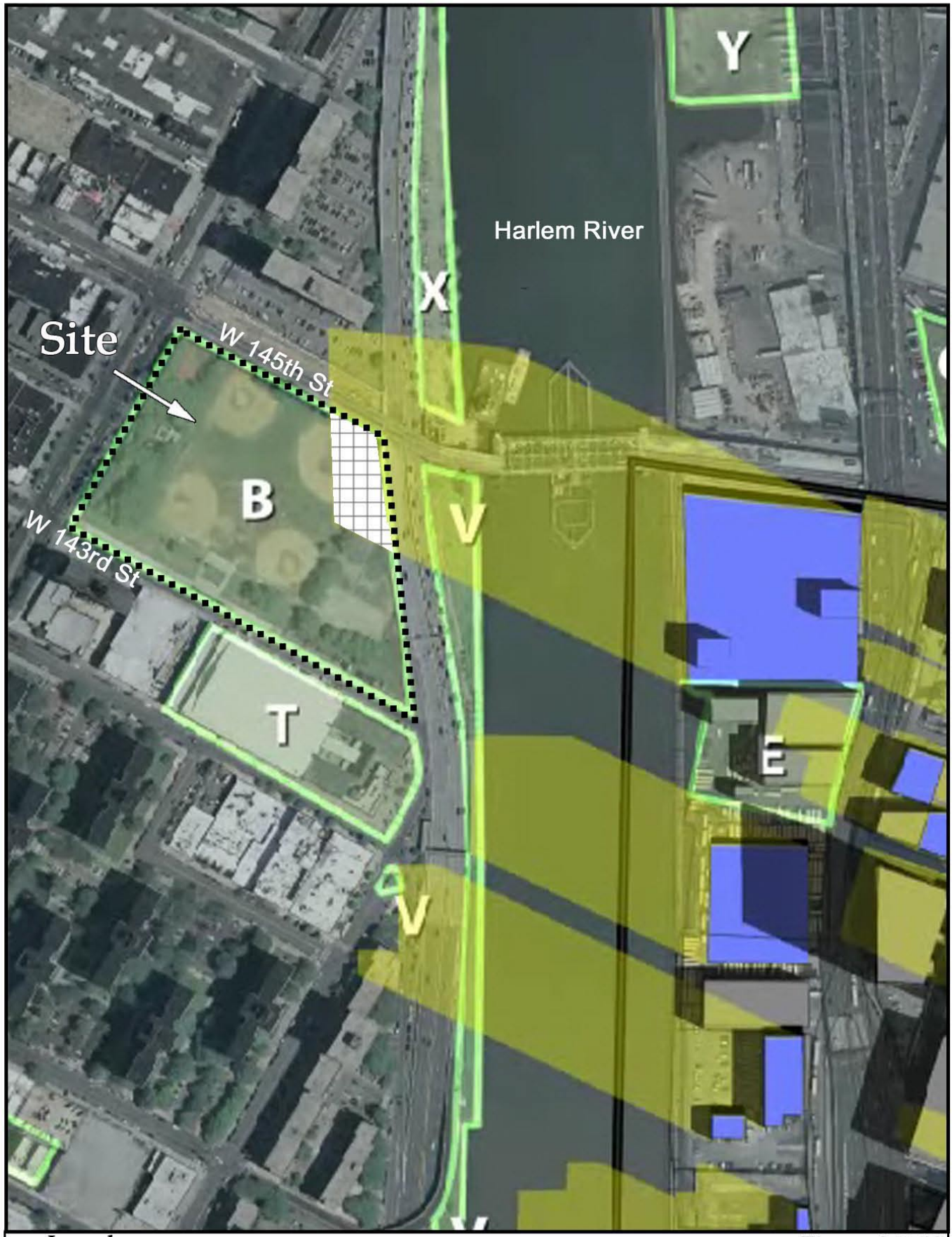
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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-12*
*Open Space Resource #34*
*Charles Young Playground*
*June 21 - 7:30am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

N

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Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-13*
*Open Space Resource #34*
*Charles Young Playground*
*March 21 - 8:30am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

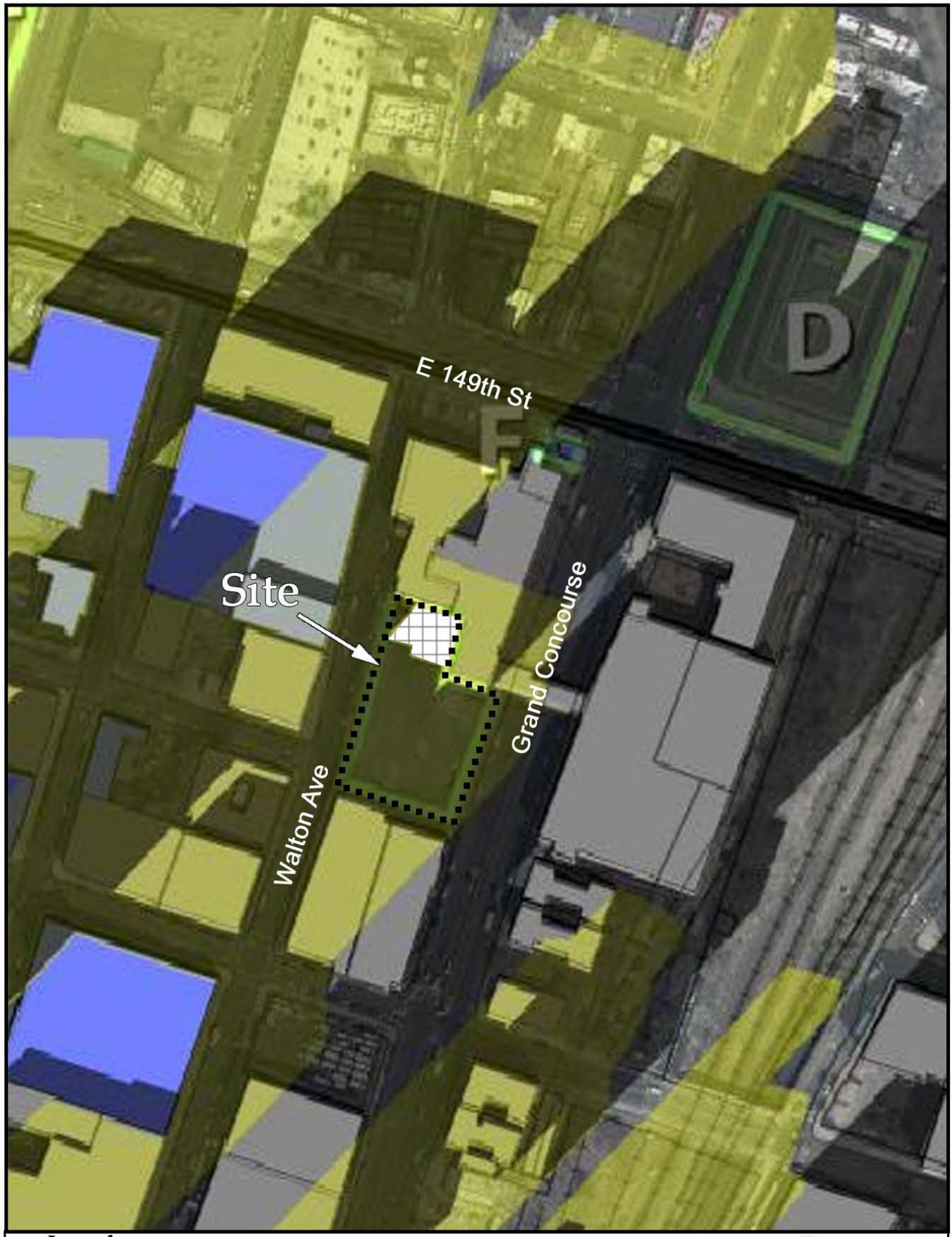
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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-14*
*Open Space Resource #34*
*Charles Young Playground*
*May 6- 7:30am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

N

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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-15*
*Open Space Resource #35*
*Garrison Playground*
*Dec 21- 3pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

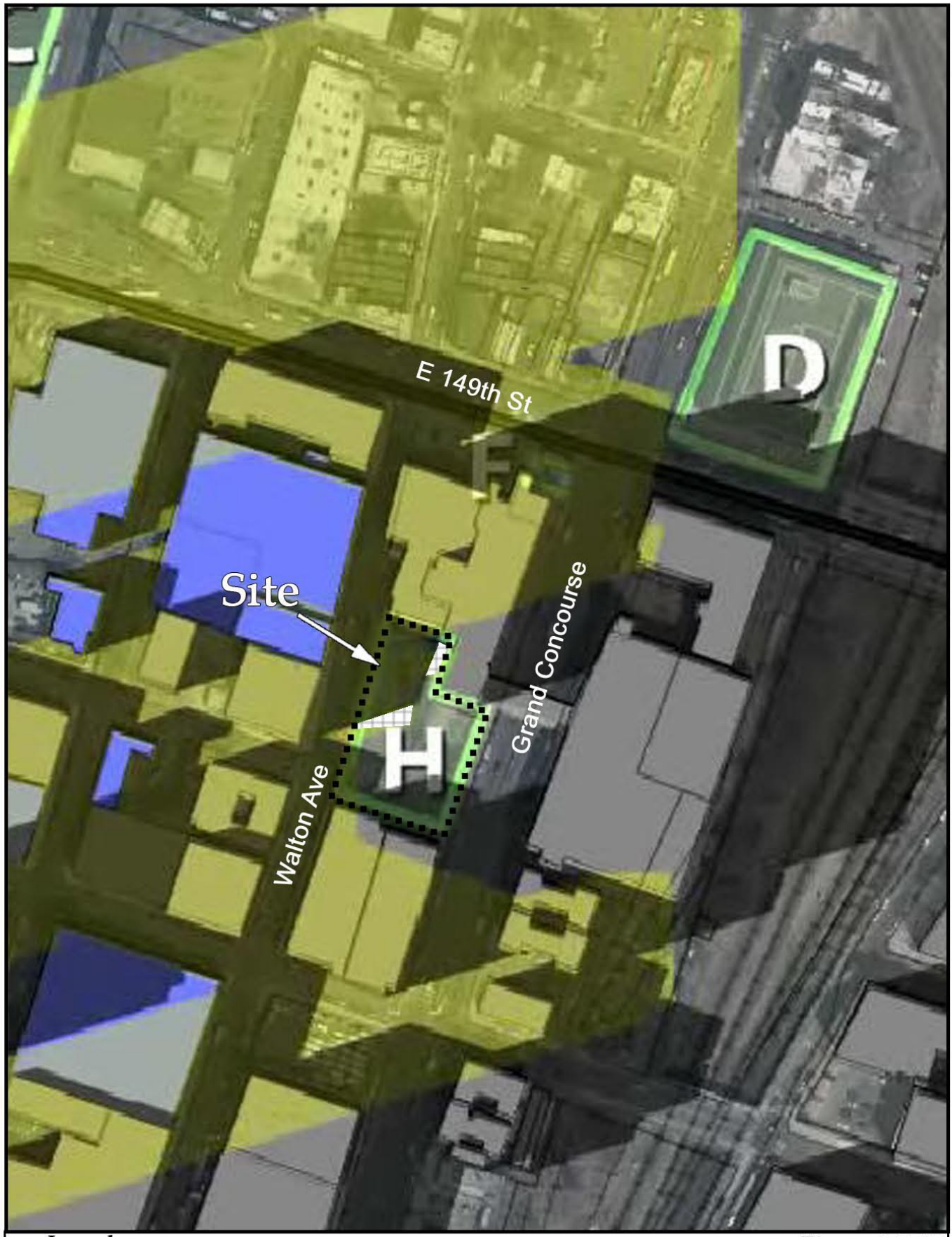
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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-16*
*Open Space Resource #35*
*Garrison Playground*
*June 21- 4:30pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

