Harlem River Brownfields Opportunity Area [BOA] Nomination Report

Borough of the Bronx

Bronx Council for Environmental Quality (BCEQ) and
New York City Department of Parks and Recreation (NYC Parks)

December 2015

ON THE COVER
The Harlem River looking south to the High Bridge
All photography, mapping and concept images by ABB unless otherwise noted

CONTRIBUTORS

This report was prepared for the New York State Department of State (DOS) with funds provided under the Brownfield Opportunities Area Program.

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New York City Department of Parks and Recreation

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Bronx Community Boards 4, 5, 7 and 8
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LIST OF ABBREVIATIONS AND ACRONYMS

ABB - Abel Bainnson Butz Landscape Architects, LLP
AST - aboveground storage tank

BBPO - Bronx Borough President's Office
BCEQ - Bronx Council for Environment Quality
BCPGS - Bronx Coalition for Parks and Green Spaces
BMP-Best Management Practice
BOA - Brownfield Opportunity Area

CB - Community Board
CD - Community District
CSO- Combined Sewer Outfall or Overflow

DCP - Department of City Planning
DEC - Department of Environmental Conservation
DOH - Department of Health
DOS - Department of State
DOT - Department of Transportation

EDC - Economic Development Corporation
EFH - Essential Fish Habitat

FEMA - Federal Emergency Management Agency

FLS - Fleming Lee Shue
FVCP - Friends of Van Cortlandt Park

HEP - Harbor Estuary Program
HR BOA - Harlem River Brownfield Opportunity Area
HRWG - Harlem River Working Group

I-87/MDE - Major Deegan Expressway

JLP+D- James Lima Planning and Development

LEED - Leadership in Energy Efficient Design
LTCPs - Long Term Control Plans

MN - Metro-North Railroad
MS4 - Municipal Separate Storm Sewer System
MTA/MN - Metropolitan Transportation Authority/ Metro-North

NORCs - Naturally Occuring Retirement Communities
NWI - National Wetland Inventory
NYC - New York City
NYCHA - New York City Housing Authority
NYC Parks - Department of Parks and Recreation
NYS - New York State
NYRP - New York Restoration Project

OEM - New York City Office of Environmental Remediation
ORR - Office of Recovery and Resiliency
OSD - Official Series Description

PAH - polycyclic aromatic hydrocarbons
PBS - petroleum bulk storage
PCB - poly-cyclic biphenyls
PCE - perchloroethene

RCSP - Roberto Clemente State Park
RFP- Request for Proposals
ROW - right-of-way
ROWB - right-of-way biowales

SHIP - Subsidized Housing Information Program
STV - STV Group
SVOC - semi-volatile organic compound

TOD - transit-oriented development
TPH - Total Petroleum Hydrocarbons
TPL - Trust for Public Land

ULI TAP-Urban Land Institute Technical Assistance Program
ULURP - Uniform Land Use Review Process
USFWS - U.S. Fish and Wildlife Service
UWFP - Urban Waters Federal Partnership

VOC - Volatile Organic Compound

WAP - Waterfront Access Plan
WWFPs - Waterbody/Watershed Facility Plans

Figure 1. Harlem River BOA Context Area Map

EXECUTIVE SUMMARY

The Harlem River BOA Step 2 report explores the potential for reviving a nearly five mile stretch of the Harlem River waterfront on the Bronx side of the river, bringing it back into a healthy functioning relationship with the community ecologically, socially and economically. The BOA Step 2 process has reaffirmed the community vision for a dynamic district of waterfront parks connected to one another, tied into the greater Greenway system and linked into the urban mesh of the city. Communities within the Context Area and region stand to benefit from access to recreational destinations along the Harlem River and from cleaner water, air and soils and better overall environmental quality. The Step 2 process has confirmed the appropriateness and general feasibility of a predominantly recreational, environmentally rich waterfront district along the Harlem River, a goal that is already on its way to becoming a reality.

Community Vision and Goals expressed in Section 1: The community vision that was clearly and powerfully summarized in the 2007 Harlem River BOA Step 1 report, "*Harlem River Waterfront: Linking River's Renaissance to its Upland Neighborhoods*" still resonates with the Harlem River BOA Steering Committee and with community participants eight years later.

> *The overarching vision for the Bronx waterfront of the Harlem River is a contiguous waterfront park. This is a fundamental consensus embraced by several generations of city and state agencies, elected officials, and their constituents. It has been outlined in some 25 plans that have been developed, refined, and reissued, all with public participation over the same number of years. It is understood today that this means future development of the waterfront itself must be primarily recreational.*[1]

The goals of the Harlem River BOA are grounded in visioning work that has been done in over 25 plans in a period of over 25 years. The fundamental goals are have been reiterated and reconfirmed in the BOA process, both in Step 1 and Step 2:

- *The value of the Harlem River and its Bronx shoreline is as a coherent scenic and recreational resource, which is best achieved with a continuous esplanade or greenway.*
- *The Harlem River's many bridges should be utilized to connect the Manhattan and Bronx waterfront parks and neighborhoods. The most important is the pedestrian High Bridge.*
- *Upland communities must be connected to the public waterfront, physically and visually.*
- *Any new developments near the waterfront – whether they generate jobs, revenue or housing opportunities -- should draw people to the waterfront.*
- *The natural shoreline habitat should be restored where possible, with the principal goal of restoring its ecological function and the secondary goal of restoring its recreational functions (e.g. fishing and swimming)*[2]

As **Section 1: Project Description and Boundary** notes, the Bronx Council for Environmental Quality (BCEQ) and NYC Parks have led this second phase of the Harlem River BOA process. New York State's Department of State Brownfield Opportunity Area (BOA) grant program has made this study possible.

The Harlem River BOA Project Area encompasses a narrow swath of land on the Bronx side of the Harlem River, extending from West 149th Street in the South Bronx northward along the waterfront and curving to the west where the Harlem River tidal strait meets the Hudson River. The Central Focus Area consists of a strip of land bounded by the riverfront and the I-87/ Major Deegan Expressway (MDE), while the smaller Spuyten Duyvil Focus Area is a non-contiguous segment of waterfront at the junction of the Harlem and Hudson Rivers.

Section 2: Public Participation Plan and Techniques to Enlist Partners describes the public process in this phase of the BOA study, which has entailed a robust community outreach program through the HR BOA Steering Committee, events hosted by BCEQ and partners and the efforts of a not-for-profit community based organization, Friends of Van Cortlandt Park (FVCP), as the outreach consultant.

The Harlem River BOA project has encouraged residents of the four upland communities to add new specificity to the planning for their shared waterfront. What uses would draw them to it? How would they get there? How can the waterfront be developed to connect the four communities to each other, to new employment centers, and to future amenities? How will the underlying resource, the Harlem River, be protected? How can the waterfront change from posing a threat to public health to enhancing public health?

Section 3: Analysis of the Proposed Brownfield Opportunity Area delves into the community and

The Department of State's Brownfield Opportunity Areas (BOA) Program provides communities with guidance, expertise and financial assistance . . . to complete revitalization and implementation strategies for neighborhoods or areas affected by brownfields or economic distress. Brownfields are dormant properties where contamination or perceived contamination has impeded investment and redevelopment.

Program grants support a variety of community revitalization activities permitted in three program steps:

- Step 1 - The Pre-Nomination Study consists of a preliminary analysis so communities can gain a basic assessment and understanding about existing conditions, brownfields and the area's potential for revitalization. This step sets the stage for detailed work.
- Step 2 -The Nomination consists of an in-depth assessment and evaluation of existing conditions, including an economic and market trends analysis, and assets to determine the best reuse potential for strategic sites and other revitalization opportunities.
- Step 3 - The Implementation Strategy funds a range of techniques and actions to achieve revitalization objectives by advancing redevelopment on strategic sites, improving supporting infrastructure, and overall neighborhood revitalization through investment, provision for public amenities and improving environmental quality.

Source: BOA Program Summary, NYS DOS, Office of Planning & Development http://www.dos.ny.gov/opd/programs/brownFieldOpp/boasummary.html

regional context of the study area. The Central Focus Area (the waterfront) is isolated by topography and the transportation corridors of I-87/MDE and rail lines; it is virtually unpopulated except for River Plaza Towers, which houses fewer than 5,000 people. On the other hand, the Context Areas beyond the Focus Area include densely populated portions of Bronx Community Districts (CDs) 4, 5, 7, and 8, where over 150,000 people live within a one-mile walk of the waterfront. Neighborhoods in the area include the Lower Concourse, Highbridge, Morris Heights, University Heights, Kingsbridge, and Spuyten Duyvil areas.

The Harlem River waterfront is a prime linkage in the midst of the Hudson-Raritan Estuary System. In 1987, the NY-NJ estuary system was designated as one of 28 "Estuaries of National Significance." Positioned within the core of the estuary, the Harlem River is actually a tidal strait linking the East River and the Hudson River. This preeminent natural resource merits protections of water quality and habitat through public, private and not-for-profit partnerships.

The **Inventory and Analysis** segment of Section 3 examines a range of issues impacting current uses and revitalization potential along the Harlem River waterfront. Key points include:

- **Brownfields, Abandoned and Vacant Sites:** The majority of the HR BOA Central Focus Area meets the BOA program definition of a brownfield as "any real property, the development or reuse of which may be complicated by the presence or potential presence of a contaminant." The Step 2 study included preliminary site assessment screening of 63 properties of interest in the Central Focus Area to reveal potential for contamination. Subsequently, the environmental investigation delved further into the environmental concerns and contamination potential on a subset of 29 tax lots. Findings are discussed in Section 3: "Brownfield, Abandoned and Underutilized Sites" and Appendix D.
- **Land Ownership/Jurisdiction:** As a key part of the Step 2 process, a complete inventory of properties within the BOA Study area was conducted. A table with detailed property ownership information resulted. Key issues are summarized in Section C and the inventory is included in Appendix C.
- **Parks and Open Space**: In the past few years since the completion of the BOA Step 1 report, tremendous progress has been made in consolidating and improving land for public access along the Harlem River. In spite of the existing and planned parks, there is still a documented need for additional developed park space along and near the Harlem River waterfront. The neighborhoods of the BOA Central Focus Area are located in some of New York City's most park-starved districts.
- **Historic or Archaeologically Significant Areas:** The western Bronx is home to a collection of historic assets that together tell a richly layered story of New York City's physical and social development during the heyday of its urban expansion in the nineteenth century. The recently reopened High Bridge, a unique example of 19th century engineering infrastructure and emblem of the Croton Aqueduct System, as well as other landmark bridges merge with the spectacular views of natural and historic resources beyond the Central Focus Area.
- **Transportation:** The greatest transportation issue for the Harlem River BOA Study Area is the need for walkable and bikeable transportation infrastructure providing linear connections along the waterfront as well as connections to the inland/upland neighborhoods. Access to the Harlem River waterfront by vehicle is limited to only a few points

of entry—the main reason why the waterfront has remained mostly undeveloped. Subway and bus service is available within reasonable walking distance of most of the Harlem River BOA Focus Area and is most convenient on the southern end of the study area. An underutilized resource is the Metro-North regional rail line that runs along the waterfront and serves the BOA area with a total of five Metro-North Stations are within or immediately adjacent to the Harlem River BOA Focus Areas.

- **Recreational Boat Access:** In spite of the Harlem River's rich history as "Sculler's Row," access points for small boats are scarce today, especially on the Bronx shoreline. Additional access points rank high as a priority in the community vision.

- **Natural Resources and Environmental Features:** The Harlem River corridor is a treasure within the urban fabric of New York City, offering a rareopportunity to revitalize a corridor of ecologically rich green space in the core of the largest city in the nation. As a connection point from tidal estuary to shoreline to upland, from the expansive Van Cortlandt Park to the north to the future greenways to the south, the HR BOA corridor's ecological functioning matters for human health and well-being as well as myriad species of plants, birds, fish and other life forms. The waterfront offers existing and potential habitat to at least 63 species of migratory birds and is in a key location near a number of heavily wooded parks in the Bronx and Upper Manhattan. The relatively shallow river provides opportunities to enhance habitat for shorebirds and aquatic species. There is considerable room for habitat improvement through well planned and executed ecological enhancements.
- **Flood Hazards:** Virtually all of the study area is classified by FEMA as being at moderate to high risk of flooding, based on the FEMA Preliminary Flood Insurance Rate Maps. The 1% annual chance floodplain generally extends inland to I-87/ MDE. The area is also designated by NYCOEM as being in hurricane evacuation Zones 2 and 3, in a system of six zones with Zone 1 being the most likely to be evacuated. Flooding potential in New York City coastal areas is expected to worsen with sea level rise over the coming decades.

- **Infrastructure:** Inadequate stormwater treatment and aging infrastructure currently have an enormous impact on the river's water quality. A total of 11 combined sewer outfalls and approximately 8 outfalls for stormwater from local streets and I-87/ MDE empty into the Harlem River in the BOA study area in wet weather events. Limited sewer and water main access is also an issue in some parts of the study area.
- An **Economic and Market Trends Analysis** conducted as part of the Step 2 process determined that while overall employment and earnings figures suggest a weak market basis for development in the immediate areas surrounding the BOA Strategic Sites, the market for new development in the Context Area and throughout the southern and western Bronx shows signs of increasing strength. Anticipated population growth suggests the need for additional public recreational facilities in the area.

Section 4: Key Findings and Recommendations

Section 4 proposes a number of Key Findings and Recommendations progressing toward the vision of a Harlem River waterfront that is alive with people enjoying biking, walking, boating, fishing, taking in the views, learning, spending time with family and friends and appreciating the wildlife that thrives in glistening clean water and beautiful native plant communities along the shore. Key Recommendations are:

- **Strategic Sites:** This Harlem River BOA Step 2 study identifies eight Strategic Sites and three Strategic Connections for inclusion in the NYS BOA program. All are vacant or underutilized brownfield properties with the potential to be remediated and upgraded to higher functioning uses to benefit local neighborhoods and the region.

- **Brownfield, Abandoned, and Vacant Sites:** The potential for petroleum and/or hazardous materials on Strategic Sites and other properties should be further investigated in order to determine the nature and extent of contamination. Results of these investigations should be used to determine appropriate remedial and mitigation measures in order to reduce contaminant discharge to the Harlem River, improve overall water quality and reduce possible health impacts. Wherever feasible, bioremediation techniques are preferred as effective long-term, low-cost strategies for cleaning waterfront sites, though in some areas, faster remediation techniques may be warranted to expedite public access projects.

- **Transportation Systems and Strategic Connections: The Crucial Role of Access:** For the Harlem River Waterfront to be revitalized and brought back into productive use, multi-modal

access routes must be funded and built, particularly pedestrian and bike infrastructure.

- ***Harlem River Greenway:*** The more greenway continuity can be developed between nodes of parkland, the higher the use value will be for all users. Harlem River Greenway connections clearly merit prioritization for funding allocations. Full construction of the Harlem River Greenway will unify and invigorate the Harlem River waterfront and adjacent neighborhoods. Connecting the HR Greenway to the Putnam Railroad Trail to the north and to other greenways within the NYC system will link the Harlem River to an expansive and ever-growing regional greenway system. Building on earlier Harlem River Greenway studies, this BOA study also delves into more detail about how the greenway might be routed through and around some very challenging obstacles. Concepts are presented in the Key Findings and Recommendations section.

- ***Pedestrian Access and Public Transit:*** The Transportation section also makes specific recommendations for improving the safety and experience for those on foot with pedestrian signals, crosswalks and other safety measures at the limited entrances to the waterfront. Locations for possible new bus stops closer to the waterfront are also identified.

- **Land Use and Zoning:** The consensus is that there should be maximum public open space in the area and that a district of waterfront parks along the Harlem River connected by a continuous greenway system is feasible. If any residential or mixed-use development is constructed on the waterfront, it should provide maximum public open space and greenway space. These elements should be required even where the site is not technically a "waterfront" lot due to presence of the Oak Point Link. Designs for Waterfront Public Access areas should consider the open space, access, boating and connectivity recommendations contained within this report.

- **Land Ownership/Jurisdiction:** Combining fragmented parcels will achieve the greatest public and ecological benefits from waterfront projects. In order for the Harlem River parks district to expand and thrive, more waterfront land needs to be publicly accessible and developed as public space.

- **Parks and Open Space**: Priorities for parks and open space on the Harlem River include:

  - Obtaining funding for the first phase of the Harlem River Promenade concept (Depot Place).

