Proposed Manhattanville in West Harlem Rezoning and Academic Mixed-Use Development Environmental Impact Statement Draft Scope of Work

A. PREFACE

Columbia University is proposing a comprehensive plan to accommodate a variety of academic-related uses and public improvements in the Manhattanville section of West Harlem. The proposed plan is intended by Columbia to facilitate the revitalization of Manhattanville primarily west of Broadway and allow Columbia to build new academic facilities over a 25-year period. Implementation of Columbia's proposal would require a rezoning of the area, as well as a General Project Plan (GPP) to facilitate the acquisition of property below streets and possibly the assemblage of above-grade sites. Adoption of the plan would require public review and approvals by a number of government agencies, including the local Community Board, the Manhattan Borough President, the New York City Planning Commission (CPC), the City Council, and the New York State Empire State Development Corporation (ESDC). The proposal also requires review and the preparation of an Environmental Impact Statement (EIS) under the New York State Environmental Quality Review Act (SEQRA) and City Environmental Quality Review (CEQR).

The purpose of this Environmental Impact Statement Draft Scope of Work (the "Draft Scope") is to solicit public comments on the key issues that must be studied in the EIS. The preparation of a final scope based on the public comments will ensure that the full environmental impact of Columbia's proposal are identified and studied consistent with environmental law and regulations. Under those laws, public review of the Columbia proposal will not begin until the Department of City Planning (DCP)—acting on behalf of the CPC, which is the "lead agency"—has determined that the environmental issues have been adequately studied in the form of a Draft EIS (DEIS) in order to permit meaningful review by the public and decision-makers.

A public meeting has been scheduled to take public comments on this Draft Scope on November 15, 2005, from 4 PM to approximately 8 PM, and will be held at I.S. 195, located at 625 West 133rd Street, between Broadway and Twelfth Avenue. Written comments on the Draft Scope will also be accepted by the lead agency until the close of business on November 28, 2005.

B. PROJECT OVERVIEW

A DEIS will be prepared pursuant to CEQR by the CPC as lead agency to assess Columbia University's proposed Manhattanville in West Harlem Rezoning and Academic Mixed-Use Development project (the "Proposed Actions"/"Proposed Project"). Columbia University proposes the rezoning of an approximately 35-acre area (the "Project Area") of Manhattanville in West Harlem in Manhattan (see Figure 1) The rezoning would amend the zoning map in the Project Area, create the Special Manhattanville Mixed-Use Zoning District, and allow Columbia to develop an Academic Mixed-Use plan (the "Academic Mixed-Use Development") on approximately 17 acres (the "Academic Mixed-Use Area") within the 35-acre rezoning area to meet its needs for long-term growth and modernization. The Academic Mixed-Use Area constitutes Subdistrict A of the Project Area (see Figure 2). In addition to the rezoning, implementation of the Academic Mixed-Use Development plan would require the adoption of a GPP for the

Academic Mixed-Use Area, by the New York State Urban Development Corporation (doing business as the ESDC) to provide for ESDC's assistance to facilitate the acquisition of property below streets (all of which would remain mapped open streets at grade) and possibly the assemblage of above-grade sites to support the Academic Mixed-Use Development. The GPP would also provide for the implementation of any features of the Academic Mixed-Use Development plan that cannot be mandated through zoning regulations or other mechanisms. Such features would include preservation of specified historic resources, uses in the below-grade space, and minimum and maximum floor area thresholds for all components. The DEIS will also meet the requirements of SEQRA and CEQR.

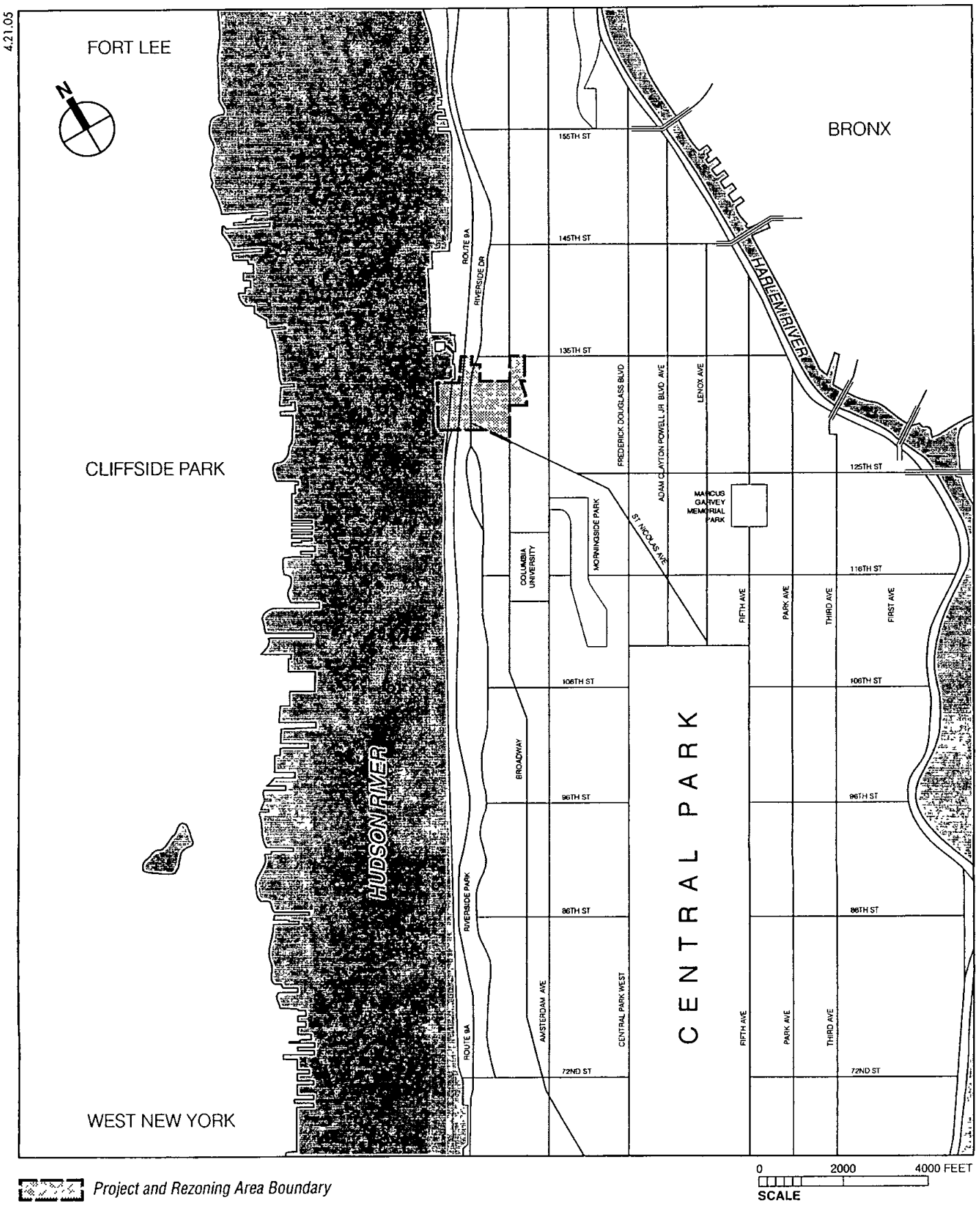
The analyses for the DEIS will consider the potential impacts on the entire area to be rezoned, which includes Subdistricts A (Academic Mixed-Use Area), B, and C, and several parcels which constitute the "Other Areas" as shown on Figure 2, and will also address impacts associated with the activities and uses covered by the GPP. Together, the rezoning and actions to be taken pursuant to the GPP constitute the "Proposed Actions."

In order to assess impacts of the Proposed Actions fully, several scenarios of development within the Project Area have been formulated for EIS analysis. In Subdistrict A, a plan has been developed for the Academic Mixed-Use Development, which is generally the reasonable worst-case development scenario for the analysis of impacts in the EIS. Located roughly between Broadway and Twelfth Avenue, from West 125th Street to West 133rd Street, including several parcels located east of Broadway between West 131st and West 134th Streets (see Figure 2), the Academic Mixed-Use Development would be built over an extended period of time. The Academic Mixed-Use Development would ultimately contain approximately 6.8 million gross square feet (gsf), including academic buildings, laboratory/research facilities, housing for graduate students, faculty, and other employees, administrative offices and support space, recreational facilities, parking, and on-site centralized steam and chilled water plants. Columbia's proposed facilities in Manhattanville would principally accommodate graduate and post-graduate education and research. It is possible that the Academic Mixed-Use Development would also include a hotel and conference center to accommodate visitors and to support Columbia's educational activities. The Academic Mixed-Use Development would include privately owned, publicly accessible open spaces.

For Subdistricts B, C, and the Other Areas, a "reasonable worst-case development scenario," has been formulated as the framework for the impact analyses. The reasonable worst-case development scenario was developed based on a set of criteria, including site size, current utilization and land use, and the opportunity for assemblages. Both the Academic Mixed-Use Development, including the time frame for its full build-out, and the reasonable worst-case development scenario for Subdistrict B, C, and the Other Areas are further described in section D, "Project Description."

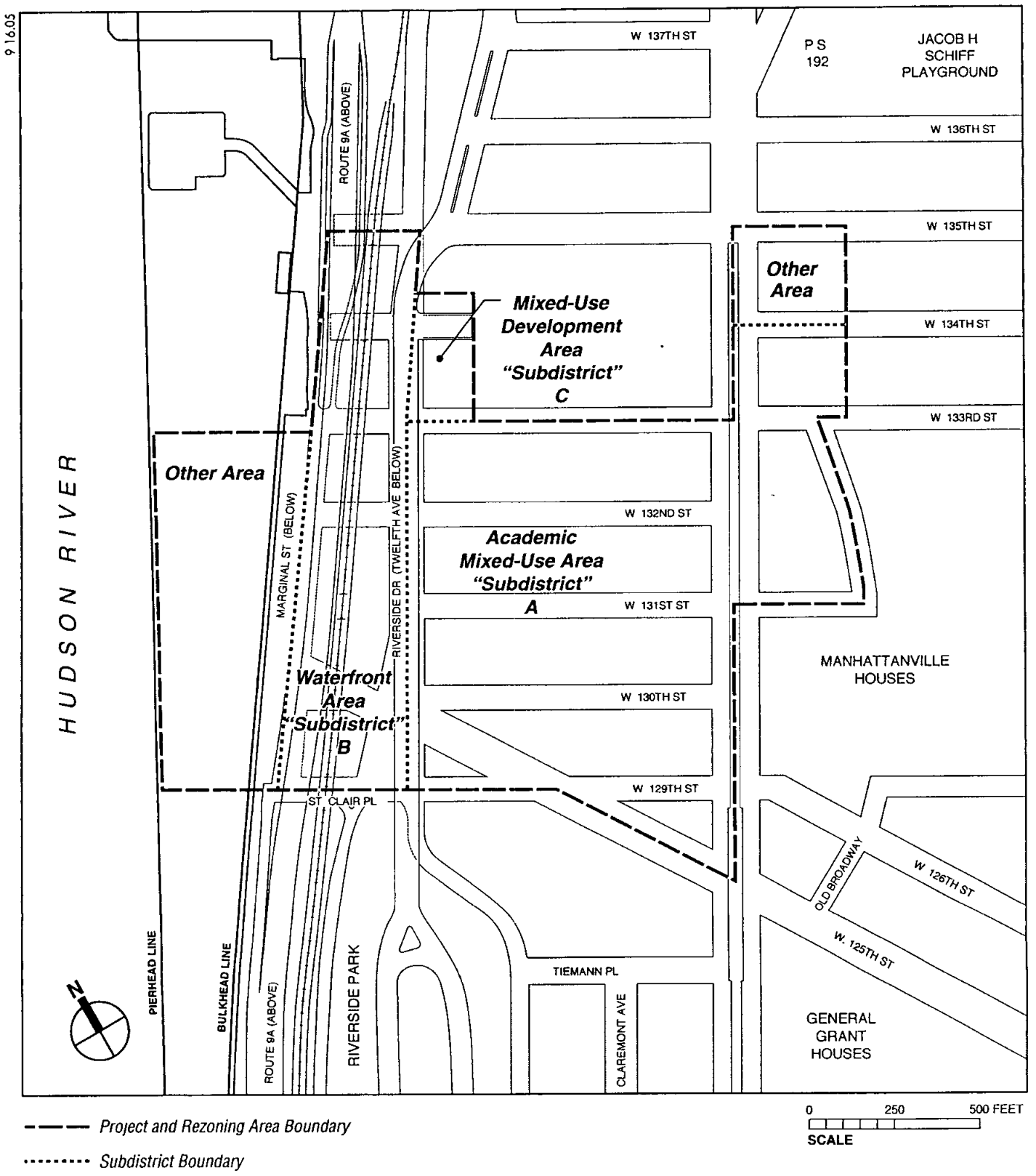
The following is the Draft Scope of Work for the EIS for the proposed Manhattanville in West Harlem Rezoning and Academic Mixed-Use Development project. This Draft Scope is being circulated to provide the public with an opportunity to comment on the issues that will be studied in the EIS. The EIS for the Proposed Actions will be prepared based on the guidance of the *CEQR Technical Manual*. It will be prepared in accordance with both CEQR and SEQRA.

A public scoping meeting has been scheduled to take comments on this Draft Scope of Work. This meeting will take place on November 15, 2005, from 4 PM to approximately 8 PM, and will be held at I.S. 195, located at 625 West 133rd Street, between Broadway and Twelfth



MANHATTANVILLE IN WEST HARLEM REZONING AND ACADEMIC MIXED-USE DEVELOPMENT

Figure 1
Project Location



NOTE The Subdistrict Boundaries correspond to the Proposed Zoning Subdistricts (see Figure 4)

MANHATTANVILLE IN WEST HARLEM REZONING AND ACADEMIC MIXED-USE DEVELOPMENT

Figure 2
Subdistricts

Avenue. The period for submitting written comments on the Draft Scope will remain open until 13 days after the close of the scoping meeting.

C. PROJECT SUMMARY AND APPROVALS

PROJECT DESCRIPTION SUMMARY

Columbia University proposes to redevelop a portion of the Manhattanville section of West Harlem in order to facilitate the revitalization and improvement of the area and to allow Columbia to build new academic facilities. The Proposed Project is intended by Columbia to generate significant economic development opportunities for a community that has not shared in the economic renaissance occurring in central and East Harlem, and to support New York City's role as a leading center of higher education. Once a thriving manufacturing area, today Manhattanville is characterized by automotive uses, storage facilities, and other low job-generating activities. The area's manufacturing zoning has not stimulated the development of lively retail and office uses that are now characteristic of 125th Street east of Broadway. The Proposed Actions are intended to provide zoning and land use changes needed to revitalize this section of Harlem and to permit Columbia University to develop a new academic mixed-use development for Columbia's long-term growth needs.

Specifically, the Proposed Actions seek to establish a new Special Manhattanville Mixed-Use Zoning District for an approximately 35-acre area, of which approximately 7 acres are underwater, in the Manhattanville section of West Harlem (the Project Area) to achieve two important goals:

- To facilitate the revitalization, improvement, and redevelopment of a portion of the Manhattanville section of West Harlem by allowing greater density and a wider variety of land uses, as recommended by the New York City Economic Development Corporation's (EDC) 2002 West Harlem Master Plan;
- To allow Columbia to fulfill its role as a leading academic institution that makes a significant contribution to the economic, cultural, and intellectual vitality of New York City by enabling it to expand and modernize its facilities within a 17-acre Academic Mixed-Use area within the proposed 35-acre Special District.

To allow for university facilities and other uses, the Proposed Actions would replace the existing M1, M2, and M3 zoning districts with a C6-2 district in Subdistricts A, B, and C of the Project Area. The Other Area west of Marginal Street would be rezoned to M1-1, a district that permits park use as-of-right. The Other Area east of Broadway would be rezoned to R8A and R8A with a C1-4 overlay, in order to promote housing in this location. A draft summary of the proposed Special Manhattanville Mixed-Use Zoning District text is provided as Appendix A.

The Proposed Actions would support the growth of Columbia University, one of New York City's largest private employers, and is intended by Columbia to enhance its ability to serve as an economic generator for the Harlem community. Columbia is severely constrained for space, with less than half the square feet per student of peer institutions, such as Yale, Harvard, and Princeton, and has virtually exhausted the expansion space available in the Morningside Heights area and in the vicinity of the Columbia University Medical Center. The Proposed Actions are proposed by Columbia in order to maintain its position as a world-class research institution and would enable Columbia to build an estimated 6.8 million gsf of new space for research, instruction, housing for graduate students, faculty, and other employees, retail, and support. Of

the total 6.8 million gsf of Academic Mixed-Use Development, approximately 2.1 million gsf would be located below grade in several basement levels including areas beneath the streets, including centralized steam and chilled water plants; research support space; loading docks; and parking and storage facilities. The approximately 4.7 million gsf of development above grade would be designed to provide view corridors to the Hudson River, active ground-floor uses along the wide streets, and privately owned, publicly accessible open space. ESDC would propose a GPP to facilitate the acquisition of property below grade and possibly the assemblage of sites above-grade to support the Academic Mixed-Use Development plan.

The urban design for the Academic Mixed-Use Area (Subdistrict A) includes strong visual and pedestrian connections linking the residential communities located east of Broadway and the Academic Mixed-Use Area to the waterfront park, as well as the creation of an active streetscape along West 125th Street, Broadway, and Twelfth Avenue. All streets in the Project Area would remain open and public. Retail and space for community uses would animate the area's major thoroughfares, providing a visually open and accessible space at the base of the buildings. Sidewalks would be widened to make the area safer and more pedestrian-friendly. As part of the Proposed Project, the Warren Nash Service Station building, a large former manufacturing building that contributes to the historic character of Manhattanville, would be retained and adaptively reused. While the proposed rezoning would regulate a number of the plan's urban design features, the GPP would allow for the implementation of features of the Academic Mixed-Use Development plan that cannot be mandated through zoning regulations or other mechanisms.

Subdistrict B consists of the west side of Twelfth Avenue, and Subdistrict C includes certain sites on the east side of Twelfth Avenue between West 133rd and West 135th Streets. The Other Areas include the area of the planned waterfront park and sites on the east side of Broadway between West 134th and West 135th Streets (see Figure 2). It is assumed that, with the exception of the waterfront park, these sites would be developed for retail, office, and/or residential uses, pursuant to a reasonable worst-case development scenario.

APPROVALS

The Proposed Project would require a number of City and State approvals. Several of these are discretionary actions requiring review under CEQR and SEQRA. Others are ministerial and do not require environmental review; nonetheless, these are subject to review under each relevant agency's public mandate, as discussed below.

DISCRETIONARY ACTIONS SUBJECT TO CEQR AND SEQRA[1]

New York City Actions

The Proposed Project would require the following land use actions to permit the range of proposed uses, as follows:

- Zoning text amendment to establish a Special Manhattanville Mixed-Use Zoning District coterminous with the Project Area; and

[1] Although still unknown, it is possible that Columbia may apply for financing assistance from City or State agencies at some time in the future. If that were to occur, these actions would be subject to CEQR or SEQRA, and such review would take place at the time each application was made.

- Changes to zoning sectional maps 5c and 6a (1) to map a Special Manhattanville Mixed-Use Zoning District coterminous with the Project Area and (2) change underlying zoning districts, which are subject to the City's Uniform Land Use Review Procedure (ULURP).

New York State Actions

- Adoption of a General Project Plan (GPP) by the New York State Urban Development Corporation (UDC) doing business as the Empire State Development Corporation (ESDC) and the making of related findings under the UDC Act, SEQRA, and the Eminent Domain Procedure Law (EDPL) to provide for ESDC's assistance to facilitate the acquisition of property below streets and possibly the assemblage of above-ground sites. These changes are discretionary in nature and would require consideration by and approval of the Directors of ESDC.
- New York State Department of Environmental Conservation (DEC) permit approval for construction and operation of on-site centralized steam and chilled water plants.
- If necessary, Metropolitan Transportation Authority/New York City Transit (MTA/NYCT) approval of the modification of the Manhattanville Bus Depot.
- Public Authorities Control Board approval of ESDC actions.

CITY AND STATE ACTIONS NOT SUBJECT TO CEQR OR SEQRA

- New York City Department of Environmental Protection (DEP) approval for an Amended Drainage Plan, a Private Drainage Proposal, and construction and operation of centralized steam and chilled water plants.
- New York City Department of Transportation (NYCDOT) possible approval for any changes to street directions, street treatment, or similar changes to the local street network.
- NYCDOT, Bureau of Bridges approval to rebuild West 130th, West 131st, and possibly West 132nd Streets above the Academic Mixed-Use Development below-grade support facility.
- NYCDOT, Division of Franchises, Concessions, and Consents possible approval for revocable consents.

D. PROJECT DESCRIPTION

BACKGROUND

The Proposed Actions are intended by Columbia to recognize the need for redevelopment in the Manhattanville section of West Harlem, while also acknowledging the need for Columbia University to accommodate its long-term growth and develop modern facilities to support its educational and research missions. A short history below provides a background for understanding the current land use and economic conditions in Manhattanville and how these might be affected through the implementation of the Proposed Actions.

MANHATTANVILLE

History

Manhattanville was one of the first areas of Manhattan to be settled by the Dutch during the 17th century. Manhattanville's gently sloped valley allowed easy entry from the Hudson River between the island's shoreline bluffs, which encouraged settlement and led to the establishment of an incorporated village in 1806 centered around present day West 125th Street. The village was organized around a street grid that followed the natural topography of the area, including Manhattan Street (now 125th Street) and Bloomingdale Road (now Old Broadway), which was based on a former Native American trail extending north–south on the island. The village developed with a commercial waterfront, supported by stables, warehouses, icehouses, and factories centered on Manhattan Street.

The village of Manhattanville began to be absorbed into the borough of Manhattan toward the middle of the 19th century as condemnation and street improvements, based on the rectilinear grid proposed in 1811 by the New York State Commissioner's Plan, reached as far north as Manhattanville in 1836. In the early to mid-19th century, transportation improvements—including a rail station for the Hudson River and New York Central Railroad, and a ferry terminal providing access to New Jersey both located at West 130th Street—spurred industrial growth. Dairies and meat packing businesses, attracted to easy access to rail and river transportation for their perishable products, moved into the area at the turn of the 20th century, including Sheffield Farms (now Columbia University's Prentis Hall), which was established on West 125th Street. The waterfront also included a pier supporting recreational activities for the community, including immigrants of European descent who had settled around Manhattan Street.