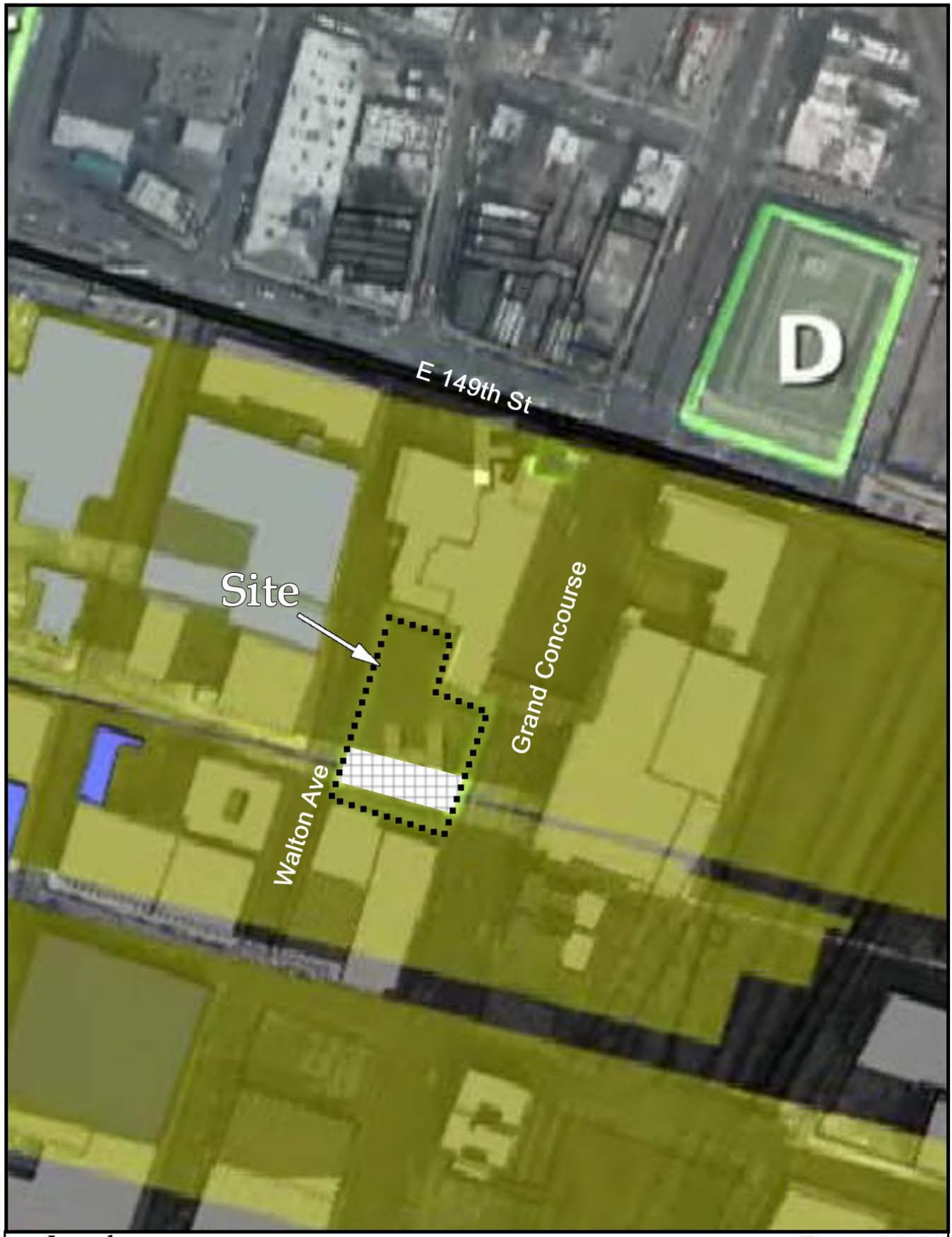
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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-17*
*Open Space Resource #35*
*Garrison Playground*
*March 21- 4pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

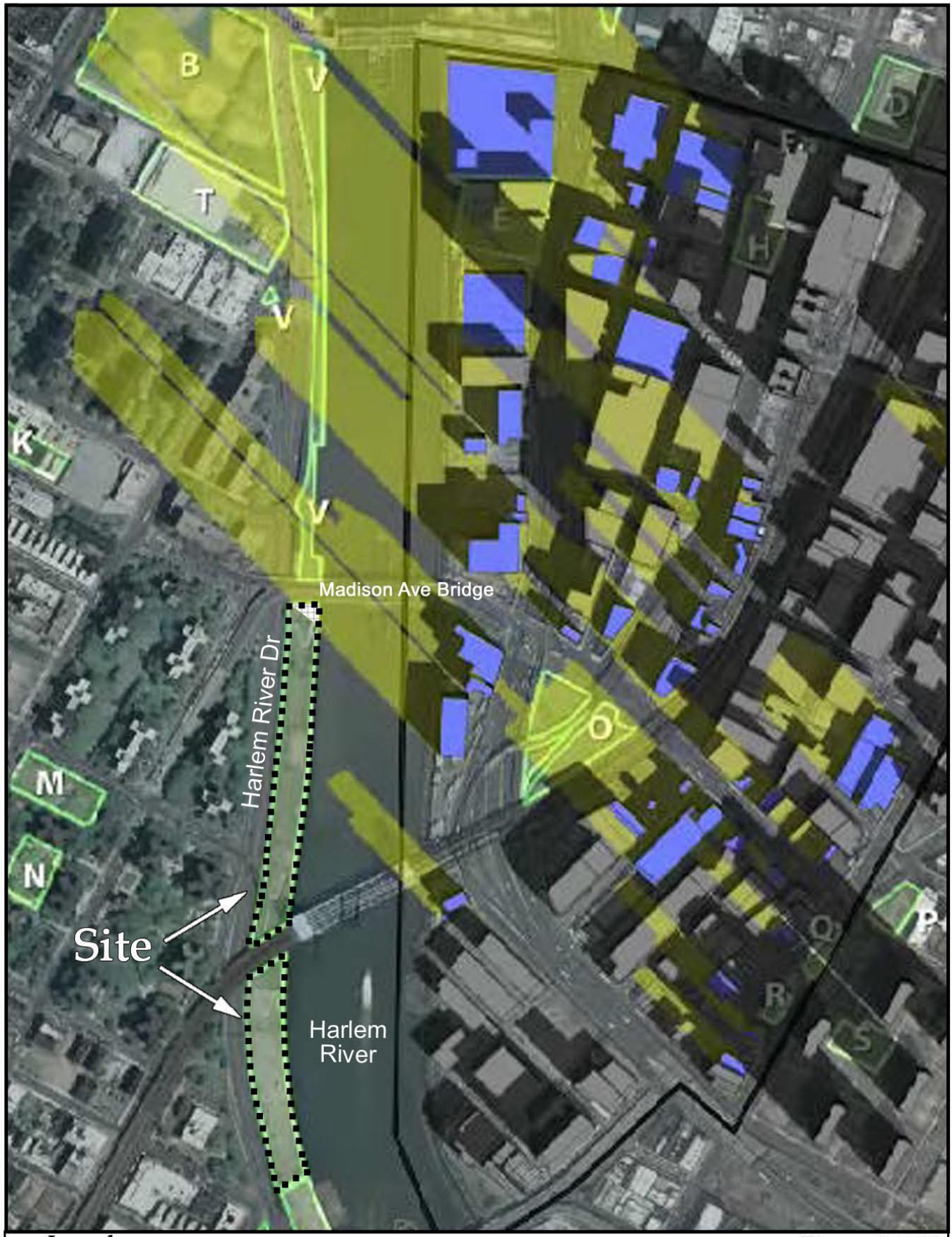
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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-18*
*Open Space Resource #35*
*Garrison Playground*
*May 6- 6pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

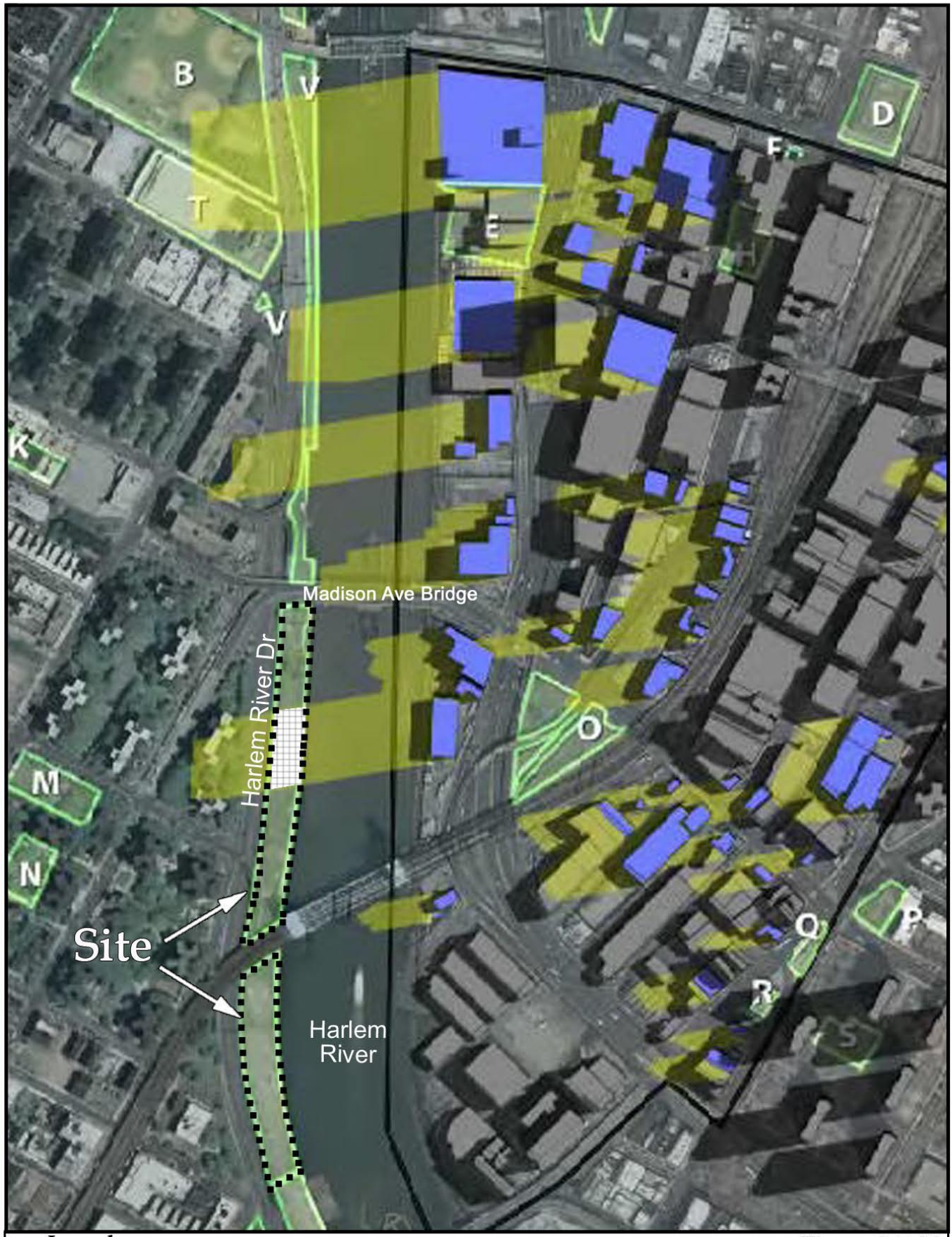
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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-19*
*Open Space Resource #43*
*Harlem River Driveway*
*December 21 - 9am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