  - Remediating and constructing Regatta Park (already initiated by NYC Parks).

  - Acquiring the CSX parcels in CDs 7 & 8 for ecologically-oriented park space and a greenway connection, including a pedestrian/ bike bridge over the rail tracks.

  - Creating new access points for hand-powered craft (boat launches and possibly boathouses) in CD5 in the proposed Harlem River Promenade and in CD7 near the University Heights Bridge and at the CSX site. The University Heights Bridge area is also often noted as a possible location for a marina.

- **Sustainable Design and Maintenance:** Whether funded publicly or privately, all new parks and open space in the BOA study area should be built and maintained according to sustainable design principles as recommended in the *High Performance Landscapes Guidelines* (2010) and other recommended resources. The community's vision includes job training and employment opportunities for installation, care and maintenance of green infrastructure and open space.

- **Resilient Design to Mitigate Flood Hazards:** Parks designed to withstand occasional flooding with minimal damage and to help manage storm surge are often considered the best land uses for flood prone areas. "Living" shoreline strategies should be pursued that allow for greater ecosystem benefits, rather than bulkheads or other hardening strategies. In some areas, new park and esplanade infrastructure could have the added benefit of helping to protect vulnerable rail infrastructure.

- **Natural Resources and Environmental Features:** The strategies that have the greatest potential for improving water quality in the Harlem River are:

- Clean-up of brownfields that may now be leaching contaminants into the river through groundwater and erosion sediments;

- Deploying green infrastructure through the greenway, waterfront parks and open spaces, and

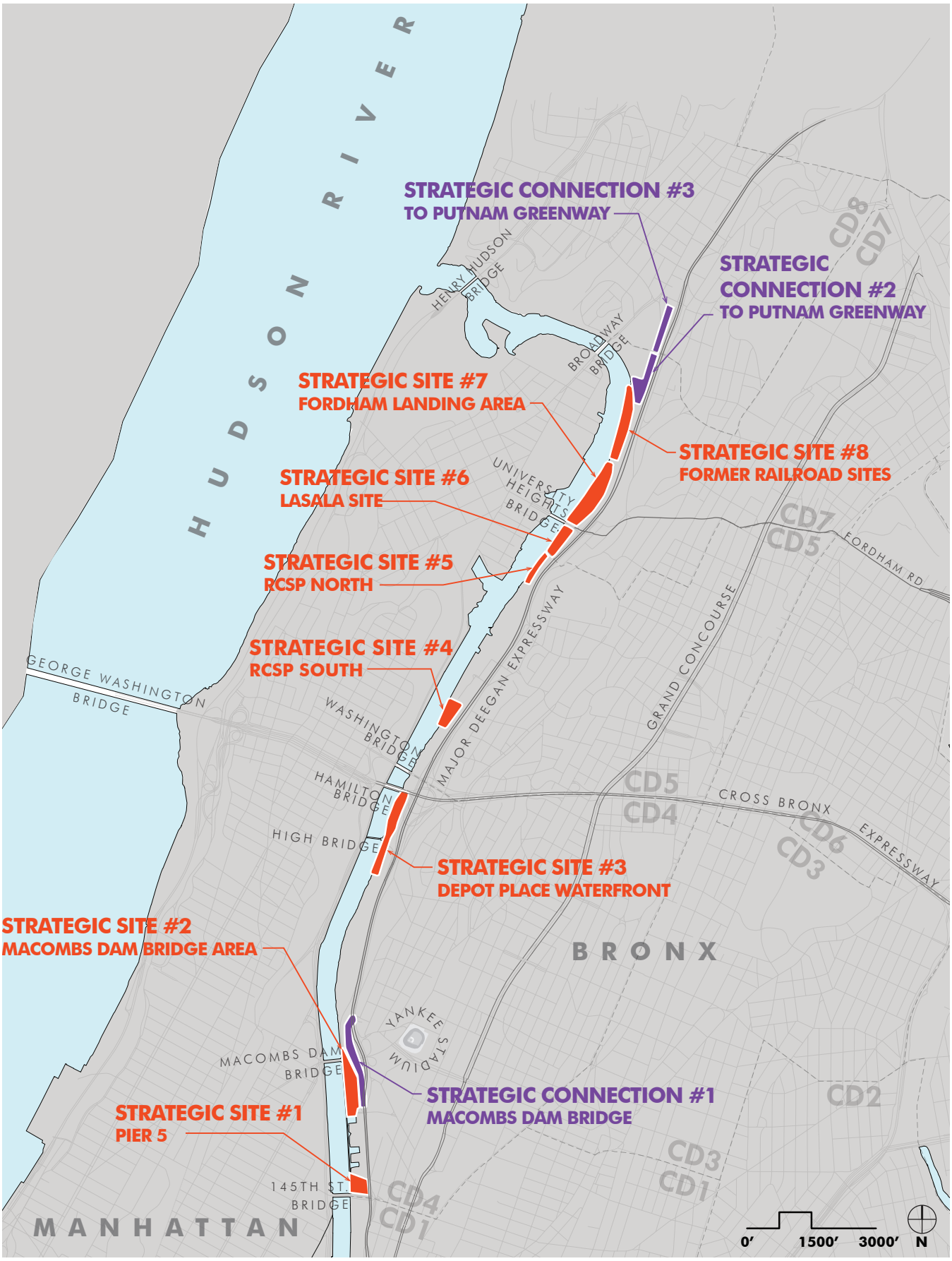


Figure 2. Overall Strategic Sites and Strategic Connections Map

streetscapes to cleanse contaminated runoff and avert combined sewage overflows into the river;

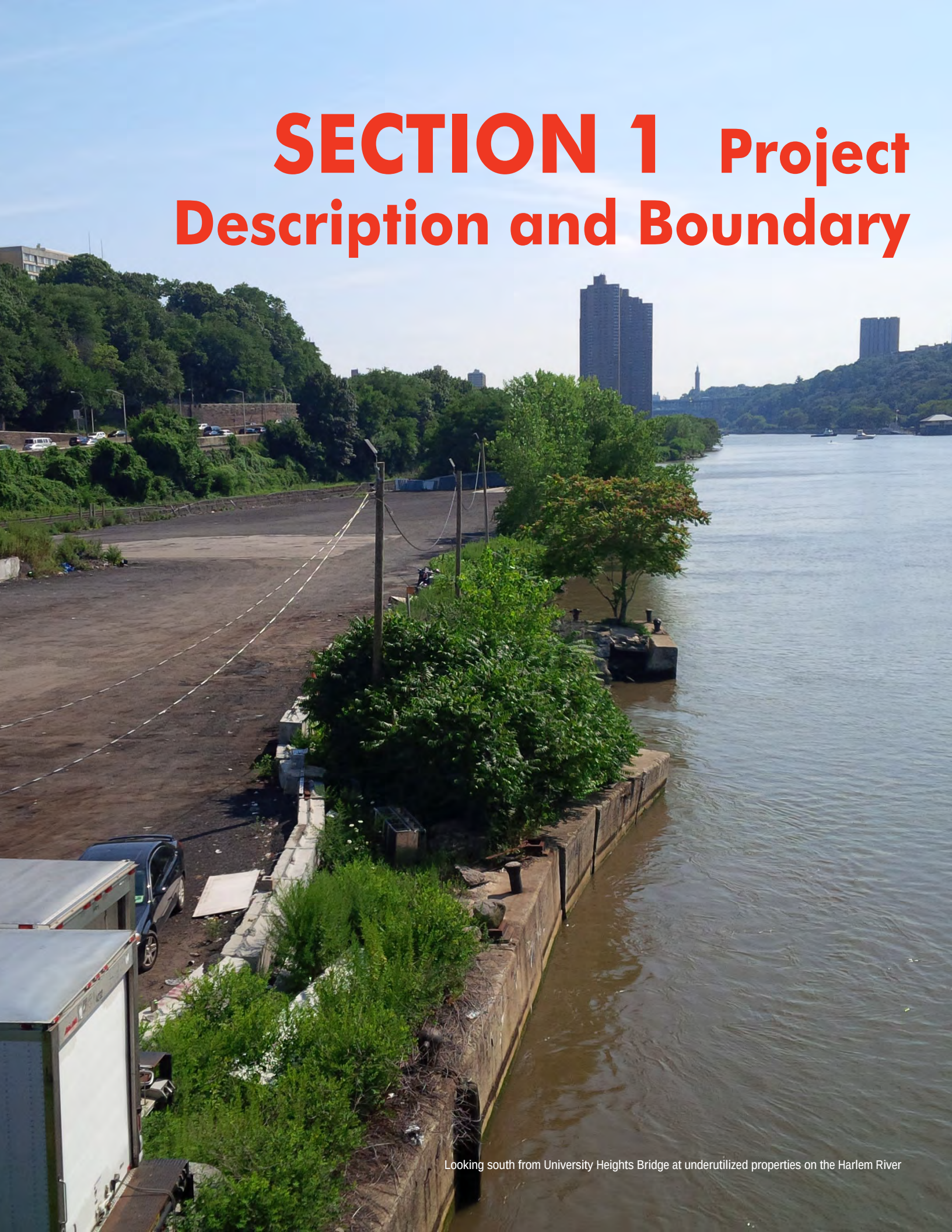
- Improving the ecological productivity of the river corridor by creating rich aquatic and terrestrial habitats such as intertidal marshes, oyster reefs, and native grass, wildflower, shrub and tree canopy areas.

- **Infrastructure:** The most urgent infrastructure issue within the Harlem River BOA study area is to integrate green infrastructure into the Harlem River Greenway and waterfront parks to help reduce water pollution.

- **Historic Assets and Tourism Potential:** An interpretive and wayfinding program along the river with a "New York, Then and Now" theme can tell the story of the ambitious 19th and 20th century engineering projects that shaped the Harlem River Valley and New York City's water supply system, as well as the Harlem River's history as a recreational boating destination. Linking the historic significance of Harlem River as boating/regatta destination in the 19th century and early 20th centuries and bringing back recreational boating under the concept of the "People's River" (as proposed by ULI) would connect a greater constellation of attractions along the Harlem River and beyond. Designs for future parks and any new structures should capitalize on distinctive views of natural and historic areas and should protect significant viewsheds along the way.

The Harlem River BOA is poised for clean-up of brownfield contamination and for vibrant, transformative adaptive reuse projects along the river's edge.

SECTION 1 Project Description and Boundary



Looking south from University Heights Bridge at underutilized properties on the Harlem River

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1.A LEAD PROJECT SPONSORS

PROJECT SPONSORS

The Harlem River BOA Step 2 Study is sponsored by the Bronx Council for Environmental Quality (BCEQ) and NYC Parks. BCEQ is a Bronx-based non-profit 501(c)3 membership organization that has been advocating for the transformation of the Harlem River waterfront into an accessible and amenity-rich destination since 2001. NYC Parks is the steward of approximately 29,900 acres of land — 14 percent of New York City — including more than 5,000 individual properties ranging from Coney Island Beach and Central Park to community gardens and Greenstreets.[1] They are New York City's principal providers of recreational and athletic facilities and programs.

Following the successful completion of the BOA Step 1 Pre-Nomination Study in 2007, BCEQ applied for and received funding from the New York State Department of State (NYSDOS) to pursue this Step 2 Nomination Study. BCEQ approached NYC Parks as an agency partner. Since much of the BOA Area is owned by the City of New York and is under the jurisdiction of NYC Parks, the agency entered into an agreement with BCEQ to work together to complete the Nomination Report, providing project management and project administration services for the NYS Department of State (NYSDOS) grant.

PROJECT PARTNERS

The Harlem River BOA Step 2 study has a number of central project partners that make up the BOA Steering Committee, including representation from the Bronx Borough President's Office (BBPO), Bronx Community Boards (CB) 4, 5, 7 and 8, Roberto Clemente State Park (RCSP), National Park Service (NPS), the Gaia Institute, Manhattan College, the Mayor's Office of Environmental Remediation (OEM), the Department of City Planning (DCP) and the NYC Soil and Water Conservation District.

With vested interests in the surrounding neighborhoods, these BOA partners drew on their vast combined knowledge base of the HR BOA Area and upland communities in order to prepare the nomination document. Partners provided local oversight and monitoring, as well as technical assistance during the course of these studies. These partners were enlisted to ensure the planning process relates to municipal goals and obtains input from a wide variety of municipal and organizational stakeholders in the area.

Not-for-profit and private sector consultants also supported the BOA partners. Friends of Van Cortlandt Park (FVCP) assisted with the Public Participation initiatives. ABB, STV, JLPD and FLS were the selected planning and design consultant team that provided services to the project. The NYSDOS administers the BOA program throughout New York State. The NYSDOS has monitored progress, tracked satisfaction of grant requirements, attended BOA partner meetings, and evaluated utilization of grant funds.

Notes: Project Sponsors

[1] Ownership and jurisdiction categories within the city can be complex. As noted by NYCDCP, "Residential, commercial, industrial/ transportation, and public facility uses currently occupy about 65 percent of the city's total lot area. Another 10 percent is vacant or occupied by parking or miscellaneous uses. The remaining lot area, about 25 percent, is parkland or other open space, most of which is not subject to zoning regulations. (Lot area is exclusive of streets, which comprise about 21 percent of the city's gross land area.)". See http://www.nyc.gov/html/dcp/html/zone/zonehis2.shtml.

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1.B PROJECT OVERVIEW AND DESCRIPTION

COMMUNITY CONTEXT: RELATIONSHIP OF THE BOA AREA TO THE COMMUNITY AND REGION

The Harlem River Brownfield Opportunity Area (HR BOA) is situated in the midst of the largest city in the country, with a current population of over 8.4 million[1] and expected to grow to 8.8 million in 2030 and to 9 million by 2040.[2] From a regional perspective, the New York-Newark, NY-NJ-CT-PA Combined Statistical Area had an estimated population of 23.6 million as of 2014. Over 150,000 people[3] live within the HR BOA Context Area alone, and the figure expands dramatically if considering the populations of northern Manhattan on the other side of the river and within Marble Hill. Clean-up and revitalization efforts within the Harlem River BOA have the potential to positively impact literally millions of people now and in the coming decades.

The HR BOA Areas encompass a narrow strip of land on the Bronx side of the Harlem River, extending from West 149th Street in the South Bronx northward along the waterfront and curving to the west where the Harlem River tidal strait meets the Hudson River. The Central Focus Area consists of a swath of land along the north-south portion of the Harlem riverfront, while the smaller Spuyten Duyvil Focus Area is a non-contiguous segment of waterfront at the junction of the Harlem and Hudson Rivers (Fig. 1). Just across the narrow channel of the Harlem River, which averages roughly 400 feet wide, about the width of a long city block, lies northern Manhattan. The two BOA Focus Areas are separated by Marble Hill, located at the tip of Manhattan, an anomalous portion of the Borough of Manhattan that, through a historical twist involving the digging of the Harlem Ship Canal in the 1890s, left a small remnant of what is still technically Manhattan on the Bronx side of the river.

Ironically, despite the enormous nearby populations, due to difficulties of access, the entire Central Focus Area contains only one residential property—River Park Towers in Roberto Clemente State Park, which houses fewer than 5,000 people. Therefore, the BOA Context Area envelops densely populated upland residential communities in the Highbridge, Morris Heights, University Heights and Kingsbridge neighborhoods. In the Spuyten Duyvil Focus Area, residential properties, including both single and multifamily are located much nearer the shoreline and are included in the Spuyten Duyvil Focal Area boundary. Altogether, the Focus Areas plus the Context Areas include 29 full and 11 partial census tracts in four Bronx Community Districts (4, 5, 7 and 8).

The Bronx, in terms of governmental jurisdictions, constitutes one of the five boroughs of the City of New York and also makes up Bronx County. In terms of legislative districts, the Harlem River BOA Focus Areas and Context Areas participate in three congressional districts (13, 15 and 16), three New York State Senate districts (29, 33, and 34), five New York State Assembly districts (77, 78, 81, 84, and 86), and four City Council districts (8, 11, 14, and 16).

Notes: Community Context

1 United States Census Bureau, "QuickFacts Beta," accessed 5/27/2015, http://www.census.gov/quickfacts/table/PST045214/3651000,00.

2 The City of New York, Michael R. Bloomberg, Mayor, Department of City Planning, Amanda M. Burden, FAICP, Director, "New York City Population Projections by Age/Sex & Borough, 2010–2040," accessed 5/28/2015, http://www.nyc.gov/html/dcp/pdf/census/projections_briefing_booklet_2010_2040.pdf.