The construction of the IRT subway system, including the Broadway viaduct from West 123rd Street to West 133rd Street over the Manhattan Valley in the first decade of the 20th century, effectively linked Manhattanville to the rest of the island and generated a housing boom that transformed the village into the urban area it is today. Commercial uses continued to move northward to Manhattanville along Broadway, including automobile showrooms, service centers, and other automobile-related activities. Excellent transportation access made Manhattanville a logical choice for the location of automobile service facilities. The prominent six-story Studebaker Building on West 131st Street west of Broadway was constructed in 1923, and the Warren Nash Service Station Building was built in 1927. The construction of the George Washington Bridge (1927) and Henry Hudson Parkway (1934) strengthened the automobile service industries located in this area. However, the stock market crash of 1929, followed by the Great Depression, signaled the end of strong residential and commercial growth in Manhattanville. Although the outbreak of World War II curtailed this industry, automotive storage and service has remained in the area. During the war, African-Americans migrated from the South seeking industrial jobs and settled in the area.

Urban renewal efforts in the 1950s and 1960s resulted in the development of large-scale residential projects, including the Manhattanville Houses. During this time, ferry service ended, the recreational pier closed, and the waterfront piers and docks vanished. Trucking largely superseded water and rail transportation, so that Manhattanville's location in a valley with access to the waterfront no longer was particularly advantageous. In 1991, the MTA Manhattanville Bus Depot, on the western end of the block bounded by Broadway, Twelfth Avenue, and West 132nd and 133rd Streets was opened. The MTA Manhattanville Bus Depot was built on the site of the former Manhattan and Bronx Surface Transit Operating Authority Depot, which was built

in 1918. The area's prospect, lying well below the elevation of Broadway, flanked by steep bluffs to the north and south, and bracketed by four viaducts—three on the west (the Amtrak rail line, Henry Hudson Parkway, and Riverside Drive) and one on the east (New York City Transit [formerly IRT] No. 1 train)—makes it geographically distinct from central Harlem.

Needs and Opportunities

Assessed by typical measures of urban land utilization—zoning, built densities, and vacant land—the Manhattanville area of West Harlem is underutilized. Its early development of industry and shipping uses created relatively low-density development patterns, and more recently the area has seen an economic decline. According to current employment data for the area and a survey conducted by the Harlem Urban Development Corporation in 1984, employment has decreased by more than 35 percent since 1984 (in the past 20 years). Redevelopment has also been constrained by the elevated transportation infrastructure bordering the area. Manhattanville is zoned predominately for low- density manufacturing uses with maximum floor area ratios (FAR) of between one and two. Underutilized areas in the Project Area include sites that are built at densities well below the maximum FAR allowed under current zoning, vacant sites, and surface parking lots. A City-owned parking lot at the water's edge between St. Clair Place (West 129th Street) and West 133rd Street constitutes today's Manhattanville waterfront; nothing remains of its past as an active commercial and transportation corridor. The Riverside Drive viaduct interrupts Riverside Park to the north and south of the parking lot. Cyclists and pedestrians traveling along the Manhattan Waterfront Greenway, a 32-mile route that circumnavigates the island of Manhattan, are detoured to Twelfth Avenue between West 125th and West 135th Streets.

Current zoning is not conducive to redevelopment. West 125th Street is zoned for manufacturing on the north and does not function as an important commercial corridor or a strong pedestrian link to the waterfront. The north part of West 125th Street is zoned M1-2 for manufacturing uses and is home to gas stations, storage facilities, and other automotive uses. The Twelfth Avenue corridor from approximately St. Clair Place (West 129th Street) to West 135th Street is zoned M2-3, M3-1, and M1-2 for manufacturing uses. Meatpacking establishments and other manufacturing and warehousing uses remain in this area, although the number of these establishments has been consistently decreasing over the years. There are also a limited number of commercial uses along the Twelfth Avenue corridor, including Fairway Market and Dinosaur Bar-B-Que. However, retail uses that are larger than 10,000 square feet are not allowed in M2-3 districts. The remainder of the area is zoned M1-2, and there are several two-story manufacturing buildings that cannot expand because the current zoning limits the FAR to 2.0. Institutional uses, such as university space or museums, are not generally permitted. The use restrictions and FAR limitations therefore hinder both potential private and institutional development.

In 2002, EDC released a study of the Manhattanville area of West Harlem called the West Harlem Master Plan. The major objective of the Master Plan was to develop a cohesive plan for the economic development of West Harlem that enhances the character of the neighborhood and fulfills the vision of the community. To achieve these goals, the Master Plan proposed three components:

The first component of the West Harlem Master Plan proposes improvements to the City-owned parking lot on Marginal Street between St. Clair Place and West 133rd Street to transform the area into a new West Harlem Waterfront park. This EDC project, which is currently underway, is projected to be completed in 2007. The Master Plan recommends the development of an

attractive waterfront amenity, links to the Manhattan Waterfront Greenway, and construction of two new piers, including an excursion pier, to allow docking for recreational excursions and ferry boats.

The second component focuses on various transportation improvements to serve the area's growth. The plan recommends the development of an intermodal transfer center along the waterfront between West 125th Street and St. Clair Place that could provide access for ferry boats from the Excursion Pier, buses from West 125th Street, bicycles from the surrounding paths, and a potential new Metro-North stop on the Amtrak line at West 125th Street. This component also includes the implementation of streetscape improvements along West 125th Street to encourage access to the waterfront, which is currently in the design phase.

The third component of the West Harlem Master Plan builds on the waterfront transportation improvements (components 1 and 2) and encourages economic development of the upland. It identifies the need to change the restrictive manufacturing zoning to allow a greater variety of uses and greater building bulk in the area near Broadway. In addition, the plan proposes that the area "take advantage of institutional partner development with Columbia University and City College, the Upper Manhattan Empowerment Zone benefits and the existing industrial building stock" to engender new cultural and commercial development.

COLUMBIA UNIVERSITY

History

Columbia University in the City of New York, the oldest institution of higher learning in New York State, was founded first as King's College in 1754 and changed its name to Columbia College after the American Revolution. The establishment of a School of Law, the first awarding of a PhD, and the affiliations of Barnard College and Teachers College, among other milestones, established Columbia as a modern university by the late 19th century. With the development of graduate programs, Columbia College was renamed Columbia University in the City of New York in 1896, and officially renamed in 1912, moving its campus to Morningside Heights the following year. During the 20th century, Columbia continued to grow and prosper, known for both its liberal arts and science programs. In 1928, the Columbia-Presbyterian Medical Center in Washington Heights opened as a permanent alliance between Columbia's College of Physicians and Surgeons and The Presbyterian Hospital and is now known as the Columbia University Medical Center. In the 1960s, the University undertook an extensive building program on all of its campuses. The University continued to expand and modernize its facilities in the 1980s and 1990s, including renovating existing buildings, developing its Audubon Biotechnology and Research Park, and constructing the new Center for Engineering and Physical Science Research, new facilities for its Schools of Law and Business, and a new student activities center. Columbia also recently completed a K-8 school within a new building at Broadway and 110th Street, and opened its new School of Social Work at Amsterdam Avenue and West 122nd Street in August 2004. Columbia University currently consists of three undergraduate schools, 13 graduate and professional schools, and a school of continuing education and is recognized as one of the nation's leading institutions of higher education.

Needs and Opportunities

Columbia University currently faces a critical need for additional research and academic facilities to support its academic and research mission and maintain its status as one of the

world's leading universities. Currently, Columbia has less than half the built square footage per student of peer institutions, such as Yale, Harvard, and Princeton.

The quality of Columbia's physical space is also an issue. Because many of its buildings were constructed in the early 20th century, much of Columbia's existing space is inadequate for its current use, especially in science and research. Although the University has invested heavily in the improvement of these facilities through renovations, the size, configuration, and age of the buildings limit adaptive reuse as a solution to space needs, and construction of new facilities has become critical.

Columbia believes that accommodating anticipated long-term growth is critical in order for it to maintain leadership in areas of graduate and post-graduate education and research. Columbia anticipates that new laboratory and research space, modern academic facilities, and campus housing are needed to attract and retain students and faculty in an increasingly competitive academic environment. Columbia may also develop a hotel and conference center to accommodate continuing education, executive programs, and national and international academic forums. Based on these anticipated needs and trends in space requirements since 1994, Columbia estimates that it must expand by approximately 200,000 square feet a year over the next 25 to 30 years—a long-term goal of 5 to 6 million square feet.

To understand the options available to the University, Columbia has evaluated how best to make use of its existing resources in the nearby Morningside Heights and Washington Heights campuses located in Manhattan, as well as its facilities located in New York outside Manhattan (Lamont-Doherty in Palisades and Nevis Laboratories in Irvington) and other suburban sites. Columbia has concluded that only 1.1 million square feet could be developed within the existing Columbia University campuses, or through the development of nearby University-owned properties, an amount well below that necessary to accommodate identified future space needs. Columbia also evaluated the possible use of vacant land at the southern end of the Riverside South development area. Riverside South could provide about half of the needed floor area—up to 2.6 million zoning square feet of development on 9 acres between West 59th and West 62nd Streets. Aside from its limited size, this option, Columbia concluded, was less desirable due to the substantial distance between Riverside South and the Morningside Heights campus and the Medical Center and its high cost.

As a result of its evaluations, Columbia determined that expansion in Manhattanville is the best solution to the University's critical need for new facilities. Columbia has identified three main reasons for the University's interest in Manhattanville for expansion: (1) location and proximity to the Morningside Heights campus and Columbia University Medical Center; (2) an opportunity to enhance the University's existing connection to West Harlem; and (3) the prospect of transforming a currently underutilized area into a vibrant, mixed-use development. Manhattanville lies approximately a quarter mile north of the Morningside Heights campus and 1¼ miles south of the Medical Center. All three locations are connected by subway and bus routes with Manhattanville's central location offering a point of connection. Columbia believes that this proximity would allow the schools and departments to reap the benefits of interdisciplinary relationships and collaborations that are the source of many scientific advances and research contributions. The area is also close to City College, which is located just northeast of the Project Area, thus providing an opportunity to enhance Columbia's relationship with this largest campus in the CUNY system. Columbia currently collaborates with City College in a number of areas; together they are part of a consortium of institutions that helped create and jointly share the use of the New York Center for Structural Biology located on the campus of

City College, a few blocks east of the Project Area. City College also participates in the consortium of outreach and education programs associated with the Columbia Nanoscale Science and Engineering Center and collaborates with the Columbia Materials Research Science and Engineering Center.

Columbia also intends to expand, as-of-right, its presence in Manhattanville by adaptively reusing Prentis Hall (an academic building) and building a new entrance from West 125th Street to 560 Riverside Drive (a residential building) on the south side of the Project Area on West 125th Street. In addition, Columbia will convert and renovate the former Studebaker Building on West 131st Street in the Project Area to administrative uses for the University and develop a new, approximately 172,000-square-foot academic building at the southwest corner of Broadway and West 125th Street.

SPECIAL MANHATTANVILLE MIXED-USE DISTRICT

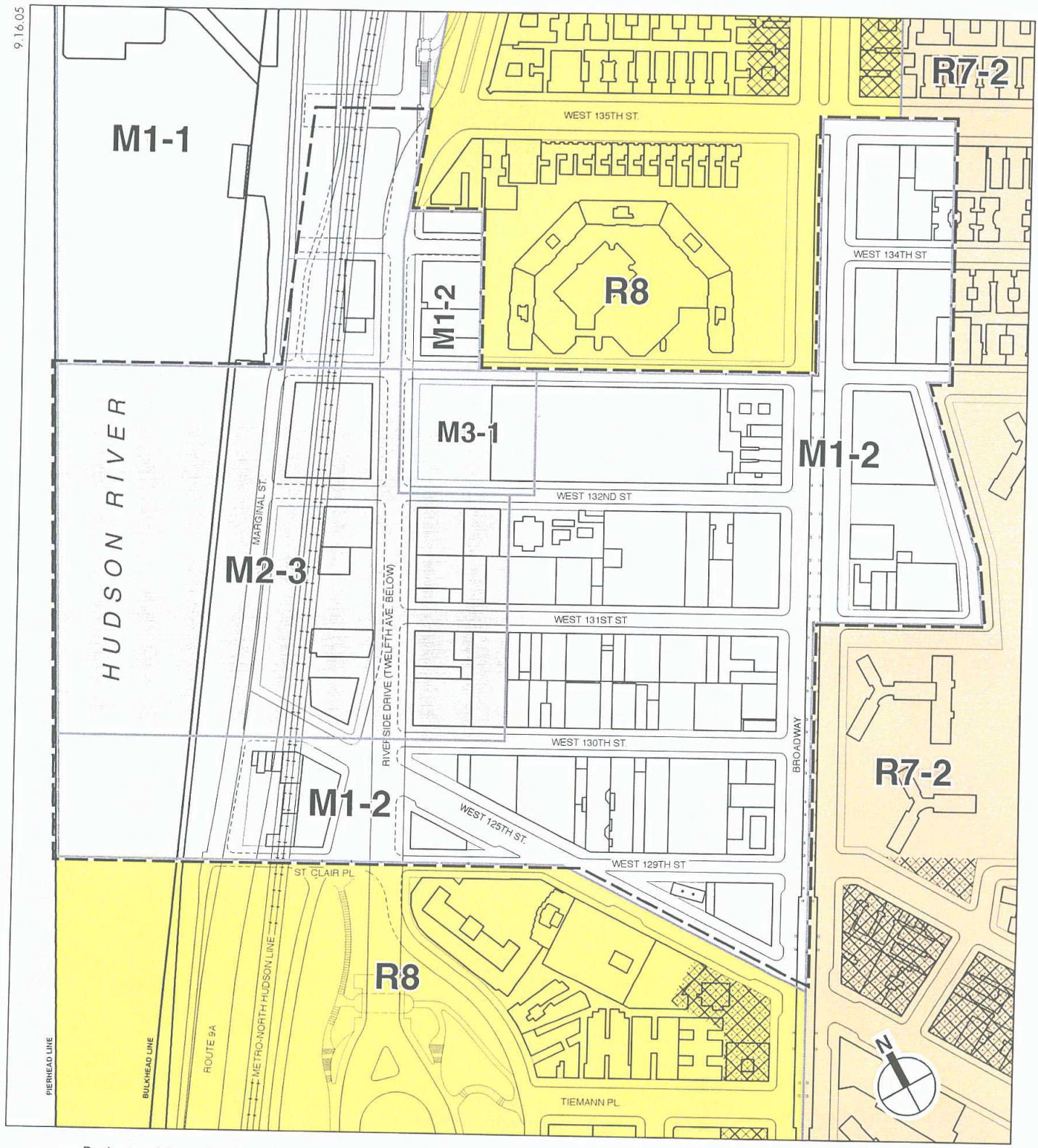
The boundaries of the Special Manhattanville Mixed-Use Zoning District proposed by Columbia to facilitate redevelopment and revitalization of Manhattanville are coterminous with the Project Area. The proposed rezoning would replace most of the current manufacturing districts in the Project Area and is also intended to promote appropriate redevelopment adjacent to the waterfront consistent with the recommendations and planning objectives of the EDC's West Harlem Master Plan. The rezoning would also allow Columbia University to develop the Academic Mixed-Use Development in Manhattanville to meet its long-term needs for modernization and expansion of the institution's facilities. The proposed rezoning includes (1) Subdistrict A, within which the Academic Mixed-Use Development would occur, and (2) adjoining Subdistricts B and C, and the two Other Areas, one east of Broadway and a second area along the waterfront west of Marginal Street—as discussed below. A draft summary of the proposed Special Manhattanville Mixed-Use Zoning District text is provided as Appendix A.

ACADEMIC MIXED-USE AREA (SUBDISTRICT A)

Zoning and GPP Requirements

Subdistrict A constitutes approximately 17 acres, or 48 percent, of the Project Area. In this subdistrict, the Special Manhattanville Mixed-Use Zoning District would change the existing low-density manufacturing zoning (see Figure 3)—light (M1-2), medium (M2-3), and heavy manufacturing (M3-1)—to a medium-density C6-2 district (see Figure 4). Subdistrict A would allow for a range of uses that would provide for the expansion of Columbia University, including classrooms, scientific research facilities containing laboratories, housing for graduate students, faculty, and other employees, and possibly a hotel/conference center. Subdistrict A would have special provisions to limit the residential floor area to a 3.44 FAR maximum, which is below the 6.02 FAR maximum for residential use in C6-2 districts. The maximum floor area would be 6 0 FAR for commercial and community facility uses, which is below the 6.5 FAR maximum for community facility use in C6-2 districts.

Enlargement or extensions of pre-existing non-conforming uses would be allowed under the provisions of the proposed Special Manhattanville Mixed-Use Zoning District. The Special Manhattanville Mixed-Use Zoning District would also continue to permit a range of manufacturing uses in Subdistrict A at the same 2.0 FAR density currently in effect. In addition, in order to allow long-term flexibility for Columbia University to develop the area over time, the Special Manhattanville Mixed-Use Zoning District provisions would include permission by the Chair of the CPC to transfer floor area from "granting" blocks to "receiving" blocks within

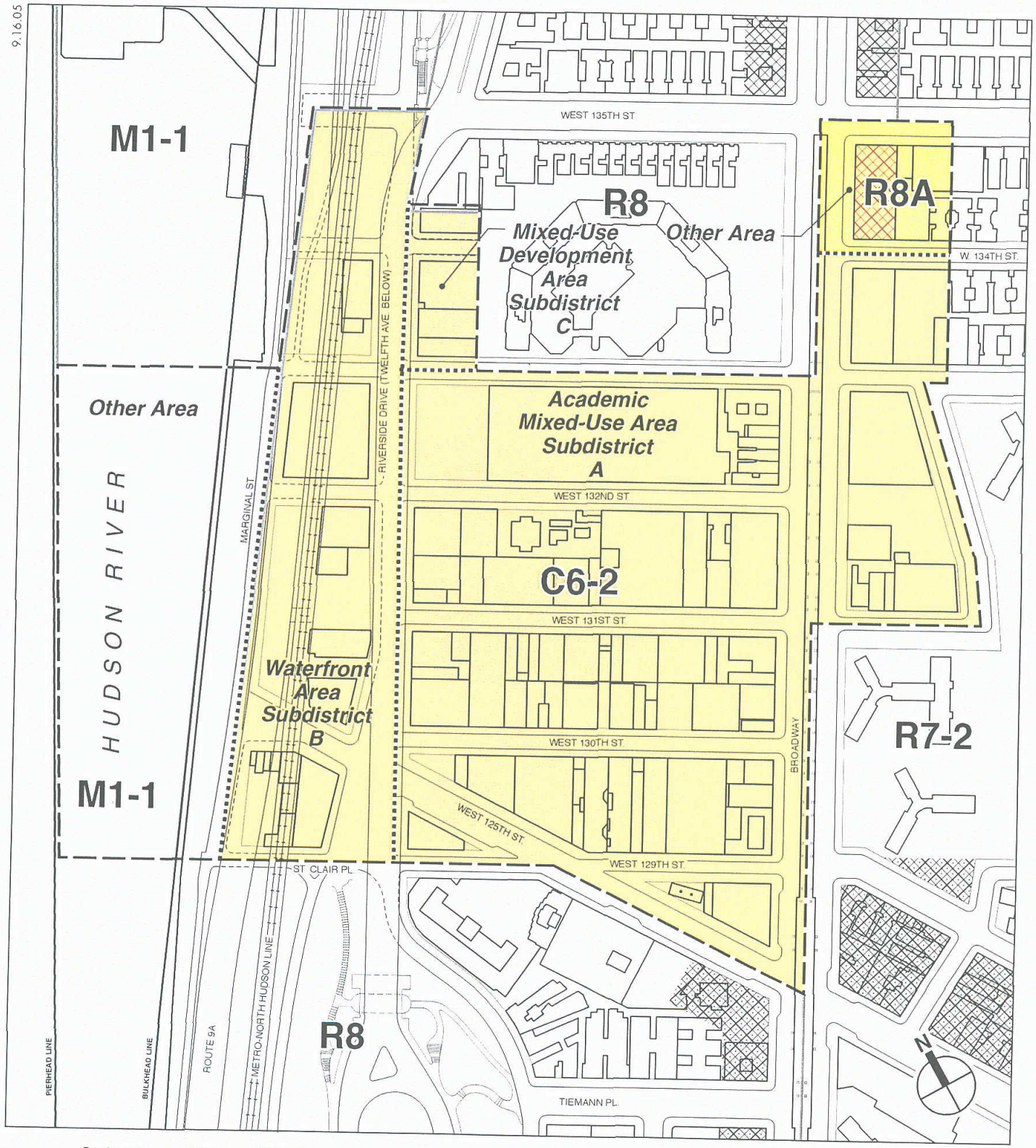


Existing Zoning

R8	General Residence District	M2-3	Manufacturing District
R7-2	General Residence District	M3-1	Manufacturing District
M1-1	Light Manufacturing District	C1-4	Commercial Overlay
M1-2	Light Manufacturing District	C2-4	Commercial Overlay

MANHATTANVILLE IN WEST HARLEM REZONING AND ACADEMIC MIXED-USE DEVELOPMENT

Figure 3
Existing Zoning



Proposed Zoning and Project Area

- R8A *General Residence District*
- M1-1 *Light Manufacturing District*
- C6-2 *Commercial District*
- C1-4 *Commercial Overlay*

MANHATTANVILLE IN WEST HARLEM REZONING AND ACADEMIC MIXED-USE DEVELOPMENT

Figure 4
Proposed Zoning

Subdistrict A (see draft zoning text summary in Appendix A). The proposed zoning would also provide for height and setback regulations, as summarized in Appendix A.

The Special Manhattanville Mixed-Use Zoning District would also have design controls and other requirements in Subdistrict A for on-site open areas to ensure the quality and public use and access to privately owned, publicly accessible open space areas.

In addition to the regulations of the Special Manhattanville Mixed-Use Zoning District, Subdistrict A would also be subject to requirements set forth in the GPP. These would control, as appropriate, development of the proposed subsurface spaces and would provide for the implementation of features of the Academic Mixed-Use Development plan that cannot be mandated through zoning regulations. To reduce on-street auto and service vehicle traffic and improve and enliven street activities, the Academic Mixed-Use Development would have an extensive below-grade component of several basement levels to provide contiguous support space. Below-grade support facilities would include centralized steam and chilled water plants, research support facilities, parking and loading facilities, storage space, and recreational facilities. As would be set forth in the GPP, the construction of the below-grade space would require temporary closure and reconstruction of streets (the Academic Mixed-Use Development would retain the existing street grid). Also under the GPP, Columbia would retain and adapt for its use the former Warren Nash Service Station building at 3280 Broadway at the corner of West 133rd Street

Planning and Design Approach to the Academic Mixed-Use Development Plan

Columbia's planning and design of the Academic Mixed-Use Development seeks to realize the following major goals:

- Establish connectivity through the Academic Mixed-Use Area to the river and planned West Harlem Waterfront park and to areas east of the Project Area.
- Create a lively, welcoming urban environment for graduate students, faculty, staff, and the community.
- Promote employment opportunities for local residents.

To accomplish these goals, Columbia has incorporated the following objectives in the design approach:

1) Retain key aspects that recall Manhattanville's history.