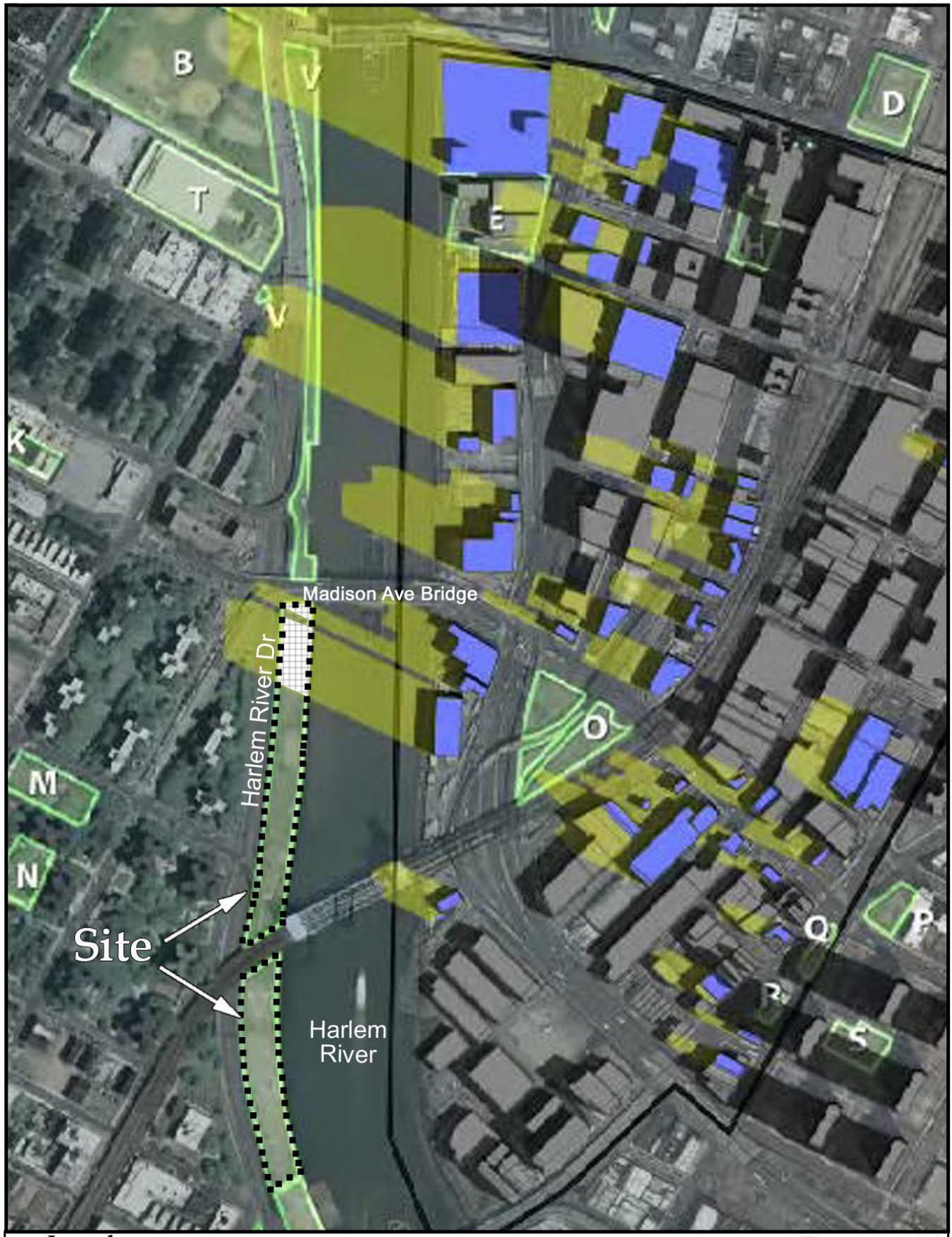
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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-20*
*Open Space Resource #43*
*Harlem River Driveway*
*June 21 - 7am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

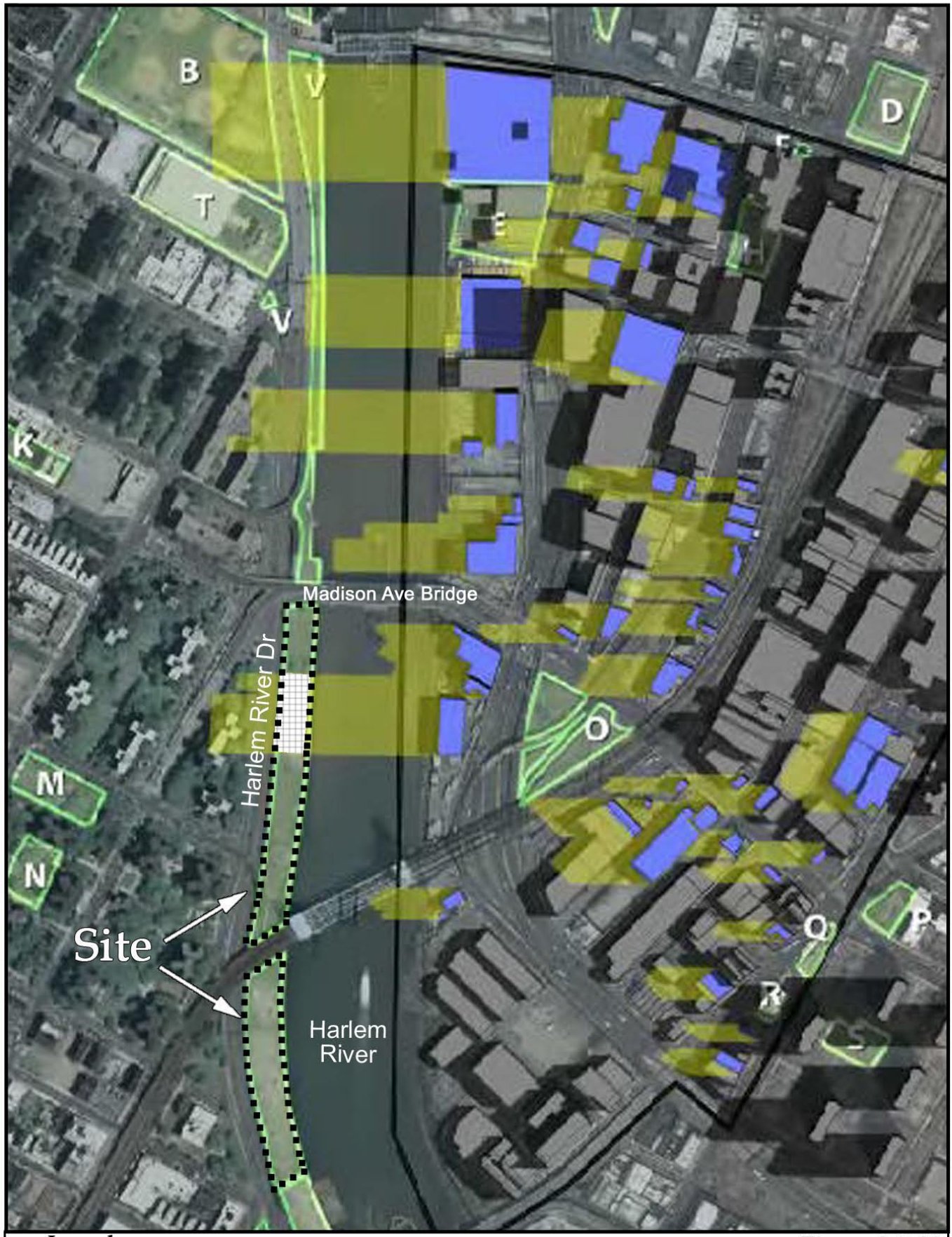
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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-21*
*Open Space Resource #43*
*Harlem River Driveway*
*March 21 - 8:30am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

N

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Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-22*
*Open Space Resource #43*
*Harlem River Driveway*
*May 6 - 7:30am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

N

240 0 240
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-23*
*Open Space Resource #44*
*Deegan Rock*
*December 21 - 9am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

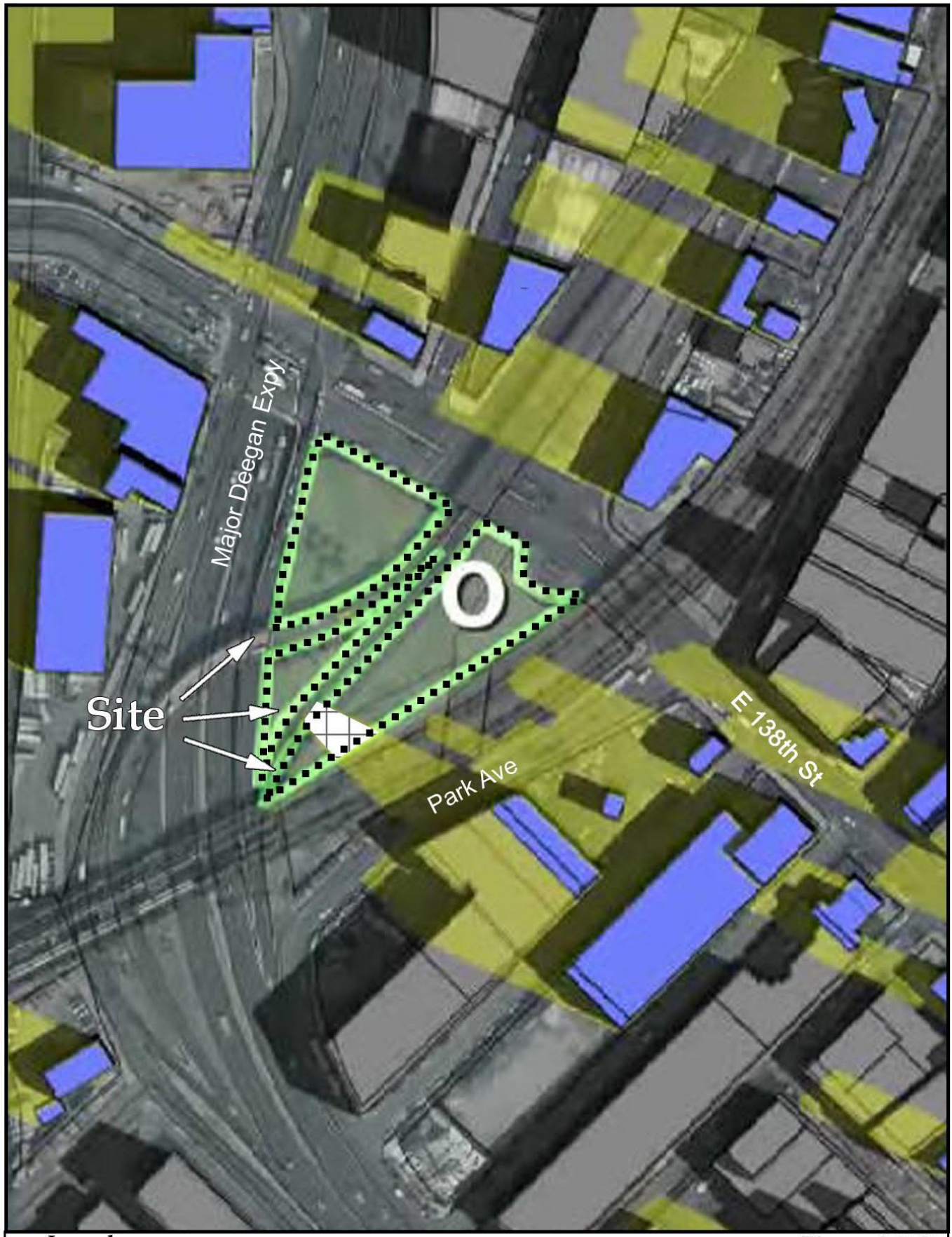
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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-24*
*Open Space Resource #44*
*Deegan Rock*
*June 21 - 7am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