3 Calculated by adding together population of each census tract within the BOA Context Area. For census tracts only partially within BOA Context Area, the percentage of the tract by area within the Context Area was estimated, and then that percentage was multiplied by the total population of the tract.

BOA AREA OVERVIEW

The Harlem River BOA Central Focus Area covers nearly 5 miles of waterfront plus a five-block northern inland extension between 225th-230th Streets, while the Spuyten Duyvil Focus Area adds another mile of shoreline. It takes in the lion's share of the Harlem River shoreline and encompasses the majority of the western boundary of the Bronx. The total acreage within the Harlem River BOA Central Focus area is just under 140 acres, not including I-87/MDE, while the acreage within the Spuyten Duyvil Focus Area totals nearly 19 acres.

The larger study area, including both the Focus Areas and the upland Context Area together comprise 1,535 acres. The Central Focus Area is bounded by the mapped pierhead line in the Harlem River on the western edge, while on the inland side, the eastern edge of I-87/MDE marks the boundary. The Spuyten Duyvil Focus Area extends from the Harlem River on its southern boundary up to Kappock Street/ Johnson Avenue on the north, to the Hudson River to the west, and to the eastern edge of Kennedy High School. Marble Hill, the anomalous segment of the borough of Manhattan that is north of the modern alignment of the Harlem River, is excluded from the BOA Area.

BROWNFIELD SITES AND OTHER UNDERUTILIZED SITES IN THE BROWNFIELD OPPORTUNITY AREA (BOA)

There are a total of 63 "properties of interest" in the proposed Harlem River BOA. These "properties of interest" are identified as those sites deemed to have potential as Strategic Sites under the BOA program or that may be important as potential Strategic Connections. Research on environmental issues for these 63 properties (tax lots) conducted by subconsultant Fleming Lee Shue, Inc. (FLS) categorized 51 of these properties as having slight potential for contamination, eight with moderate potential, and one with high potential. Three properties listed within the BOA Area were not found in the public databases reviewed. After applying Strategic Sites Criteria developed by the Steering Committee, a total of 29 tax lots were considered in more detail and identified as potential Strategic Sites for the New York State Department of State BOA program. All of the properties fall within the Central Focus Area, while none are located in the Spuyten Duyvil Area, due to a number of limiting factors in the Spuyten Duyvil location.

OPPORTUNITIES FOR NEW PUBLIC AMENITIES AND RESTORATION OF ENVIRONMENTAL QUALITY

The proposed Harlem River BOA is rich in opportunities for new recreational areas and other public amenities, going hand-in-hand with opportunities to restore environmental quality on, in and near the river. The Harlem River is set within the core area of the NY-NJ Harbor Estuary Program (HEP), established in 1987, in which the NY-NJ estuary system is designated as one of 28 "Estuaries of National Significance." The goals of the program are to protect and restore healthy waterways and habitats, manage sediments, encourage community stewardship, educate the public and improve safe access to waterways. Federal, state, and local governments; scientists; civic and environmental advocates; the fishing community; business and labor leaders; and educators are all encouraged to cooperate through the HEP. The core area of the HEP that includes the Harlem River is an interconnected tidal system that includes the Hudson River, Upper and Lower Bays, Raritan Bay, Newark and Sandy Hook Bay, Jamaica Bay, and the East River, as well as the Hackensack, Passaic, Raritan, Shrewsbury, Navesink, and Rahway Rivers of New Jersey. As summarized by the HEP:

> *The NY-NJ Harbor Estuary is home to incredible natural diversity and is also one of the most vibrant and populated metropolitan areas in the country and the world, presenting unique opportunities and challenges. Over 300 species of birds breed or make their home in Jamaica Bay; striped bass and alewife travel up our tributaries to spawn; and salt marsh grasses line the shores, providing habitat to many fish, crabs, and other creatures. As residents, we use the estuary for fishing, boating, swimming, bird watching, transportation, and many other activities that bolster our quality of life and economy.*[1]

The Harlem River waterfront offers ample underutilized land that calls out for clean-up of contamination and development of new parks and open space amenities. Two priorities for public amenities are the Harlem River Greenway and new recreational boat access points.

Water quality and habitat value (both aquatic and terrestrial) can benefit substantially from sustainably designed projects in the BOA Area while providing recreational opportunities that contribute to public health and enjoyment.

Notes for Opportunities for New Public Amenities and Restoration of Environmental Quality:

[1] New York-New Jersey Harbor and Estuary Program, "About the Program," http://www.harborestuary.org/about.htm, accessed 5/29/2015.

AREA'S POTENTIAL IN TERMS OF OPPORTUNITIES FOR NEW USES & BUSINESSES, NEW EMPLOYMENT AND ADDITIONAL REVENUES

A number of public and private actions, including rezonings, studies, and development proposals, have taken place or are being initiated currently that reflect city and private visions for redevelopment. Together, these actions contribute to a changing context for redevelopment and economic growth in the BOA and along the Harlem River waterfront.

Opportunities to create new employment and generate additional revenue in the BOA are fairly limited in the near term. The primary opportunity for new job-dense commercial development within the BOA will be in the portion of the BOA closest to the Manhattan Central Business District and transit connections.

Within the BOA Focus Area, development is most likely at Pier 5. According to City sources multiple scenarios will be explored for this site, including variations on the potential amount of housing, retail, office, light industrial, job-dense workspace, and other uses that could be realized, along with waterfront access and publicly accessible open space. If Pier 5 and other Lower Concourse development sites end up featuring commercial retail and/or community facilities uses on the first and second floors, these uses would create new employment in or very near the BOA.

Additional prospects for new employment opportunities may build from the more than $1 billion dollars in relatively new investment in the Yankee Stadium and Gateway Center (Bronx Terminal Market) immediately upland from the BOA's waterfront sites. In addition, development incentives from the City are currently focusing on the waterfront district to the immediate south of the BOA, in the separate Lower Grand Concourse BOA.

In the longer term, potential development sites at the northerly end of the BOA, including the "Fordham Landing" / La Sala site may present opportunities for employment growth in a mixed-use context, subject to future infrastructure investments on a similar scale to that currently committed by the Office of the Mayor to redevelopment at the Lower Concourse.

Development of parkland, Greenway and green infrastructure along the length of the waterfront has the potential to generate a certain amount of new employment. BCEQ sees opportunities for job training and job creation for installation and maintenance of green infrastructure that may be more professional and higher paying than many other jobs, creating a positive impact on the local economy while also providing environmental benefits.

PLANNING AND DEVELOPMENT CONTEXT

The Harlem River BOA study is set in the context of copious numbers of planning studies that have been done over the years at the local, state and federal levels, the most relevant of which is the Harlem River BOA Step 1 study prepared in 2007.

HARLEM RIVER WATERFRONT: LINKING A RIVER'S RENAISSANCE TO ITS UPLAND NEIGHBORHOODS: As the 2007 Harlem River BOA Step 1 report led by BCEQ noted, plans and studies for the Harlem River waterfront over the past decades have recommended an:

> *overarching vision for the Bronx waterfront of the Harlem River [as] a contiguous waterfront park. This is a fundamental consensus embraced by several generations of city and state agencies, elected officials, and their constituents. It has been outlined in some 25 plans that have been developed, refined, and reissued, all with public participation over the same number of years.*[1]

More details about the consensus represented in these 25 plans are presented in the Community Vision section.

As the 2007 study also discussed:

> *The Harlem-Hudson Waterfront Greenway was envisioned in the 1993 Harlem-Hudson Greenway Plan as a path along the Harlem River waterfront from Macombs Dam Bridge (where it connects with the Aqueduct) north, making an on-street link through Kingsbridge, accessing the water again at Spuyten Duyvil, and then proceeding north on either a river or inland route. Sections of this greenway are also part of important regional systems. In 2000 the Department of City Planning issued the Harlem River Greenway Master Plan (2000) for a multi-use path that runs the length of Harlem River. It recommended a multiphase approach that could take decades to implement.*[2]

In recent years, this vision of a recreational waterfront has been expanded and reinforced by other studies, several of which are discussed here.

The importance of the river corridor's ecology as a part of a significant estuary system, as well as the HR BOA Area's position in the midst of the largest city in the nation, mean that what happens in the Harlem River BOA Focus Area will have ripple effects throughout these larger systems. The vision for the Harlem River BOA is consistent with environmentally conscientious plans for the estuary system and with goals for sustainability and resilience for the city and region. A few of the most relevant plans are:

NEW YORK-NEW JERSEY HARBOR ESTUARY PROGRAM: The Harbor Estuary Action Plan, revised in April 2011, is organized around five major themes or goals that point to the potential within the Harlem River, and in the larger regional, national and global context:

- Clean Up Pollution in the Estuary
- Habitat and Ecological Health
- Improve Public Access
- Support an Economically and Ecologically Viable Estuary and Port
- Public Education and Community Involvement.[3]

These NY-NJ Harbor Estuary planning goals align perfectly with the Harlem River BOA's Community Vision and recommendations.

DRAFT HUDSON RIVER ESTUARY ACTION AGENDA 2015-2020: The Hudson River BOA initiative is also well aligned with the goals and visions of DEC's Harlem River Estuary program. The current 2015-2020 draft action plan lays out specific targets under six benefits, which are similar to the NY-NJ Harbor Estuary program themes:

- **Benefit 1: Clean Water** "Vision: The Hudson River estuary is drinkable, swimmable and fishable."
- **Benefit 2: Resilient Communities** "Vision: All watershed communities plan and manage their natural resources and built environment to reduce vulnerability to change and to provide for human uses in ways that sustain the estuary and a healthy watershed ecosystem."
- **Benefit 3: Vital Estuary System** "Vision: Life in the estuary thrives with support from healthy forests, wetlands, and streams throughout the watershed."
- **Benefit 4: Estuary Fish, Wildlife and Habitats** "Vision: The estuary supports robust populations of fish and wildlife that are popular for fishing and wildlife-related recreation."

- **Benefit 5: Natural Scenery** "Vision: Natural Scenery is preserved and enjoyed by the public."

- **Benefit 6: Education, River Access, Recreation and Inspiration** "Vision: The estuary, as an integral part of our river communities, is valued by Hudson Valley residents, and its many natural resources are available and accessible, providing high-quality, place-based educational, recreational and inspirational experiences."[4]

HUDSON RIVER SUSTAINABLE SHORELINES PROJECT: As a "collaboration between the NYSDEC and local science and state organizations to provide science-based information on the ecological, economic and engineering questions facing shoreline habitats in a changing environment,"[5] the Sustainable Shorelines project offers recommendations for the Hudson and its tidal tributaries, which includes the Harlem River. In general, scientists recommend adding complexity to engineered shorelines with vegetation, different materials and rougher surfaces in order to enhance their habitat value and ecological functioning. Naturalized edges with a variety of shoreline conditions and gradual slope are recommended, while long, straight stretches of bulkhead are discouraged because they are not beneficial ecologically. The *Managing Shore Zones for Ecological Benefits Handbook* prepared by the Sustainable Shorelines project provides more detailed recommendations for improving the ecological functioning of shorelines;[6] these strategies can help to improve water quality, resilience under storm conditions and overall value as habitat. The vision and recommendations for the Harlem River BOA draw heavily on these and similar science-based recommendations.

ONE NEW YORK: THE PLAN FOR A JUST AND EQUITABLE CITY: New York City's recently released vision plan builds on the strong sustainability initiatives begun during the Bloomberg administration under PlaNYC, adding Mayor de Blasio's emphasis on economic, social and environmental justice. Of particular relevance for the Harlem River BOA vision are two of the four goals: "Our Sustainable City," with a vision of NYC becoming "the most sustainable big city in the world and a global leader in the fight against climate change" and "Our Resilient City," envisioning that "Our neighborhoods, economy, and public services are ready to withstand and emerge stronger from the impacts of climate change and other 21st century threats."[7] "Sustainable City" strategies address greenhouse gas emission reductions, zero waste goals, air quality, brownfields clean-up, water management and parks and natural resources[8] all areas where visions for the Harlem River BOA area can make a positive impact to city-wide goals. In terms of resiliency, the Harlem River BOA area can help achieve the vision of a city where transportation and other infrastructure can withstand and recover quickly from severe weather events, including coastal flooding and sea level rise.

DCP VISION 2020 WATERFRONT PLAN: DCP's 2011 comprehensive waterfront plan recommends strategic interventions throughout the Harlem River BOA to improve upland pedestrian connections to the waterfront, manage storm surge and reduce wave action, and many other area-wide suggestions. As part of the citywide waterfront strategy, opportunities for ecological education, boat access, and passive recreation are strongly encouraged throughout sites in the BOA. The plan suggests development of a Waterfront Access Plan (WAP) for the University Heights waterfront in order to promote future development; a WAP allows for site-specific modification of public access requirements for stretches of waterfront with unique conditions and opportunities. In the wake of Superstorm Sandy, DCP design guidelines for resilient river's edge treatment will have to be considered. On the other hand, the Harlem River BOA is not the focus of DCP Open Space and Waterfront Division's more specific resilient neighborhoods studies due to the fact that natural topography and current limited development in the area shield residents and most businesses from most storm-related risks.[9]

NYC DEPARTMENT OF CITY PLANNING SUSTAINABLE COMMUNITIES IN THE BRONX STUDY: In 2011, the Department of City Planning Bronx Borough Office initiated a study examining opportunities for transit-oriented development (TOD) adjacent to existing or proposed Metro-North stations in the Bronx. There are two stations within the Central Focus Area of the Harlem River BOA: University Heights Station and Morris Heights Station. Three additional Metro-North stations are near the BOA Focus Areas: the Marble Hill, Spuyten Duyvil and Yankee Stadium-153rd Street stations. The DCP study includes recommendations to integrate Bronx Metro-North stations into communities, spur investment, and better connect Bronx citizens to job centers. The study also aims to improve station

Figure 3. Notable Land Uses Near University Heights Station (Source: DCP Sustainable Communities)

visibility and pedestrian safety, while expanding inter-modal connections in the future.

The area surrounding the University Heights station is of particular interest for its development potential within the Harlem River BOA and for improvements to connections between the waterfront and the upland neighborhood. Figure 3 depicts notable land use features located in close proximity to the University Heights station under existing conditions, highlighting nearby institutions and the contrast in land uses at the waterfront and upland.

To address deficiencies in market potential and waterfront access for the waterfront north of High Bridge, the DCP Sustainable Cities study recommends implementing phased access, safety, and pedestrian improvements to the area surrounding the University Heights station, which in its existing condition is oriented toward automobile access to I-87/MDE and presents an unfriendly environment for pedestrians. Short-term improvements include the installation of a vegetated median on Fordham Road up to the foot of the bridge, with additional pedestrian islands to enhance pedestrian safety and experience at the intersection with the I-87/MDE access ramps, at the University Heights station entrance. These improvements, coupled with longer-term enhancements such as new bike lanes, a station platform extension, and direct pedestrian access to the waterfront across the Major Deegan, would significantly improve pedestrian connections from Fordham Road and upland neighborhoods to the waterfront, to University Heights station, and to retail destinations and new public amenities proposed for Inwood. The study also recommends addressing misalignments in zoning by developing a comprehensive approach to redevelopment by permitting a balance of land uses tied to infrastructure improvements such as those described here.[10]

These improvements are suggested as part of a broader set of scenarios the report sets forth. The study offers scenarios which illustrate progressively more intensive development responses to proposed improvements in public access, public space amenities, and infrastructure in the area. As the study notes, further community visioning and planning is needed to determine the best possible combinations of uses in this area.