The Academic Mixed-Use Development Plan would retain the existing street grid, IRT and Riverside Drive viaducts, and a number of the industrial structures within the Academic Mixed-Use Area. These structures include the Warren Nash Service Station building—a former automobile service station—which would be adapted for new use.

2) Revitalize West 125th Street.

West 125th Street would be enlivened through the creation of ground-floor retail uses to create a lively streetscape similar to that of the street in central Harlem.

3) Establish connectivity to the waterfront and neighboring community.

The Academic Mixed-Use Area would remain open to the community without traditional campus walls or gates. All streets would also remain open and public. Building on the streetscape improvements proposed by the City, which include the reconfiguration of the

West 125th Street intersections with Twelfth Avenue and Broadway, the Plan includes open areas and landscaping adjacent to sidewalks to enhance views to the waterfront and encourage pedestrians to cross the Academic Mixed-Use Area to get to the waterfront.

4) *Construct significant new privately owned, publicly accessible open spaces.*

The Plan includes approximately 50,000 to 70,000 square feet of privately owned, publicly accessible open spaces located on the block between West 130th and West 131st Streets between Broadway and Twelfth Avenue. Approximately 30- to 50-foot-wide landscaped strips would extend north and south from this landscaped area, creating a network of open space connecting the focal point of the "bowtie" intersection of West 129th and West 125th Streets, through to I.S. 195 on the north side of West 133rd Street.

6) *Generate street vibrancy.*

Visually open and accessible space is proposed at the base of the new buildings to make streets in the Academic Mixed-Use Development Area lively and welcoming to students and the community. This space would constitute the ground floor of many of the new buildings and would contain community-oriented uses as retail, galleries, performance spaces, and other space for community services. Active ground-floor uses would be located along West 125th Street, Broadway, and Twelfth Avenue.

7) *Create below-grade service area.*

The Academic Mixed-Use Development would have a below-grade area, which would include parking and loading, to keep vehicles off the street and enhance the pedestrian environment at street level. The below-grade area would also include centralized steam and chilled water plants and all the support services for the research buildings. Locating all service uses below-grade would facilitate the goal of creating visually open and accessible space along the base of buildings.

8) *Use massing to create a coordinated design.*

Building height controls and streetwall requirements would ensure a design that relates to the topography and allows for a coordinated design of buildings of various uses. The research buildings that would be developed along Broadway require large floor plates and would be set back from the street along most of the cross streets. The setback at street level would generate additional open areas that would accommodate wider sidewalks The setback would also allow light and air into the narrow side streets and expand and enhance views through the viaduct arches to the Hudson River.

Proposed Academic Mixed-Use Development Plan

The Proposed Actions would enable Columbia to build an estimated 6.8 million gross square feet (gsf) of new space in the Academic Mixed-Use Area For planning purposes, Columbia has established that research, academic (instruction), housing for graduate students, faculty, and other employees and related support space would comprise the 6.8 million gsf and that approximately 4.7 million gsf would be located above grade and 2.1 million gsf located below grade. The proposed new buildings would range from seven to 20 stories (see Figures 5 and 6). One or another of two specified land uses would be permitted on each development site, as shown on Table 1. These uses are illustrated on Figure 7, which presents one of the specified uses on each site; taken together, these sites and uses constitute an Illustrative Plan, for analysis in the DEIS.

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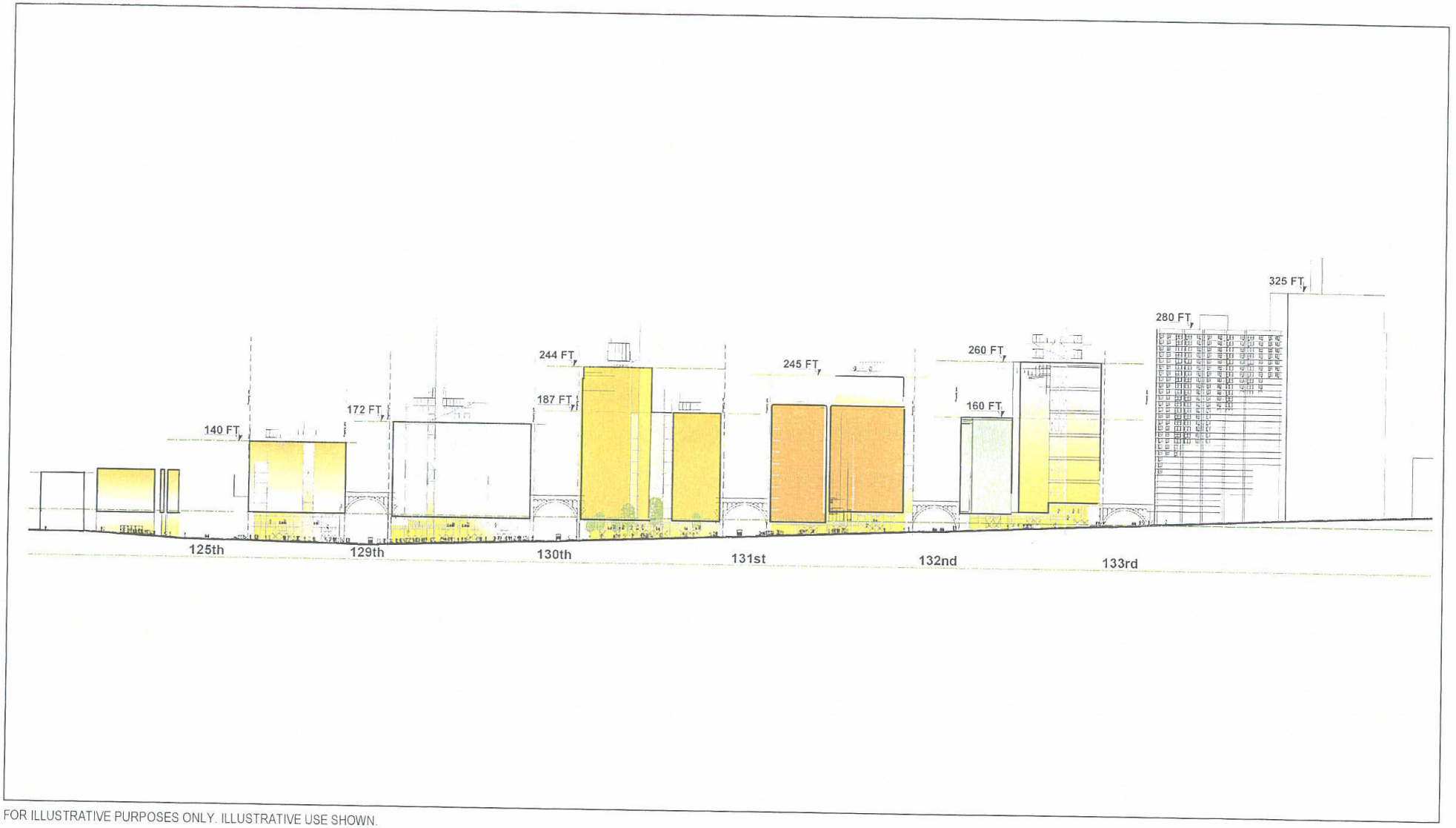

FOR ILLUSTRATIVE PURPOSES ONLY. ILLUSTRATIVE USE SHOWN.

MANHATTANVILLE IN WEST HARLEM REZONING AND ACADEMIC MIXED-USE DEVELOPMENT

Figure 5
Broadway Elevation Looking West

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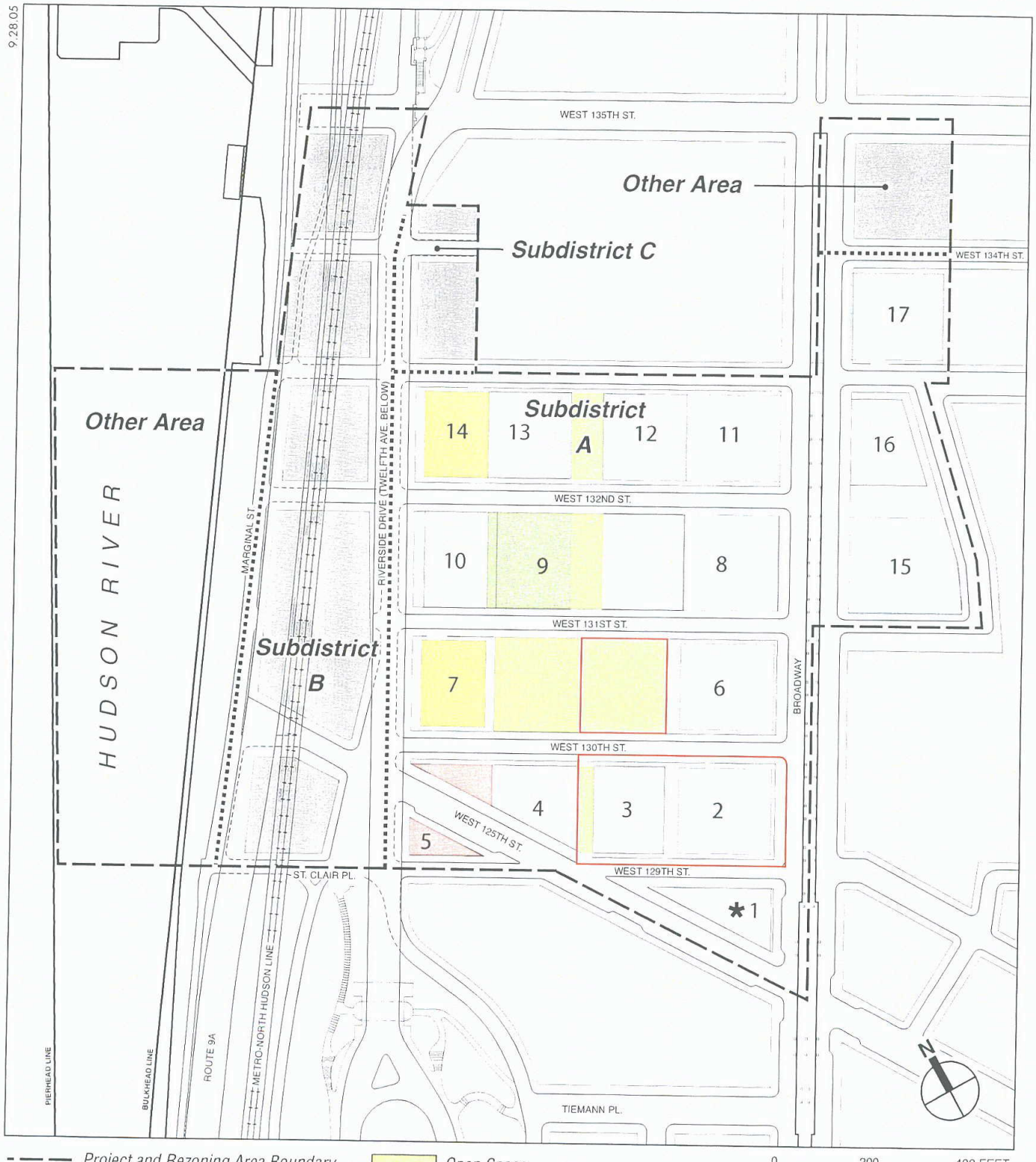
Figure 6

Twelfth Avenue Elevation Looking East



Project and Rezoning Area Boundary
Subdistrict Boundary
2015 Development
Research
Academic
Housing for Graduate Students, Faculty, and Other Employees
Recreation Facility
Open Space
Streetfront/Retail
Subdistricts B,C, and the Other Areas
* Potential Hotel/Conference Center Site
1 Development Site

MANHATTANVILLE IN WEST HARLEM REZONING AND ACADEMIC MIXED-USE DEVELOPMENT

Figure 7
Subdistrict A: Illustrative Plan

Table 1
Permitted Uses by Development Site

Development Site	Illustrative Plan Use	Alternate Use
1	Academic	Hotel/conference center
2	Research	–
3	Academic	–
4	Academic	University housing
5	Retail	–
6	Research	–
7	University housing	Academic
8	Research	Academic
9	Recreation	Research
10	Academic	Research
11	Research	Academic
12	Research	Academic
13	Academic	University housing
14	University housing	Academic
15	Research	Academic
16	Academic	Research
17	Research	University housing

As currently contemplated by Columbia, two new buildings, one research and one academic, would be developed by 2015 on the north side of West 125th Street. By 2030, the remainder of the Academic Mixed-Use Area would be developed, for a total of 6.8 million gsf (see Table 2).

As part of the Illustrative Plan, the EIS will assume that the Manhattanville Bus Depot would be rebuilt below grade at its present location. Alternatives, including the construction of new University facilities on top of the existing above-grade structure, will also be analyzed. In either event, operations would continue at that location.

For EIS purposes, maximum and minimum ranges of floor area have been developed for each component use of the Academic Mixed-Use Area, and these ranges have been used to establish a "reasonable worst-case development scenario" for analysis in the EIS, as described below under "Framework for Environmental Review." Both the Illustrative Plan and reasonable worst case development scenarios adhere to the project's design principles and would conform to the proposed zoning in Subdistrict A.

SUBDISTRICTS B, C, AND THE OTHER AREAS

The Special Manhattanville Mixed-Use Zoning District would change the existing zoning in Subdistricts B and C and the Other Areas from M2-3, M1-1, and M1-2 (see Figure 3) to M1-1, R8A, R8A with C1-4 overlay, and C6-2 (see Figure 4). The Special Manhattanville Mixed-Use Zoning District is intended to permit development in Subdistricts B, C, and the two Other Areas consistent with the recommendations of the EDC West Harlem Master Plan, such as the new West Harlem Waterfront park and other public uses.

Table 2
Subdistrict A: Illustrative Plan by Development Site (in GSF)

Site #*	Academic	Research	Housing	Recreation	Active Ground Floor Uses	Total
2015 Development Sites						
2		318,900			10,500	329,400
3	206,613				40,425	247,038
					2015 Total Above Grade	**576,438**
Below-Grade Components						
Research support		72,608				72,608
Centralized steam and chilled water plants						35,475
Mechanical/circulation/loading facilities						173,928
Storage						98,363
					2015 Total Below Grade	**380,374**
2015 Total	**206,613**	**391,508**	**0**	**0**	**50,925**	**956,812**
2030 Development Sites						
1	126,986				11,500	138,486
4	208,370				14,500	222,870
5					10,491	10,491
6		318,900			10,500	329,400
7			344,244		7,700	351,944
8		328,863			7,700	336,563
9				233,880		233,880
10	286,451				7,700	294,151
11		309,850			10,500	320,350
12		258,329				258,329
13	282,570					282,570
14			381,684		7,700	389,384
15		404,099			10,500	414,599
16	207,718					207,718
17		356,700			10,500	367,200
					2030 Total Above Grade	**4,157,935**
Below-Grade Components						
Research support		269,985				269,985
Swimming and diving center				110,324		110,324
Centralized steam and chilled water plants						23,257
Parking						905,544
Mechanical/circulation/loading facilities						306,753
Storage						100,815
					2015-2030 Total Below Grade	**1,716,678**
2015–2030 Total	**1,112,095**	**2,246,726**	**725,928**	**344,204**	**109,291**	**5,874,613**
All Sites Above Grade						**4,734,373**
All Sites Below Grade						**2,097,052**
Total All Sites	**1,318,708**	**2,638,234**	**725,928**	**344,204**	**160,216**	**6,831,425**

Note: * Site reference corresponds to Figure 7

Subdistrict B

The area located along the west side of Twelfth Avenue to Marginal Street, consisting of approximately 8 acres, or approximately 21 percent of the Project Area, constitutes proposed Subdistrict B. Subdistrict B would be rezoned from M1-1 and M2-3 to a C6-2 underlying zoning district. However, in order to promote appropriate land uses and strengthen the visual east–west corridors to the waterfront within this Subdistrict, additional regulations would apply: residential development would be prohibited and commercial and community facility development would be limited to a maximum FAR 2.0 for both uses. Community facility uses (Use Groups 3 and 4) would be limited to 5,000 square feet per establishment in Subdistrict B Subdistrict B would also contain a height limitation to remain below the height of the Riverside Drive viaduct. The proposed zoning changes for Subdistrict B would also allow the existing Fairway Market flexibility in its operations and potential for expansion. Twelfth Avenue and West 125th Street

in Subdistrict B would also be designated for Special Ground-Floor Uses in the Special Manhattanville Mixed-Use Zoning District (see Appendix A for a draft summary of the Special Manhattanville Mixed-Use Zoning District).

Subdistrict C

Subdistrict C, which constitutes approximately 2 percent of the Project Area, comprises three parcels on the east side of Twelfth Avenue between West 133rd Street and north of West 134th Street. It is proposed for inclusion the Special Manhattanville Mixed-Use Zoning District because it is part of the existing manufacturing area, and its location adjacent to the Riverside Park Community apartments makes it important that any new development that might occur in the future be compatible with its residential neighbors. Thus, Subdistrict C would also be subject to the proposed underlying C6-2 zoning district with a maximum 6.02 FAR for residential uses, and 6.0 FAR for commercial and community facility uses. Subdistrict C would also contain a height limit of 120 feet above curb level.

Other Areas

As shown on Figure 4, the Other Areas of the proposed Special District would include two separate areas: an area containing several parcels on the east side of Broadway between West 134th and West 135th Streets, and a second area comprising all of the waterfront west from Marginal Street to the pier line. Both Other Areas constitute approximately 10.5 acres, or 29 percent, of the Project Area. The Other Area east of Broadway constitutes approximately 3 percent of the Project Area. The remaining 26 percent of the Other Areas is primarily land under water, west of Marginal Street.

All of the Other Area east of Broadway would be mapped as an R8A contextual zoning district that applies height and setback regulations designed to be compatible with the character of the neighborhood. The R8A district requires a base height of 60 to 85 feet and a maximum height of 120 feet. Along Broadway, buildings must be set back 10 feet above the base height. A C1-4 overlay would be mapped along the entire frontage of Broadway to a depth of 100 feet east from Broadway. Broadway would be designated for active ground-floor uses in the Special District. As governed by the underlying zoning, the maximum FAR would be 6.02 for residential uses and 6.5 for community facility uses. Where the C1-4 overlay is mapped, the maximum FAR would be 2.0 for commercial uses; otherwise, commercial uses are limited to 1.0 FAR in the base of a residential building. The remaining area located east of the C1-4 overlay on the same block would be mapped R8A, with a maximum FAR of 6.02 for residential uses and 6.5 for community facility uses.

The Other Area west of Marginal Street would be mapped as M1-1. This is the area planned to be developed as the West Harlem Waterfront park. The proposed zoning change would allow the park to be legally developed since the existing M2-3 district does not allow for a park use.

E. FRAMEWORK FOR ENVIRONMENTAL REVIEW

The Proposed Actions would change the regulatory controls governing land use and development in the Project Area and would allow its redevelopment over the long term. The EIS will analyze the Proposed Actions' potential to generate significant adverse environmental impacts as the redevelopment takes place. The EIS will consider alternatives that would reduce or eliminate impacts identified in the technical analyses and propose mitigation for such impacts, to the extent practicable. The rezoning would permit a wide range of development options; from among these, the EIS will examine the "reasonable worst-case development scenario" permitted

under the proposed zoning In addition, the analyses will address *future* development, so it is necessary to identify conditions in the future, both without and with the Proposed Actions. The approach to the analysis framework is discussed below.

REASONABLE WORST-CASE DEVELOPMENT SCENARIO

The proposed changes would allow development of buildings of new uses and density and would change the development potential of sites within the Project Area in a manner consistent with the Special Manhattanville Mixed-Use Zoning District and new zoning districts. As a result, a range of new development could occur within the Project Area. For analysis purposes, likely, reasonable scenarios that could result from the proposed land use control changes are first identified. From this range of reasonable development scenarios, the one with the worst environmental effect is chosen for all analyses—this is referred to as the "reasonable worst-case development scenario." A reasonable worst-case development scenario is used to assess the range of effects (e.g., on traffic, air quality, and neighborhood character) that might occur as a result of development under the Proposed Actions.

Academic Mixed-Use Area/Subdistrict A

Reasonable Worst-Case Development Scenario. As described above, the Illustrative Plan is Columbia's current proposal for its future development. Under the Illustrative Plan, Columbia contemplates total development in Subdistrict A of approximately 6 8 million gsf, with approximately 4.7 million gsf located above grade and 2.1 million gsf located below grade. The maximum zoning floor area within the Academic Mixed-Use Area would be 4,417,956 square feet (6.0 FAR equivalent) (see Table 3)[1]. Since development would be incremental, two analysis years—2015 and 2030—have been selected to assess the build-out of Columbia's proposed development.

It is possible that as the Academic Mixed-Use Area develops over time, the plan would change. In order to allow for a degree of flexibility in Columbia's future development, while at the same time ensuring that future development is consistent with the analyses in the EIS, the GPP would: (a) establish minimum and maximum floor areas for each potential land use component (see Table 3); and (b) limit the range of uses on each development site as set forth in Table 1. In addition, the zoning will define maximum building envelopes. Because of the possibility that the actual development would differ from the Illustrative Plan, the reasonable worst-case development scenario for Subdistrict A is not necessarily the same as the Illustrative Plan.

In order to provide a conservative analysis of the potential impacts of the development of the Academic Mixed-Use Area, the EIS will analyze a "reasonable worst-case development scenario" that is derived from the Illustrative Plan, but modified in two ways. One difference is that although Columbia currently contemplates developing two new buildings (Sites 2 and 3 on Figure 7) by 2015 under the Illustrative Plan, the reasonable worst-case development scenario for the EIS will conservatively assume development of four new buildings by 2015 (Sites 1-4 on Figure 7). The difference in 2015 between the Illustrative Plan and the reasonable worst-case

[1] The zoning floor area of a building is the gross floor area above grade less space devoted to mechanical uses.

Table 3
Subdistrict A: 2015 and 2030 Maximum and Minimum Proposed Academic Mixed-Use Development

Use	Maximum GSF		Maximum Height (ft.)[5]	Minimum GSF		Minimum Height (ft.)[5]
	2015	2030		2015	2030[1]	
Community Facility						
Research	391,508[2]	3,600,000[3]	320	391,508	1,300,000[3]	100
General or other academic	541,969	2,900,000	320	206,613	1,000,000	100
Housing for graduate students, faculty, and other employees	208,370	1,300,000	300	0	350,000	210
Recreation[4]	—	350,000	230	—	0	85
Commercial						
Active ground-floor uses	225,000	600,000	40	36,500	130,000	20
Hotel	126,986	300,000	250	0	0	160
Support						
Parking, loading, and service	0	905,544		0	905,544	
Centralized steam and chilled water plants	35,475	58,732		35,475	58,732	

Notes:
Maximum academic uses would not occur with maximum housing for graduate students, faculty, and other employees.
[1] Maximum zoning floor area within the Academic Mixed-Use Subdistrict is 4,417,956 square feet (6 0 FAR equivalent); estimated maximum gross floor area is 6 8 million square feet.
[2] The total gsf for research includes 72,608 gsf of below-grade support facilities
[3] The total gsf for research includes 342,593 gsf of below-grade support facilities
[4] The total gsf for recreation includes 110,324 sf for the below-grade swimming and diving center.
[5] Heights include mechanical space

development scenario, Sites 1 and 4, is approximately 335,356 gsf. In addition, for both analysis years, several categories of technical analysis will be analyzed using maximum and minimum floor areas and heights derived from alternative permitted uses set forth on Table 1 where such uses would have impacts greater than those that would be created under the Illustrative Plan. Thus, the reasonable worst-case development scenario would differ from the Illustrative Plan in the following impact categories.