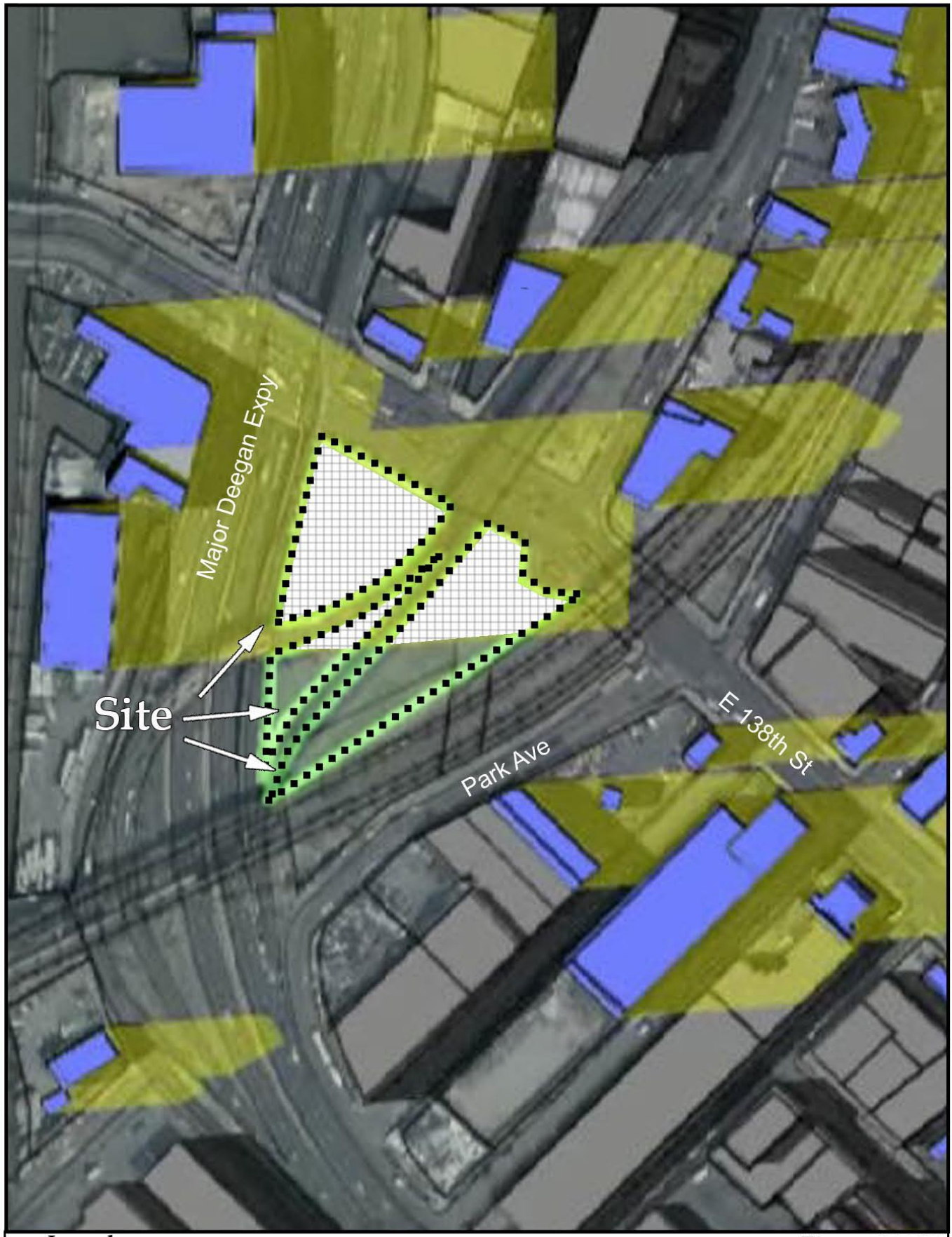
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Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-25*
*Open Space Resource #44*
*Deegan Rock*
*March 21 - 8:30am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

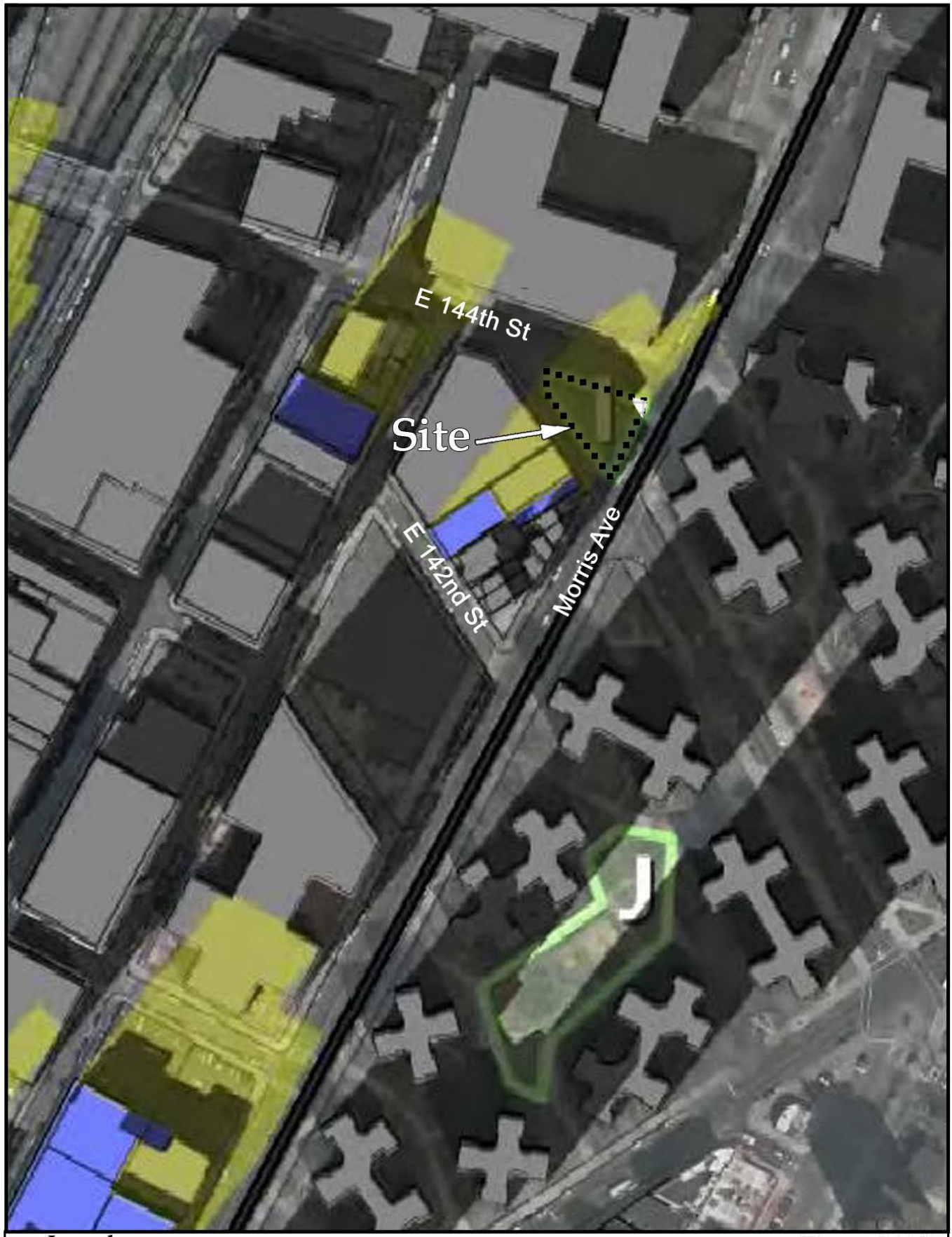
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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-26*
*Open Space Resource #44*
*Deegan Rock*
*May 6 - 4pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

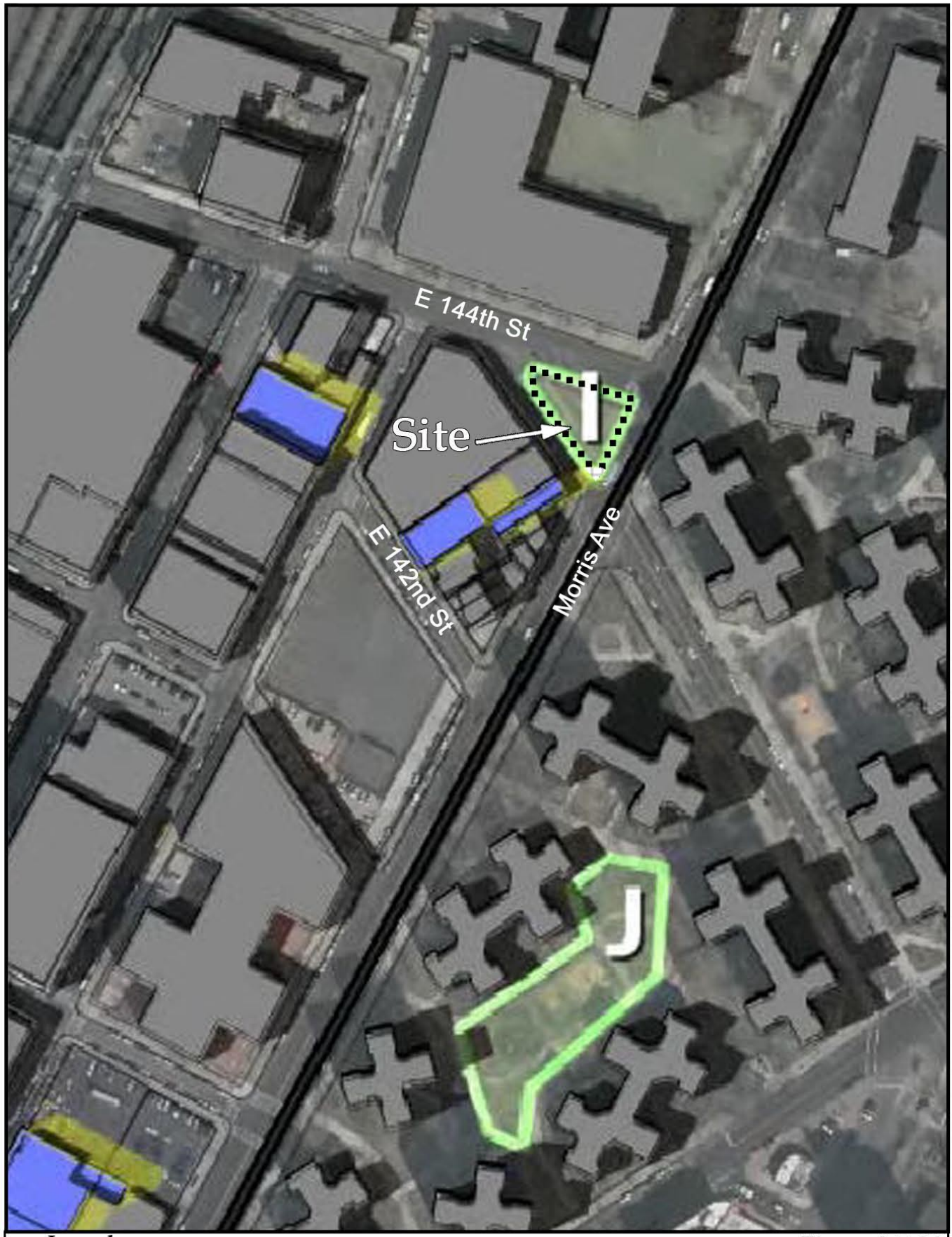
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Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-27*
*Open Space Resource #45*
*Ryan Triangle*
*December 21- 2:30pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

N

60 0 60
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-28*
*Open Space Resource #45*
*Ryan Triangle*
*June 21- 2pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

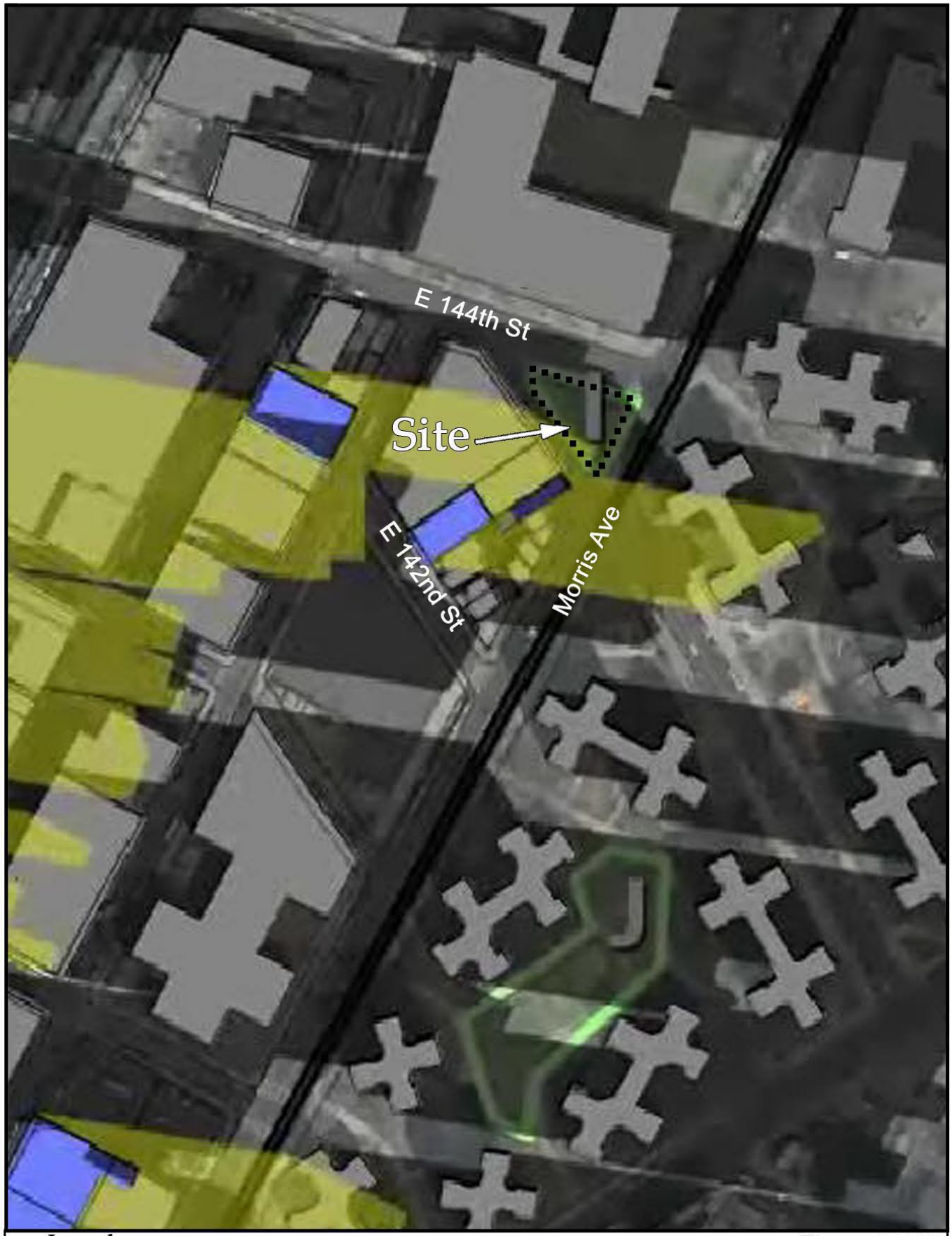
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Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-29*
*Open Space Resource #45*
*Ryan Triangle*
*March 21- 3pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