ULI UNIVERSITY HEIGHTS WATERFRONT TECHNICAL ASSISTANCE PANEL STUDY: In 2014, DCP convened Urban Land Institute members to evaluate development potential for the University Heights waterfront area. ULI panelists analyzed development scenarios, local capacity, self-financing, and public investment. The study sets forth short-term through long-term goals for the HR BOA Area. These range from temporary retail kiosks to housing built on decking above I-87/MDE. One of the recommendations that most resonates with the BOA community participants is the concept of the Harlem River as the "People's River," regaining its former prominence as a mecca for recreational boating.[11]

HARLEM RIVER PROMENADE: The Bronx Overall Economic Development Corporation (BOEDC) and landscape architecture firm Starr Whitehouse reimagined the waterfront of Depot Place as a new public place. Community workshops in 2009 invited residents to offer their opinions and aspirations for the site. In its conceptual phase the proposal describes enhanced pedestrian riverfront access and improved community recreational opportunities. The proposed program envisions the waterfront site as providing direct waterfront access and providing "spaces for families to gather, play and experience a taste of nature in an urban setting." A riparian marsh at the shoreline would be planted with native species to help with stormwater management and environmental improvements. A shared greenway running through the site would connect directly to the south end of the existing greenway in Bridge Park. In more advanced phases of the Harlem River Promenade, the plan for this segment of parkland calls for a boathouse and a hydroponic greenhouse which could help "generate a local food economy and support programs for school groups and other community organizations." A third structure could house an education center with classroom and lab space "for teaching restoration, revitalization and protection of the urban estuary and watershed."[12]

UNIVERSITY STUDIES

COLUMBIA GSAPP "RECLAIMING THE RIVERFRONT" STUDY, 2010: In 2010, a Columbia University Urban Planning Studio in the Graduate School of Architecture, Planning and Preservation (GSAPP) focused on the Harlem River Waterfront in CD7. Students under the direction of Professor Ethel Sheffer worked with Community Board 7 to propose strategies for revitalizing the CD7 waterfront, with an emphasis on crafting a practical phased plan to introduce public access to the waterfront and encourage its redevelopment. The plan proposes a first phase of preliminary clean-up and community involvement, tree planting and intersection improvements, followed by

Phase II, which consists of remediating and "Realizing Regatta Park" to the north of the University Heights Bridge. Phase III would involve redevelopment of vacant and underutilized parcels both south and north of the University Heights Bridge, as well as access improvements to the northern segment of the waterfront.[13]

MIT DUSP "BRONX, MEET YOUR WATERFRONT" PLAN: In 2011, MIT urban planning students published a comprehensive plan as part of their academic coursework that focused on four strategic Harlem Riverfront sites in the Bronx. Working with the NYC Department of City Planning Waterfront and Open Space Division and Bronx community-based organizations, MIT students highlighted strategic sites to bolster community access and development on the river. Three of the strategic sites, High Bridge/Depot Place, Macombs Dam, and Pier 5 are located at least in part within the BOA Central Focus Area. The MIT plan proposed improved public riverfront access both on the waterfront in the form of new parks as well as upland in reconfigured pedestrian and vehicular circulation patterns. Concept design proposals include proposals to improve riparian ecology, activate spaces through temporary programming, adapt existing infrastructure, and lastly, develop existing and new connections between the community and the river.[14]

Notes: Planning and Development Context

1 Bronx Council for Environmental Quality, "Harlem River Waterfront: Linking a River's Renaissance to its Upland Neighborhoods," February, 2007, p. 31.

2 Ibid., p. 32.

3 New York-New Jersey Harbor and Estuary Program, "New York-New Jersey Harbor Estuary Action Plan for 2011-2015," accessed September 21, 2015, http://www.harborestuary.org/reports/HEP_Action_Plan-042711.pdf.

4 NYS Department of Environmental Conservation, "Draft Hudson River Estuary Action Agenda 2015-2020, accessed September 21, 2015," http://www.dec.ny.gov/lands/5104.html.

5 New York State Department of Environmental Conservation, "Shoreline Habitats, accessed September 21, 2015, http://www.dec.ny.gov/lands/87653.html.

6 David L. Strayer and Hudson River Sustainable Shorelines Project Team, "Managing Shore Zones for Ecological Benefits Handbook," accessed September 21, 2015, https://www.hrnerr.org/doc/?doc=273743856.

7 The City of New York, One New York: The Plan for a Strong and Just City," accessed September 21, 2015, http://www.nyc.gov/html/onenyc/downloads/pdf/publications/OneNYC.pdf, p. 5.

8 Ibid., pp. 160-213.

9 The City of New York Department of City Planning, Amanda M. Burden, Commissioner, "Vision 2020: New York City Comprehensive Waterfront Plan," March 2011 and communication with Shawn Brede, NYCDCP Bronx Borough Office, October 24, 2014.

10 The City of New York Department of City Planning, Amanda M. Burden, Commissioner, "University Heights: Balancing Access Needs and Development Potential," in "Sustainable Communities in the Bronx: Leveraging Regional Rail for Access, Growth and Opportunity." March 2014, pp. 78-102.

11 Urban Land Institute New York Technical Assistance Panels, "The People's River: A New Vision for the Bronx's University Heights Waterfront," July 23-24, 2014.

12 Bronx Overall Economic Development Corporation and Starr Whitehouse Landscape Architects, "Harlem River Promenade", 2010, p. 10.

13 Columbia University GSAPP, "Reclaiming the Riverfront," 2010.

14 Massachusetts Institute of Technology Department of Urban Studies and Planning , "Bronx, Meet Your Waterfront," Spring 2011.

PLANNING AND DEVELOPMENT CONTEXT IN AREAS ADJACENT TO THE HARLEM RIVER BOA AREA

Recent and on-going planning and development activity in areas adjacent to the Harlem River BOA Central Focus Area and Context Area impacts development trends within the HR BOA. In particular, activity to the immediate south and southeast of the Focus Area in Bronx CD1 and initiatives just across the river in Upper Manhattan have implications for the HR BOA neighborhoods. Those initiatives and developments that are expected to have spill-over effects into the HR BOA and to create greater need for recreational amenities along the waterfront include:

PORT MORRIS HARLEM RIVER BOA AND PUBLIC INVESTMENT: In 2014 a BOA study was initiated for an area in Community District 1, immediately south of Pier 5 at the southern boundary of the Harlem River BOA.[1] In many respects, the vision proposed in the Port Morris Harlem River BOA (also sometimes referred to as the Lower Grand Concourse BOA within the City) differs considerably from the community vision for the adjoining Harlem River BOA: the Port Morris BOA vision calls for high-density mixed-use development primarily concentrated on the Harlem River waterfront between the 138th and 145th Street bridges. However, the two BOA visions have some importantly elements in common, most notably the desire to establish a continuous riverfront promenade along the Harlem

River, to restore wetlands and to create new publicly accessible open spaces. The Port Morris study also proposes extending street corridors to connect upland neighborhoods to developments at the water's edge.

MAYOR'S $200 MILLION COMMITMENT TO LOWER CONCOURSE INFRASTRUCTURE UPGRADES: Following on the vision set forth in the Port Morris BOA in 2014, the Office of the Mayor has recently allocated approximately $200 million in infrastructure investment to support the development of affordable housing in the Lower Concourse area of the Bronx, in particular along the Harlem River. The City envisions that this infrastructure investment will help to create the market for a mixed-use, mixed-income neighborhood with housing, new job opportunities, and new open space. The initiative also includes objectives to expand Harlem River waterfront access and livability improvements through public realm enhancements. This financial commitment by the Mayor is a complement to the Lower Concourse Rezoning that has been in place since 2009. The close proximity of these public investments can be expected to increase populations in the immediate vicinity of the Harlem River BOA.[2]

INWOOD NYC NEIGHBORHOOD STUDY: The New York City Economic Development Corporation (NYCEDC) is partnering with the Department of City Planning and a team of planning and economic consultants on an initiative to support an innovative, mixed-use neighborhood integrating affordable and mixed-income housing with job-dense commercial uses to revitalize vacant and underutilized sites in the Sherman Creek district of Inwood, in Manhattan. The district, sited along the Harlem River waterfront, is connected directly to the BOA via the University Heights Bridge. The study, currently underway as of 2015, also seeks to identify opportunities to create a more unified greenway / blueway experience on both sides of the river.

The economic impacts of development and new public amenities in Inwood are expected to be felt across the Harlem River, too, as Inwood is already a strong retail and commercial destination for a catchment area that includes University Heights residents. New destinations and increasing retail and public space amenities will continue to strengthen cross-river connections that will have a progressive impact on the development potential of sites within the HR BOA, especially the La Sala and Fordham Landing North sites. At the same time, development in Inwood would also stimulate demand for more recreational amenities on both sides of the river.

Manhattan CD12 Inwood waterfront looking south from UH Bridge

Notes: Planning and Development Context in Adjacent Areas

1 South Bronx Overall Economic Development Corporation, "Lower Grand Concourse: Brownfield Opportunity Area Phase I Visioning Study," 2014

2 "State of the City: Mayor de Blasio Puts Affordable Housing at the Center of 2015 Agenda to Fight Inequality," February 3, 2015, http://www1.nyc.gov/office-of-the-mayor/news/088-15/state-the-city-mayor-de-blasio-puts-affordable-housing-center-2015-agenda-fight#/0

3 New York City Economic Development Corporation, "Inwood NYC Neighborhood Study," accessed September 22, 2015, http://www.nycedc.com/project/inwood-nyc-neighborhood-study

1.C COMMUNITY VISION, GOALS AND OBJECTIVES

BUILDING ON 25 PLANS OVER 25 YEARS

The community vision that was clearly and powerfully summarized in the 2007 Harlem River BOA Step 1 report, "*Harlem River Waterfront: Linking River's Renaissance to its Upland Neighborhoods*" still resonates with the Harlem River BOA Steering Committee and with community participants eight years later.

> *The overarching vision for the Bronx waterfront of the Harlem River is a contiguous waterfront park. This is a fundamental consensus embraced by several generations of city and state agencies, elected officials, and their constituents. It has been outlined in some 25 plans that have been developed, refined, and reissued, all with public participation over the same number of years. It is understood today that this means future development of the waterfront itself must be primarily recreational.*[1]

WHERE THE PLANS AGREE: GOALS OF THE HARLEM RIVER BOA

- *The value of the Harlem River and its Bronx shoreline is as a coherent scenic and recreational resource, which is best achieved with a continuous esplanade or greenway.*
- *The Harlem River's many bridges should be utilized to connect the Manhattan and Bronx waterfront parks and neighborhoods. The most important is the pedestrian High Bridge.*
- *Upland communities must be connected to the public waterfront, physically and visually.*
- *Any new developments near the waterfront – whether they generate jobs, revenue or housing opportunities -- should draw people to the waterfront.*
- *The natural shoreline habitat should be restored where possible, with the principal goal of restoring its ecological function and the secondary goal of restoring its recreational functions (e.g. fishing and swimming)*[2]

As a corollary to the widespread agreement that ecological sensitive recreational uses should predominate along the Harlem River shoreline, there has also been a community consensus regarding undesirable uses within the BOA Area. The consensus is not to support any types of development that are in conflict with provision of public access. This would include no heavy manufacturing and heavy industrial uses, such as cement plants and other noxious uses. It also includes no additional self-storage facilities on the waterfront if those facilities do not provide public access. Moreover, in determining whether a project qualifies for the brownfield clean-up program tax credits by being in conformance with the goals of the Harlem River BOA, only projects that provide substantial amounts of safe, high quality, public waterfront access and greenway, that is, a storm water infiltration waterfront or waterfront proximity, should qualify for such funding.

OBJECTIVES

Brownfield Remediation: Wherever feasible, bio-remediation techniques should be used as effective long-term, low-cost strategies for cleaning waterfront sites.

Transportation Systems and Strategic Connections: Multi-modal access routes must be funded and built, particularly pedestrian and bike infrastructure. Improvements to pedestrian and bicycle safety are key and additional bus stops should also be prioritized.

Land Use and Zoning: Use land use and zoning to maximum public open space along the waterfront and strengthen the district of waterfront parks along the Harlem River, connected by a continuous greenway system.

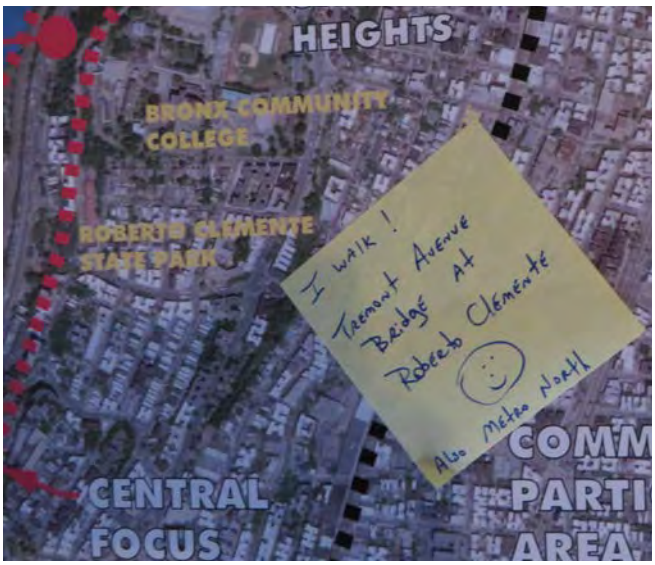
Land Ownership: Combine fragmented underutilized parcels to achieve the greatest public and ecological benefits from waterfront open space projects.

Parks and Open Space:

Prioritize parks and open space on the Harlem River including:

- revitalization of Roberto Clemente State Park and completion of its southern expansion
- remediation and construction of Regatta Park (already initiated by DPR)
- obtaining funding for the Harlem River Promenade Phase I concept (Depot Place)
- public acquisition of the CSX parcels in CD7 for ecologically-oriented park space and greenway connection, including a pedestrian bike bridge over the rail tracks.

Recreational Boat Access: Add new boat access infrastructure for small craft, ideally with a boathouse, but at the least, another boat launch area.



Community input from BCEQ Mini-Waterfront Conference

Sustainable Design and Maintenance: Whether funded publicly or privately, all new parks and open space in the BOA study area should be built and maintained according to sustainable design principles

Natural Resources and Environmental Features: Improve water quality in the Harlem River by:

- cleaning up brownfields that may now be leaching contaminants into the river through groundwater and erosion sediments
- deploying green infrastructure through the greenway, waterfront parks and open spaces, and streetscapes to cleanse contaminated runoff and avert combined sewage overflows into the river.

Education: Institute more environmental education programs on the Harlem River.

Air Quality: Advance air pollution-related public health goals by providing much-needed infrastructure to enable pedestrians and cyclists to bike or walk through the area.

Resilient Design to Mitigate Flood Hazards: Consider flood potential in all aspects of planning and design for new uses. Create parks designed to withstand occasional flooding with minimal damage and mitigate flood damage to other assets such as rail infrastructure.

Historic Assets: Implement an interpretive and wayfinding program along the river, which in conjunction with that of the High Bridge, tells the story of the ambitious 19th and 20th century engineering projects that shaped the Harlem River Valley and New York City's water supply system, as well as the Harlem River's history as a recreational boating destination.

Infrastructure: Along with sustainable transportation infrastructure, green infrastructure is the highest priority within the community 's vision. Job training and employment opportunities for installation, care and maintenance of green infrastructure and open space are among the foremost objectives.

Notes for Community Vision, Goals and Objectives

[1] BCEQ, "Harlem River Waterfront," (2007) p. 31. This list of previous plans was prepared as of 2007. Since that date, additional plans have explored the study area.

1982: New York City Waterfront Revitalization Program, revised in 2002.

1989: The Bronx Harlem River Plan (New York City Department of City Planning)

1990: Waterfront Management Plan (NYC Department of City Planning)

1992: New York City Comprehensive Waterfront Plan (New York City Department of City Planning)

1993: Plan for the Bronx Waterfront (New York City Department of City Planning)

1993: Bronx Greenway Plan (Bronx Borough Board)

1995: New Parkland for New Yorkers: Opportunities to Protect Open Space in New York City (Trust for Public Land)

1997: Investing in the Waterfront: New York City's Waterfront Revitalization Program (New York City Department of City Planning)

1997 New York City Bicycle Master Plan (New York City Departments of City Planning and Transportation)

1997 The Old Croton Aqueduct (The Parks Council, now New Yorkers for Parks)

2000 Harlem River Greenway Master Plan (Department of City Planning)

2002: New Waterfront Revitalization Program (New York City Department of City Planning)

2003: Report of the Bronx Waterfront Task Force (Borough President Adolfo Carrion)

2003: CD8 2000: A River to Reservoir Strategy (197a Plan)

2004: Bronx Waterfront Plan (Bronx Borough President Adolfo Carrion)

2004 Bronx Arterial Needs Major Investment Study (NYS Department of Transportation)

2004: The Harlem River Waterfront. (Bronx Council on Environmental Quality)

2005: NYS Open Space Conservation Plan (NYS Department of Environmental Conservation) (Updated 2009)

2006: Upper Harlem River Comprehensive Waterfront Plan (New York Restoration Project) Added since 2007:

2012: Harlem River Greenway: Our Vision, Our Future (Harlem River Working Group)

[2] BCEQ, "Harlem River Waterfront," (2007) p. 22.