- *Socioeconomic Conditions*—Indirect displacement assumes maximum research use and minimum housing for graduate students, faculty, and other employees This combination of uses would generate the greatest potential off-site demand for housing and commercial space.
- *Community facilities*—Assumes maximum housing for graduate students, faculty, and other employees. These uses would generate the largest population that could place demands on the area's community facilities and services.
- *Open space*—Assumes maximum housing for graduate students, faculty, and other employees, maximizes other uses with high employment rates (e.g., research) and minimizes recreation uses. These uses would generate the largest demands for open space. Assumes 50,000 square feet of privately owned, publicly accessible open spaces.
- *Shadows*—Assumes maximum heights and bulks of buildings. This would generate the largest shadows.
- *Urban Design/Visual Resources*—Assumes maximum building heights, which would generate the greatest urban design changes and potential impacts on visual resources.
- *Infrastructure*—Assumes maximum housing for graduate students, faculty, and other employees and maximizes other high-energy or high water users.

- *Traffic and parking*—Assumes minimum housing for graduate students, faculty, and other employees and maximum administration and research uses, which are the highest transportation trip generators.
- *Transit and pedestrians*—Assumes minimum housing for graduate students, faculty, and other employees and maximum administration and research uses, which are the highest trip generators.
- *Air quality*—For stationary source analysis, assumes minimum height of the building exhaust and maximum height for the surrounding buildings. Mobile source analysis assumes the reasonable worst-case traffic and parking scenario.
- *Noise*—Assumes reasonable worst-case traffic and parking scenario.

Subdistricts B, C, and the Other Areas

In Subdistricts B, C, and the Other Areas of the proposed Special Manhattanville Mixed-Use Zoning District, new uses and uses with greater densities may develop as a result of the proposed rezoning. Changes to the land use regulatory controls could allow subsequent future projects in Subdistricts B, C, and the Other Areas, as yet undefined, to be developed that may not require further environmental review. Therefore, the EIS will also consider a reasonable worst-case development scenario for the sites within Subdistrict B, C, and the Other Areas (see Table 4 and Figure 8). Although the physical form of the development for these areas is unknown, its potential characteristics are considered for analysis purposes. Regardless of what is actually developed for Subdistricts B, C, and the Other Areas, the impacts would be no worse than those considered in the EIS for the reasonable worst-case development scenario.

To determine the reasonable worst-case development scenario for sites located outside the Academic Mixed-Use Area, all lots in Subdistricts B, C, and the Other Areas were evaluated to determine if they would likely be redeveloped over time, based on the proposed zoning land use controls. The criteria for identifying specific development sites include the size of the site, its current utilization and land use, and the opportunity for assemblages. Specifically, the criteria include:

- Individual or assembled lots (by the same owner) of at least 4,000 square feet or larger.
- Lots that are vacant or contain vacant or partially vacant buildings.
- Lots containing marginal commercial and/or manufacturing uses, including parking lots and auto repair facilities (which are considered "soft," or likely to be redeveloped). These uses are located on sites that do not contain substantial investment in buildings or infrastructure and are thus more likely to be assembled or redeveloped.
- Lots constructed to half or less than half the permitted floor area ratio (FAR) under proposed zoning.

Lots that are planned for development, such as the West Harlem Waterfront park as well as lots owned by the New York City Department of Parks and Recreation, were excluded from the evaluation. Sites that met one or more of the criteria were identified as soft for redevelopment and are called "projected development sites" in the DEIS. Table 4 presents the nine projected development sites with their existing and proposed uses, FARs, and reasonable worst-case development

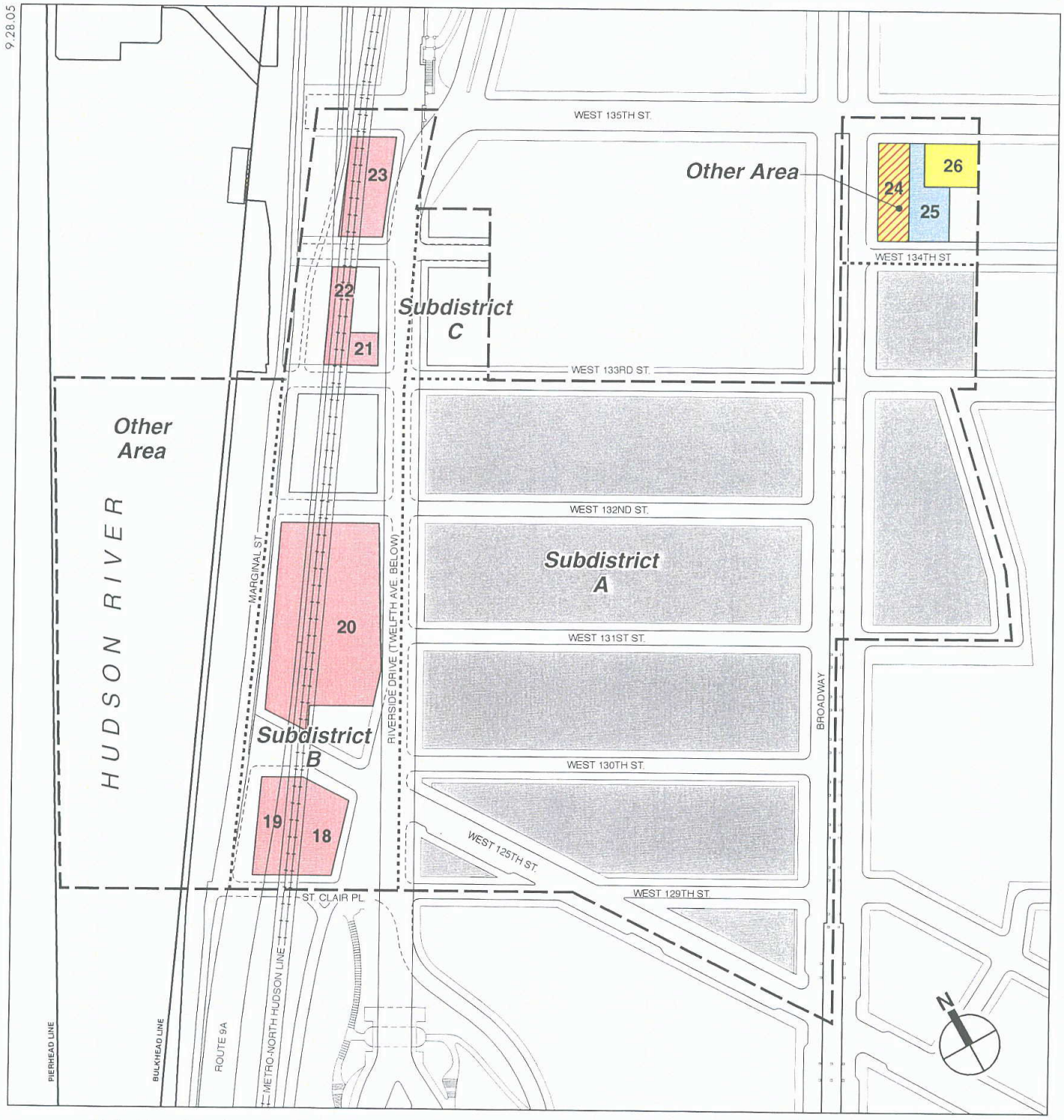


Figure 8

Subdistricts B, C, and the Other Areas: Reasonable Worst-Case Development Scenarios

MANHATTANVILLE IN WEST HARLEM REZONING AND ACADEMIC MIXED-USE DEVELOPMENT

Table 4

Subdistricts B, C, and the Other Areas: Reasonable Worst-Case Development Scenario

Site Description			Existing						Potential					
Site Ref[1]	Block: Lot(s)	Lot Area[2]	Existing Use	Existing Zoning District	Built FA	Built FAR	Permitted FA	Permitted FAR	Proposed Zoning District	Permitted FAR	Floor Area By Use (SF)	Floor Area Total (SF)	Incremental Development (SF)	Comments
Proposed Subdistrict B														
18	2004 12	12,196	Wholesale, auto repair	M1-2	24,392	2 0	24,392	2 0	C6-2	2 0	12,196 office 12,196 retail	24,392	0 0	Redeveloped as first floor retail, second floor office
19	2004 8	18,750	Warehouse, parking	M1-2	563	0 03	37,500	2 0	C6-2	2 0	18,750 retail	18,750	18,188	Only enough clearance under highway overpass for one-story retail
20	2004 46, 50, 65, 68, 71, 72, 171	74,800	Commerical, warehouse, and vacant lots	M2-3	26,180	0 35	149,600	2 0	C6-2	2 0	74,500 retail 35,000 office	109,800	83,620	Lot Area 35,000 sf east of highway overpass and 39,800 sf under highway overpass Redeveloped as first floor retail and second floor office east of overpass and one-story retail west of overpass
21	2005 12	4,312	Auto repair	M1-1	4,312	1 0	4,312	1 0	C6-2	2 0	4,312 retail 4,312 office	8,624	4,312	Redeveloped as first floor retail and second floor office
22	2005 9	17,125	Storage, vacant	M1-1	17,960	1 0	17,125	1 0	C6-2	2 0	11,138 retail	11,138	-6,822	Existing storage building to remain Vacant area below overpass redeveloped as one-story retail (17,960 sf)
23	2005 32	15,670	Warehouse with billboard and vacant areas	M1-1	3,000	0 2	15,670	1 0	C6-2	2 0	3,300 retail 3,300 office	6,600	3,600	Lot Area 3,300 sf east of highway overpass Redeveloped as first floor retail and second floor office Low headroom and lack of access to develop under highway overpass Existing warehouse would not expand since needed for billboard to advertise along highway
	Subtotal				**76,407**		**248,599**					**179,304**	**102,898**	
Other Area East of Broadway														
24	1988 1	17,985	Grocery store, storage	M1-2	42,120	2 3	35,970	2 0	R8A/C1-4 overlay	6 02 Res 1 0 Comm	17,985 retail 121,451 res	139,436	97,316	Redeveloped as residential with ground floor retail
25	1988 60	9,492	Health Center	M1-2	18,829	2 0	18,984	2 0	R8A	6 5 Com Fac , 6 02 Res	61,698 community facility	61,698	42,869	Health center associated with New York-Presbyterian which has long term lease Could potentially expand in size to maximum 6 5 FAR for community facility uses
26	1988 53[3]	15,987	Office	M1-1, R7-2	43,000	2 7	70,982	1 0 (M1-1) 3 44 (R7-2)	R8A /R7-2 (existing)[3]	6 02 (R8), 3 44 (R7-2)	88,819 res	88,819	45,819	Eastern portion of lot is developed to 3 44 FAR for residential use in the existing R7-2 district and western portion of the lot is developed to 6 02 FAR for residential use in the proposed R8A district Use additional 11,912 floor area available from adjacent Lot 8
	Subtotal				**103,949**		**125,927**					**289,953**	**186,004**	
	TOTAL				**180,356**		**374,526**					**469,257**	**288,902**	

Notes

FA = floor area

There are no projected development sites in Subdistrict C

1 Site reference corresponds to Figure 8

2 Based on preliminary estimates of lot area from New York City Department of Finance's Real Property Assessment Database (RPAD) and calculated ZFA

3 Lot is split in two zoning districts The western portion of the lot is located in the Project Area in an M1-1 district, and the eastern portion is located in an R7-2 district outside of the Project Area As a result of the Proposed Action, the western portion of the lot would be rezoned to R8A, and therefore the entire lot could potentially be redeveloped for residential uses

4 Lot could receive 11,912 sf of additional floor area from adjacent lot (Lot 8), which is part of an existing residential building that would be rezoned to R8A

5 Future without the Proposed Action condition is anticipated to be a continuation of existing conditions

Subdistrict B. All lots in proposed Subdistrict B meet one or more of the criteria. Lots in common ownership on the same block were assembled into one projected development site. In total, six sites are considered projected development sites in proposed Subdistrict B. The proposed zoning for Subdistrict B would not allow any residential development; commercial and community facility development would be limited to a maximum of 2 FAR. Therefore, retail and office development at the proposed maximum 2 FAR requirement is identified as the reasonable worst-case development scenario for the projected development sites in Subdistrict B.

Development in Subdistrict B would also be limited by a height restriction to remain below the height of the Riverside Drive viaduct. The low clearance of the Henry Hudson Parkway overpass also does not allow for any development greater than one story in much of this area. Therefore, due to the height limitations and overpass constraints, the projected development sites could only accommodate two stories of development on the east side of the overpass and one story beneath the overpass. It is likely that development would take the form of ground-floor retail with second-floor office space on the east side of the overpass and ground-floor retail beneath the Henry Hudson Parkway overpass. This form of commercial development along Twelfth Avenue is also consistent with the recommendations of the West Harlem Master Plan and would complement both the proposed West Harlem Waterfront park to the west and the active ground-floor uses proposed for the Academic Mixed-Use Area streetfront uses along the east side of Twelfth Avenue. In total, Subdistrict B could accommodate approximately 179,304 sf of new commercial development (office and retail) on six projected development sites.

Subdistrict C. The portion of proposed Subdistrict C located in the Project Area to the east of Twelfth Avenue between West 133rd Street and just north of West 134th Street does not contain any lots that meet the criteria described above. All lots are overbuilt (built to a higher than permitted FAR) under the current zoning requirements and would also be built to more than half the FAR under the proposed zoning requirements.

Other Areas. Three lots to be designated as "Other Areas" in the proposed Special Manhattanville Mixed-Use Zoning District are considered projected development sites. The three lots located east of Broadway between West 134th and West 135th Streets are identified as projected development sites for community facility and residential uses. Projected Development Site 24 could be redeveloped for approximately 121,451 square feet of residential development and 17,985 square feet of ground- floor retail (as allowed by the proposed C1-4 commercial overlay district proposed for this lot). Projected Development Site 25. which currently contains a community health center, could be expanded with additional floor area.

Projected Development Site 26 is located in two zoning districts. The eastern portion of the lot is located in an R7-2 district, and the western portion of the lot, in the Project Area, would be rezoned to R8A. As a result of the proposed rezoning, it is possible that the entire lot would be redeveloped for residential purposes. In addition, Projected Development Site 26 could receive additional floor area from adjacent Lot 8, which is not identified as a projected development site. Lot 8 is currently zoned M1-1 but is part of a larger residential building, with the remainder of the building located in an R7-2 zone to the east. The Proposed Actions would rezone Lot 8 to an R8A district, which allows 6.02 FAR for residential uses. With the proposed R8A district, the lot contains floor area below the maximum 6.02 FAR. Therefore, the additional residential floor area could be transferred to the adjacent Projected Development Site 26.

All the lots west of Marginal Street to be designated as "Other Area" in the proposed Special Manhattanville Mixed-Use Zoning District are planned to be developed as the West Harlem Waterfront park, and are therefore not considered projected development sites.

Reasonable Worst-Case Development Scenario: Project Area Summary

As shown in Table 5, the reasonable worst-case development scenario to be studied in the EIS assumes that in 2015, there will be approximately 1.5 million gsf of new development in the Project Area, with nearly 1 million gsf attributable to the Academic Mixed-Use Development/ Subdistrict A, and approximately 0.47 million gsf attributable to Subdistrict B and Other Areas. Over the long-term, the reasonable worst-case development scenario assumes that development in Subdistrict A will increase to approximately 6.8 million gsf, for a total of approximately 7.3 million gsf in the overall Project Area.

Table 5

Project Area Reasonable Worst-Case Development Scenario

Proposed Manhattanville Mixed-Use Zoning Subdistrict	2015 (Gross Square Feet)	2030 (Gross Square Feet)
Subdistrict A		
Community Facility Uses		
Research	391,508[1]	2,638,234[2]
General or other academic	541,969[3]	1,318,708[4]
Housing for graduate students, faculty, and other employees	0	725,928
Recreation		344,204[4]
Commercial Uses		
Active ground-floor uses	76,925	160,216
Support Uses		
Parking	0	905,544
Centralized steam and chilled water plants	35,475	58,732
Mechanical/circulation/loading facilities	173,928	480,681
Storage	98,363	199,178
Subtotal	**1,318,168**	**6,831,425**
Subdistrict B		
Commercial Uses		
Retail	124,496	124,496
Office	54,808	54,808
Subtotal	**179,304**	**179,304**
Subdistrict C[5] Subtotal	**0**	**0**
Other Areas		
Residential (232 units)	210,270	210,270
Retail	17,985	17,985
Community facility	61,698	61,698
Subtotal	**289,953**	**289,953**
Total	**1,462,052**	**7,300,682**

Note:

1 The total gsf for research includes 72,608 gsf of below-grade support facilities.

2 The total gsf includes 342,593 gsf of below-grade support facilities.

3. The reasonable worst-case development scenario assumes the development of Sites 1-4 by 2015. Compared with the Illustrative Plan, this includes an additional 335,356 gsf of academic space on Sites 1 and 4.

4 The total gsf for recreation includes 110,324 gsf for the below-grade swimming and diving center.

5. There are no projected development sites in Subdistrict C.

ANALYSIS YEARS

As previously described, the Academic Mixed-Use Development is intended to accommodate Columbia's need for long-term growth. For purposes of analyzing the reasonable worst-case development scenario for the proposed Academic Mixed-Use Development, it is assumed that this development would take place incrementally over a 25-year period. The specific long-term development schedule beyond 2015 has not been defined by Columbia at this time, but the Academic Mixed-Use Development is conservatively assumed to be fully built out by 2030. Accordingly, two analysis years, 2015 and 2030, have been selected for EIS purposes.

For the purposes of evaluating any development that would occur outside the Academic Mixed-Use Area in Subdistricts B, C, and the Other Areas of the Project Area, it is conservatively assumed that any development would occur by 2015. Conditions in each analysis year "with the Proposed Action" will be evaluated against conditions in the analysis year "without the Proposed Actions."

The future without the Proposed Actions condition will provide a baseline condition that will be evaluated and compared to the incremental changes due to the Proposed Actions. The future without the Proposed Actions conditions will be assessed for the same analysis years as the Proposed Actions—2015 (and 2030 for the Academic Mixed-Use Development).

The future without the Proposed Actions condition will use existing conditions as a baseline and add to it changes known or expected to be in place at various times in the future. For many technical areas, the future without the Proposed Actions condition incorporates known development projects that are likely to be built by the analysis years. This includes development currently under construction, or which can be reasonably anticipated due to the current level of planning and public approvals. The future without the Proposed Actions analyses of some technical areas, such as traffic, use a background growth factor to account for a general increase expected in the future. Such growth factors may also be used in the absence of known development projects. The future without the Proposed Actions analyses must also consider other future changes that will affect the environmental setting. These could include technology changes, such as advances in vehicle pollution control and roadway improvements, and changes to City policies, such as zoning regulations.

2015 Analysis Year

Future Without the Proposed Actions For purposes of the most conservative analysis, the future without the Proposed Actions in the Project Area is anticipated to be a continuation of existing conditions with the exception of two known projects. One, which follows the recommendations made in the 2002 West Harlem Master Plan within the Project Area, is the West Harlem Waterfront park. This EDC project, which is currently underway, is projected to be completed in 2007. It is therefore included in the 2015 analysis year. The open space, between St. Clair Place and West 133rd Street, will include walking and biking paths, an excursion pier to allow docking for excursion and ferry boats, a recreation pier, an ecological platform, and several passive recreation areas, such as lawns and sitting areas. The open space will also include traffic calming measures and streetscape improvements on Marginal Street. In coordination with the master planning effort, the City proposes to improve several intersections in the Project Area along West 125th Street and on Twelfth Avenue as well as improvements to the streetscape from Old Broadway to Marginal Street. The other project is Columbia's plan to convert and renovate the former Studebaker Building on West 131st Street to administrative uses for the University.

Outside the Project Area, Columbia expects to develop the property in its control south of West 125th Street in accordance with current zoning regulations. Because this development would occur

independently of the proposed rezoning and would not require City or State approvals, this as-of-right development will be analyzed in the future without the Proposed Actions condition and is not part of the Academic Mixed-Use Development. Columbia currently owns and occupies Prentis Hall, 628–644 West 125th Street, with approximately 91,000 gross square feet (gsf) of academic space. By the 2015 analysis year, Prentis Hall may be enlarged to include an additional floor of approximately 17,000 gsf of additional academic space. In addition, the low-rise portion of 560 Riverside Drive along West 125th Street will be renovated to provide a building entrance in this location. Columbia also proposes to develop an approximately 172,000-gross-square-foot academic building at the southwest corner of Broadway and West 125th Street.

Future with the Proposed Actions. Construction of the Academic Mixed-Use Development in Subdistrict A would occur from 2005 to 2030, beginning along the north side of West 125th/West 129th Street to complement Columbia's as-of-right development on the south side of West 125th Street (see Figure 7 for the location and numbering of the development sites). During this time, Columbia would also renovate several existing structures in the Academic Mixed-Use Area to operate them for interim uses prior to the time when the sites require demolition for the remainder of the development.

By 2015, it is projected that four new buildings would be developed on the north side of West 125th Street: three academic buildings and one research building under the reasonable worst-case development scenario. Development by 2015 would also include 0.8 acres of privately owned, publicly accessible open space. To allow for subsequent phases, this open space would later be closed to allow construction of the below-grade facility north of West 130th Street. In combination with as-of-right development on the south side of West 125th Street and the City's plan for intersection improvements, this initial phase of development is intended by Columbia to transform the streetscape of West 125th Street as an important corridor providing access to the new waterfront park.

It is possible that permitting residential uses under the Proposed Actions in Subdistrict A may result in interim residential conversions. The EIS will identify potential locations for such conversions, but it is not expected that these conversions would constitute a substantial amount of new residential use.

Although the specific timeframe for development under the reasonable worst-case development scenario for Subdistrict B, and Other Area is not known at this time, 2015 is conservatively assumed for analysis purposes. It is anticipated that redevelopment along the west side of Twelfth Avenue would occur within a timeframe that follows and builds upon the development of the adjacent West Harlem Waterfront park.

2030 Analysis Year

Future Without the Proposed Actions. By 2030, the future without the Proposed Actions in the Project Area is anticipated to be a continuation of the 2015 future without the Proposed Actions conditions. As described above, no specific developments have been identified in the study area for completion by the 2030 analysis year.