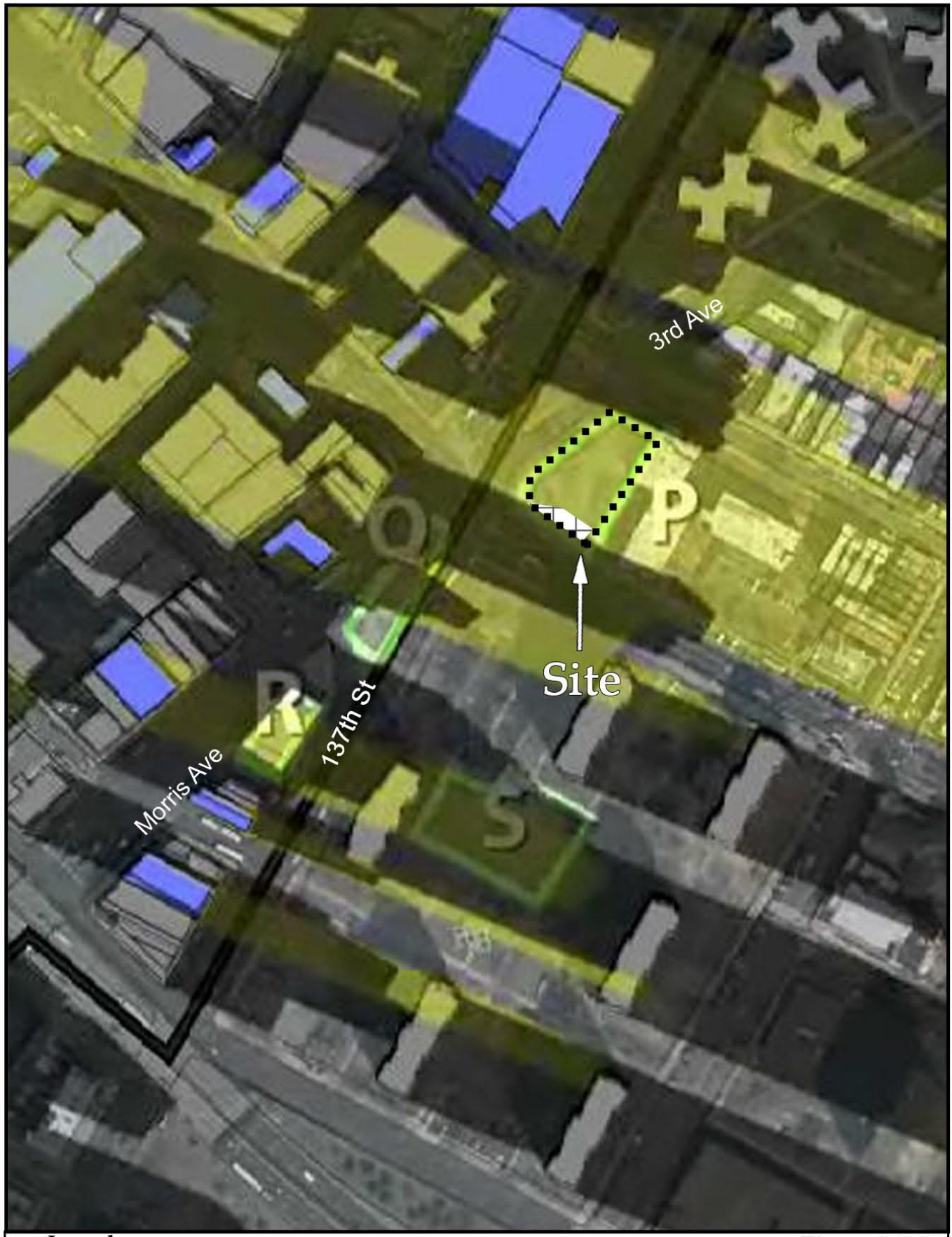
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Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-30*
*Open Space Resource #45*
*Ryan Triangle*
*May 6 - 5:30pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

N

60 0 60
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-31*
*Open Space Resource #55*
*Senior Center*
*June 21 - 6:30pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

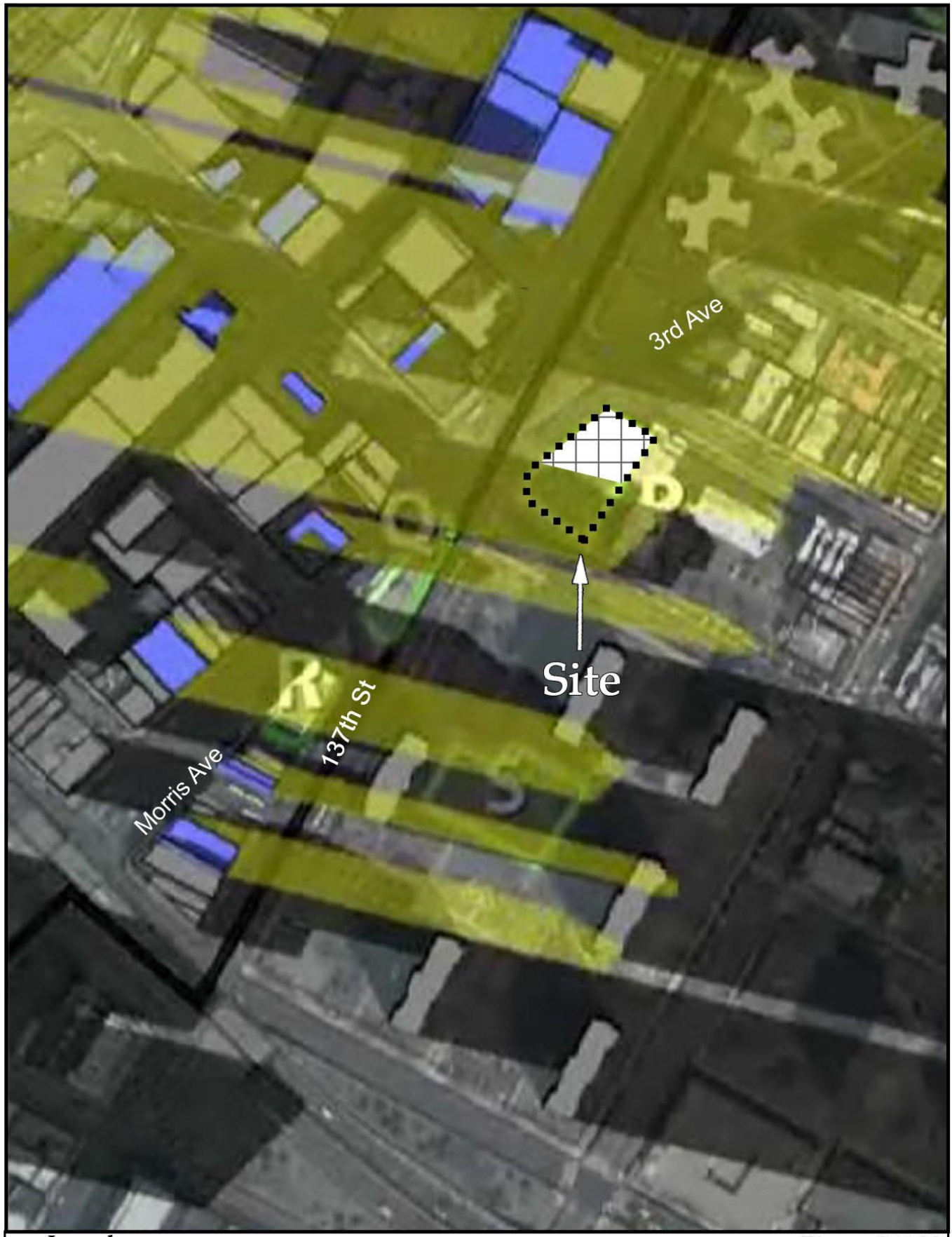
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Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-32*
*Open Space Resource #55*
*Senior Center*
*March 21 - 5pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

N

60 0 60
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-33*
*Open Space Resource #55*
*Senior Center*
*May 6 - 6pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

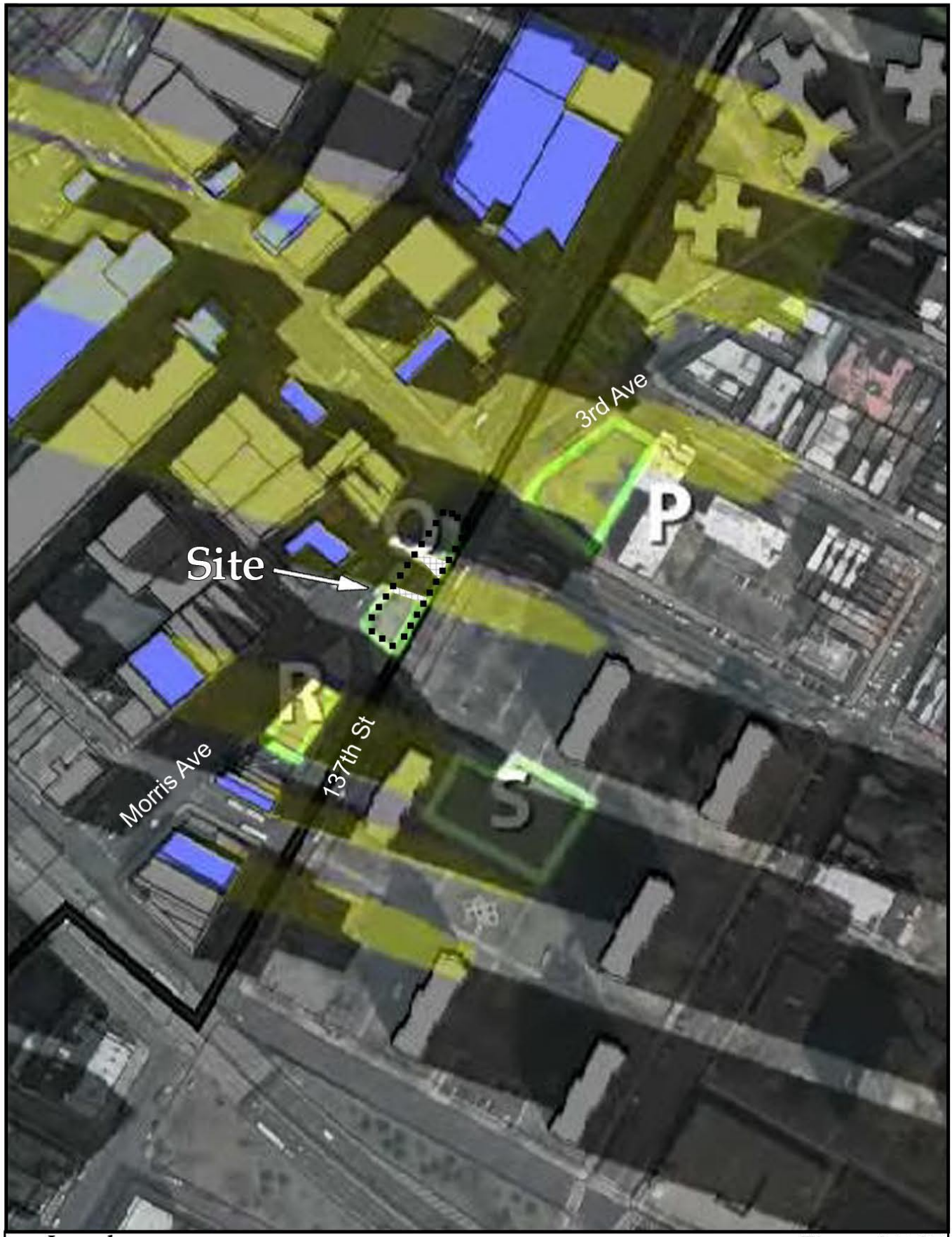
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Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-34*
*Open Space Resource #56*
*Graham Triangle*
*December 21 - 3pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