1.D BROWNFIELD OPPORTUNITY AREA BOUNDARY DESCRIPTION AND JUSTIFICATION

For purposes of this Step 2 study, the proposed Harlem River Brownfield Opportunity Area consists of the Central Focus Area, the smaller Spuyten Duyvil Focus Area and the more expansive Context Areas, all in the New York City Borough of the Bronx, in Bronx County, New York. Separating the two study areas is Marble Hill, an anomalous section of Manhattan that is on the Bronx side of the Harlem River. It is excluded from the BOA boundaries. The Context Areas have been drawn to capture residents who live with a one-mile walk of the river; these residents also live within the Harlem River watershed.

CENTRAL FOCUS AREA: The Central Focus Area is a linear strip of land along the eastern shore (Bronx side) of the Harlem River. Its eastern and western boundaries are clearly defined by the river on the east side and I-87/MDE on the western edge. The Central Focus Area encompasses nearly 5 miles of waterfront from West 149th Street on the south to West 225th Street on the north, plus a five block northern inland extension between 225th-230th streets. The average width of the waterfront portion of this strip of land is approximately 300 feet. The total acreage within the Harlem River BOA Central Focus area is 139.8 acres.

In the BOA Step 2 process, the Central Focus Area has been expanded somewhat from its original Step 1 boundaries. Early in the Step 2 process, the Steering Committee recommended extending the southern boundary from Macombs Dam Bridge to West 149th Street, taking in an additional 3,000 feet of waterfront. Extending the boundary to West 149th Street enables the BOA process to consider strategies for the waterfront in the vicinity of the new Yankee Stadium and Gateway Center mall, an area with high traffic, high visibility and much potential, but with persistent brownfields, underutilized sites and roadway infrastructure that is currently extremely unfriendly for cyclists and pedestrians. Potential connections and improvements in this area are crucial to achieving the vision of a continuous linear greenway and recreational areas along the Harlem River.

On the north end of the Central Focus Area, two areas of expansion have been added to the proposed BOA Boundary due to their strategic locations for potential greenway connections. The oblong block bounded by Exterior Street, West 230th Street, the Major Deegan and West 225th Street has become a strategically important link between the proposed Harlem River Greenway and a proposed extension of the Putnam Greenway to south of Van Cortlandt Park; the Putnam project is currently in the planning and easement acquisition process through NYC Parks, and when successfully completed, will offer a direct greenway connection to the existing greenway in Westchester County. Similarly, the proposed BOA Boundary has been extended slightly westward at River Plaza Mall between the Harlem River shoreline and West 225th Street, now reaching west to Broadway. This relatively small expansion could help facilitate pedestrian and bike access to Broadway, the 1 train line and the Marble Hill Metro-North stop at a key multi-modal transportation hub that links the Bronx, Manhattan and upstate locations.

Within the proposed Harlem River BOA Central Focus Area, a total of eight Strategic Sites and three Strategic Connections have been identified within this BOA Area nomination study. The Strategic Sites and Strategic Connections are distributed from the southern end to the northern tip of the Central Focus Area, making it clear that these boundaries define an area that has a strong underlying logic to it, even though it has the challenge of being fairly large for a BOA Area.

THE CONTEXT AREA FOR THE CENTRAL FOCUS AREA includes both the Central Focus Area itself (whose population is concentrated in only one housing development, namely River Towers in Roberto Clemente State Park) and the upland communities extending east to Jerome Avenue. Jerome runs from Macombs Dam Bridge northward and intersects with West 230th Street, which is the northern extent of the Context Area.

SPUYTEN DUYVIL FOCUS AREA: During the course of the Step 2 study, the boundaries of the Spuyten Duyvil Focus Area and Context Area remained unchanged from the Step 1 BOA process; however, no Strategic Sites or Strategic Connections have been identified in the Spuyten Duyvil area.

THE CONTEXT AREA IN SPUYTEN DUYVIL encompasses the Spuyten Duyvil Focus Area plus the residential community up to a line that includes West 230th Street and a line extending along the approximate trajectory of West 230th Street to the Hudson. On the east, the Context Area is bounded by the eastern edge of Kennedy High School.

Figure 4. Harlem River BOA Boundary Map

SECTION 2

Public Participation Plan and Techniques to Enlist Partners

BCEQ Water Conference

COMMUNITY PARTICIPATION PLAN: The Bronx Council for Environmental Quality (BCEQ) approached the Harlem River BOA Step 2 project community participation plan with the same enthusiasm as Step 1. BCEQ assimilated the BOA Project into its organizational annual events to encourage upland community residents to participate in the watershed planning.

- What uses would draw them to it?
- How would they get there?
- How can the waterfront be developed to connect the four communities to each other, to new employment centers, and to future amenities?
- How will the underlying resource, the Harlem River, be protected?
- How can the waterfront change from posing a threat to public health to enhancing public health?

Throughout the process, residents were encouraged to think creatively and strategically about how brownfields along the waterfront can be a springboard for the revitalization of their neighborhoods and the river itself; how cleaning the land will clean the water, too!

A Collaborative Community Approach Manages an Urban River Naturally: Along with the BCEQ Board of Directors, the Harlem River BOA project was structured to give other community-based organizations a leadership role in order to ensure that the public will remain engaged in the development of the waterfront from conception through implementation.

In Step 1, BCEQ and the Bronx Borough President's Planning Office formed a Steering Committee that by agreement included a majority of community-based, non-profit organizations with longstanding and diverse interests in the waterfront. This committee includes Manhattan College, New York City Soil and Water Conservation District, New York Restoration Project, Metro Forest Council, the Gaia Institute, the Hudson Riverkeeper, and others. Many Steering Committee members were involved in the planning of this "environmental" brownfields project, having partnered with BCEQ on five previous Water Conferences, including three on the Harlem River. Agency representatives supplemented the Steering Committee, which included representatives of New York State Department of State (DOS) and Department of Environmental Conservation (DEC) which together administered the state program, the New York City Mayor's Office of Environmental Remediation (MOER), NYC Parks - Planning, New York City Department of City Planning, the Bronx Borough President's Office, and Bronx Community Boards 4, 5, 7, and 8. Together, this formalized the Harlem River Brownfield Opportunity Area Project Steering Committee.

The Committee was involved in defining the scope and boundaries of the project and reviewing the draft of the report. Members contributed all of the concepts, technical data, and mapping. A smaller coordinating committee handled the day to day operations with the project manager, who was the point of contact with the state agencies. This BOA project was unique in that it recommended using nature and natural methods to remediated pollutants found in the built urban landscape.

The Harlem River BOA Step 2 continued the same process, including a robust community outreach program. BCEQ volunteers scheduled the group's annual community events, which included community rides on the Harlem River and Van Cortlandt Park Lake in Wilderness Inquiry Canoemobiles, a Mini-Water Conference as a kick-off introduction to Step 2, the February Speak-Up, the March Annual Membership Meeting and Water Conference on the Step 2 (which included workshops), and several Harlem River Steering Committee Meetings.

In addition, BCEQ was funded through a grant from NYC MOER's Brownfield Incentive Grant (BIG) program to hire a community consultant, and hired the Friends of Van Cortlandt Park (FVCP), a local not-for-profit community-based organization to assist with public participation and outreach.

Community-Based Steering Committee: For the BOA Step 2 process, BCEQ convened and updated the Steering Committee consisting of all of the organizations that participated in the Step 1 BOA Steering Committee and added new economic development sector agencies, including the Bronx Overall Economic Development Organization and the New York City Economic Development Corporation.

The Step 2 Steering Committee met in July 2012 to discuss the relationship with NYC Parks as the Program Manager. They met again in March 2014 to finalize the BCEQ – Parks Agreement. While the RFP, interviewing and hiring of the consultant team proceeded, BCEQ circulated requests in the community to seek an appropriate community-based organization to assist with the Public Participation Plan.

Steering Committee meetings were held in September and December 2014. The group was able to review the results of the first term of the survey undertaken by the Friends of Van Cortlandt Park interns, as well as the

Rating form prepared by BCEQ Water Committee for inclusion in the decision-making process. In 2015, the BCEQ Annual Meeting and Water Conference served as the Steering Committee's spring meeting, while another Steering Committee Meeting was held in July to review and seek feedback on the Draft Final Report.

Friends of Van Cortlandt Park as Community Participation Planner: The Friends of Van Cortlandt Park responded to BCEQ's request and created a survey to seek the public's opinions on access and brownfields to the Harlem River. It set forth a plan to conduct outreach throughout the HR BOA Focus and Community Participation Areas and nearby. Over the next year, and under the FVCP Executive Director's guidance, Harlem River BOA interns visited over 40 events and places where people gathered and administered surveys in HR BOA communities to more than 1,000 people. Outreach locations included BCEQ conferences and meetings; Community Boards 5, 7 and 8; Lehman, Fordham, Manhattan Colleges; Botanical Garden, Farmers Market and Wildlife Conservation Society; Bronx Rivers Conference; local schools at release time; neighborhood parks and libraries; regional and state parks, such as Van Cortlandt Park, Roberto Clemente State Park and the Highbridge Opening; subway and bus stops; etc. At first, a long and short form of the survey was developed by the interns with review by the Steering Committee and Consultants. (See Appendix B)

- Of the over 306 people who answered the short survey, most were from CB 7 (37%). Fifty-two percent (52%) of respondents were between 18 and 40 years of age. The most popular answer (38%) to "What would you like to see developed on the Harlem River" was tied between: Canoeing/ Ferries, and Recreational Trails. The least popular answer was Commercial and Light Industrial uses at 4%.
- The Long Form was answered by 149 people. Most of those responding (33%) were from CB 8. In response to "out of those recreational options, which would you most like to see along the Harlem River," Recreational Uses was chosen by 88%. Twenty-eight percent (28%) of respondents were 55 and above. Fifty-six percent (56%) stated that there are obstacles that prevent them from accessing the river, including the train tracks and highway. When asked "why would you like to access the planned greenway," a majority (87%) favored exercise or recreational activity.
- Based on these results, the Spring Survey was adjusted and administered from January to June 2015. Of the 575 people who participated in this Spring Survey, most were 17-24 years of age (25%), and covered four community boards. The responses were similar in that 43% were in favor of recreation, 37% exercise, and 47% stated that they had difficulty accessing the River.

Community Contact List: The community contact list for the Step 2 BOA process began with lists prepared under the Step 1 BOA phase and other names gathered through the ongoing outreach efforts of BCEQ's Harlem River Working Group. The list has continued to evolve and expand, with new names added continually by FVCP as they conducted community outreach, as well as those referred by BCEQ, NYC Parks and the planning/design consultant team. FVCP maintained the list of over 800 names totaled by the end of 2015.

Initial Kick-off Meeting: BCEQ's Mini-Water Conference, held on October 8th, 2014 at Roberto Clemente State Park, served as the forum for the public's introduction to the HR BOA Step 2 process. In the late afternoon, participants from BCEQ, the Harlem River Working Group (HRWG), Bronx Coalition for Parks and Green Spaces (BCPGS) and the BOA Steering Committee and consultant team were invited to explore the Harlem River in canoes in conjunction with the Wilderness Inquiry canoe event.

BCEQ Water Committee volunteers moderated the evening session presentations by FVCP, ABB, and NYC Parks. There were three presentations: explaining the intent and scope of the BOA Step 2, and the survey by the FVCP interns; BCPGS's fall event and the upcoming reopening of the High Bridge; and the NYC Parks concept study regarding the potential for daylighting Tibbets Brook in Van Cortlandt Park.

This networking event also served as a means of soliciting input on goals and objectives, opportunities and constraints of the Study Area, through a question and answer period, surveys and an interactive map. See "Brownfields in a Nutshell" in Appendix B, Community Participation Supplemental Information.

Public Informational Meetings and Notices: Two additional informational meetings held in the late winter/spring of 2015 served as the main venues for presenting and reviewing the Harlem River BOA current conditions, vision and goals. At the Bronx Speak-up in February 2015, the BOA team's consultant project manager participated on the Access Panel, discussing challenges to overcome to provide access to the Harlem River Waterfront.

Just as was the case for Step 1, the big event was the BCEQ's Annual Water Conference event, held at Manhattan College on March 18, 2015, devoted to "Going from Step 2 to Designating a Brownfield Opportunity Area along the Harlem River Waterfront in Bronx Community Boards 4, 5, 7 and 8." Advance publicity described the process to prospective participants. The general sessions entailed presentations on the Goals, Objectives and Vision Statement; the potential Strategic Sites and Strategic Connections; and the possibility of applying to designate the HR BOA area. Break-out sessions followed, organized by Community Districts to gain specific feedback on the draft vision, goals and sites proposed as part of the nomination. Invitations went to the full mailing list and followed up with email blasts and phone messages. See Press Release and Report on the Water Conference Appendix B.

BCEQ Harlem River BOA on BCEQ website/ newsletter: The Harlem River Brownfield Opportunity Area is on the BCEQ website (www.bceq.org/ category/ projects/boa/) to share information and progress about the project with the public. It explains the program, schedule of meetings, reports issued, and news relevant to brownfields. As BCEQ is a membership organization, the web page is designed to allow the community to sign up for news alerts on the Harlem River, for the mailing list or for the e-mail list, and the site automatically updates the information. The BCEQ web page will also upload the BCEQ newsletter, which is an eNewsletter sent to the mailing list.

TECHNIQUES TO ENLIST PARTNERS: The majority of partner engagement has been done through BCEQ's Harlem River Working Group. The Harlem River is a Urban Waters Federal Partnership (UWFP) waterbody and as such has been closely engaged with Federal Agencies such as the National Parks Service of the Department of the Interior, EPA, Forest Service, NOAA and USGS.

BCEQ's NOAA grant was a model in situ bioremediation project which cleaned stormwater runoff from the highway with 5,000 native plants in a pop-up wetland. This was consistent with the BOA project's using nature and natural methods to remediate pollutants found in the built urban landscape. BCEQ worked with USGS to do the monitoring of the project. It was so successful that people came to see it and to talk about the BOA program.

In terms of academic institutions, the strong partnerships with Manhattan, Hostos and Lehman colleges have included a wide range of faculty and student groups. Walter Matystik, Associate Provost at Manhattan, has been deeply engaged in BCEQ's Harlem River work since before the Step 1 process and Manhattan College has hosted the BCEQ Water Meeting since 2000. Additionally, BOA Steering Committee Co-Chair, Dart Westphal, is an adjunct instructor at Manhattan College. Lehman College, part of the CUNY system, hosted the Bronx Speak-up and the July 2015 BOA Steering Committee meeting.

As was planned during the Step 1 BOA process, the Step 2 phase has strengthened partnerships with the following stakeholders:

- MTA/MetroNorth, Amtrak, and private railroads
- NYS Office of Parks & Historic Preservation at Roberto Clemente State Park
- Tenants and cooperative associations
- Parks Committee of each Community Board

SECTION 3

Analysis of the Proposed Brownfield Opportunity Area

View looking north from Macombs Dam Bridge

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3.A COMMUNITY AND REGIONAL SETTING

COMMUNITY IN CONTEXT: COMMUNITY SIZE, POPULATION AND LOCATION

The communities that comprise the Harlem River BOA Context Area are located within the Borough of the Bronx in the City of New York, which has a population of more than 8 million people. Bronx County itself is home to over 1.4 million people. From a regional perspective, the New York-Newark-Jersey City, NY-NJ-PA Metropolitan Statistical Area houses a population of approximately 20.1 million people according to 2014 census estimates.[1] The Combined Statistical Area that includes additional counties in New York, New Jersey and Connecticut is estimated at a population of 23.6 million as of 2014.[2] The region is by far the most populous in the United States and is an ethnically diverse area that is a major gateway for legal immigration. As of the 2010 census, the population within the Context Areas is roughly 150,000. Of this BOA Community population, only approximately 5,000, namely the residents of River Park Towers, who constitute a single census tract, live within the BOA Central Focus Area.