Future with the Proposed Actions. Between 2015 and 2030, under the reasonable worst-use development scenario, it is projected that an additional six research buildings, three academic buildings, two buildings with housing for graduate students, faculty, and other employees, and one recreation facility would be developed within the Academic Mixed-Use Area. As noted, the EIS assumes that all development projected in Subdistrict B and Other Areas would be complete by 2015.

F. SCOPE OF WORK

The EIS for the Manhattanville in West Harlem Rezoning project will be prepared pursuant to New York City Environmental Quality Review (CEQR) and the *CEQR Technical Manual*. It will also be prepared in accordance with the State Environmental Quality Review Act (SEQRA). The environmental review provides a means for decision-makers to systematically consider environmental effects along with other aspects of project planning and design, to evaluate reasonable alternatives, and to identify, and mitigate where practicable, any significant adverse environmental impacts. The CPC will act as the lead agency for CEQR review.

The first step in preparing the EIS document is the public scoping process. "Scoping," or creating the scope of work, is the process of focusing the environmental impact analysis on the key issues that are to be studied in the EIS. The proposed scope of work for each technical area to be analyzed in the Manhattanville in West Harlem Rezoning EIS follows. Analyses will be conducted for two Build years: Phase I Build year of 2015, when the first phase of development (parcels on West 125th, 129th, 130th, and 131st Streets) is anticipated to be constructed, and 2030, when the full build-out of the Academic Mixed-Use Area is expected to occur (see Figure 7).

TASK 1. PROJECT DESCRIPTION

The first chapter of the EIS will introduce the reader to the Proposed Actions and set the context in which to assess impacts. The chapter will contain a project identification (brief description and location of the Proposed Actions), a statement of purpose and need for the Proposed Actions, a detailed description of the Proposed Actions and development program, and discussion of the approvals required, procedures to be followed, and the role of the EIS in the process. The chapter is the key to understanding the Proposed Actions and their impact, and gives the public and decision-makers a base from which to evaluate the Proposed Actions against both Build and No Build options.

TASK 2. FRAMEWORK FOR ANALYSIS

This chapter will discuss the framework for the analyses for the EIS. It will identify the analysis years and project phasing, and describe the reasonable worst-case development scenarios that will be assessed in the EIS. For the Academic Mixed-Use Area, a reasonable worst-case development scenario has been established for most of the technical areas. However, the reasonable worst-case development scenario will vary for several tasks, based on a range of minimum and maximum floor area. The chapter will also describe the reasonable worst-case development scenario for the areas outside the Academic Mixed-Use Area in the Project Area (Subdistricts B, C, and the Other Areas), including the criteria for identifying projected development sites and anticipated uses under the rezoning.

TASK 3. LAND USE, ZONING, AND PUBLIC POLICY

The Proposed Actions would directly affect the land use on approximately 17 acres of land in the Manhattanville section of West Harlem. The land use, zoning, and public policy analysis will assess the potential impacts of the expected changes in land uses resulting from the Proposed Actions. The analysis will evaluate impacts within the Project Area and defined primary and secondary land use study areas. The land use assessment will include a description of existing conditions and evaluations of future with the Proposed Actions and future without the Proposed Actions conditions in 2015 and 2030. The analysis will describe any potential impacts on land

use resulting from the implementation of the Academic Mixed-Use Development and the rezoning of Subdistricts B, C, and the Other Areas.

The study area for land use, zoning, and public policy analysis encompasses the region within roughly a ½-mile of the Project Area, a distance that, based on *CEQR Technical Manual* guidelines, defines the area in which the Proposed Actions could reasonably be expected to create potential direct and indirect impacts. The specific boundaries also account for large physical barriers, such as City College and St. Nicholas Park, which delineate the eastern boundaries of the study area, and the addition of areas to the north and south based on geographical proximity and accessibility to the Project Area. The study area is further divided to create a primary study area, within a ¼-mile radius, where effects of the Proposed Actions are likely to be the most direct, and a secondary study area covering the blocks within a ¼- to roughly ½-mile distance from the Proposed Actions (see Figure 9). Tasks include:

A. Provide a detailed description of existing land use in the Project Area and the primary study area. This task will be closely coordinated with the socioeconomic conditions analysis, which will provide qualitative and quantitative assessments of the Proposed Actions and rezoning development scenario's effects on businesses and employment. Recent land use trends in the study area will also be identified and noted. Additionally, land uses sensitive to changes in environmental conditions, i.e., noise levels or air quality, will be identified. These may include housing, hospitals, schools, places of worship, and parks.

B. Identify, describe and graphically portray predominant land use patterns in the land use study areas based on existing studies, information included in existing geographic information systems (GIS) for the area, and field surveys. Recent land use trends and major factors influencing land use trends will be described based, as applicable, on discussions with public or private agencies and local real estate brokers.

C. Provide a brief development history of the Project Area and study areas.

D. Describe and map existing zoning and recent zoning actions in the study areas.

E. Describe other public policies that apply to the Project Area and the study areas, including specific development projects and plans for public improvements.

F. Prepare a list of future development projects in the study areas that could affect future land use patterns and trends by 2015 and 2030. Also, identify pending zoning actions or other public policy actions that could affect land use patterns and trends as they relate to the Proposed Actions. Based on these changes, assess future conditions in land use zoning in the future without the proposed action

G. Assess impacts on land use and land use trends and public policy resulting from the activities with the Proposed Actions, and provide assessments of the compatibility of the Proposed Project with surrounding land use, the consistency of the Proposed Actions with recognized public policies, such as the New York City Comprehensive Waterfront Revitalization Plan, 197-a Plans, zoning, and other identified public policies. This assessment will include the effect of the loss of manufacturing zoning and the effect of the proposed action on existing conditions and ongoing development in the primary study area.

H. Assess the potential land use changes in the primary and secondary study areas based on the future land use trends. Analysis of these trends will include various combinations of project elements that could reasonably be expected to be developed.

I. In coordination with the analysis of socioeconomic conditions, address the potential for the Proposed Actions to influence land use trends and development in the secondary study area.

TASK 4. SOCIOECONOMIC CONDITIONS

According to the *CEQR Technical Manual*, a socioeconomic assessment should be conducted if an action is reasonably expected to create substantial socioeconomic changes within the area affected by the action that would not be expected to occur absent the action (Section B, 200). The Proposed Actions could lead to direct displacement of residences, businesses, institutions, or employment. The Proposed Actions also could result in substantial new development that is markedly different from existing socioeconomic conditions, which could lead to significant secondary or indirect displacements. Given these potentially significant impacts, an analysis of the potential changes in socioeconomic conditions will be conducted. In addition, an assessment of the fiscal and economic benefits of the Proposed Actions will be provided.

While direct displacement would be limited to the Project Area, the Proposed Actions could have indirect or secondary displacement effects that extend beyond the Project Area into adjacent neighborhoods. Therefore, three study areas will be examined: the Project Area, consisting of the Academic Mixed-Use Area and all other areas to be rezoned; and two larger, approximately ¼- and ½-mile study areas—the primary socioeconomic study area and secondary socioeconomic study area, respectively—that include the adjoining neighborhoods (see Figure 10). As per the *CEQR Technical Manual*, these study areas are patterned on those being used to evaluate the project's effects on land use, zoning, and public policy (see Task 3) though the boundaries of the primary socioeconomics study have been adjusted from the strict ¼-mile boundary delineation to better reflect census tract boundaries. The primary study area is where effects of the Proposed Actions are likely to be more direct, with the secondary study area assumed to have lesser effects.

The analysis will follow the guidelines of the *CEQR Technical Manual* and will include the identification of significant impacts and accompanying mitigation strategies, where appropriate and feasible. According to the *CEQR Technical Manual*, the five principal issues of concern with respect to socioeconomic conditions are whether the proposed actions would result in significant impacts due to:

1) direct residential displacement in the Project Area;

2) direct business and institutional displacement in the Project Area;

3) indirect residential displacement in the primary and secondary study areas;

4) indirect business and institutional displacement in the primary and secondary study areas; and

5) adverse effects on a specific industry.

In conformance with *CEQR Technical Manual* guidelines, the assessment of these five areas of concern will begin with a preliminary screening analysis. Detailed assessments will be conducted for those areas in which the preliminary assessment can not definitively rule out the potential for significant adverse impacts. The detailed assessments will be framed in the context of existing conditions and evaluations of the future with the Proposed Actions and the future without the Proposed Actions in 2015 and 2030.

The assessments will consider a reasonable worst-case development scenario developed specifically for the socioeconomic conditions assessments. The socioeconomic conditions

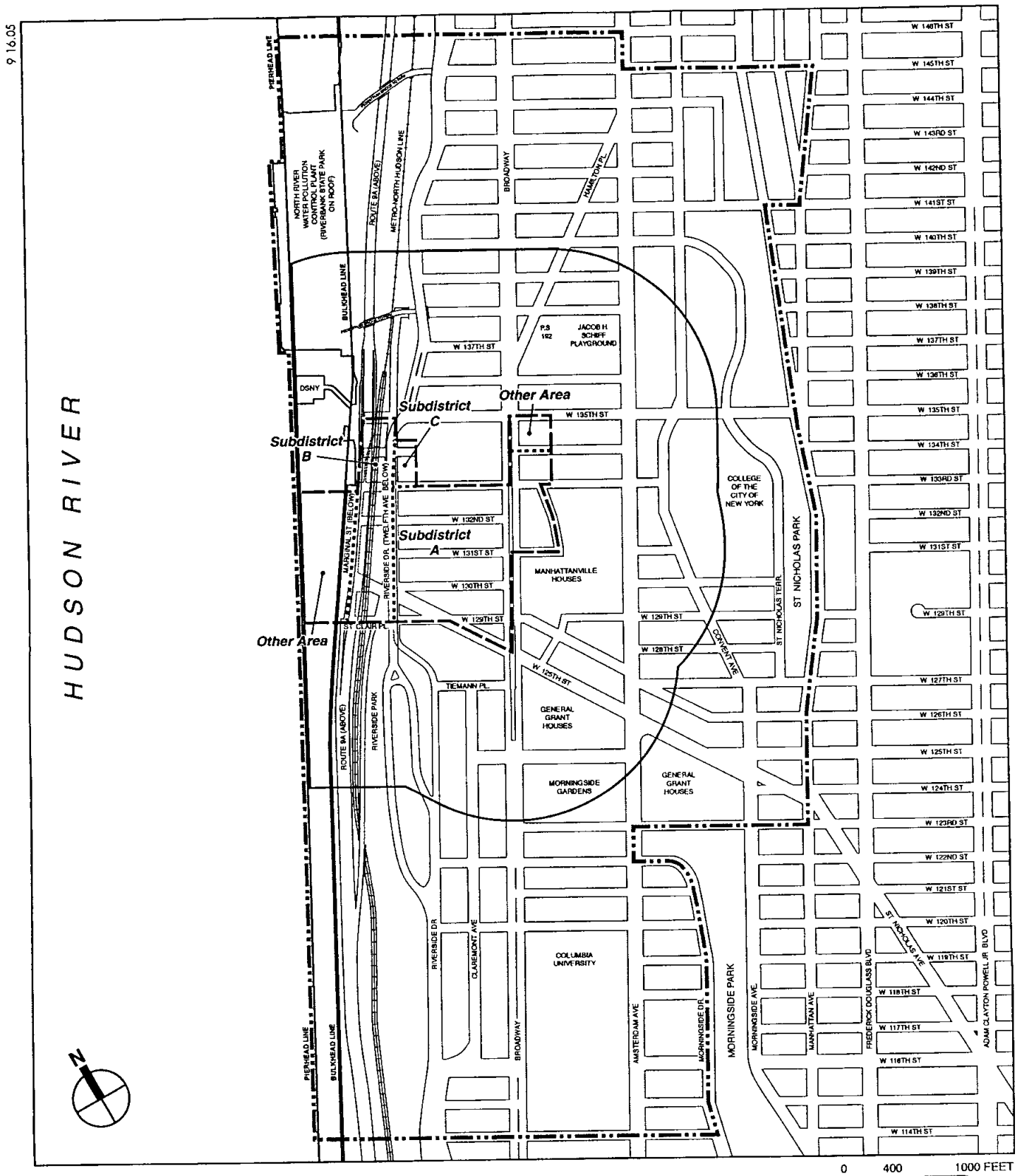


Figure 9
Land Use Study Area

MANHATTANVILLE IN WEST HARLEM REZONING AND ACADEMIC MIXED-USE DEVELOPMENT

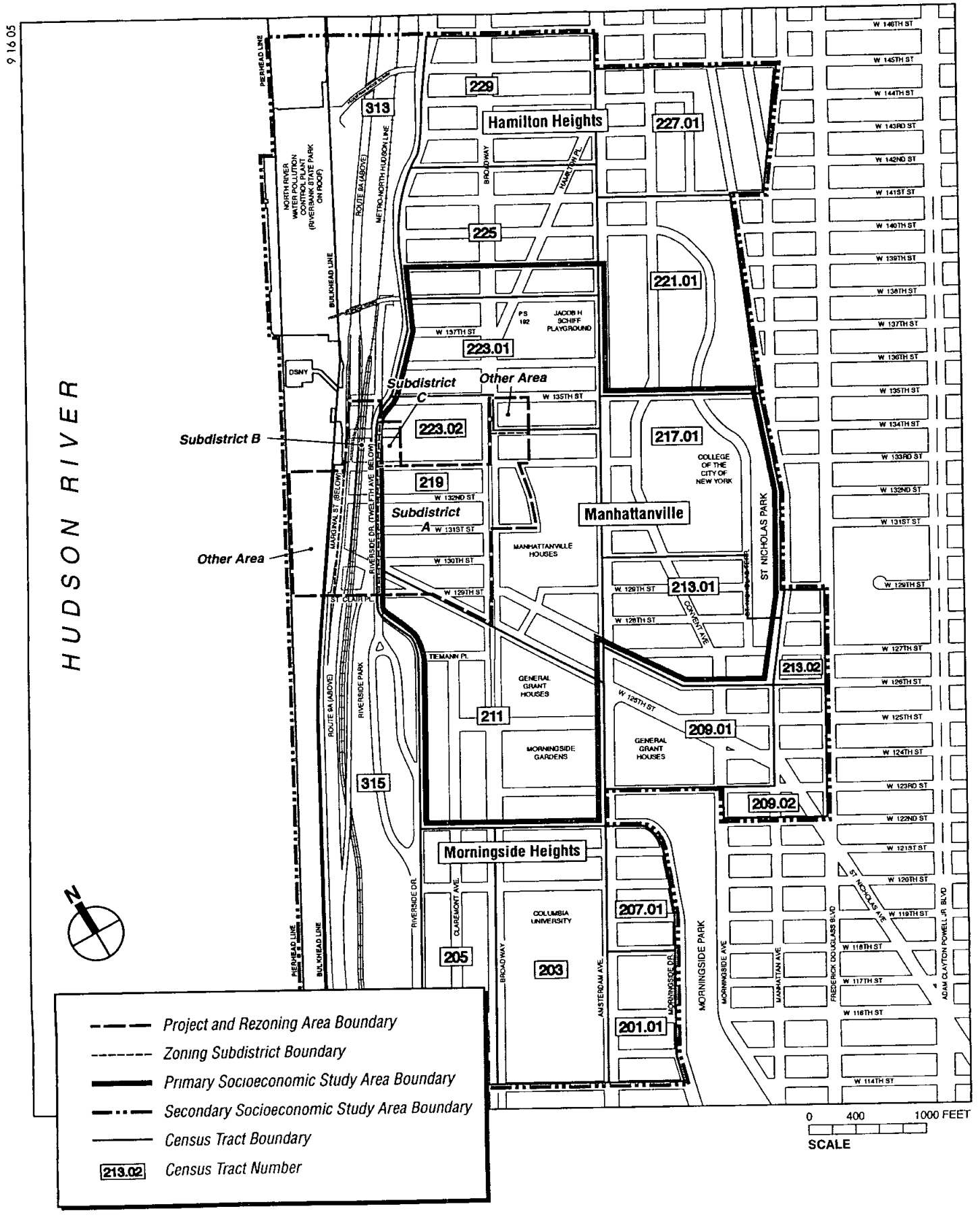


Figure 10
Socioeconomic Study Area

reasonable worst-case development scenario will maximize the amount of potential institutional science facility space and commercial ground-floor (retail) space, and minimize housing for graduate students, faculty, and other employees and private commercial research space. This combination of uses would generate the greatest potential off-site demand for housing and commercial research space, which in turn would maximize potential indirect residential and business displacement pressures. Direct displacement is unaffected by variations in the types of uses considered for a worst-case scenario.

The analytical approach to assessing potential socioeconomic impacts is outlined below. Demographic and economic studies and field investigations will be used to describe existing socioeconomic conditions in the Project Area and within the primary and secondary study areas. These studies will include descriptions of:

- Residential population, households, income, and age, based on Census data from 1980, 1990 and 2000;
- Housing characteristics, including trends in rents, sales prices, vacancy, and tenure; and
- Types of business and industries currently located in the Project Area and in the study areas.

In conjunction with the land use task, specific development projects that would occur in the primary and secondary study areas in the future without the Proposed Actions will be identified, as well as the likely changes in socioeconomic conditions that would result, such as potential increases in population, changes in the demographic characteristics of the study areas, new residential developments, changes in rents or sales prices of residential units, new commercial or industrial uses, or changes in employment or retail sales.

DIRECT RESIDENTIAL DISPLACEMENT

The Proposed Actions have the potential to result in the direct displacement of residences in the Project Area. The analysis of direct residential displacement will:

A. Identify the number of existing residents in the Academic Mixed-Use Area that would likely be directly displaced by the Proposed Actions and their demographic profile, including income, age, household characteristics, rents, or home values. The demographic characteristics will be determined to the fullest extent permitted by available data and field investigations.

B. Determine if displaced residents represent a sizeable portion of future population in the primary and secondary study areas (generally interpreted to mean greater than 5 percent), and that a population with a similar profile would not be able to relocate within the study areas.

C. Determine if the loss of existing population and the number of units to be displaced is substantial, and whether the loss would result in a significant change in the socioeconomic profile or housing character of the study areas.

D. Describe the type of relocation benefits that would be available to the displaced landlords, homeowners, and residential tenants. The analysis will consider the Uniform Relocation Act as it applies to direct displacement.

DIRECT BUSINESS AND INSTITUTIONAL DISPLACEMENT

The Proposed Actions have the potential to directly displace several existing economic uses in the Project Area. The analysis of direct business and institutional displacement will:

A. Identify the number of employees and number and types of businesses in the Project Area that would likely be relocated, and ultimately displaced by the Proposed Actions. Describe the demographic characteristics of employees to the fullest extent permitted by available data and field investigations.

B. Determine if any of the businesses to be displaced are a defining element of the character of the primary and secondary study areas, or if they have an important economic value to the City.

C. Assess whether the businesses to be displaced would be able to relocate within the study areas or elsewhere in the City.

D. Describe the likely effects of this direct business displacement on the character of the study areas.

E. Describe the type of relocation benefits that would be available to the displaced landlords, businesses, and employees.

INDIRECT RESIDENTIAL DISPLACEMENT

The objective of the indirect residential displacement analysis is to determine if the Proposed Actions would make the surrounding area more attractive as a residential neighborhood, leading to higher rents. Following the guidelines of the *CEQR Technical Manual*, the analysis of indirect residential displacement will:

A. Identify populations at risk of displacement by determining: (1) portion of the population below the poverty level, assuming they could not sustain significant increases in rents, and (2) portion of the population living in units not protected by rent control or rent stabilization regulations.

B. Determine if the Proposed Actions are introducing a new trend or accelerating a trend of changing socioeconomic conditions that would put the primary and secondary study area populations at risk.

C. Determine if the Proposed Actions would cause indirect displacement of existing residents in the study areas by introducing a new land use that would affect socioeconomic conditions. including the housing market, in the future compared with the No Build condition.

INDIRECT BUSINESS AND INSTITUTIONAL DISPLACEMENT

The objective of the indirect business and institutional displacement analysis will be to determine if the Proposed Actions would ultimately lead to higher rents or property values in commercial and industrial buildings in the primary and secondary study areas, causing existing businesses to relocate from the study areas, or from the City as a whole. The analysis assumes that under the reasonable worst-case development scenario, the Proposed Actions would result in development of the maximum amounts of potential institutional science facility space and commercial retail space, while minimizing all other community facility and commercial uses. Following the methodologies outlined in the *CEQR Technical Manual*, the analysis of indirect business displacement will:

A. Based on field surveys and employment data from the U.S. Census and/or New York State Department of Labor, identify and characterize conditions and trends in employment and businesses within the study areas.

B. Determine if the Proposed Actions would introduce a new type of economic activity that would change the existing economic patterns.

C. Determine if the Proposed Actions would introduce a new trend or accelerate an existing trend in converting commercial and industrial buildings to a different use, e.g., residential.

D. Determine if the Proposed Actions would add to the concentration of one economic sector that would change the existing economic patterns in the study areas.

SPECIFIC INDUSTRIES

Based on the guidelines in the *CEQR Technical Manual*, a preliminary assessment of the Proposed Actions' potential effects on specific industries will be performed to respond to the following issues:

A. Would the Proposed Actions significantly affect business conditions in any industry or category of businesses within or outside the study areas?

B. Would the Proposed Actions substantially reduce employment or impair viability in a specific industry or category of businesses?

The analysis will draw on the economic and real estate data compiled in assessing direct and indirect displacement impacts, as well as other published data, data from impacts analyses contained in other chapters of the DEIS, and field surveys, as appropriate.

ECONOMIC AND FISCAL BENEFIT ANALYSIS

Although not required by the *CEQR Technical Manual*, the socioeconomic analysis will assess the fiscal and economic impacts of the Proposed Actions because of its size, proposed use, and likely contribution to the economic vitality of New York City. The analysis will be based on the IMPLAN (IMpact Analysis for PLANning) input-output modeling system, or similar model.

Construction Period Benefits

The following benefits that would occur during the overall construction period in the City and the State will be estimated:

A. Direct employment (in full-time equivalents) created by the capital investment and indirect employment created by purchases of other goods and services during the construction period.

B. Wages and salaries generated by the direct and indirect employment.

C. Taxes generated during the construction period, including payroll taxes, corporate and business taxes, mortgage recording fees (if any), and miscellaneous taxes. Columbia University is exempt from sales tax, and therefore it is assumed that Columbia would not pay sales tax on construction materials.

D. The total economic output, or the total demand for goods and services created by construction of the project.

Operating Period Benefits

The following benefits that would occur annually in the City and the State after the project is fully developed will be estimated:

A. Direct or permanent employment (in full-time equivalents) and indirect employment, based on economic multipliers specific to the type of development.