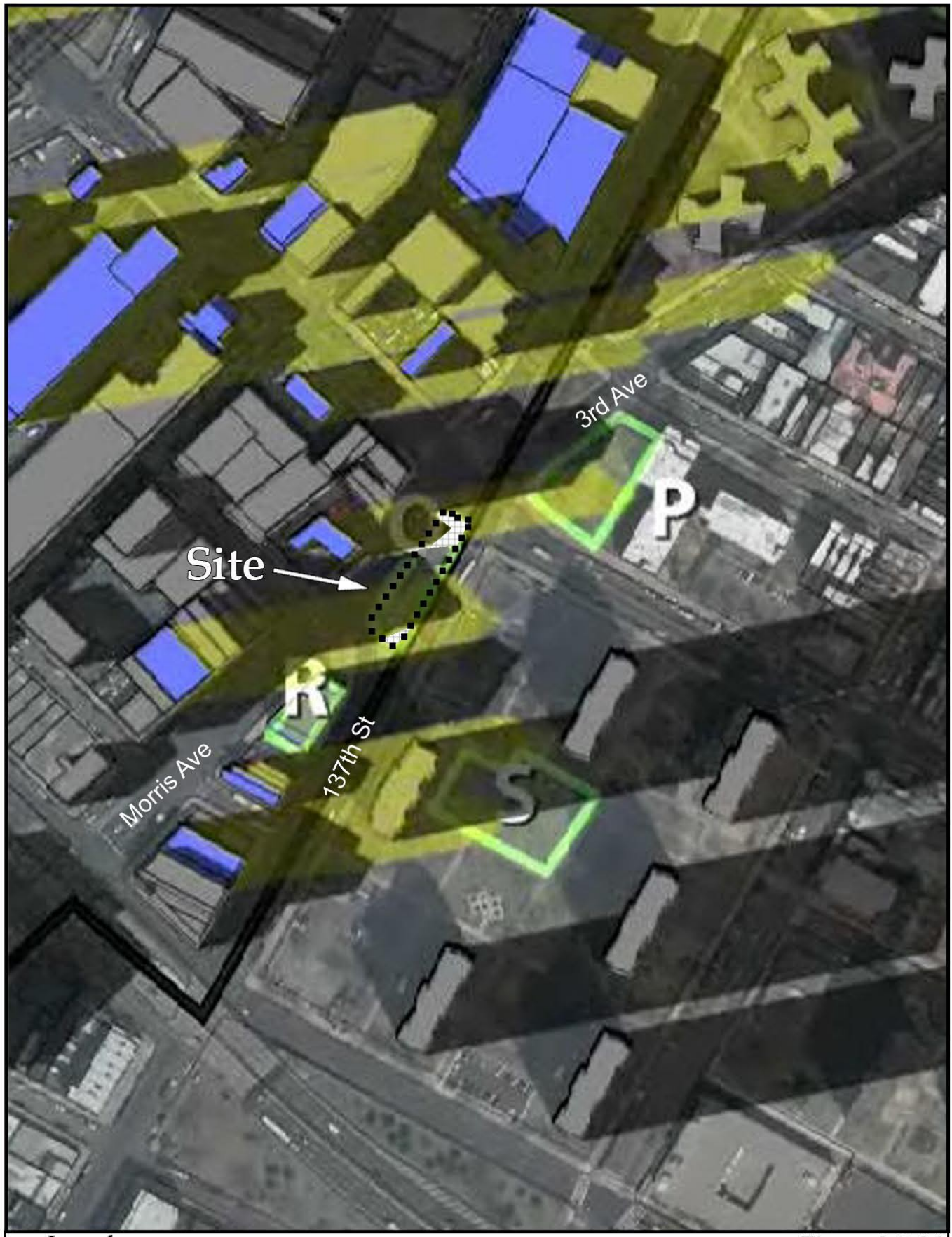
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Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-35*
*Open Space Resource #56*
*Graham Triangle*
*June 21 - 6pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

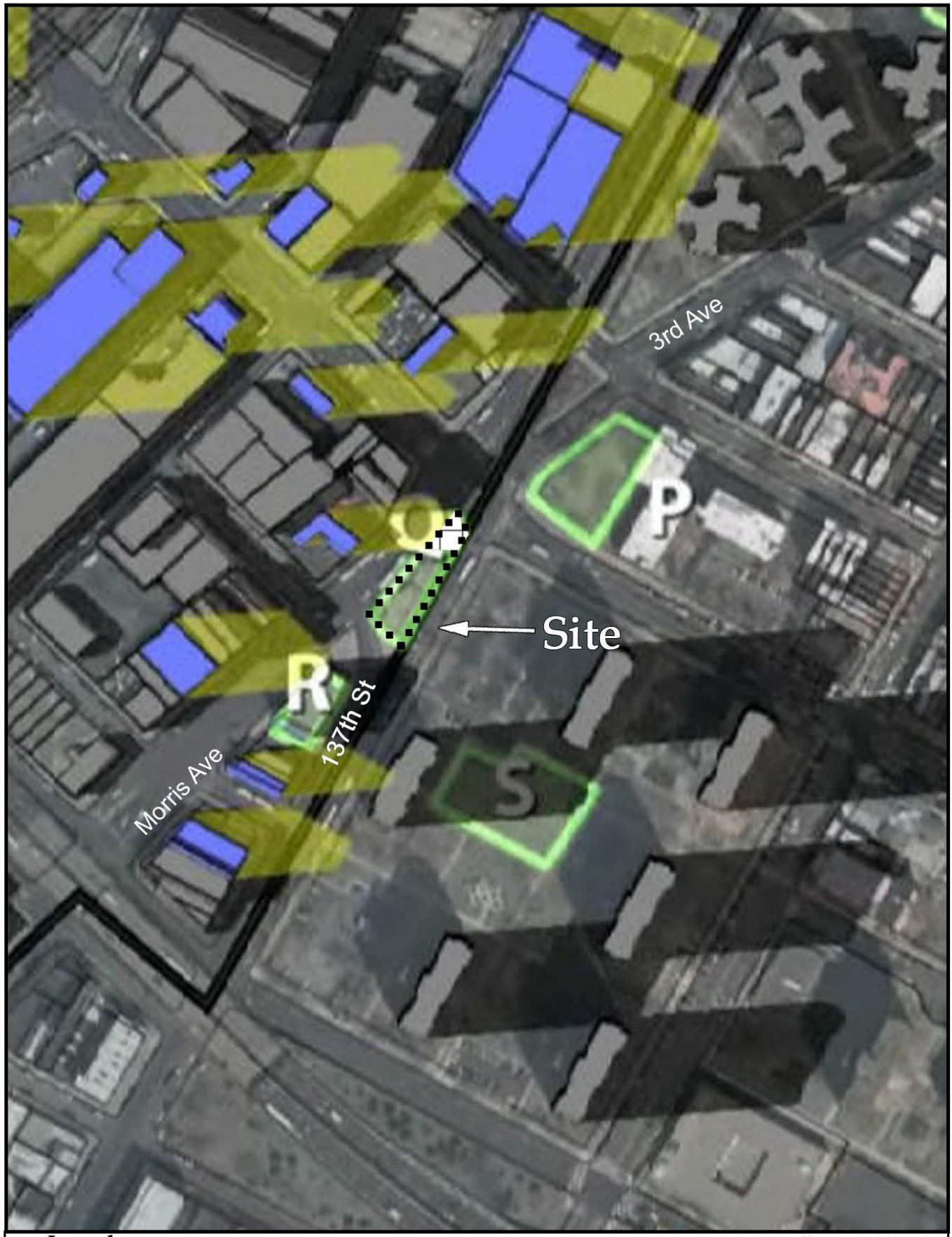
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Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-36*
*Open Space Resource #56*
*Graham Triangle*
*March 21 - 5pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

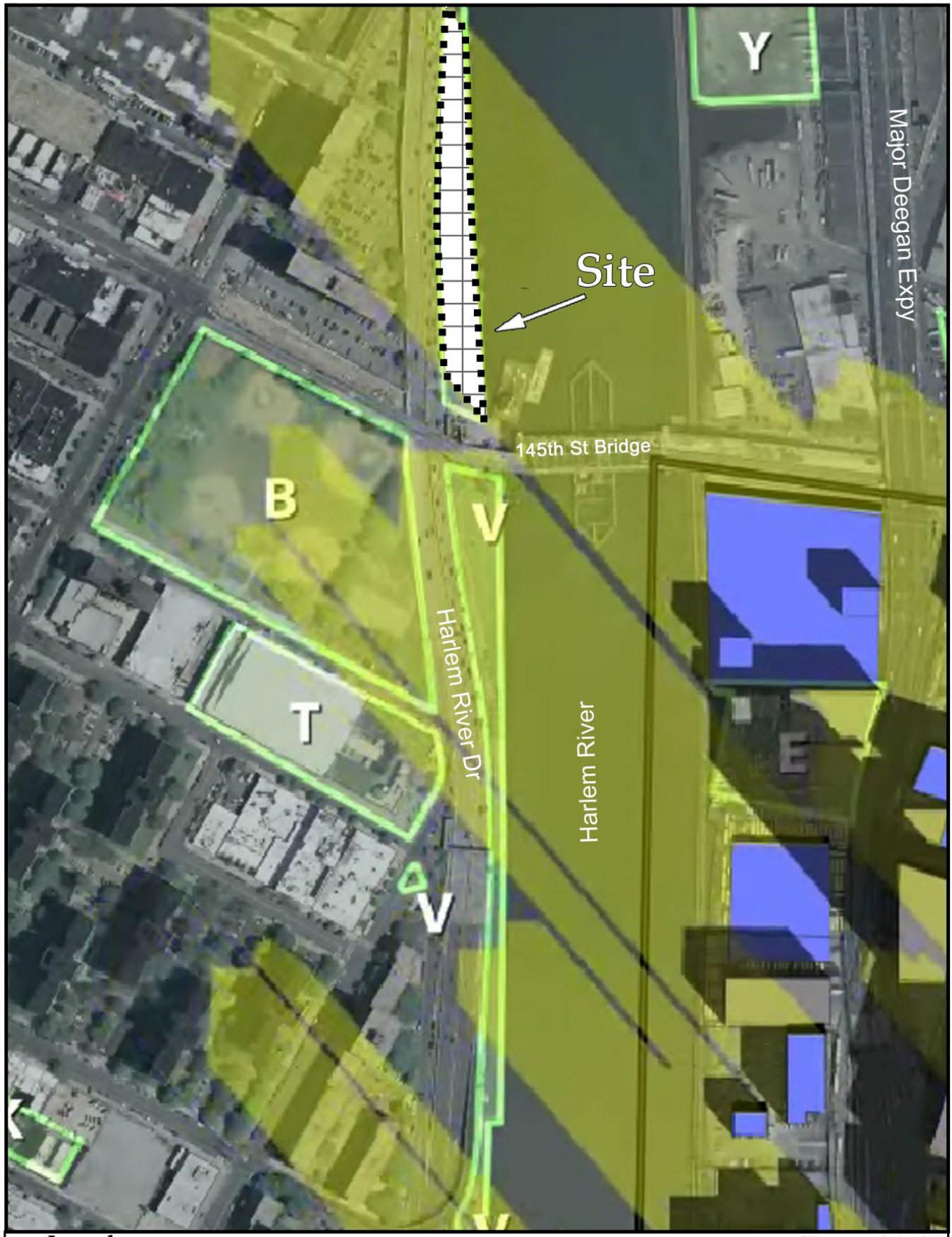
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60 0 60
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-37*
*Open Space Resource #56*
*Graham Triangle*
*May 6 - 4pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