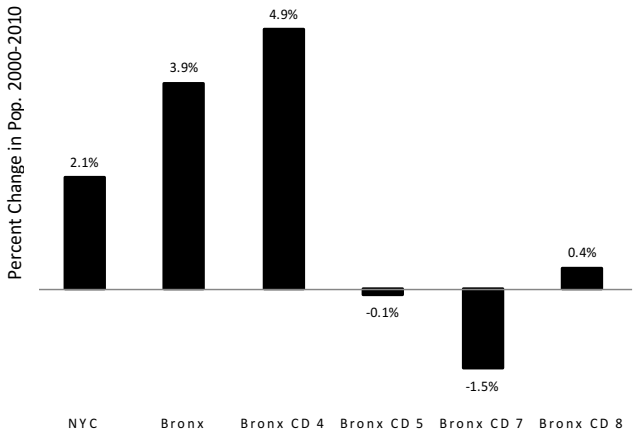

Figure 5. Changes in Population Graph, 2000-2010
(Source: 2000 and 2010 Census Data, NYCDCP Population Profiles and BOA Pre-Nomination Study, 2007)

KEY DEMOGRAPHIC INFORMATION AND TRENDS

The Harlem River BOA includes portions of Bronx Community Districts (CDs) 4, 5, 7, and 8. Neighborhoods in the area include: Highbridge, Morris Heights, University Heights, Kingsbridge Heights, and Spuyten Duyvil; the Lower Concourse neighborhood adjoins the Central Focus Area on the waterfront to the south.

Between 2000 and 2010, both NYC and the Bronx grew in population. Three of the four community boards that include portions of the BOA, however, either lost population or gained less than borough-wide or city-wide figures. Both Community District 5 and Community District 7, which include BOA Context Area neighborhoods Morris Heights, University Heights, and Kingsbridge Heights, lost residents. Bronx Community District 4, which includes Highbridge and the lower Concourse neighborhoods, on the other hand, outpaced both the Bronx and the City with a positive 4.9% change in population.

Throughout most of the BOA Context Area, Hispanics make up between 50% and 80% of residents. This corresponds to 53.3% in the Bronx as a whole, more than the 28.6% for New York City. These figures are consistent with out-migration of African Americans and Whites and in-migration of Hispanics, a trend that has been observed previously. The three census tracts in the Spuyten Duyvil neighborhood, however, stand out; in this portion of the BOA, White Non-Hispanics are about 70% of the population and Hispanics represent only about 15% of the population. If we look at one neighborhood more closely, we can get a sense of the communities that characterize much of the central focus area. In the University Heights neighborhood, 68% of residents are Hispanic and 42% of all residents are foreign-born.[4]

One demographic category where the Spuyten Duyvil area is markedly different from the majority of the BOA, is age. In the three census tracts in Spuyten Duyvil, between 25% and 50% of residents are 65 years of age or older. This is compared to 10.6% in the Bronx and 12.1% in New York City. As mentioned in the 2007 BOA Study, some of the residential developments in Spuyten Duyvil may qualify as “Naturally Occurring Retirement Communities” (NORC’s). The vast majority of the census tracts in the central focus area of the BOA have fewer seniors than borough- or city-wide.

Note: Community in Context and Key Demographics

1 U.S. Census Bureau, “Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2014 – Metropolitan Statistical Area; and for Puerto Rico - 2014 Population Estimates,” accessed March 26, 2015.

2 U.S. Census Bureau, “Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2014 – Combined Statistical Area; and for Puerto Rico - 2014 Population Estimates,” accessed March 26, 2015.

3 Refer to Appendix A for maps of 2010 census tracts in Bronx Community Districts 4, 5, 7, and 8.

4 This includes census tracts not located within the BOA. Source: DCP, Sustainable Cities Metro-North Study.

Table 1	Population 2010	% over 65	Hispanic Any Race	African American Non Hispanic	Asian Non Hispanic	White Non Hispanic
CD4 - High Bridge	146,441	9.10%	63.1%	32.3%	1.5%	1.5%
BOA Context Area						
Census tract 063*	5,280	7.6%	65.9%	24.0%	4.2%	3.7%
0189	7,752	6.1%	65.3%	31.0%	0.7%	1.6%
0193	5,461	8.6%	64.8%	33.1%	0.2%	0.7%
0199	8,154	7.7%	67.8%	29.3%	0.4%	1.4%
0201*	4,013	5.6%	61.6%	35.2%	0.4%	1.3%
0211	5,565	6.2%	61.7%	35.8%	0.4%	1.2%
0213.02	5,415	8.1%	59.2%	38.5%	0.6%	0.8%
0219	1,387	7.6%	73.8%	22.1%	1.0%	1.1%
CD5 - Morris Heights	128,200	6.7%	68.6%	33.7%	1.1%	12.9%
BOA Context Area						
Census tract 053	4,669	5.6%	43.4%	54.0%	0.2%	0.9%
0205.01*	6,996	8.1%	59.9%	37.4%	0.3%	1.1%
0205.02	1,764	16.5%	65.5%	31.2%	0.2%	2.0%
0213.01*	1,201	7.4%	79.2%	18.2%	0.1%	1.6%
0215.01	4,206	6.1%	64.6%	22.3%	4.5%	6.1%
0215.02	6,051	6.7%	67.9%	29.3%	0.2%	1.5%
0217	5,334	4.6%	52.3%	43.0%	0.7%	2.8%
0243	5,685	7.7%	69.0%	27.8%	1.0%	1.0%
0245.01	4,864	6.3%	76.3%	20.8%	0.3%	1.4%
0245.02	3,640	2.6%	72.4%	24.8%	0.2%	1.1%
0247	1,764	6.1%	46.6%	47.3%	1.9%	2.2%
0251	6,802	4.5%	67.3%	23.1%	7.0%	1.1%
CD7 - University Heights	139,286	8.9%	64.60%	21.40%	6.6%	17.0%
BOA Context Area						
Census tract 0239*	8,348	6.2%	75.6%	20.3%	0.8%	1.7%
0253	6,332	7.0%	74.1%	17.2%	5.3%	1.5%
0255	6,529	9.7%	77.2%	16.2%	3.2%	2.4%
0257*	1,912	6.7%	75.8%	20.4%	0.2%	1.9%
0261	1,932	17.3%	31.2%	55.6%	3.6%	8.3%
0263	6,984	13.3%	68.8%	17.3%	3.7%	8.7%
0265	6,942	10.0%	74.7%	12.0%	8.2%	3.2%
0267.01	4,037	8.5%	69.0%	9.4%	14.9%	4.4%
0269	3,777	8.9%	73.3%	19.5%	2.0%	4.1%
CD8 - Spuyten Duyvil	101,731	16.0%	44.90%		15.5%	45.50%
0267.02	7,040	7.8%	76.4%	14.4%	2.3%	5.8%
0273	7,942	8.9%	73.9%	15.8%	2.2%	7.0%
0293.01	1,875	26.3%	12.9%	7.2%	3.8%	74.5%
0293.02	5,052	26.6%	14.0%	8.6%	5.1%	69.9%
0301	1,304	48.6%	14.4%	8.1%	3.1%	72.5%
Bronx County	1,385,108	10.6%	53.5%	30.1%	3.4%	10.9%
New York City	8,175,133	12.10%	28.6%	22.8%	12.6%	33.3%
***partially within BOA Boundary**						

Figure 6. Demographics by Census Tract.

HOUSING TRENDS AND NEEDS

New York City continues to face high pressure on its housing, indicated by extremely low rental vacancy rates, among other indicators. Under the de Blasio administration, affordable housing has gained even more prominence as one of the top City priorities. As emphasized in the OneNYC vision, "Housing is in high demand and short supply, as the population continues to grow and housing production lags demand."[1] By 2040, New York City's projected population of 9 million people will need a minimum of 3.7 million housing units within the five boroughs of the city.[2] Under the OneNYC plan, the City has set a goal of creating and preserving 200,000 affordable housing units and supporting creation of 160,000 additional market rate units by 2024. This initiative to create more affordable housing in the Bronx impacts the Harlem River BOA Focus Area and Context Area, and a balance must necessarily be struck between these needs and those outlined in the Step 1 community goals - waterfront access, recreational opportunities, open space amenities and improved water quality.

BRONX HOUSING TRENDS AND NEEDS: Despite a 2.8% vacancy rate in 2013 (down from 4.1% in 2010) and a severe crowding rate of 6.5%, 42.7% of land across the borough possesses unused zoning capacity, i.e. it has been developed less than what the city's regulations allow. This unused development potential demonstrates a historic reluctance from the private sector to develop in the area. The borough's unemployment rate in 2013 was 14.6, nearly four percent higher than any other borough. Median rents in the Bronx were the lowest of any borough; more than 85% of renters in the Bronx paid less than $1,500 per month in 2013, compared to 68% across the city.[3]

In recent history, the majority of housing in the Bronx has been developed with public support. The Bronx has the highest share of subsidized housing in the city; 24.4% of housing units across the borough are publicly owned (e.g. New York City Housing Authority) or subsidized.[4] Thirteen percent of Bronx housing units receive some sort of public financing.[5] In contrast, only two percent of Queens rental units are in properties that receive financing from any of the programs covered in the Subsidized Housing Information Program (SHIP) database.[6] Of the borough's 390,348 rental units (as of 2011), 48,932 units were catalogued in the SHIP database. From 2011-2015, six properties with 4,200 units came to the end of their affordability requirements for all subsidy programs and could not renew at least one of their existing subsidy programs. Although the Bronx represents a concentration of projects that extend their affordability across the city, replacing these lost subsidies generally requires creative or complex financing arrangements. In total, 60 properties with 12,713 units had public affordability programs expire or were eligible to opt-out in the period from 2011 to 2015.[7]

Publicly owned and publicly subsidized apartments play an important role in the housing profile of the BOA and the Context Area. River Park Towers (census tract 053 in CD5) is the only major residential use located on the river's edge. This Mitchell-Lama middle income housing development was constructed in 1974 and is home to more than 4,600 residents. The two towers, 42- and 44-stories, are located in the middle of RCSP. Several New York City Housing Authority (NYCHA) developments are also in the BOA Context Area.[8]

HOUSING TRENDS, CONTEXT IN THE VICINITY OF THE HARLEM RIVER BOA: Despite its high unemployment rate, the Bronx's average annual wage of $47,000 is second highest behind Manhattan, supported by strong employment in the healthcare and wholesale sectors.[9] The market potential of the area — admittedly not driven exclusively by demand within the Bronx but also by adjacency and connectivity to the Manhattan market — is being recognized by the private sector. Investments in development sites in the Bronx increased 88% from 2013 to 2014, to $129.7 million with over 40 transactions including 73 sites and almost 3 million buildable square feet. The

	2010 — Total Housing Units	Change 2000-2010	
	Number	Number	%
BX CD4	51,652	3,641	7.6
BX CD5	43,460	769	1.8
BX CD7	50,161	(418)	-0.8
BX CD8	44,164	1,087	2.5

Figure 7. Portrait of Housing in BOA Community Districts
(Source: NYC Department of City Planning, "2010 Demographics Tables, Table PL-P2 CD: Total Population, Under 18 and 18 Years and Over by Mutually Exclusive Race and Hispanic Origin and Total Housing Units New York City Community Districts, 1990 to 2010," http://www.nyc.gov/html/dcp/pdf/census/census2010/t_pl_p2_cd.pdf.)

majority of activity is in the South Bronx near the HR BOA, where 24 development sites traded with nearly 2 million buildable square feet in 2014, averaging $45 per buildable square foot.[9] CD1, immediately south of Pier 5 and the southern boundary of the Harlem River BOA, is a particularly active location for new development, which has implications for the population of potential waterfront users and for the market in the Harlem River BOA as well.

River Park Towers on Harlem River waterfront

Notes: Housing Trends Context

1 "One New York Vision," http://www1.nyc.gov/html/onenyc/visions/thriving/goal-3.html, accessed 6/3/2015.

2 Ibid.

3 Furman Center for Real Estate and Urban Policy, New York University, "State of New York City's Housing & Neighborhoods in 2014," http://furmancenter.org/research/sonychan.

4 Ibid.

5 As categorized in the Furman Center for Real Estate and Urban Policy at New York University, Subsidized Housing Information Program (SHIP) database.

6 Ibid.

7 Furman Center for Real Estate and Urban Policy, New York University, "State of New York City's Subsidized Housing: 2011," p. 51.

8 As noted in the BOA Step 1 study, there are four major public housing complexes within or adjacent to the BOA study area: River Park Towers (Mitchell Lama) and three NYCHA properties, Marble Hill Houses, Sedwick Houses and Highbridge Gardens. BCEQ, Harlem River Waterfront Study, p. 21.

9 Department of Labor statistics

10 Ariel Property Advisors, "Bronx Year-end Sales Report," January 2015, accessed at http://arielpa.com/download/APA-Bronx-2014-Sales-Report.pdf.

AREA'S ECONOMIC CONDITIONS: INCOME, DOMINANT EMPLOYMENT SECTORS AND UNEMPLOYMENT

The majority of the BOA Central Focus Area, constrained between the Major Deegan and the Harlem River, currently has little economic activity. However, the River Plaza, a shopping center built in 2005 in Kingsbridge Heights, includes a Target, Marshall's and other national chain stores employing an estimated 600 people in total. Further south, several industrial uses, such as La Sala site and a cement plant, both in University Heights as well as the grocery store and educational complex in the River Towers, are the other employment nodes in the Central Focus Area. In the larger BOA Context Area, Yankee Stadium and Gateway Mall at the Bronx Terminal Market (another large shopping center), the Veteran's Hospital and Bronx Community College employ thousands of Bronx residents, some of whom presumably live in the BOA. New residential and commercial development just south of the BOA may provide future employment opportunities for residents in the BOA Context Area.

The Bronx unemployment rate (14.6%) is nearly five percent more than New York City's (8.7%). Between 2000 and 2012, the unemployment rate in NYC as whole diminished 0.9%, from 9.6% to 8.7%. The Bronx unemployment rate, however, grew 0.3%, from 14.3% to 14.6%. In Bronx Community Districts 5, 7, and 8, unemployment rates diverged from borough trends and diminished. In Bronx CD4 unemployment did increase, but in the four community districts within the BOA community area the 2012 unemployment rate is still lower than borough-wide figures. CD8, where the Spuyten Duyvil focus area is located, includes wealthy (for the city as a whole) neighborhoods in Riverdale; unemployment here is lower than the city-wide figures.

Almost all census tracts in the Central Focus Area have median household income figures lower than those of the city as a whole; these numbers are generally characteristic of Bronx-wide figures. Within the BOA community area, however, there is a range of median household incomes. In census tract 063 in the Lower Concourse neighborhood (Community District 4), the median income is $63,051. In the Morris Heights (Community District 5) census tract 053 household median income is $16,582. This census tract is home to high-rise subsidized housing complex, River Park Towers.