B. Wages and salaries generated by the direct and indirect employment.

C. Direct taxes generated by the annual operation of commercial, institutional, and/or graduate students, faculty, and other employee housing development, including retail sales tax, hotel occupancy tax (if any), payroll taxes, corporate and business taxes, and miscellaneous taxes.

D. Taxes generated by indirect economic activity.

E. The total economic output, or the total demand for goods and services created by annual operation of the project.

TASK 5. COMMUNITY FACILITIES AND SERVICES

The demand for community facilities and services is directly related to the type and size of the new population generated by development resulting from the Proposed Actions. The Proposed Actions are not expected to directly cause the displacement of a police or fire facility. In addition, the project is not expected to introduce more than 600 low- to moderate-income residential units; therefore, a detailed assessment of healthcare facilities would not be required. The Proposed Actions are not expected to introduce more than 50 children eligible for day care (357 low-income or 417 low-moderate income residential units in Manhattan as identified in Table C, 3C-4 of the *CEQR Technical Manual*). Therefore, a detailed assessment of day care centers would not be required. Further, Columbia has its own security services for its buildings and campuses health care facilities for students, and extensive libraries. This chapter will provide an assessment of public schools and libraries in the area and how the Proposed Actions may affect their utilization.

SCHOOLS

This assessment will include the identification of public schools serving the Project Area, an assessment of conditions in terms of enrollment and utilization, identification of conditions that will exist in the future without the proposed action, and an evaluation of impacts by estimating the number of new students generated as a result of the Proposed Actions, relative to the available capacity that may exist in the future without the proposed action. The reasonable worst-case development scenario for the schools analysis will assume maximum housing for graduate students, faculty, and other employees.

LIBRARIES

The graduate student, faculty, and other employee housing component of the Proposed Actions is likely to result in an increased library user population As a result, the library branches most likely to serve the new residential population from the Proposed Actions will be identified and the impact on library services assessed.

TASK 6. OPEN SPACE

The Proposed Actions would provide for the creation of privately owned, publicly accessible open space in the Academic Mixed-Use Area. The *CEQR Technical Manual* recommends a detailed assessment of a project's effects on open space if a proposed action is expected to generate more than 500 employees or 200 residents, or a similar substantial number of other users. Since the Proposed Actions are expected to generate more than 200 residents and 500 employees, it will have an effect on the utilization of open space and recreational facilities in the surrounding area, and on the new privately owned, publicly accessible open space to be created. Therefore, a detailed assessment of the Proposed Action's effect on open space will be provided.

This section of the EIS will assess potential project effects on open space, including any direct or indirect impacts. A discussion of the open space added by the Proposed Actions will be provided. The reasonable worst-case development scenario for the open space analysis will assume minimum recreation, maximum housing for graduate students, faculty, and other employees and the maximum of other uses that generate the highest employment rates. Tasks for the open space analysis will include:

A. Given the Proposed Actions' introduction of new graduate students, faculty and other employees, workers, and residents to the Project Area, the analysis will consider both passive and active open space resources, requiring two study areas—one that considers the supply and demand for passive open space required by the non-residential population, including the non-resident graduate student/faculty/staff population, and one that considers the supply and demand for both passive and active open space required by the residential population, including the resident graduate student/faculty/staff population. Existing publicly accessible passive open space will be inventoried within two study areas: ¼-mile radius (non-residential population needs) and ½-mile radius from the Project Area (residential population needs). As recommended in the *CEQR Technical Manual*, the non-residential open space study area comprises all census tracts that have 50 percent of their area located within a ¼-mile of the Project Area and the residential study area includes all census tracts that have at least 50 percent of their area located within a ½-mile of the Project Area. Both study areas are adjusted for census tract boundaries, as shown in Figure 11. Active open spaces will also be inventoried for the residential study area. The condition and use of existing facilities will be described based on the inventory.

B. Prepare a demographic analysis of the commercial open space study area worker and residential population, and residential population in the residential open space study area, including information available from the 2000 Census.

C. Based on the inventory of facilities and worker population, calculate the open space ratios and compare these ratios to City guidelines to assess adequacy.

D. Assess expected changes in future levels of open space supply and demand in both 2015 and 2030 based on other planned development projects within the study areas. The analysis for future conditions will also consider the creation of new public open spaces in the study area, such as the adjacent waterfront park planned between St. Clair Place and West 133rd Street to the west of Marginal Way. Open space ratios will be developed for future conditions and compared with existing ratios to determine changes in future levels of adequacy; and

E. Based on the population added by the Proposed Actions, assess its effects on open space supply and demand. The assessment of impacts will be based on a comparison of open space ratios with the proposed action and its associated public space, and open space ratios in the

future without the Proposed Actions. The analysis will also consider, at least qualitatively, the recreational facilities provided by the Proposed Actions.

TASK 7. SHADOWS

The Proposed Actions will result in the creation of at least 16 new buildings in West Harlem/ Manhattanville. Therefore, an analysis of shadows will be prepared focusing on the relation between the incremental shadows created by the Proposed Actions' buildings on any sun-sensitive landscape or activities in the open spaces near the Project Area or any historic resources if the features that make the resources significant depend on sunlight. The reasonable worst-case development scenario for the shadow analyses will assume the maximum heights of the Academic Mixed-Use Development buildings, in relation to sun-sensitive uses, as presented in Table 3. These analyses will include the following tasks:

A. Identify sun-sensitive landscapes and historic resources within the path of the Proposed Actions' shadows. In coordination with a survey for the open space and historic analyses, map and describe any sun-sensitive areas. For open spaces, map active and passive recreation areas and features of the open spaces, such as benches or play equipment.

B. Prepare a three-dimensional CAD model of the Academic Mixed-Use Area including existing structures and topology as well as the proposed structures. The data for this model will come from Sanborn Fire maps, USGS topological data, surveys prepared as part of the project design, and other plans available for the Academic Mixed-Use Area.

C. Prepare shadow diagrams for time periods when shadows from the new buildings could fall onto publicly accessible open space as well as project-created open spaces. The analysis will also take into account any historic resources identified in Task 8 that may have significant sunlight-dependent features. These diagrams will be prepared for up to four representative analysis days if shadows from the proposed building would fall onto any of the open spaces on that day. The four analysis days:

   a. March 21—the vernal equinox, which is the equivalent of September 21, the autumnal equinox
   b. May 6—the midpoint between the vernal equinox and the longest day of the year, which is the equivalent to August 6—the midpoint between the equinox and the shortest day of the year
   c. June 21—the longest day of the year
   d. December 21—the shortest day of the year

D. Describe the effect of the incremental shadows on the publicly accessible open spaces based on the shadow diagrams for each of the analysis dates. Assess the effects of the Proposed Actions' incremental shadow compared with shadows expected under No Build conditions for both the 2015 and 2030 analysis years.

E. If vegetation or sun-sensitive activity areas will be covered by the Proposed Actions' increment for a significant amount of time, the duration of the Proposed Actions' increment will be compared with the amount of sunlight on those areas under No Build conditions.

TASK 8. HISTORIC RESOURCES

The area of Manhattanville where the Proposed Actions would be located contains a number of structures dating from the early to mid-20th century. These include known architectural

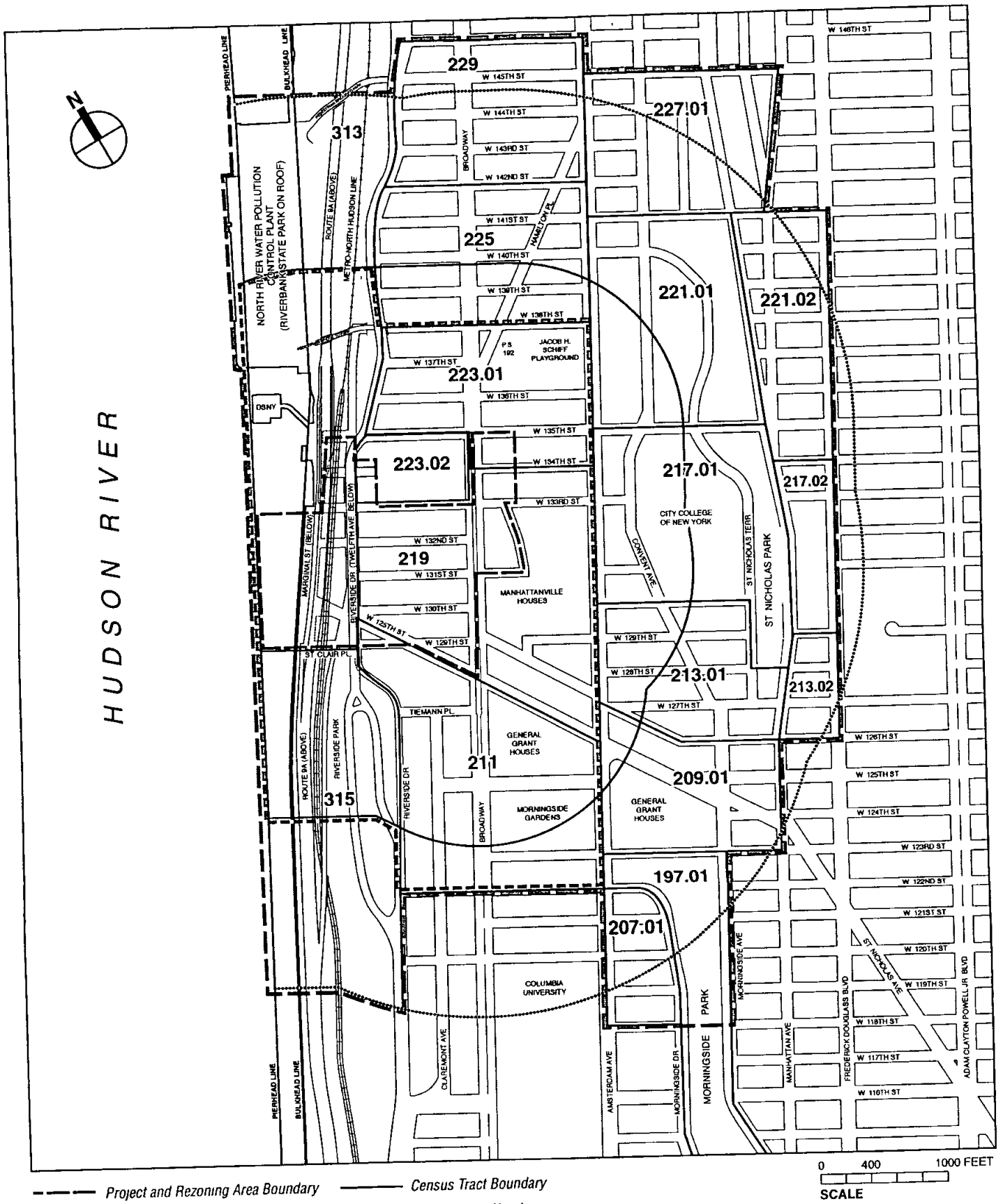


Figure 11
Open Space Study Area

MANHATTANVILLE IN WEST HARLEM REZONING AND ACADEMIC MIXED-USE DEVELOPMENT

resources, including the Manhattan Valley IRT Viaduct, the 125th Street Station, and former Sheffield Farms Stable at 3229 Broadway. As part of the EIS, research and consultation with the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) and the New York City Landmarks Preservation Commission (LPC) will be undertaken to identify buildings that appear to meet criteria for listing on the State and National Registers or designation as landmarks. In addition, any potential archaeological resources that could be affected by the Proposed Actions will be identified. The analyses will consider the potential effects of the Academic Mixed-Use Development and the rezoning of Subareas B, C, and D in the Project Area on historic resources.

The historic and archaeological resources analyses will include the following tasks:

A. Consult with LPC for their preliminary determination of the Project Area's archaeological sensitivity. Submit to LPC a Sanborn map, photographs, and any relevant material from Columbia University pertaining to prior construction disturbances in the Project Area. LPC will make recommendations regarding which portions of the Project Area have been disturbed and do not possess the potential for archaeological resources.

B. For portions of the Project Area that cannot be eliminated from further archaeological evaluation based on LPC's preliminary evaluation and OPRHP review and which may be sensitive for archaeological resources, a Stage 1A Archaeological Assessment will be prepared for review by LPC and OPRHP. The Stage 1A Archaeological Assessment will identify the potential of the Project Area to contain prehistoric and/or historic-period archaeological resources. It will provide a prehistoric and historical contextual overview in which to assess archaeological resources, a development history of the Project Area, an in-depth assessment of past disturbance, and the identification of any potential resource types and their potential significance that may be present on the Project Area. The conclusions of the Stage 1A Archaeological Assessment will be summarized in the EIS.

C. Map and briefly describe designated architectural resources within the study area (see Figure 12). These comprise National Historic Landmarks, properties listed on or determined eligible for listing on the State and National Register of Historic Places (S/NR, S/NR-eligible), New York City Landmarks (NYCLs), properties listed within New York City Historic Districts (NYCHD), and properties pending NYCL and NYCHD designation.

D. Field survey the Project Area and the study area to determine whether there are any potential architectural resources that could be impacted by the proposed action. Potential architectural resources comprise properties that may be eligible for listing on the S/NR and/or designation as a NYCL. Identification of potential architectural resources will be based on criteria for listing on the National Register as found in the Code of Federal Regulations, Title 36, part 60. Map and describe any identified architectural resources. In consultation with OPRHP and LPC, seek determinations of eligibility for any potential resources in the Project Area and study area that would be impacted by the Proposed Actions.

E. Based on planned development projects, qualitatively discuss any impacts on architectural and archaeological resources that are expected in the future without the proposed action.

F. Assess any direct physical impacts of the Proposed Actions on architectural and archaeological resources. In conjunction with the urban design task, assess the Proposed Actions' potential to result in any visual and contextual impacts on architectural resources.

G. Develop mitigation measures to avoid any adverse effects on architectural resources in consultation with LPC and ORPHP.

TASK 9. URBAN DESIGN/VISUAL RESOURCES

This section of the EIS will consider the effects of the Academic Mixed-Use Development and the rezoning of Subdistricts B, C, and the Other Areas on the urban design character on the Project Area and surrounding area (bounded by West 137th Street to the north, Lasalle Street to the south, the Hudson River to the west, and Amsterdam Avenue to the east). In addition, the analysis will consider the effects of the Proposed Actions on visual resources in the area, including Riverside Park, and views from the park and major roadways in the area, including Riverside Drive and the Henry Hudson Parkway. For Subdistrict A, the urban design and visual resources analysis will assess the reasonable worst-case development scenario in terms of proposed use-based building types and maximum building heights. The potential effects of the rezoning of Subdistricts B, C, and the Other Areas will be evaluated based on the projected development sites identified for the reasonable worst-case development scenario and as allowed by the proposed zoning regulations. The urban design and visual resources analysis will consist of the following tasks:

A. Based on field visits, describe the Project Area and the urban design and visual resources of the study area, using photographs and text as appropriate.

B. Based on planned development projects, describe the changes expected in the urban design and visual character of the study area that are expected in the future without the Proposed Actions.

C. Assess the potential changes in urban design and visual resources that could result from the Proposed Actions in the study area and evaluate the significance of those changes.

TASK 10. NEIGHBORHOOD CHARACTER

The character of a neighborhood is established by numerous factors, including land use patterns, the scale of development, the design of buildings, the presence of notable historic, physical, or natural landmarks, and a variety of other features, including traffic and pedestrian patterns, noise, and socioeconomic conditions.

Since most of these elements will already be covered in other sections of the EIS, this assessment will essentially represent a summary of the key findings of these other analyses. As appropriate, the neighborhood character assessment will incorporate the finding of the reasonable worst-case development scenario analyses for the other environmental sections of the EIS.

A. Drawing on other EIS sections, describe the predominant factors that contribute to defining the character of the area.

B. Based on planned development projects, public policy initiatives, and planned public improvements, summarize changes that can be expected in the character of the neighborhood in the future without the proposed action.

C. Drawing on the analysis of impacts on various other EIS chapters, assess and summarize the Proposed Actions' impacts on neighborhood character.

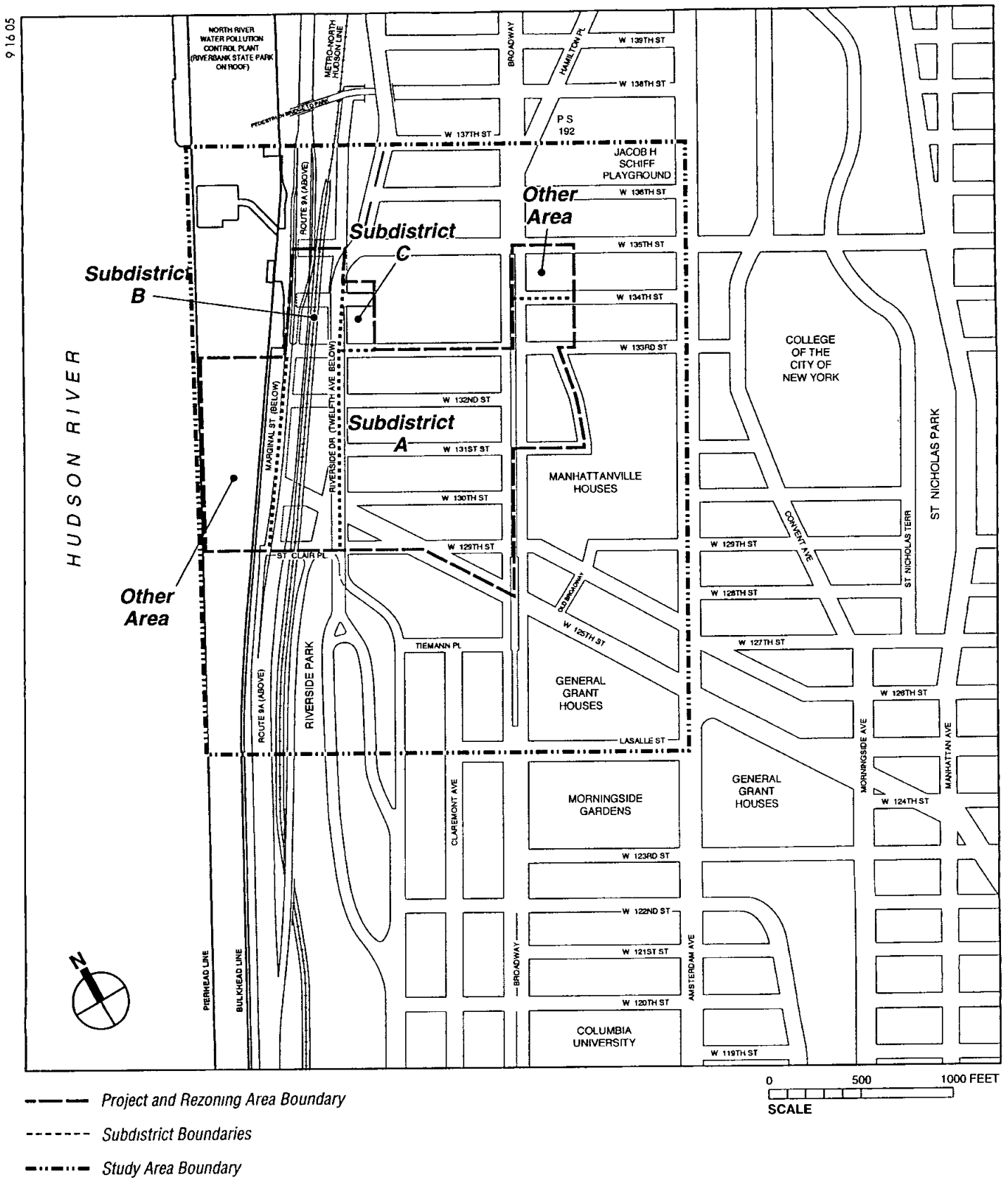


Figure 12

Historic Resources Study Area

MANHATTANVILLE IN WEST HARLEM REZONING AND ACADEMIC MIXED-USE DEVELOPMENT

TASK 11. NATURAL RESOURCES

The land portion of the Project Area is a largely impervious surface. Therefore, it has limited existing vegetation resources and consequently provides almost no habitat for wildlife. The proposed increase in grassed area has the potential to provide some habitat for wildlife. Increases in discharges from combined sewer overflows can potentially affect water quality and aquatic biota. Analyses performed in this chapter will:

A. Describe existing natural resources (plants, wildlife, threatened or endangered species, and floodplains) within the Project Area.

B. Provide a general description of aquatic resources of the Hudson River in the vicinity of the Proposed Actions, including water quality and aquatic organisms (plankton, macroinvertebrates, fish, and threatened or endangered species).

C. Assess potential effects to natural resources from the Proposed Actions, including the potential habitat provided by additional open space in 2015 and 2030.

D. Assess the potential effects to aquatic natural resources of the Hudson River (water quality and aquatic organisms) in the vicinity of the Proposed Actions associated with stormwater and sewage discharges to the combined sewer system from the Proposed Actions in 2015 and 2030.

TASK 12. HAZARDOUS MATERIALS

The Project Area has a variety of industrial uses, and, therefore, may contain a range of hazardous materials and other contaminants. Also, construction of the below-grade space would involve extensive excavation of the area's streetbeds. The hazardous materials analysis in the EIS will consider whether hazardous or contaminated materials potentially exist in the Project Area, whether they would be disturbed during construction, whether they would persist in the area after development (posing a threat to workers, visitors, and residents at the development), and whether E-designations[1] are warranted on parcels not presently controlled by Columbia University. It is anticipated that subsurface investigations and/or remediation will need to be performed at properties within the Project Area prior to redevelopment.

For the EIS, a preliminary environmental site assessment (PESA) will be performed for the entire Project Area. It will include an area-wide summary of topographical, geological and hydrogeological conditions from City and U.S. Geological Survey sources. For each site in the Project Area, the following tasks will then be undertaken:

A. A visual inspection of the property (from sidewalks and public rights-of-way) to identify uses and assess existing conditions, such as fill pipes, vent caps, transformer vaults, dumping and abandoned drums, or other evidence of petroleum usage or hazardous materials.

B. An evaluation of the land use history using available historical fire insurance maps going back to approximately 1900, if available.

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[1] Pursuant to Section 11-15 of the New York City Zoning Resolution, E-designations are applied to specific properties that could require remediation, should an owner seek to demolish, excavate, or otherwise construct on his/her property, and are denoted on the zoning map. DEP review of development on an E-designated property is required prior to the issuance of a permit from the New York City Department of Buildings

C. A review of U.S. Environmental Protection Agency and DEC databases regarding hazardous materials will be reviewed for the sites in the Project Area and for the surrounding area. These records can assist in identifying the use, generation, storage, treatment, disposal, or release of hazardous materials and chemicals.

D. A review of available Phase I Environmental Site Assessment reports (Phase I ESA), subsurface investigation reports, or remedial reports.

E. For each site in the Project Area, a short narrative history will be written, highlighting environmental conditions on the site and, if appropriate, noting potential impacts from properties within or adjacent to the surrounding site. Recommendations for any necessary subsurface testing or remediation of contaminated materials, as well as measures to be followed during demolition/construction, will also be included.