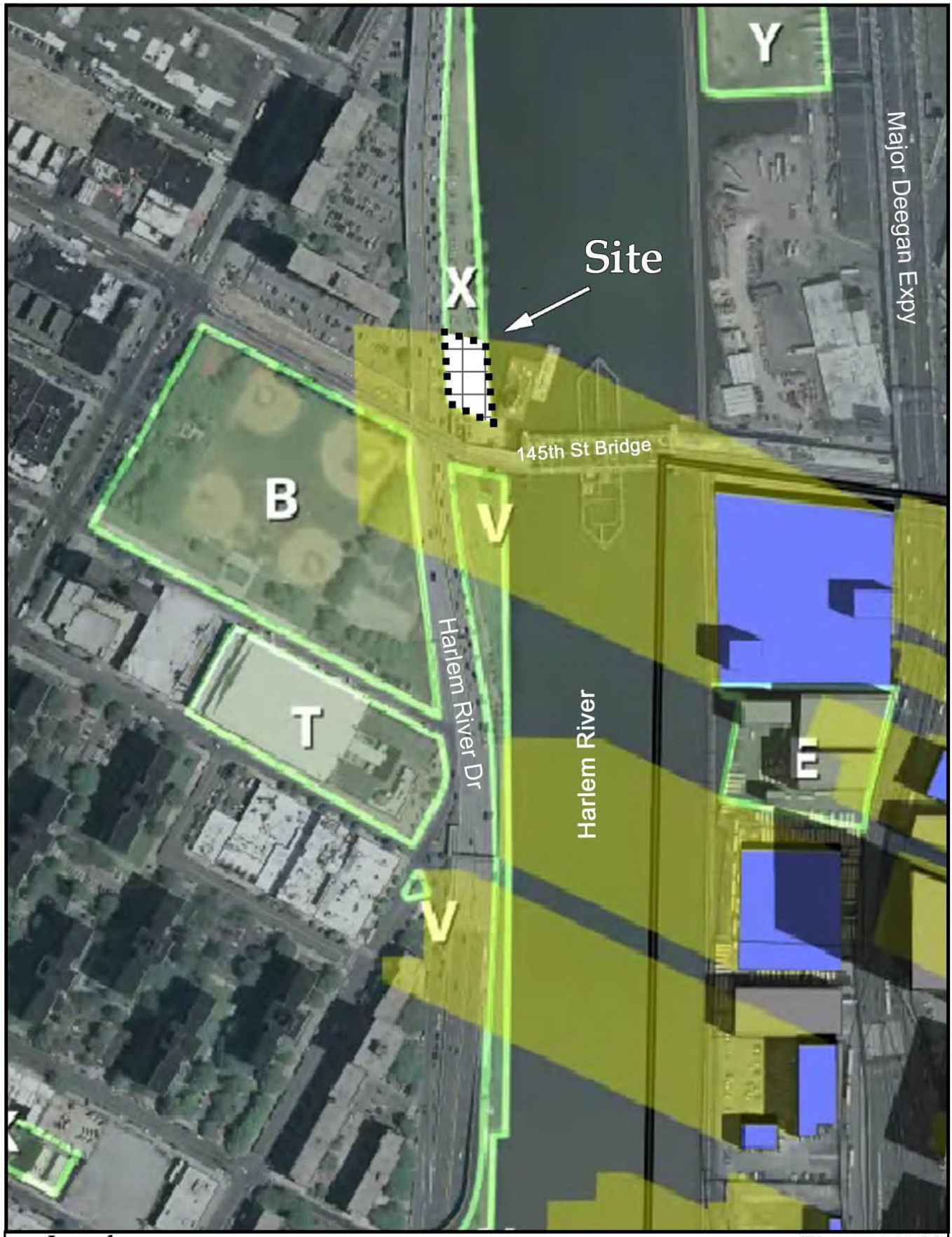
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120 0 120
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-38*
*Open Space Resource #70*
*Esplanade Gardens*
*December 21 - 9am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

N

120 0 120
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-39*
*Open Space Resource #70*
*Esplanade Gardens*
*March 21 - 8:30am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

N

120 0 120
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-40*
*Open Space Resource #72*
*Bronx Terminal Market Waterfront Park*
*December 21 - 11:30am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

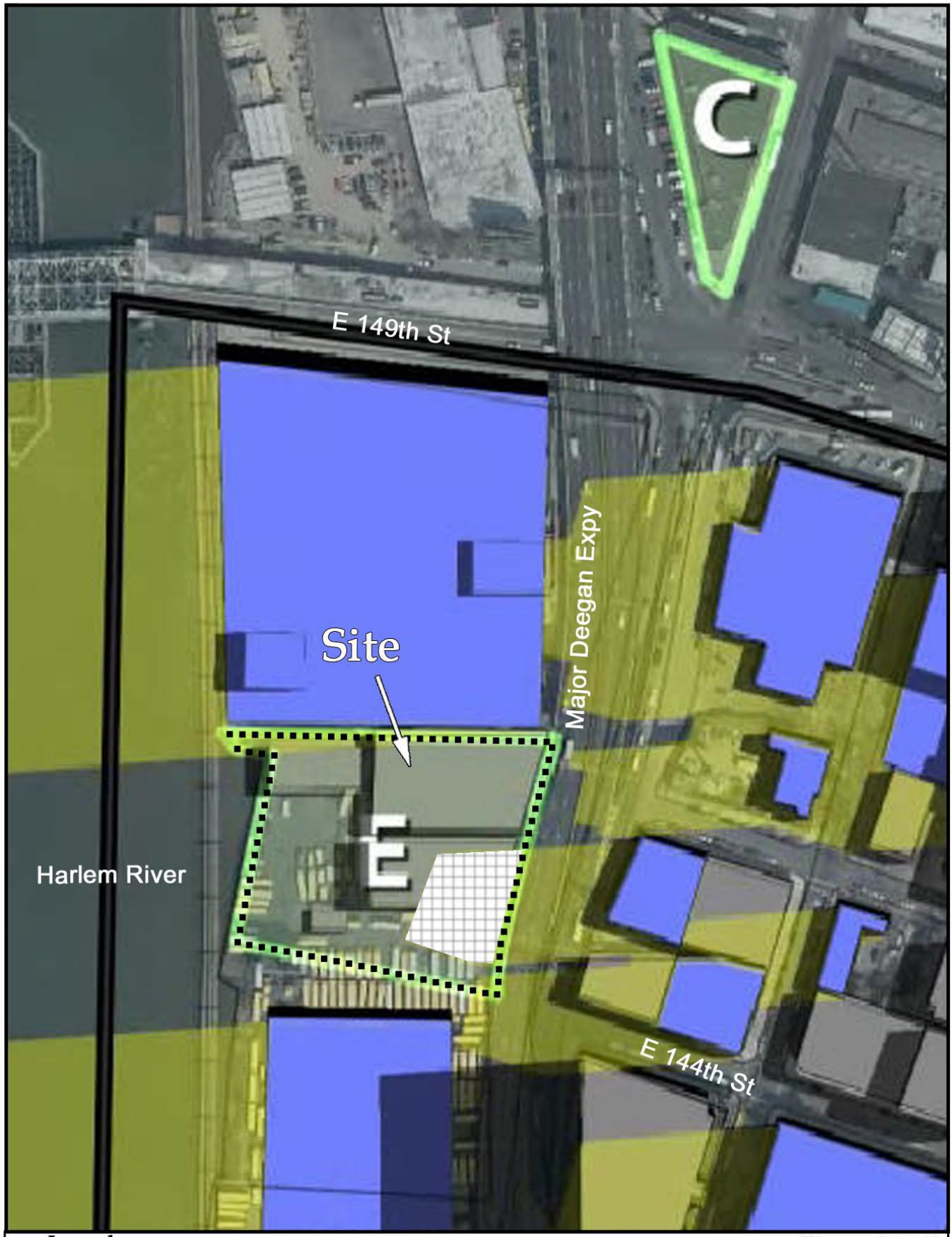
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Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-41*
*Open Space Resource #74*
*Proposed Lower Concourse Park*
*December 21 - 9:30am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

N

60 0 60
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-42*
*Open Space Resource #74*
*Proposed Lower Concourse Park*
*June 21 - 7:30am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

N

60 0 60
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-43*
*Open Space Resource #74*
*Proposed Lower Concourse Park*
*March 21 - 1pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

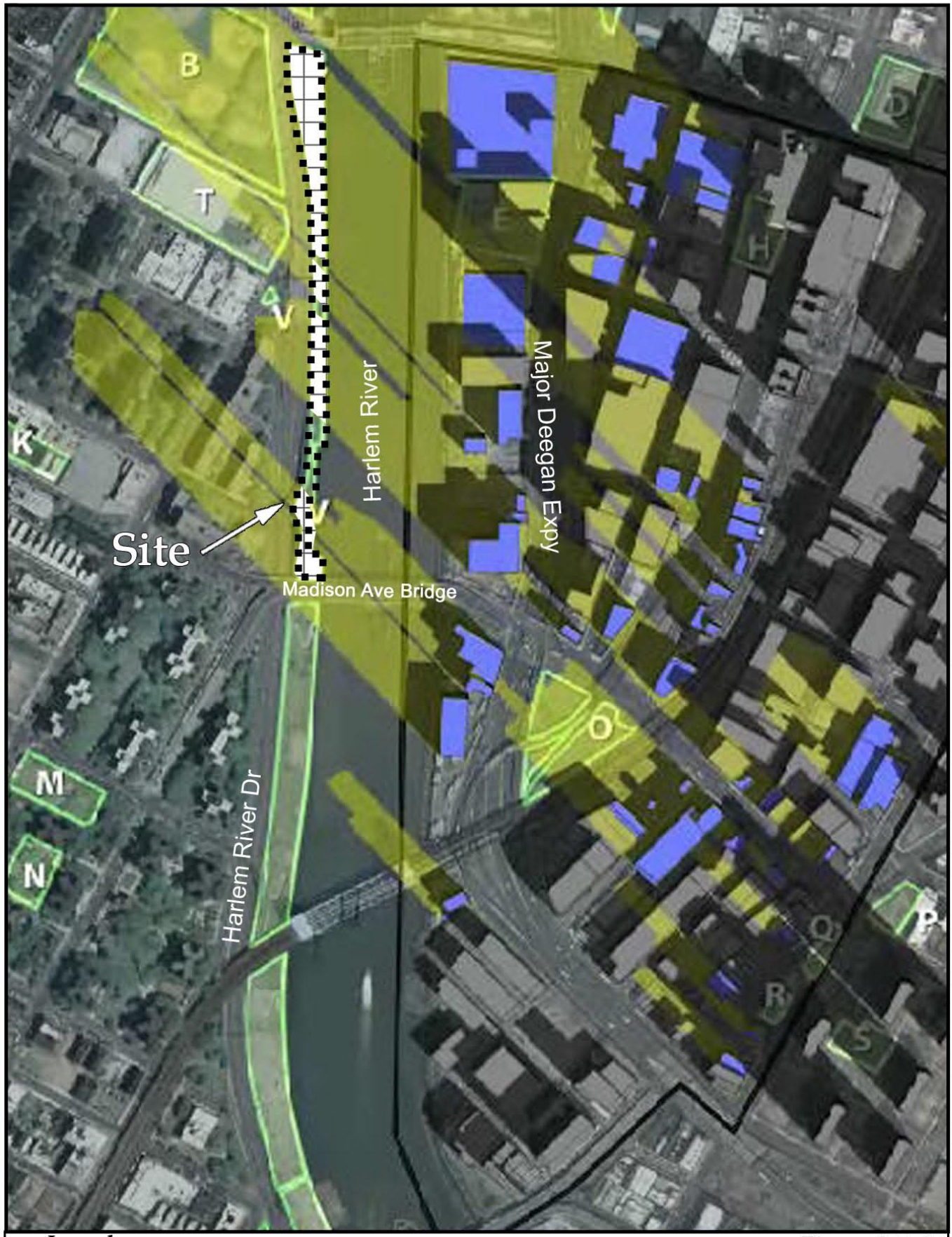
N

60 0 60
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-44*
*Open Space Resource #74*
*Proposed Lower Concourse Park*
*May 6 - 12pm*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