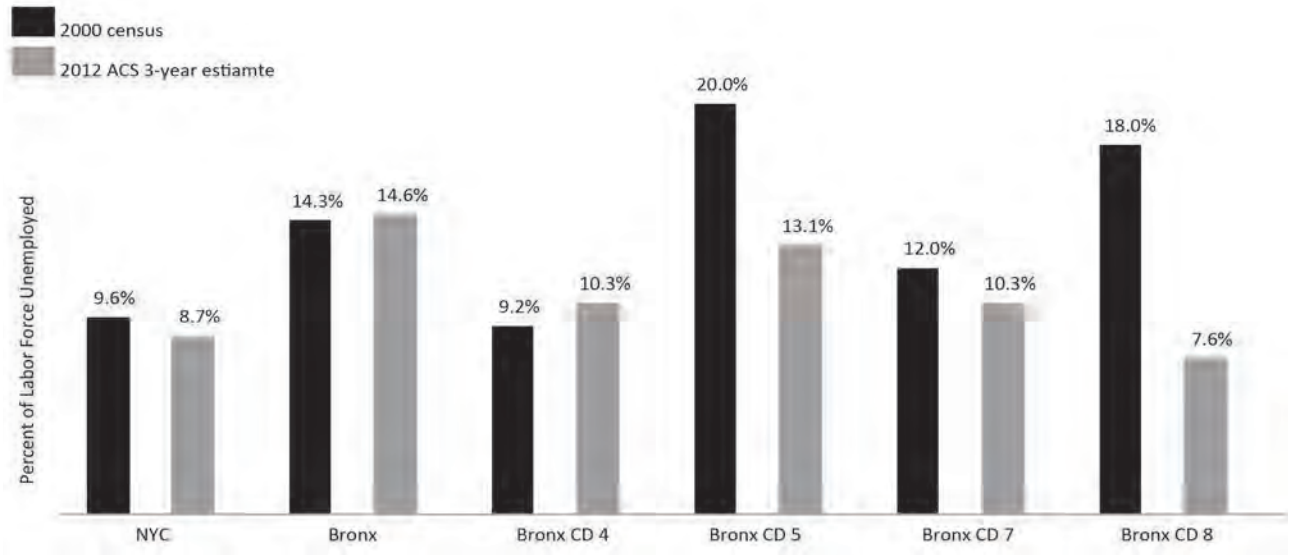

Figure 8. Unemployment 2000-2012
(Sources: U.S. Census Bureau 2000 Census and U.S. Census Bureau American Community Survey (ACS) 3-Year Estimates)

	Population 2010	Median Household Income (ACS 2012)	% renter occupied
Community District 4	146,441	$25,834.00	93.20%
BOA Context Area			
census tract 063*	5,280	$63,051	88.7%
0189	7,752	$24,000	92.7%
0193	5,461	$18,820	99.1%
0199	8,154	$24,226	91.3%
0201*	4,013	$31,582	100.0%
0211	5,565	$26,080	96.9%
0213.02	5,415	$23,855	94.9%
0219	1,387	$31,250	98.9%
Community District 5	128,200	$24,753	96.6%
BOA Context Area			
census tract 053	4,669	$16,582	100.0%
020501*	6,996	$24,615	95.3%
020502	1,764	$24,476	84.9%
021301*	1,201	$26,000	95.8%
021501	4,206	$34,485	99.3%
021502	6,051	$19,397	96.9%
0217	5,334	$17,207	98.5%
0243	5,685	$23,944	96.9%
024501	4,864	$27,144	90.4%
024502	3,640	$26,698	96.5%
0247	1,764	$51,250	100.0%
0251	6,802	$32,440	89.4%
Community District 7	139,286	$30,231	93.4%
BOA Context Area			
census tract 0239*	8,348	$22,404	95.7%
0253	6,332	$28,586	95.5%
0255	6,529	$21,889	96.5%
0257*	1,912	$31,728	87.8%
0261	1,932	$64,293	16.4%
0263	6,984	$26,576	98.2%
0265	6,942	$30,424	90.5%
026701	4,037	$26,935	97.6%
0269	3,777	$27,851	90.7%
Community District 8	101,731	$53,595	69.3%
census tract 26702	7,040	$38,765	93.9%
0273	7,942	$44,152	86.5%
029301	1,875	$105,682	27.0%
029302	5,052	$92,469	47.8%
0301	1,304	$78,036	59.3%
Bronx County	1,385,108	$34,300	80.1%
New York City	8,175,133	$50,711	69.0%

Figure 9. Economic Indicators For Harlem River BOA Communities

LAND USE HISTORY AND CURRENT STATUS[1]

The Harlem River was a stream flanked by high forested cliffs until the 1800s, when it became the object of radical interventions by transportation and civil engineers determined to make it viable for commercial navigation. Its tidal patterns and meandering course were the principal hurdles. Strong and variable currents in the upper river caused the river to silt up, leaving only a narrow channel between broad mud flats. The shoreline was cut and filled. The seven-foot channel was dredged to 18 feet and widened by 400 in Spuyten Duyvil. The river bent sharply around the peninsula jutting out from the Manhattan shore, so the soft marble rock was cut away to sever Marble Hill from Manhattan and re-attach it to the Bronx.

The Harlem Ship Canal, a 100-year project intended to make a shortcut from the Hudson to the Long Island Sound, manipulated the shoreline and the course of the river, but not its tides. The Harlem kept silting up, making it difficult for large ships – the kind that stood any chance of meeting the new competition from the railroad or that might have been developed in conjunction with it.

The first railroad came to the Bronx in 1840. In 1851 tracks were laid down along the Harlem shoreline, usurping about half of the available land on the waterfront fringe. Where the fringe was too narrow or even non-existent, trestles and tracks were installed on top of riprap. The railroad sealed off the waterfront from both sides, restricting access from the inland to a handful of crossings spread out over seven miles. It also made building and reaching new piers or docks nearly impossible.[1A]

This choked access to dwindling acreage restricted industrial development of the waterfront to small enterprises able to make use of small piers: boat building, coal storage and distribution, sand and gravel to supply the local building boom.[1B]

Spuyten Duyvil was an exception because of its proximity to the Hudson River and greater land. The Johnson Iron Works, a munitions factory, continued to operate there until the 1930s.

If heavy industry requiring acreage and access was precluded by the railroad, recreational development was left to thrive in response to the great recreational development on the Manhattan side. By the turn of the 19th century, the upper Harlem was a small boating mecca served by piers, boating clubs, and waterfront parks, joined by bridges used for promenades and viewing platforms. Kyle's Amusement Park south of the High Bridge and the Velodrome in Kingsbridge were major attractions. A plethora of stone step streets, many of them grand, were built throughout the area between 1890 and 1920 to bring people down from the upland. Commercial activity developed around the breaks or valleys where residential neighborhoods came closest to the river: e.g., Kingsbridge, Fordham, Burnside, Tremont, Highbridge.

But the recreational uses of the waterfront survived only as long as the there was sufficient public access from the upland Bronx neighborhoods, Manhattan, and the water. With the construction of the six-lane Major

Harlem River Rowing Late 19th Century
(Source: eastrivercrew.org)

Deegan Expressway in 1956, the six-lane Cross Bronx Expressway in 1963, the Harlem River Drive in 1964, and the closing of the High Bridge in 1970, the waterfront's strangulation was completed.

With the advent of containers, highway trucking eventually drove the railroads to bankruptcy and reorganization, forcing them to sell off land and rights, and to seek other revenue. One of the more lucrative sources of revenue was billboards aimed at the new highway. While old time residents recall the billboards of the railroad era being six feet high, invisible from the neighborhoods, the new ones now shot up

from the railroad yards along the waterfront hundreds of feet in the air, expanding to the size of the high-rise buildings whose views they now blocked….

The steep slope is also what enabled the City and State in 1974 to create Roberto Clemente State Park and the first (and so far only) residential development on the waterfront. Using air rights over the railroad, the city was able to build a platform to provide the infrastructure required by the new uses: broad at-grade connections with the local street and a school. The park was built on former industrial land, heralding the recognition by the State and the City that the future of the upper Harlem waterfront would be park and residential.

. . . In 2005 River Plaza became the first development in thirty years to bring the public to the waterfront, this time as employers and customers of a shopping mall instead of residents of a housing complex.

Notes: Land Use History

1 Land Use section excerpted from HR BOA Step 1 Report, *Harlem River Waterfront: Linking a River's Renaissance to it Upland Neighborhoods,* pp. 22-24.

1A Daniel Van Pelt, *Leslie's History of Greater New York*, (New York: Arkell, 1899).

1B Preservation Plan for the Harlem River: Columbia University Graduate School of Architecture Studio project, 2004. Also recollections from Robert Rothschild: "Colonial Sand & Gravel was north of the University Heights Bridge. The material would be brought by sailboat from the Long Island Sound to the entrance of the harbor, then transferred to a tug that would bring it to [Fordham Landing]."

COMMUNITY AND REGIONAL CONTEXT: TRANSPORTATION SYSTEMS

Most of the Harlem River waterfront is still severed from the neighboring Bronx communities by steep topography, I-87/MDE and Metro-North Railroad (MNR) tracks, two major transportation infrastructure resources that primarily serve through-trips. These transportation routes are used infrequently by local residents. A modest to high portion of housing units within the study area do not have a vehicle available: in Bronx Community Districts 4, 5, 7, and 8, rates of housing units without vehicles are a respective 75, 74, 71, and 48 percent.[1]

Traffic data obtained from the New York State Department of Transportation indicates that average daily traffic volumes along the I-87/MDE exceeded 107,000 vehicles, and that ten percent of these volumes consisted of heavy vehicles (i.e., trucks and buses).

View of waterfront and transportation infrastructure north of High Bridge

The Harlem River waterfront is very well served by commuter rail, an underutilized resource for the area: Metro-North Railroad (MNR) commuter rail stations in or near the BOA Focus Areas include the Spuyten Duyvil, Marble Hill, University Heights, Morris Heights, and Yankees/153rd Street Station. Daily commuter ridership at these Hudson Line stations is low, and with one exception, each has an average weekday ridership (boarding and alighting) totaling less than 200 passengers.[2] The exception is the Spuyten Duyvil station, which experiences more than 900 daily riders. The low ridership can be primarily attributed to the high cost ($6.50 for a one-way off-peak fare) for relatively short MNR trips within New York City as compared to the $2.75 MetroCard fare for subways and buses. To reach Metro-North destinations within the Bronx

that are on the on the Harlem Line as opposed to the Hudson Line that runs through the BOA Study Areas, it is necessary to go south to the 125th Street station in Harlem and then take the northbound Harlem line at high cost.[3] The new Yankees/153rd Street MNR station serves as a benefit for fans, as up to 6,000 riders use this station on game days. Train ridership reduces the parking and traffic demand in the vicinity of Yankee Stadium on game days. However, weekday ridership averages about 100 trips per direction, indicating that this station is not a primary transportation option for the adjoining community.

On the other hand, these Hudson Line MNR stations offer excellent reverse-commute potential as well as weekend access to points north. The MNR stations in the BOA area also offer potential for bringing more people to Harlem River waterfront destinations in the future.

NYCDCP's "Sustainable Communities in the Bronx" study noted that Bronx residents rely heavily on public transit to make their commutes, with about 65 percent using public transit daily, and local residents using buses more than other city residents.

Overall, MTA NYCT bus ridership has declined about seven percent citywide from 2009 to 2014. This decline has been attributed to increased traffic congestion that slows buses and results in unreliable service. However, Bronx bus ridership has increased by approximately two percent during the same period. The Bx 12, which is NYCT's second highest ridership bus route and first Select Bus Service route, operates along 207th Street in Manhattan, across the Harlem River on the University Heights Bridge and through the Bronx along Fordham Road; this route has experienced a seven percent increase in ridership since 2009. Similarly, average weekday subway ridership in the Bronx has increased by ten percent between 2009 and 2014, which is consistent with the citywide ridership increase. These trends highlight the growing importance of bus and subway service for Bronx residents. However, few bus routes stop near the Harlem River waterfront, while most subway stations are more distant (½-mile upland from the shorefront).

Bike ridership within NYC has more than doubled since 2009, and NYCDOT bike projects have totaled more than 200 miles of bike routes in NYC during this time. A current DOT initiative that favorably impacts the Harlem River waterfront is DOT's "High Bridge and Bridge Park Access – Pedestrian and Bicycle Connections" project, providing new dedicated bike lanes and wayfinding signage linking the High Bridge with the Harlem River waterfront at Depot Place.

NYCDOT's current bike map (2015) identifies a "potential future bike path" along Exterior Street the full length of the Harlem River waterfront north of RCSP, although there is no current agency movement to plan and implement this section. Regardless, developing the greenway remains a high priority for the Harlem River Working Group and this BOA study.

NYCDOT's latest initiative is Vision Zero, which seeks to eliminate all deaths from traffic crashes regardless of whether on foot, bicycle, or inside a motor vehicle. The 2015 Bronx Borough Safety Action Plan notes that pedestrian fatalities in the Bronx have fallen 55 percent in the past three decades, but have begun to rise in recent years, and are slightly higher than the citywide average. Priority safety corridors identified by NYCDOT within the Harlem River waterfront area include Fordham Road, 149th Street, and University Avenue.

As part of the Vision Zero initiative, the bridges across the Harlem River between the Bronx and Manhattan have been of particular concern for mobility and safety. DOT is responding with the Harlem River Bridges Access Plan to develop strategies for improving these conditions. Of the 16 bridges on the Harlem River (not all inside the limits of the HR BOA study areas), 13 of these have pedestrian facilities and 5 have bicycle facilities, including the recently opened Randall's Island Connector. A series of community workshops are being held on both sides of the river in 2015, with the intended results of generating priorities for short term, acheivable pedestrian-bike improvements, as well as helping to prioritize longer-term capital projects.

Routine water transportation to/from the Bronx and other locations within New York City does not exist, although a single ferry line currently operates a ferry service from Highlands, New Jersey for selected Yankee home games, and one tour line makes multiple trips per day around Manhattan via the Harlem River.

Other transportation and planning projects within the region that could have an effect on the BOA communities include:

- NYCDCP's Jerome Avenue Study, which seeks to revitalize a two-mile stretch of Jerome Avenue and support the surrounding neighborhoods in Bronx Community Districts 4 and 5. This is a key transportation corridor from which many of the public transit trips to the Harlem waterfront may originate.

- NYSDOT's Major Deegan Expressway Corridor Bridge Rehabilitation from 160th to 232nd streets.

Notes: Transportation Systems

1 U.S. Census Bureau, "2010-2012 American Community Survey 3 Year Estimates, Population Division – New York City Department of City Planning" (January 2014).

2 NYC Department of City Planning "Sustainable Communities in the Bronx" study noted a 2011 University Heights Metro-North weekday ridership of 40 inbound and 212 outbound passengers and that of Morris Heights at 36 inbound and107 outbound passengers daily.

3 Example peak fare for Morris Heights Station to Fordham Station was $25 as of 2015.

COMMUNITY AND REGIONAL CONTEXT: INFRASTRUCTURE

HARLEM RIVER WATERSHED: A healthy waterway is able to sustain ecosystems and natural habitats for animals and plants and to provide human populations with recreational opportunities ranging from boating, swimming and fishing. In order to provide all of these benefits, improving water quality is a key goal which both the NYS Department of Environmental Conservation (NYSDEC) and NYC Department of Environmental Protection (NYCDEP) have been working towards for all of the waterways around New York City, and of particular interest for this study, along the Bronx side of the Harlem River. The federal government also has a stake in improving the water quality of the Harlem River. In 2011, the Urban Waters Federal Partnership (UWFP) announced initiatives on seven pilot locations throughout the country, one of which was the Harlem River Watershed. The UWFP facilitates local government and community organizations' access to resources and technical assistance in an effort to improve water quality of local waterways.

The Harlem River is part of the Lower Hudson Sub-Basin. It is classified by the NYSDEC as a Class I saline surface water estuary. Due to low dissolved oxygen, PCBs and other toxins, floatables and CSO pollutants, the Harlem River's recreational use, aquatic life and fish consumption are known to be impaired. In 2014, NYSDEC proposed amending Parts 701 and 703 of Title 6 of the Official Compilation of Codes, Rules, and Regulations of the State of New York (6 NYCRR) to require that the quality of Class I and Class SD saline surface waters be suitable for primary contact recreation, such as swimming. This is necessary to meet the "swimmable" goal of the federal Clean Water Act.

STORMWATER, WASTE WATER AND CSOs: Pollution of the Harlem River is attributed to several sources such as contaminated stormwater runoff, combined sewer overflows (CSOs), and contaminated soil on sites adjacent to the river. Both NYSDEC and NYCDEP have begun to tackle the pollution starting with NYSDEC's 2005 Consent Order requiring New York City to address the over 400 CSO release points of the NYCDEP municipal wastewater system. The Order follows the two-phased approach identified in the USEPA CSO Control Policy which calls for Nine Minimum Control Measures to minimize overflows and CSO pollution and the development of Long Term Control Plans to address water quality issues not fully addressed by the nine minimum controls. As a result NYCDEP is undertaking projects totaling $2 billion to capture about 75% of wet-weather overflows. The Order also requires NYCDEP to develop 11 Waterbody/ Watershed Facility Plans (WWFPs) to identify remaining water quality issues, evaluate CSO contributions to these problems and form the basis of subsequent Long Term Control Plans (LTCPs) to bring these waters into compliance with water quality standards. The Harlem River is included in the East River and Open Waters

Combined Sewer Overflow near RCSP

WWFPs.

Sewer Systems: The HR BOA Central Focus area has both storm sewers carrying stormwater run-off directly to the river and combined sewer systems. Combined systems are designed to transport sewage, industrial wastewater and rainwater runoff in the same pipes to wastewater treatment plants.

Combined Sewer Overflows: During periods of heavy rainfall or snowmelt, the volume of wastewater traveling through a combined sewer system can exceed the

capacity of the sewer system or treatment plant. For this reason, combined sewer systems are designed to overflow occasionally and discharge excess wastewater directly to nearby streams, rivers, lakes or other water bodies. These overflows, called combined sewer overflows (CSOs), contain not only stormwater but also pollutants such as untreated human and industrial waste, toxic materials and debris. Stormwater may also contain pollutants, including oil, grease and toxic substances, picked up as rain washes across roads or fields. These pathogens, solids and toxic pollutants may be discharged directly to local waters when it rains, resulting in a discharge that exceeds water quality standards. They pose risks to human health, threaten aquatic habitats and life, and impair the use and enjoyment of waterways.