In addition, for those sites currently owned or controlled by Columbia University, to the extent practicable, the PESA will also include an inspection of the interior of buildings. At these sites, if the potential for contamination is found in the PESA, then surface and subsurface investigations will be conducted to confirm the presence and extent of the contamination, and appropriate mitigation measures will be developed to eliminate, reduce to acceptable levels, or control any significant sources of contamination.

TASK 13. WATERFRONT REVITALIZATION PROGRAM

New York City's Local Waterfront Revitalization Program (LWRP) was adopted pursuant to several local, state, and federal regulatory programs relating to the coastal area. The Project Area is located within the designated boundaries of New York City's Coastal Zone (see Figure 13). The Proposed Actions will, therefore, be reviewed, as appropriate, for consistency with the LWRP. The study area for the LWRP evaluation will be the designated Coastal Zone boundary.

TASK 14. INFRASTRUCTURE

This chapter of the EIS will assess the additional demands the Proposed Actions would place on the infrastructure systems serving the area, including water supply, sanitary sewage, stormwater management, and telecommunication services. Internal infrastructure systems will also be described. These analyses will also address the appropriate treatment of liquid wastes generated by the proposed research laboratories that cannot be directly sent to the sewerage system. The analyses will be based on the maximum development plan that would place the greatest burden on the infrastructure system. This would typically include the largest possible residential development. The infrastructure analyses will include the following tasks:

A. The existing utilities under those streets below grade that are to be acquired will be described. The description will include size, capacity, and general location. Current deficiencies will be identified. Any special features, such as the existing Consolidated Edison cooling station, and other nearby infrastructure components with the potential to be affected by the Proposed Actions, such as the combined sewer system, will also be described. The planned utility relocations and new capacities will be described and illustrated. Measures to avoid impacts on the existing users during the relocation will be explained.

B. Project water demand for the Proposed Actions' 2015 and 2030 development phases to determine whether this demand would trip any threshold requiring additional analysis. The

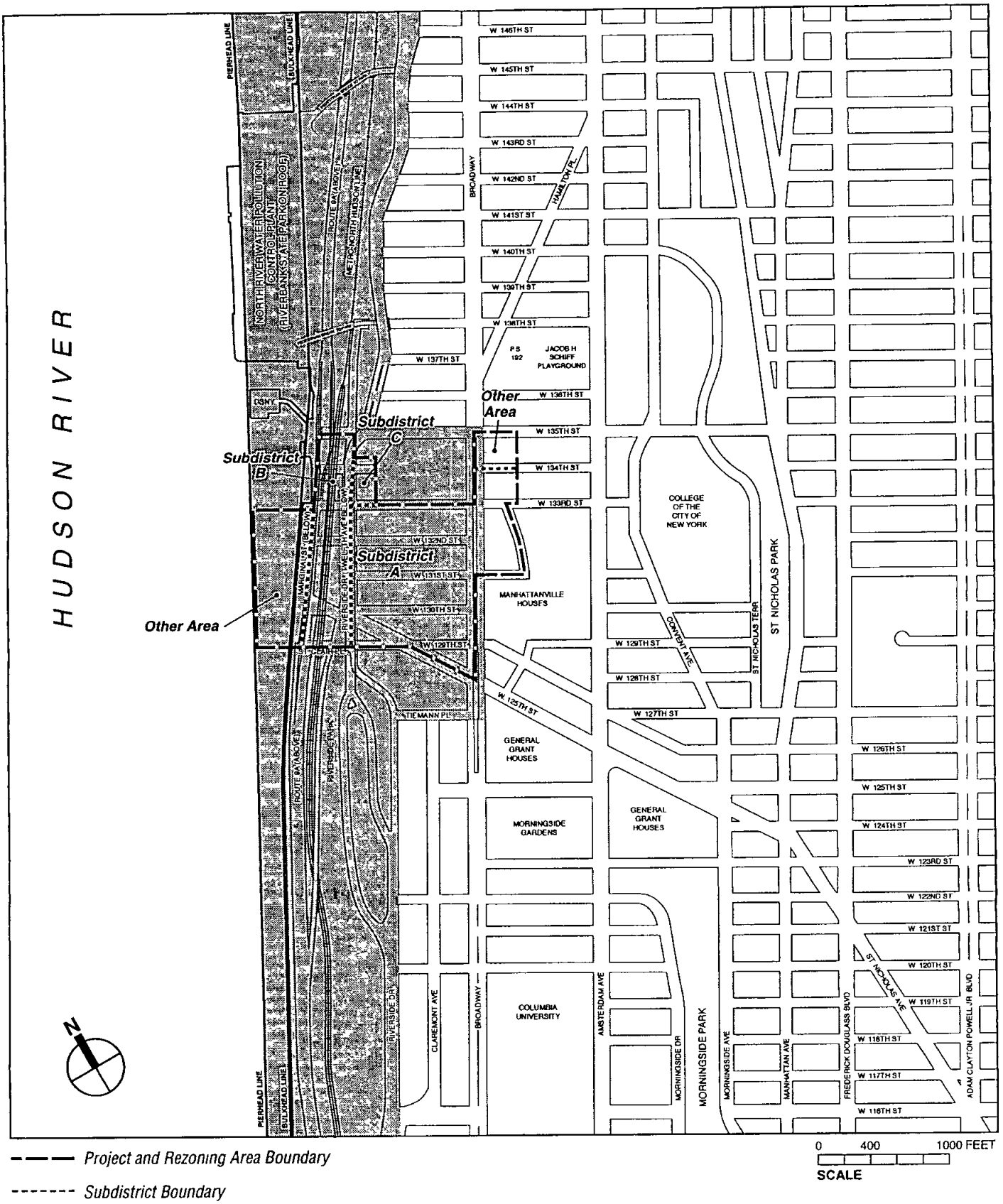

Figure 13

Waterfront Revitalization Program: Coastal Zone Boundary

MANHATTANVILLE IN WEST HARLEM REZONING AND ACADEMIC MIXED-USE DEVELOPMENT

ability of the new water lines to handle the existing and estimated additional demand will be assessed.

C. An estimate of sanitary sewage generation for the Proposed Actions' 2015 and 2030 development phases will be provided. The ability of the combined sewer system to handle the existing and estimated additional demand will be assessed The pretreatment system for certain laboratory liquid waste will be discussed, and the capability of the treated waste to meet DEP standards characterized.

D. Stormwater management and potential impacts to the combined sewer system will be discussed for the Proposed Actions' 2015 and 2030 development phases. The water quality in the vicinity of the Project Area will be described. Any expected changes due to other projects will be included.

E. The required telecommunication systems to support the new development as well as the existing uses will be described. The ability of the new utilities to handle the existing and estimated additional demand will be assessed.

TASK 15. SOLID WASTE AND SANITATION SERVICES

This chapter of the EIS will assess the additional demands the Proposed Actions would place on the solid waste disposal service. These analyses will also address the appropriate treatment of solid wastes generated by the proposed research laboratories that cannot be directly sent to the solid waste system. The analyses will be based on the maximum development that would place the greatest burden on the solid waste system. This would typically include the largest possible residential development.

Solid waste generation from the Proposed Actions' 2015 and 2030 development phases will be estimated to determine whether this demand would trip any threshold requiring additional analysis. Any special solid wastes that have to be separated from the normal solid waste will be discussed. The volume of this waste will be quantified, and the handling system described.

TASK 16. ENERGY

This chapter of the EIS will assess the additional demands the Proposed Actions would place on the energy supply. Green measures will also be described. The analyses will be based on the maximum development that would place the greatest burden on the energy system. This would typically include the largest residential development.

Based on square footage and proposed uses, the energy usage for the Proposed Actions' 2015 and 2030 development phases will be estimated. Any "green measures" to reduce energy consumption as well as the potential effect of the proposed centralized steam and chilled water plant on the energy supply and distribution system will be described. The effect of the new demand on the energy supply systems will be assessed. In addition, the ability of the new utilities to handle the existing and estimated additional demand will be assessed.

TASK 17. TRAFFIC AND PARKING

The EIS will contain a detailed assessment addressing the traffic and parking-related issues associated with the increased vehicular traffic resulting from the Proposed Actions. This study will include a description of existing conditions, projection of future transportation conditions, identification of potential adverse impacts, and recommendation of feasible mitigation measures.

Based on the uses that generate the highest number of trips, the reasonable worst-case development scenario for the traffic and parking analyses will assume maximum administration and research uses and minimum housing for graduate students, faculty, and other employees.

The traffic and parking studies will include the following tasks:

A. Conduct travel demand projections. Project trip generation estimates will be developed for each component of the Academic Mixed-Use Development—research, housing for graduate students, faculty, and other employees, administrative office, commercial office, retail, and recreational uses. These estimates will be based on the results of original travel questionnaires developed for the Proposed Actions, information provided by Columbia University, standard references, the *CEQR Technical Manual* and a review of rates developed for similar uses from previous studies, such as the *Columbia University School for Social Work, Audubon Research Park, Metrotech, Rockefeller University Projects, and East River Science Park*. The estimated daily trips will be distributed for the weekday AM, midday, and PM peak hours by travel mode. The peak hour trips by mode will then be assigned to the available modes of transportation. Trips associated with No Build projects will also be estimated. To develop the reasonable worst-case development scenario, these estimates will be applied to a unit of development area and distributed to different travel modes and analysis peak periods. The resulting peak hour volumes will then be ranked from highest to lowest to determine which project components are the highest transportation trip generators. The peak hour volumes for the Academic Mixed-Use Development will be applied to the background peak hours.

B. Define traffic study areas. The primary study area, which encompasses the Academic Mixed-Use Area, is bounded by West 138th Street to the north, Amsterdam Avenue to the east, West 122nd Street to the south, and Marginal Street to the west. To adequately evaluate the potential effects of the Proposed Actions on the surrounding roadway network, a larger (secondary) study area has been delineated to include key intersections located as far north as West 145th Street, as far east as the First Avenue, and as far south as West 110th Street (see Figure 14) and as listed below. When vehicular trip assignments are fully developed, if necessary, additional intersections that would have 50 or more vehicle trips will be included in the traffic study area. In addition, operating conditions on nearby Henry Hudson Parkway ramps will also be addressed.

Intersections to Be Analyzed—Primary Study Area

- Marginal Street and West 125th Street
- Riverside Drive and West 135th Street
- Twelfth Avenue and West 133rd Street
- Twelfth Avenue and West 132nd Street
- Twelfth Avenue and West 125th Street
- Broadway and West 138th Street
- Broadway and West 135th Street
- Broadway and West 133rd Street
- Broadway and West 132nd Street
- Broadway and West 131st Street
- Broadway and West 130th Street

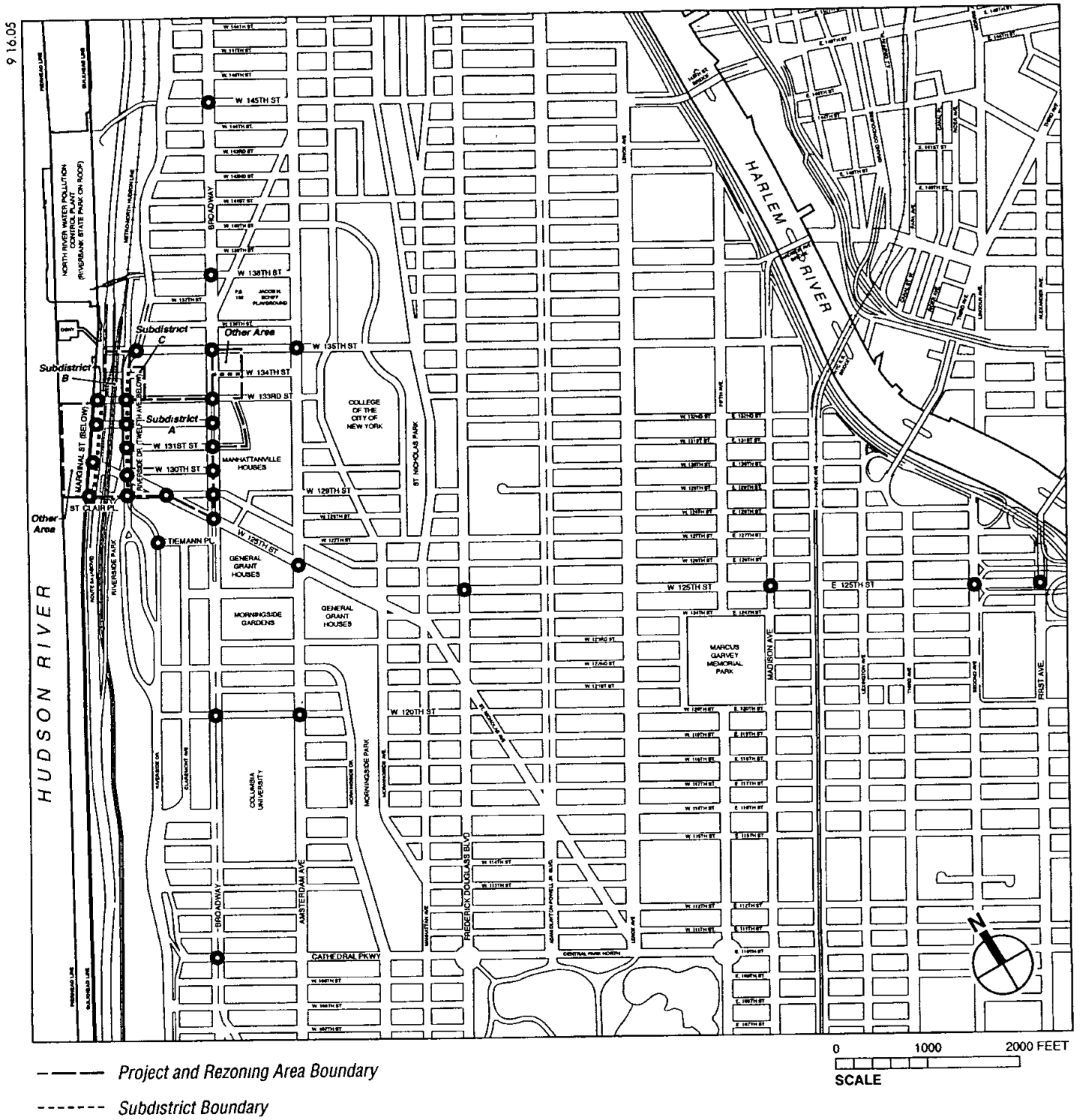

Figure 14

MANHATTANVILLE IN WEST HARLEM REZONING AND ACADEMIC MIXED-USE DEVELOPMENT

Traffic Study Area/Intersections to Be Analyzed

- Broadway and West 129th Street
- Broadway and West 125th Street
- Amsterdam Avenue and West 135th Street
- Amsterdam and West 125th Street
- Marginal Street and West 133rd Street
- Marginal Street and West 132nd Street
- Marginal Street and St. Clair Place
- Riverside Drive and Tiemann Place
- Twelfth Avenue and West 131st Street
- Twelfth Avenue and St. Clair Place
- Riverside Drive and St. Clair Place
- West 125th Street and West 129th Street/St. Clair Place

Intersections to Be Analyzed—Secondary Study Area

- Broadway and West 110th Street
- Broadway and West 120th Street
- Amsterdam Avenue and West 120th Street
- Frederick Douglass Boulevard and West 125th Street
- Madison Avenue and East 125th Street
- Second Avenue and East 125th Street
- First Avenue and East 125th Street
- Broadway and West 145th Street

C. Conduct traffic data collection. Manual turning movement and vehicle classification counts for peak weekday time periods will be conducted. The likely hours of peak traffic levels have been preliminarily identified as 7 to 10 AM in the morning, noon to 2 PM in the midday, and 4 to 7 PM in the evening. These manual counts will be supplemented with continuous (7-day) automatic traffic recorder (ATR) counts to develop an understanding of background temporal distribution of traffic and to determine/confirm peak analysis hours. Physical inventories of study area intersections will include the number of lanes, lane width, parking regulations, signal timing information (obtained from NYCDOT), and other general roadway characteristics.

D. Collect parking data. An inventory of the on- and off-street parking supply, as well as on-street parking regulations, in the study area will be performed. The on-street parking supply survey will be conducted on one weekday during the AM, midday, and PM peak periods. An area within a ¼-mile radius from the boundaries of the Academic Mixed-Use Area has been identified as the parking study area.

E. Analyze traffic operations and parking conditions. Traffic data will be summarized to determine existing vehicular peak hours, heavy vehicle percentages, peak hour factors, and other analysis parameters, and to develop peak hour balanced traffic networks for the primary and secondary traffic study areas. Traffic volumes in the future without the proposed action in place (No Build) will be determined, including an annual background growth rate plus traffic generated by major new development projects in the study area. For

the future Build analyses, two scenarios will be considered to reflect the gradual phasing of the Academic Mixed-Use Development. These scenarios will encompass a Phase I Build year of 2015 and a full Build year of 2030. Detailed traffic and parking analyses for the baseline, future No Build and Build conditions will be conducted for the AM and PM peak periods in accordance with CEQR guidelines to identify potential adverse impacts associated with the Proposed Actions. It is anticipated that a midday analysis would not be required. A review of midday peak period traffic data and trip projections will be conducted to confirm the comparatively lower activities levels.

F. Prepare mitigation analyses. As appropriate, potential mitigation measures, such as signal timing modifications, lane restriping, and intersection approach daylighting will be recommended.

TASK 18. TRANSIT AND PEDESTRIANS

The transit and pedestrians analyses for the EIS will be based on the trip generation estimates developed for the traffic and parking task. The transit and pedestrians studies will include a description of existing conditions, projection of future conditions, identification of potential adverse impacts, and recommendation of feasible mitigation measures. The reasonable worst-case development scenario for the transit and pedestrian analyses will also assume maximum administration and research uses and minimum housing for graduate students, faculty, and other employees.

The transit and pedestrian studies will include the following tasks:

A. Conduct transit and pedestrian data collection and analyses. For the transit and pedestrian study locations identified below, original data will be gathered, in accordance with CEQR guidelines, to develop existing baseline conditions. As with traffic and parking, it is assumed that detailed future conditions analyses will be conducted for two Build years, incorporating the weekday AM and PM peak periods.

B. Assess transit conditions. The transit analysis will include a description of nearby transit facilities and a characterization of subway and bus ridership levels. Transit service to the Project Area is available via NYCT subways and buses. Based on the *CEQR Technical Manual*, detailed analyses will be required if the proposed action generates 200 or more peak hour trips at a particular subway station or bus route. Given the scale of the Proposed Actions, it is expected that a detailed assessment, including operational analyses of stairways and control areas, will be required for the 125th Street and 137th Street No. 1 subway stations, and the 125th Street A/B/C/D subway station. A line-haul assessment of the Broadway No. 1 subway line will also be provided. In addition, selective nearby bus routes (M3, M4, M5, M11, M18, M60, M100, M101, M104, and Bx15) will be assessed in terms of their capability to accommodate additional riders from the Project Area.

C. Assess pedestrian conditions. The Proposed Actions will generate pedestrian traffic along likely routes between the Project Area and connecting transit service and the adjacent neighborhoods. It is assumed that a quantified analysis of sidewalk, crosswalk, and corner conditions will be conducted, focusing on conditions along major pedestrian corridors, such as 125th Street and Broadway, and other key locations where high pedestrian activities have been identified and/or will be generated.

D. Prepare mitigation analyses. As appropriate, potential mitigation measures, such as widening restrictive stairways and crosswalks and increasing frequency of bus service, will be recommended.

TASK 19. AIR QUALITY

The air quality studies for the Proposed Actions will include both mobile and stationary source analyses. The mobile source air quality impact analysis will assess potential effects from traffic-generated emissions. For the purposes of analyzing the Proposed Actions' reasonable worst-case development scenario for mobile source air quality, the analysis will incorporate the reasonable worst-case findings of the traffic analyses. The stationary source air quality impact analysis will address the following issues with respect to the potential for air quality impacts: the effects of emissions from the proposed central steam and chilled water plant on pollutant levels (i.e., sulfur dioxide, carbon monoxide, particulate, and/or nitrogen dioxide concentrations); the expected usage of potentially hazardous materials and the procedures and systems that would be employed in the proposed facilities to ensure the safety of staff and the surrounding community in the event of a chemical spill in one of the proposed laboratories; and the potential for impacts on project users from existing industrial/manufacturing uses in the area. To be conservative, the reasonable worst-case development scenario for stationary source air quality will minimize the height of the structure that contains the stack for the centralized steam and chilled water plant, minimize the height of the proposed laboratories (with exhaust), and maximize the height of the adjacent surrounding Academic Mixed-Use Development buildings.

MOBILE SOURCE ANALYSES

A. Gather existing air quality data. Collect and summarize existing ambient air quality data for the study area.

B. Determine receptor locations for the CO and $PM_{2.5}$ microscale analysis. Select critical intersection locations in the study area, and outside the study area, based on data obtained from the Proposed Actions' traffic analysis. At each intersection, multiple receptor sites will be analyzed in accordance with CEQR guidelines. Annual $PM_{2.5}$ concentrations will be calculated at neighborhood scale receptor locations, in accordance with the most current DEP guidance.

C. Select dispersion model. The EPA CAL3QHC screening model will be used for less congested locations. EPA's CAL3QHCR refined intersection model will be used at the more sensitive CO receptor locations. For this analysis, five years (1999-2003) of meteorological data from La Guardia Airport and concurrent upper air data from Brookhaven, New York, will be utilized for the modeling program.

D. Select emission calculation methodology and worst-case meteorological conditions. Vehicular cruise and idle emissions for the dispersion modeling will be computed using EPA's MOBILE6 model. For the worst-case analysis of CO (at screening locations), conservative meteorological conditions to be assumed in the dispersion modeling are a 1 meter per second wind speed, Class D stability, and a 0.70 persistence factor. Temperature data for input to the MOBILE6 model will be based on the most recent guidance available from EPA and DEP.

E. Select appropriate background levels. For the CO microscale analysis, select appropriate background levels for the study area in consultation with DEP. For the $PM_{2.5}$ analysis, existing background levels will be used as estimates of future background conditions.

F. At each CO mobile source microscale receptor site, calculate maximum 1- and 8-hour concentrations for existing conditions, the future conditions without the proposed action, and the future conditions with the proposed action. $PM_{2.5}$ maximum 24-hour and annual concentrations will be determined for the future conditions without the proposed action and the future conditions with the proposed action. Future year analyses with and without the project will be performed for two Build years: 2015 and 2030. The analysis period will be based on the reasonable worst-case project trips as determined in the traffic task. For intersections along Twelfth Avenue, background concentrations from Henry Hudson Parkway traffic volumes will be included in the microscale analysis.