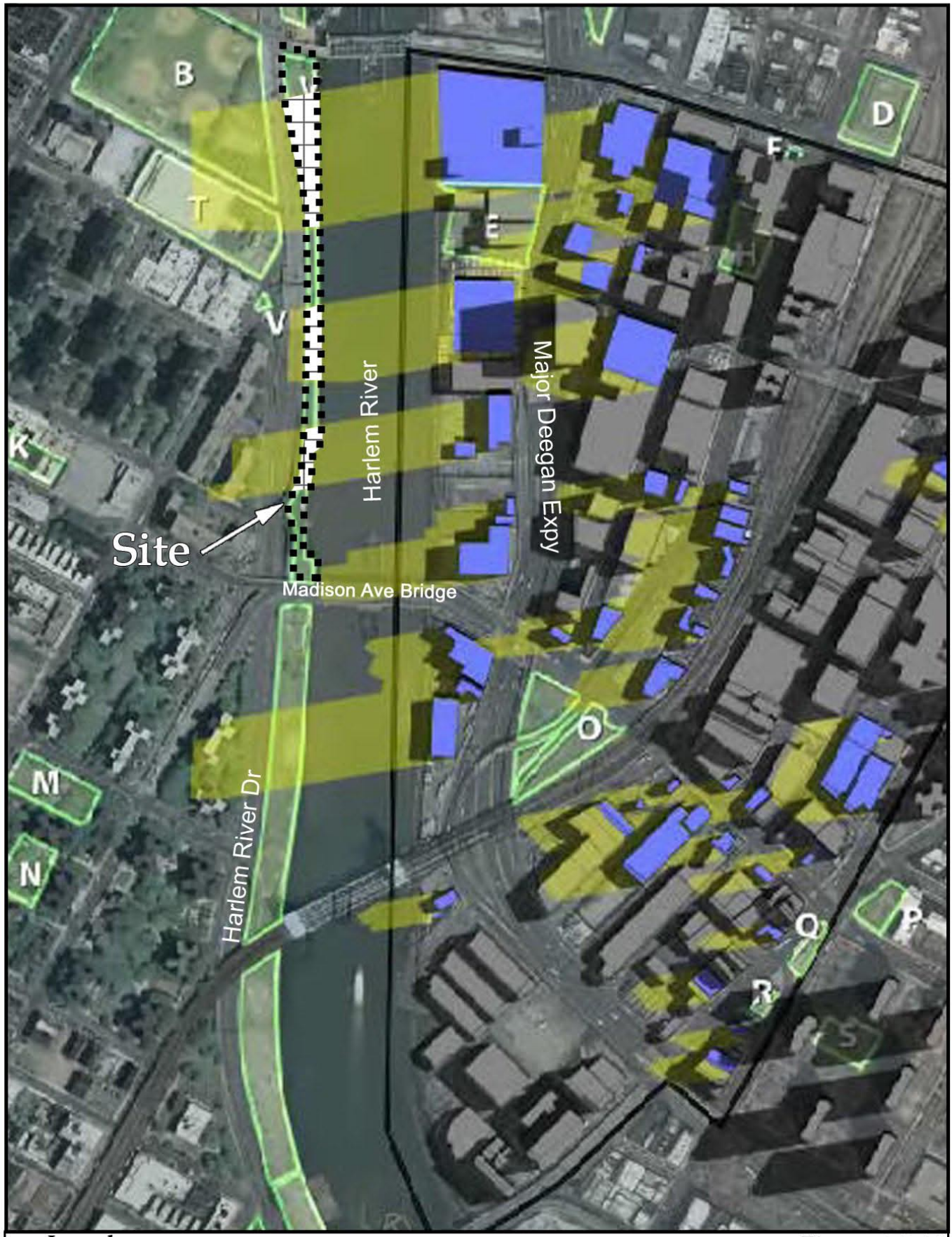
N

480 0 480
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-45*
*Open Space Resource #76*
*Harlem River Driveway*
*December 21 - 9am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

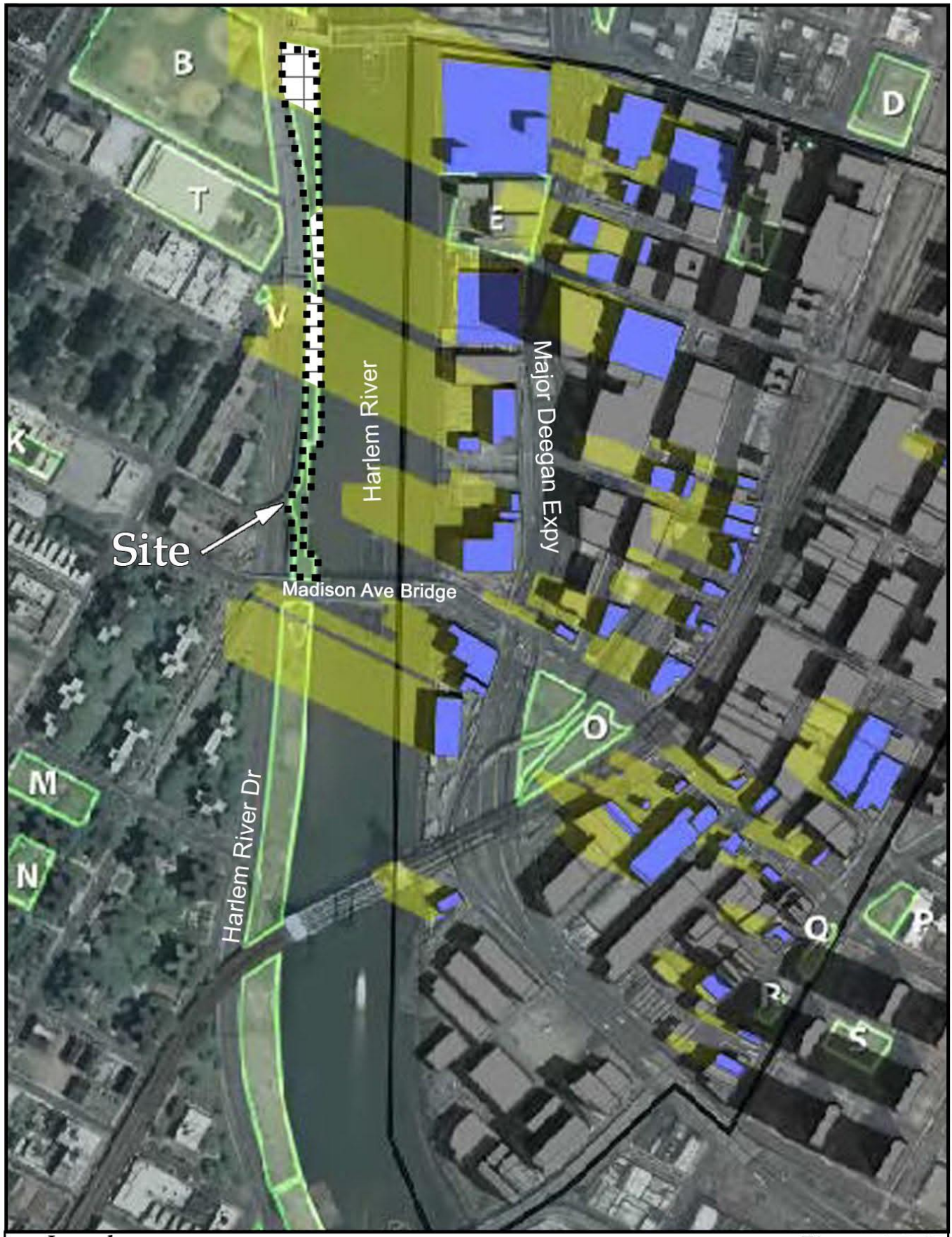
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480 0 480
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-46*
*Open Space Resource #76*
*Harlem River Driveway*
*June 21 - 7am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

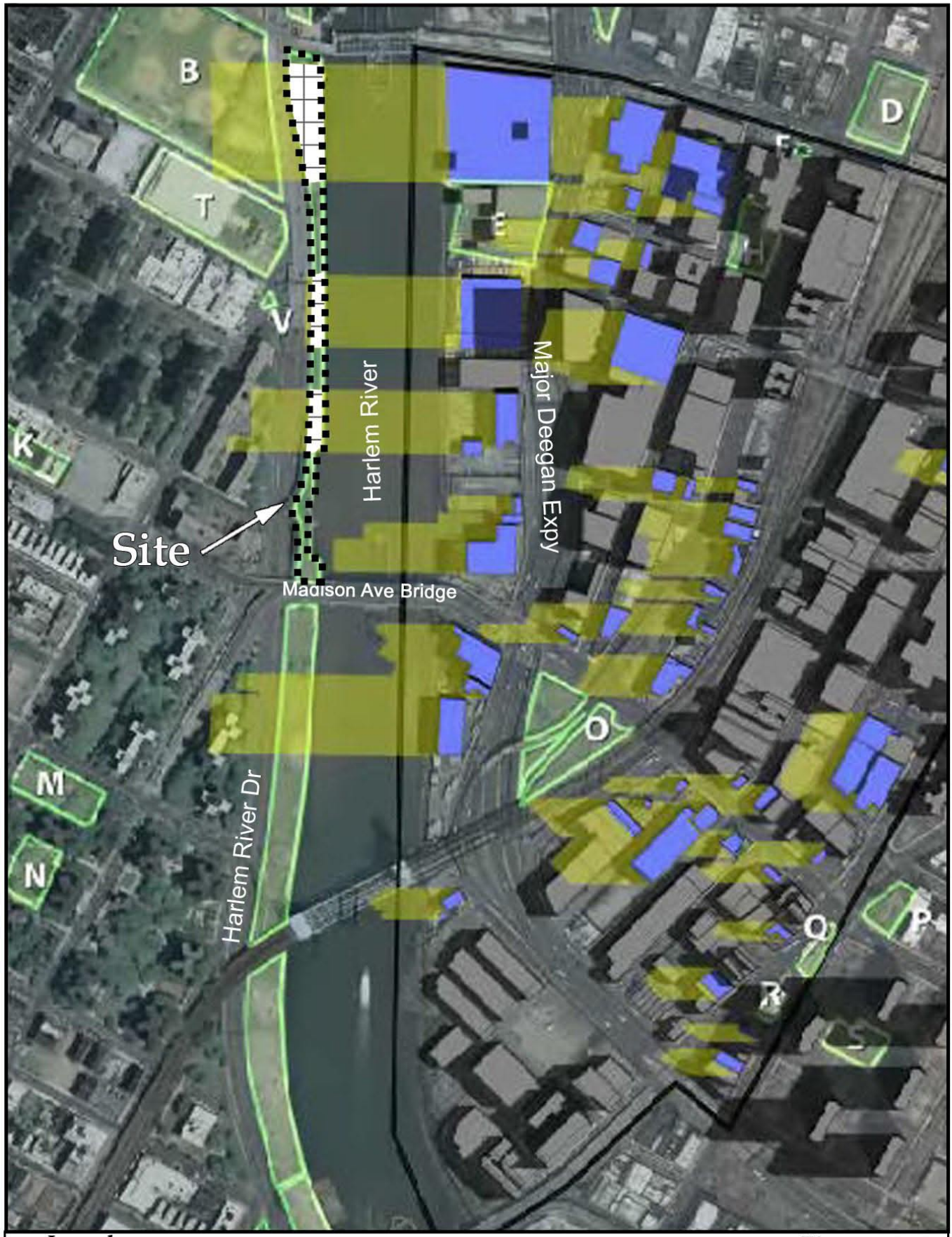
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480 0 480
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-47*
*Open Space Resource #76*
*Harlem River Driveway*
*March 21 - 8:30am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*




**Legend**

- Incremental Shadow from Projected and Potential Sites on Resource
- Shadow from Future No-Action Condtion
- Additional Future Action Condition
- Resource of Concern

N

480 0 480
Feet

Source: NYC Department of City Planning MapPLUTO 2006; HDR Inc.

*Figure 3.5-48*
*Open Space Resource #76*
*Harlem River Driveway*
*May 6 - 7:30am*

*Lower Concourse Rezoning and Related Actions EIS*
*NYC Department of City Planning*