G. Assess the potential impacts associated with proposed parking facilities. The analysis will use the procedures outlined in the *CEQR Technical Manual* for assessing potential impacts from proposed parking facilities. Cumulative impacts from on-street sources and emissions from the parking lots will be calculated where appropriate. Compare future CO pollutant levels with standards and applicable *de minimis* criteria to determine potential significant adverse project impacts.

H. Analyze potential future PM_{10} and $PM_{2.5}$ emissions from the MTA Manhattanville Bus Depot on at-grade and elevated receptor locations.

I. Compare existing and future levels with standards. Future CO pollutant levels with and without the Proposed Actions will be compared with the National Ambient Air Quality Standards (NAAQS) to determine compliance with standards, and the City's *de minimis* criteria will be employed to determine the impacts of the proposed actions. The incremental increases in $PM_{2.5}$ for the future conditions with and without the project will be compared to the latest DEP interim guidance criteria for $PM_{2.5}$.

J. Determine the consistency of the Proposed Actions with the strategies contained in the State Implementation Plan (SIP) for the area At any receptor sites where violations of standards occur, analyses would be performed to determine what mitigation measures would be required to attain standards.

STATIONARY SOURCE ANALYSES

Centralized Steam and Chilled Water Plants and Other HVAC Systems

K. Perform a detailed stationary source analysis of the emissions from the Academic Mixed-Use Development's centralized steam and chilled water plants and any other heating, ventilation, and air conditioning (HVAC) systems using EPA's Industrial Source Complex (ISC3) dispersion model. Five years of meteorological data (1999-2003) with surface data from LaGuardia Airport and upper air data from and Brookhaven, New York, will be used for the simulation modeling. Concentrations of nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (PM_{10} and $PM_{2.5}$) will be determined. Predicted values will be compared with ambient air quality standards, significant impact thresholds, and DEP and DEC $PM_{2.5}$ interim guidance criteria In the event that violations of standards are predicted, examine design measures to reduce pollutant levels to within standards.

L. Assess the combined impacts of criteria air pollutants from the Proposed Actions' stationary sources with pollutants from other existing or planned future commercial, institutional, manufacturing or large-scale residential sources (e.g., the North River water pollution control plant and the Manhattanville Houses) in the defined study areas that may contribute to ambient air quality concentrations. The cumulative impact analysis will consider sources

of PM_{10}, NO_x, and SO_2. Maximum predicted impacts will be added to background concentrations and compared to ambient air quality standards. This analysis will also assess the impact of these other sources on proposed development sites.

M. Perform a screening analysis, based on the methodology of the *CEQR Technical Manual*, of HVAC emissions from sites within Subdistricts B, C, and the Other Areas, and from the future operations of the MTA Manhattanville Bus Depot. The analysis will assess impacts on existing sensitive uses and proposed development sites (i.e., project-on-project impacts) to determine whether they are below significance levels that would result in violations of the NAAQS.

Chemical Spills

N. Review information provided by Columbia University on chemicals and storage quantities that would be expected at the proposed Academic Mixed-Use Development laboratories. Information on toxicity, volatility, and other relevant characteristics will be reviewed. Based upon a preliminary review of this information, it is expected that the chemicals to be considered for the lab spill analysis will include osmium oxide, methyl isocyanate, 2-propenal, and bromine or bromine solutions. Review design information of the laboratory fume hood exhaust system provided by the project's engineers.

O. Impacts from an accidental spill occurring in the proposed Academic Mixed-Use Development laboratory buildings will be evaluated using the information provided and the procedures and methodologies contained in the *CEQR Technical Manual*. The procedures utilize evaporation rates developed by the Shell Development Company (M.T. Fleisher, *An Evaporation/Air Dispersion Model for Chemical Spills on Land*, December 1980), an examination of recirculation potential using the methodology described by D.J. Wilson in *A Design Procedure for Estimating Air Intake Contamination from Nearby Exhaust Vents* (ASHRAE TRANS 89, Part 2A, pp.136-152, 1983), and the determination of maximum pollutant concentrations at elevated receptors downwind of the fume exhausts using the EPA INPUFF model (W.B. Peterson, *Estimating Concentrations Downwind From an Instantaneous Puff Release*, EPA 600/3-82-078, August 1978). One set of design parameters will be evaluated.

P. Maximum concentrations will be compared to the Short-Term Exposure Levels (STELs) or ceiling levels recommended by the U.S. Occupational Safety and Health Administration (OSHA) for the chemicals examined. Where necessary, recommendations will be made to reduce any potential levels of concern.

INDUSTRIAL SOURCE ANALYSES

Q. A field survey will be performed to determine if there are any manufacturing or processing facilities within 400 feet of the Proposed Actions for each of the analysis years. The DEP's Bureau of Environmental Compliance (BEC) files will be examined to determine if there are permits for any industrial facilities within a 400-foot radius of the boundary of the proposed rezoning area, and a 1,000-foot radius of the proposed rezoning area for large sources with process emissions, as per the *CEQR Technical Manual* guidelines. A review of federal and state permits will also be conducted (using the EPA Envirofacts and NYSDEC Air Guide-1 databases). Based on this information, a determination will be made of whether further detailed analysis is necessary. The ISC3 dispersion model screening database will be used to estimate the short-term and annual concentrations of critical pollutants at the potential receptor sites. Predicted worst-case impacts on the project will be compared with the short-term guideline concentrations (SGC) and annual guideline concentrations (AGC) reported in the DEC's *DAR-1 AGC/SGC Tables* (December 2003) to determine the potential for

significant impacts. In the event that violations of standards are predicted, measures to reduce pollutant levels to within standards will be provided.

TASK 20. NOISE

The noise study will focus on assessing: (1) potential noise impacts due to project-generated traffic (mobile sources); (2) potential noise impacts due to building operations (i.e., stationary source noise from the Academic Mixed-Use Development's centralized steam and chilled water plants and other mechanical equipment); and (3) the level of attenuation needed in the Academic Mixed-Use Development's buildings and other proposed sites to satisfy CEQR requirements. For the purposes of analyzing the Proposed Actions' reasonable worst-case development scenario for mobile source noise, the analyses will incorporate the reasonable worst-case findings of the traffic analyses.

The EIS noise study will include the following tasks:

A. Select appropriate noise descriptors. Appropriate noise descriptors that characterize the noise environment and the impact of the Proposed Actions will be selected based on current CEQR criteria. Consequently, the 1-hour equivalent ($L_{eq(1)}$) and, where appropriate, the L_{10} noise levels will be examined. Where appropriate the 24-hour day night (L_{dn}) noise levels will be examined for train and subway noise.

B. A screening analysis will be performed to determine locations where there is the potential for significant impacts due to the Proposed Actions. In general, these locations would be places where traffic generated by the Proposed Actions would result in a doubling of passenger car equivalents (PCEs). Techniques used for this screening analysis will include proportional modeling, use of the TNM model, and/or use of the Federal Transit Administration (FTA) transit modeling techniques.

C. Select receptor locations for detailed analysis. Two types of receptor sites will be selected: receptor sites for detailed impact analysis and receptor sites for building attenuation purposes. Where necessary both ground-level and elevated receptors will be selected. In general, receptor sites selected for impact analysis will be those locations where the Proposed Actions have the potential for significant impacts (based upon a screening analysis that will look for a doubling of traffic). These receptor sites would include locations where the Proposed Actions would have the greatest potential to affect ambient noise levels. Receptor sites for building attenuation purposes will be locations where building design measures would be necessary to meet CEQR requirements, but where no detailed impact analysis is necessary (because project-generated traffic would not result in a significant increase in noise levels). Receptor sites will include locations adjacent to busy streets, rail and subway tracks, and the elevated Henry Hudson Parkway. Particular attention will be paid to sensitive land uses—parks, open space, residences, etc.

D. Determine existing noise levels. At each of the impact receptor sites identified above, existing noise levels will be measured during four time periods—weekday AM, weekday midday, weekday PM, and weekday nighttime). At each of the building attenuation receptor sites identified above, existing noise levels will be measured during three time periods—weekday AM, weekday midday, and weekday PM. Weekday nighttime conditions will be examined as part of the impact analysis (but not for building attenuation). Measurements will be made using a Type 1 instrument, and L_{eq}, L_1, L_{10}, L_{50}, and L_{90} values will be

recorded. At each site 20-minute spot measurements will be made. At selected locations, 24-hour continuous measurements will be made.

E. Determine future noise levels without the Proposed Actions. At each of the impact receptor locations, noise levels without the Proposed Actions will be determined for the 2015 and 2030 analysis years using existing noise levels, acoustical fundamentals, and mathematical models. Noise from traffic, transit (train and subway), and mechanical equipment operation will be included in the analysis. Techniques used for this analysis will include proportional modeling, use of the TNM model, and/or use of the FTA transit modeling techniques.

F. Determine future noise levels with the Proposed Actions for the 2015 and 2030 analysis year programs. At each of the impact receptor locations, noise levels with the Proposed Actions will be determined using existing noise levels, acoustical fundamentals, and mathematical models. Noise from traffic, transit (train and subway), and mechanical equipment operation will be included in the analysis. Techniques used for this analysis will include proportional modeling, use of the TNM model, and/or use of the FTA transit modeling techniques. Noise due to stationary sources (including the proposed HVAC and energy center equipment) will be included in the analysis.

G. Compare noise levels with CEQR impact evaluation criteria. Existing noise levels and future noise levels, both with and without the Proposed Actions, will be compared with the CEQR noise impact criteria to determine project impacts. In addition, noise from mechanical equipment will be compared to other relevant City noise criteria (i.e., New York City Noise Code, Performance Standards for Manufacturing Zones contained in the New York City Zoning Resolution, etc.).

H. Determine level of building attenuation required. For the buildings analyzed as part of the Proposed Actions, the level of attenuation and the types of measures (i.e., alternative ventilation, double-glazed windows, etc.) necessary to achieve the attenuation specified in the *CEQR Technical Manual* will be examined.

I. Examine mitigation measures, if necessary. If significant noise impacts are predicted to occur with the Proposed Actions, possible mitigation measures will be examined to reduce or eliminate such impacts. These measures will include possible rerouting of traffic and building attenuation measures (i.e., retrofitting windows and providing alternative ventilation), as well as design modifications for mechanical equipment.

TASK 21. CONSTRUCTION

The EIS will assess potential project construction-related impacts. The likely construction schedule for the Academic Mixed-Use Development and an estimate of activity on-site (on the Academic Mixed-Use Area) will be described. Construction impacts will be evaluated for the period of maximum construction activity. For the purposes of analyzing the reasonable worst-case development scenario for construction, it is conservatively assumed that the construction of the two to three Academic Mixed-Use Development buildings may occur simultaneously, reflecting the heaviest period of construction for the Proposed Actions.

Technical areas to be analyzed in the construction analysis include:

A. Transportation Systems. Consider any losses in lanes, walkways, and other above- and below-grade transportation services and increases in vehicles from construction workers, and analyze potential temporary impacts to these transportation systems.

B. Air Quality. Analyze direct emissions from demolition and construction site activity, including fugitive dust and on-site diesel equipment. Analyze potential effects from increases in mobile source emissions of trucks and worker vehicles at nearby sensitive receptors and congested locations and from potential long-term traffic diversions. Discuss measures to reduce impacts.

C. Noise. Discuss noise from each phase of construction activity.

D. Hazardous Materials. In coordination with the work performed for hazardous materials, above, summarize actions to be taken during construction to limit exposure of construction workers to potential contaminants.

E. Open Space. The temporary loss of the Phase I privately owned, publicly accessible open space during construction of the below-grade space will be addressed.

F. Infrastructure. The Proposed Actions would need to relocate public infrastructure, particularly water and sewer mains, as well as the electric, gas, and telephone lines; thus, the maintenance of services to the neighborhood during the relocation will be addressed.

G. Historic Resources. The integrity of nearby historic resources within and adjacent to the Project Area could be adversely affected by construction vibrations; thus, the maintenance of the integrity of such resources would need to be assessed.

H. Other Technical Areas. As appropriate, discuss the other areas of environmental assessment for potential construction-related impacts.

TASK 22. PUBLIC HEALTH

Following the guidelines presented in the *CEQR Technical Manual*, this task will examine the project's potential to significantly impact public health concerns related to air quality, noise, hazardous materials, and construction. Drawing on other EIS sections, this task will assess and summarize the potential for significant adverse impacts on public health from project activities.

TASK 23. MITIGATION

Where significant project impacts have been identified in the analyses discussed above, measures will be assessed to mitigate those impacts. This task summarizes the findings of the relevant analyses and discusses potential mitigation measures. Where impacts cannot be mitigated, they will be described as unavoidable adverse impacts.

TASK 24. ALTERNATIVES

The purpose of an alternatives analysis is to examine reasonable and practicable options that avoid or reduce project-related significant adverse impacts and achieve the stated goals and objectives of the Proposed Actions. The specific alternatives to be analyzed are typically finalized with the lead agency as project impacts become clarified. However, they will likely include a No Action Alternative, which assumes that the Proposed Actions are not implemented and the Project Area parcels maintain their current uses; one or more alternatives that minimize or avoid identified significant adverse impacts; alternative energy supply options, including with cogeneration; and construction of new University facilities on top of the existing above-grade bus depot.

TASK 25. COMMITMENT OF RESOURCES

CEQR regulations include several trade-off, summary analyses, as follows:

- Irreversible and irretrievable commitment of resources;
- Growth-inducing aspects of the Proposed Actions;
- Relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity;
- Unavoidable significant adverse impacts that cannot be mitigated.

These analyses draw from the work done in the technical areas, as relevant. They are intended to inform decision-makers of the environmental "costs" and benefits of the Proposed Actions.

TASK 26. EXECUTIVE SUMMARY

The executive summary will utilize relevant material from the body of the EIS to describe the Proposed Actions, the necessary approvals, study areas, environmental impacts predicted to occur, measures to mitigate those impacts, unmitigated and unavoidable impacts (if any), and alternatives to the Proposed Actions. ✷

APPENDIX A

PROPOSED SPECIAL MANHATTANVILLE MIXED-USE DISTRICT ZONING TEXT AMENDMENTS

APPENDIX A: PROPOSED SPECIAL MANHATTANVILLE MIXED USE DISTRICT ZONING TEXT AMENDMENTS

The Special Manhattanville Mixed Use District (MMUD) would encompass much of the area between West 125th Street and West 135th Street between Broadway and Marginal Street, the area between Marginal Street and the Pierhead Line, from the prolongation of West 129th Street to West 133rd Street, as well as the area between West 131st Street and West 135th Street, east of Broadway, for a depth of 200'.

The Special District would include general provisions applicable throughout the district related to use, urban design, floor area and other regulations, with more detailed regulations and controls on a sub-area basis. The intent of the controls is to allow for sufficient flexibility to accommodate a wide range of uses, including community facilities in designated areas. Additional controls include required street walls on designated streets, height limits, floor area limits, and a mechanism to transfer floor area, which would overlay the basic underlying zoning rules.

Specific Subdistrict Regulations

The Special District would be divided into three principal subdistricts and two "other areas" as follows:

Subdistrict A: Academic Mixed Use Area

The core of the Special District, located between Broadway and 12th Avenue, West 125th Street and West 133rd Street and between Broadway and Old Broadway, West 131st Street and West 134th Street. The underlying zoning would be C6-2.

Subdistrict B: Waterfront Area

This portion of the Special District is between 12th Avenue and Marginal Street, and extends from St Clair Place to West 135th Street. The underlying zoning would be C6-2.

Subdistrict C: Mixed Use Development Area

Subdistrict C encompasses the east side of the 12th Avenue blockfront from West 133rd Street to the north side of West 134th Street. The underlying zoning would be C6-2.

Other Area: West of Marginal Street

This "Other Area" would be bounded by Marginal Street on the east, the Pierhead Line on the west, the prolongation of West 129th Street on the south and West 133rd Street on the north. The underlying zoning would be M1-1. Bulk and use would be governed by the underlying zoning.

Other Area: East of Broadway
This "Other Area" as its name indicates, would be on the east frontage of Broadway between West 134th Street and West 135th Street, for a depth of 200'. The underlying zoning would be an R8A, with a C1-4 commercial overlay on Broadway. Bulk and use would be governed by the underlying zoning.

Use Regulations
The purpose of the Special Manhattanville Mixed Use Special District is to promote a broad variety of uses. Therefore, compatible uses from all use categories would be allowed as described below.

Community Facility Use
Community facility uses would be permitted in Subdistricts A, B, and C. In Subdistrict B, community facility uses would be limited to 5,000 sqft per establishment.

Residential Use
Residential uses would be permitted in Subdistricts A and C. Residential uses would not be permitted in Subdistrict B.

Manufacturing Use
Selected manufacturing uses would be permitted in Subdistricts A, B, and C.

Commercial Use
Commercial uses would be permitted in Subdistricts A, B, and C.

Active Ground Floor Use: Ground floor uses intended to activate key street frontages on Broadway, West 125th Street and 12th Avenue would be required for new developments or enlargements of a certain size. Some permitted uses could include retail, galleries, performance spaces and other space for community services.

In the "Other Areas" use regulations would be governed by the underlying zoning.

Enlargement and Extension of Non-Conforming Uses
Enlargement and extension of non-conforming uses listed in Use Group 16 or 17 would be permitted.

Floor Area Ratio (FAR) / Density
Residential Use
The maximum floor area ratio for residential uses in Subdistrict A would be 3.44 FAR, while in Subdistrict C and the Other Area East of Broadway, the maximum residential floor area would be 6.02 FAR. Residential use would not be permitted in Subdistrict B.

Community Facility Use
The maximum floor area ratio for community facility uses in Subdistricts A and C would be 6 FAR, while in Subdistrict B, the floor area for community facility use would be 2 FAR, with an additional floor area limit of 5,000 sqft per establishment.

Manufacturing Use
The maximum floor area ratio for manufacturing uses in Subdistricts A, B and C would be 2 FAR.

Commercial Use
The maximum floor area ratio for commercial uses in Subdistricts A and C would be 6 FAR, while in Subdistrict B, the commercial floor area would be limited to 2 FAR.

In "Other Areas" density would be governed by the regulations of the underlying zoning.

Site Planning, Bulk and Massing
Required Street Walls
The Special District specifies street wall requirements for many of the streets, establishing a minimum base height and a maximum base height.

Maximum Base and Building Heights
In Subdistrict A, because of the changes in topography, a base plane would be established for each designated area, representing the lowest curb level of each area, for the purpose of measuring building heights. The base planes would range from approximately 10 feet to 70 feet above Manhattan Datum. As measured from the base plane, the maximum base height of buildings would be generally set forth to range from 140 feet to 260 feet.

Above the top building floor, 40'-60' of mechanical space could be added. In addition to the mechanical space, and excluded from height limits would be elements such as antennae, chimneys or flues, and ventilation pipes and structures.

In Subdistrict B, maximum building heights are generally set forth to remain below the height of the Riverside Drive viaduct. In Subdistrict C, the maximum building height would be set at 120' above adjacent curb level. In "Other Areas" underlying zoning controls govern.

Open Space Improvements
A variety of publicly accessible privately owned open areas will be required in Subdistrict A. These spaces are intended to enhance pedestrian access to and through the new development, allow light and air into the new academic mixed use area and serve as spaces for repose, gathering, and circulation. These spaces, including the "Landscaped Areas" described below, will provide a total amount of open space generally in the range of 50,000 to 70,000 sqft.

All of these open space improvements would be required to be open and accessible to the public seven days a week, from 7:00 am to 11:00 pm from May to October and from 7:00 am to 7:00 pm from November to April. Provisions would be made to permit the owner to close the "Square" and the North/South Passageways, with public notice, for a maximum of 12 days each calendar year.

Mandatory Setbacks at Grade
Mandatory setbacks at grade would be required in Subdistrict A on all narrow street frontages between Broadway and 12th Avenue, except for the block between West 131st Street and West 132nd Street, since the existing Studebaker building, which is to remain, is on that block and is built to the property line on both streets.

These mandatory setbacks at grade would be improved as paved surfaces with planted landscape treatment required. The setbacks on the narrow streets would be prescribed to enhance pedestrian circulation through the site, to the waterfront park, and would also strengthen the framed view of the arches of the Riverside Drive Viaduct from points east.

Mandatory setbacks at grade would also be required on the east side of 12th Avenue. These mandatory setbacks at grade would be improved as paved surfaces with landscape treatment permitted. These setbacks on 12th Avenue would allow light and air onto the area below the viaduct.

North/South Passageways
If the blocks between Broadway and 12th Avenue are developed as single zoning lots, they would be required to include through block open areas known as north/south passageways as an alternative midblock pedestrian route through these blocks. They would be improved as paved surfaces, with planted landscape treatment permitted. No fences would be permitted; no walls or planters would be higher than 2½' above the grade of the adjacent sidewalk.

The "Landscaped Areas"
If the block bounded by Broadway, West 130th Street, 12th Avenue, and West 131st Street is developed as a single zoning lot, a publicly accessible privately owned open area or areas, (the Landscaped Areas) would be required for recreational uses Structures such as kiosks, pavilions, exit stairs or exhaust shafts would be permitted to be placed in the Landscaped Areas provided they are not more than 50' high, and have an aggregate area not to exceed 10% of the area of the Landscaped Areas. No fences would be permitted on the street perimeter of the Landscaped Areas and no walls or planters would be permitted to be higher than 2½' above the grade of the adjacent sidewalk.

Transfer of Floor Area
Within Subdistrict A, unused floor area would be able to be transferred from a granting site to a receiving site, by Certification of the Chairperson of the City Planning Commission subject to the maximum building heights, setbacks, streetwall, and all other applicable bulk regulations. Granting and receiving lots would be full block zoning lots.

Proposed Special Permits
The CPC would be able to allow, by special permit, a modification of the bulk regulations and mandated street wall requirements to allow design flexibility to meet programmatic requirements or to achieve an improved site plan.

Parking
No accessory off-street parking would be required. Accessory parking in amounts in excess of that permitted by the underlying zoning would be allowed, with conditions. Special permits would be established for public parking facilities and accessory group parking facilities. In Subdistrict A, enclosed accessory off-street parking spaces at or above grade would only be permitted to be located a minimum distance of 10' from an exterior building wall.

Curb Cuts
No new curb cuts would be permitted on avenues or wide streets. New curb cuts would be allowed in limited locations on narrow streets. For most blocks, curb cuts would be limited to two new curb cuts per street frontage; each curb cut would be a maximum of 30' wide, with a minimum of 30' between curb cuts.

Zoning Map Changes
Changes to the underlying zoning map would be made in conjunction with the establishment of the Special Manhattanville Mixed Use District.

Subdistricts A, B, and C would be remapped to a C6-2 district, from the existing M1-2, M2-3, and M3-1. The "Other Area" west of Marginal Street would be remapped to an M1-1 from a M2-3 zone. The "Other Area" East of Broadway would be remapped to an R8A, with a C1-4 commercial overlay, from an M1-2 zone.