Exposure to polluted water from CSOs can cause waterborne infections including hepatitis, gastroenteritis, as well as skin, wound, respiratory, eye and ear infections. Although, generally, waterborne diseases result from ingesting contaminated water, they may also be contracted through inhalation of water vapors, eating contaminated fish and shellfish, and swimming. The most common symptoms are diarrhea and nausea. The impacts are not limited to adverse human health effects; CSOs can cause beach closures, affect fish survival, and result in shellfish bed closures and the destruction of aquatic life. They can also limit recreational use of important and beautiful natural resources. Data for New York State in 2008 indicate that of the 138 beaches that had beach closures or advisories about water quality, approximately 5 percent were determined to be directly due to CSOs. The largest CSO in the City, which discharges into the Harlem River, is in Bronx Community Board 8. Outfall WI-056 has the largest in terms of annual CSO volume, and has the third largest outfall subcatchment area, which occupies 2,114 acres in the northwest Bronx.

New York State Department of Environmental Conservation (DEC) issued a public notice for a draft State Pollutant Discharge Elimination System (SPDES) Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s) owned or operated by the City of New York. According to the notice and accompanying fact sheet, discharges to surface waters from both public and private property via MS4 outfalls owned or operated by the City, as well as discharges to surface waters from municipal operations and facilities that drain via overland flow, would be authorized under the terms of the permit (draft SPDES Permit No. NY-0287890). The Draft Permit applies to the approximately 40% of the City's land area that is served by the MS4 or by direct drainage, with the rest of the City served by the combined sewer system.
The City's sewer system includes over 7,500 miles of sewer pipes of varying size (consisting of combined, sanitary and separate storm sewers) and approximately 148,000 catch basins. Every year, New York City has approximately 45 inches of precipitation, generating an average of 165 billion gallons of stormwater runoff. Approximately half that rainfall/snowmelt makes its way into the City's combined sewer system, with much of the balance flowing directly into surrounding waterways through the City's MS4. Currently, DEP's separate sewer outfalls are incorporated into the SPDES permits for the 14 wastewater treatment plants. The Draft Permit, for the first time, implements City-wide MS4 system requirements to manage urban sources of stormwater runoff into the MS4.

NYC Green Infrastructure Program: New York City's Green Infrastructure Program began in September 2010 with the release of the *NYC Green Infrastructure Plan*, kicking off a multiagency effort led by DEP, along with NYC Parks and DOT. Under this program, the City is constructing and maintaining Right-of-Way bioswales and Stormwater Greenstreets (SGSs) on city-owned property such as streets, sidewalks, schools, and public housing.

To date there have been no Green Infrastructure program installations in the Harlem River BOA Focus Area or its upland sewershed drainage areas, though these strategies could be beneficial in some drainage areas outletting to the Harlem River. DEP also offers a grant program for private property owners in combined sewer areas of New York City. Eligible projects include green roofs, blue roofs, rain gardens porous pavement and rainwater harvesting. Since the BOA areas are served by combined sewer systems, private property owners within the BOA are eligible to apply for this grant funding.

NYC Community Parks Initiative: NYCDEP is partnering with NYC Parks on the new Community Parks Initiative (CPI), a targeted capital investment program to reconstruct parks in underserved communities; DEP will cover green infrastructure construction costs at CPI sites. Since the Harlem River BOA from the 145th Street Bridge to the University Heights Bridge is within the limits of the CPI, this initiative could offer possibilities to improve stormwater runoff in upland parks in areas that overflow into the Harlem River through already established city programs.

COMMUNITY AND REGIONAL CONTEXT: NATURAL FEATURES

> *The Harlem River Valley is a stunning remnant of wilderness in the midst of New York City: a river detour through a forested gorge. This arcadian setting is home to a collection of public works marking the city's ascendance to global metropolis – from the Roman-style aqueduct that brought water from the Catskills to the gravity-defying helix of viaducts and ramps built to tie the urban expressways. Skimming the river and soaring hundreds of feet above it are no less than fifteen bridges that transformed Manhattan into Greater New York. Hugging the narrow shoreline is the railroad, the mode that fueled the city's growth by linking it to its suburbs and the country's interior. All of this makes the Harlem River Valley one of the world's great urban landscapes.*[1]

The natural features of the Harlem River waterfront can best be understood in the context of the Hudson-Raritan Estuary System. As New York City has burgeoned over the past four centuries as one of the world's largest waterfront cities, its five boroughs now encompass over 520 miles of shoreline. The Harlem River's geographic context, positioned within the New York Harbor Estuary system as a link between the East River and the Hudson River, set the stage for its engineered reconfiguration in the 19th and early 20th century to its current alignment.

The Harlem River Valley offers spectacular views from the waterfront and from bridges with pedestrian access, particularly in the areas where forested parks (e.g. Highbridge Park and Inwood Park in Manhattan) flank the river, and on the Bronx side, the hill topped by the Hall of Fame of Great Americans can be seen for miles around. Where the Harlem River joins the Hudson at Spuyten Duyvil, the views also open up to the expansive Hudson River and to the unusual geological feature of the Palisades on the New Jersey side of the river.

The relative flatness of this valley downslope from the steep ridge has lent itself to becoming a transportation corridor over the past century and half. Both the steepness of the pre-existing grade change (approximately 150 feet in many areas) and the vehicular and rail transportation corridors still serve to isolate the northern reaches of the Harlem River from the upland neighborhoods.

Despite the environmental degradation that the waterfront has suffered over the past century or more, it is still a corridor full of spectacular views, green space, geological interest and ecological restoration potential.

Notes: Natural Features

1 BCEQ, "Harlem River Waterfront," (2007), p. 3.

View looking southwest from Marble Hill

3.B INVENTORY AND ANALYSIS

View of Harlem River waterfront from University Heights Bridge, domed Stanford White-designed Bronx Community College Library beyond

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EXISTING LAND USE AND ZONING

EXISTING AND ADJACENT LAND AND WATER USES: As Figure 13, the Land Use map, shows that parks, transportation, undeveloped land and industrial and manufacturing uses make up the bulk of the land uses along the Harlem River waterfront. The Property Report Table in Appendix C provides more detailed information about individual properties.

EXISTING ZONING DISTRICTS AND OTHER RELEVANT LOCAL LAWS OR DEVELOPMENT CONTROLS GUIDING LAND USE: Zoning designations in the Harlem River BOA Central Focus Area range from Manufacturing (the vast majority of the BOA Area), to multi-family Residential on very limited numbers of sites, to Commercial for the River Plaza Mall in Kingsbridge.

By Community District, the overall summary of zoning is:

- CB4—Most land in the BOA Focus Area is M2-1, with a few very small DOT-owned right-of-way lots zoned as R-7. According to DCP, these lots are part of a larger R-7 zone that predates the 1974 extension of the M2-1 zone north of Macombs Dam Bridge. Portions of Macombs Dam Park and Mill Pond Park are mapped parkland.
- CD5- The Focus Area is a combination of M1-1 and M2-1 for most of the transportation uses (e.g. Highbridge Yard and rail lines), along with some Parkland zones.
- In CD7, the La Sala site just south of the University Heights Bridge was rezoned as R7-2 in 1989 to encourage its use as residential. To the north of the bridge, the waterfront area is currently zoned for manufacturing (M2-1 and M3-1) and is largely undeveloped. Further north, the CSX sites carry M1-1 zoning, and River Plaza Mall sites in Kingsbridge are zoned C8-3.
- CD8—In CD8, the block between 225th and 230th Street in the BOA Area is zoned M1-1.

ZONING DESIGNATIONS RELEVANT FOR THE HARLEM RIVER BOA:[1]

R-7 zones, which permit medium-density residential development, encourage lower-scale apartment buildings on smaller zoning lots and taller buildings with less lot coverage on larger lots. Alternatively, developers may choose the optional Quality Housing regulations to build lower buildings with greater lot coverage.

M1: Consists generally of light industrial uses, often serving as buffers between commercial and residential and heavier manufacturing. Strict performance standards apply. Retail and office use is permitted. (Target retains this zoning classification. Most of the active railroads are under this category.)

M2: Allows uses that permit more noise and vibration and have lower performance standards. In most cases industrial uses do not need to be entirely enclosed.

M3: Allows heavy industry that usually generates traffic, noise, odor and pollutants, though with some performance standards. Typically located on waterfronts and buffered from residential areas by distance or another manufacturing district. (The six small sites on the waterfront north of University Heights Bridge are an M-3 zone, although none are believed to be carrying out activities currently that fit this description.)

Waterfront zoning, enacted in 1993 and updated in 2009, sets forth zoning provisions that aim to maximize the public's access to and enjoyment of the city's waterfront, while enabling appropriate development along the shoreline. These regulations address the form, size and location of new development, the amount and design of waterfront public access areas required, and visual corridors to the waterfront. Waterfront zoning requires public access for the majority of waterfront residential and commercial developments (low density residential districts and heavy commercial and industrial uses are exempt). The Fordham Landing sites if developed for residential use would need to comply with these zoning provisions and provide a publicly accessible waterfront esplanade.

New York City Coastal Zone; The Harlem River BOA falls entirely within the boundary of the New York City Coastal Zone, which is generally delineated by the steep slope or the "nearest legally mapped street at least 300 feet landward of the Mean High Tide." The coastal zone establishes the City's policy for development and use of the waterfront. Consistency with the policies of the

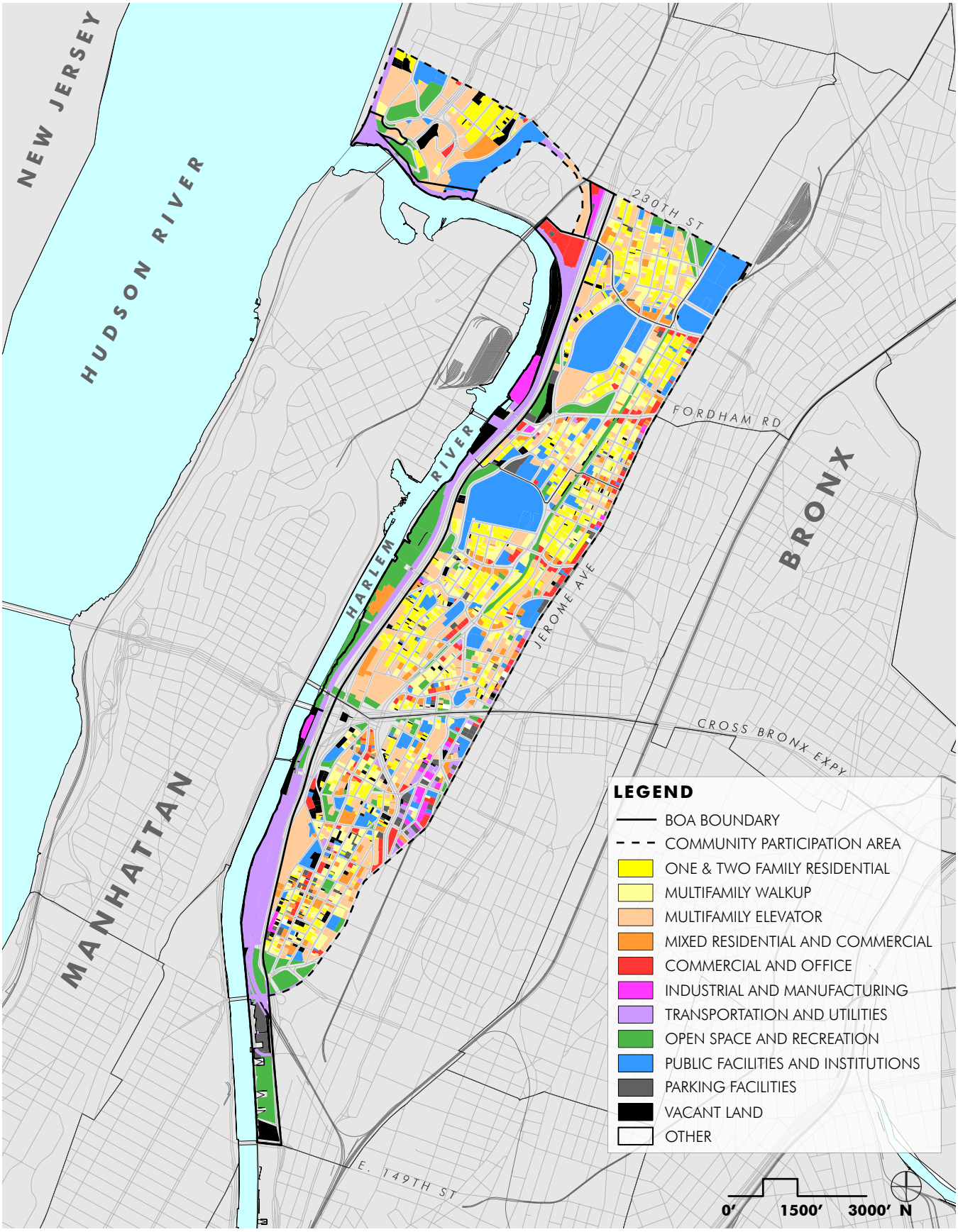


Figure 10. Existing Land Use Map (Source: ABB based on NYCDCP data)

NYC Waterfront Revitalization Program is required for all discretionary actions.

SPECIAL NATURAL AREA DISTRICT (SNAD): In the Spuyten Duyvil area, the Riverdale Special Natural Area District includes areas that are within the BOA Focus Area. As the Step 1 Report summarizes:

> *It is a special zoning district overlay that provides added protections for an area's natural features, without changing or altering the requirements of the underlying zoning. In most cases, a development, site alteration, or enlargement must be reviewed by the Department of City Planning to evaluate impacts on natural features. The SNAD was mapped in Riverdale in 1975 and covers approximately one-half of Bronx Community District 8.*

RELEVANT REZONINGS: Since the date of the 2007 BOA Report, several rezonings, either located within the BOA Context Area or nearby, are deemed relevant. These include:

- ***West Fordham Road / University Heights:*** The area south of the University Heights Bridge (Zone R7-2) was rezoned in 1989. In 2008, West Fordham Road immediately west of I-87/the MDE was rezoned to permit expanded commercial development. A commercial overlay district now covers most of the length of West Fordham Road between Jerome Avenue and the Major Deegan. The waterfront parcels north of the University Heights Bridge are still zoned for manufacturing, limiting potential development.
- ***161st Street/River Avenue Rezoning:*** Though not located within the Central Focus Area of the Harlem River BOA, the 2009 rezoning of 161st Street and River Avenue near Yankee Stadium creates opportunity for expanded residential and commercial development in close proximity to the Harlem River BOA within the Context Area. The objectives of the rezoning include strengthening the 161st Street corridor, encouraging the development of new affordable housing by including an inclusionary zoning provision in portions of the rezoned area, and directing new development to areas with transit access. The updated zoning includes a new zoning district (C6-3D) that aims to encourage development along the elevated rail and to spur construction of affordable housing on 161st Street by employing the Inclusionary Housing Program (IHP). The IHP promotes economic integration in targeted areas of the city undergoing particularly intense residential development. Developers are offered an optional FAR bonus in exchange for creating or preserving affordable housing on-site or off-site. The principal beneficiaries of the program are low-income households.

Adjacent Rezonings: Lower Concourse Rezoning and the Special Harlem River Waterfront District (SHRWD): In 2009, the City successfully rezoned areas adjacent to the southernmost portions of the Harlem River BOA. The Special Harlem River Waterfront District sanctions high-density development south of Mill Pond Park and north of 138th Street, east of I-87/ MDE. Zoning changes allow residential and commercial towers to rise up to 400 feet on lots 100,000 square feet or larger. In 2014, the Office of the Bronx Borough President released an announcement that suggested that SHRWD could produce as much as $500 million in new development, 3,544 new jobs, and more than 1,500 new housing units.[2]

ECONOMIC DEVELOPMENT DESIGNATIONS AND ZONES:

Portions of the BOA Central Focus Area are situated within Federal Empowerment Zone: Bronx 5 and Federal Empowerment Zone: Bronx 4. Federal Empowerment Zones are designated areas of high poverty and unemployment that benefit from tax credits provided to businesses within their boundaries.[3] The extent of these zones along the Harlem River is roughly between West Tremont Street to the north and to 149th Street to the south. No funds new have been available to businesses in the area since the program sunset two years ago. Funds are still circulating from previous disbursements, but benefits are no longer available to access by new applicants or recipients.[4]

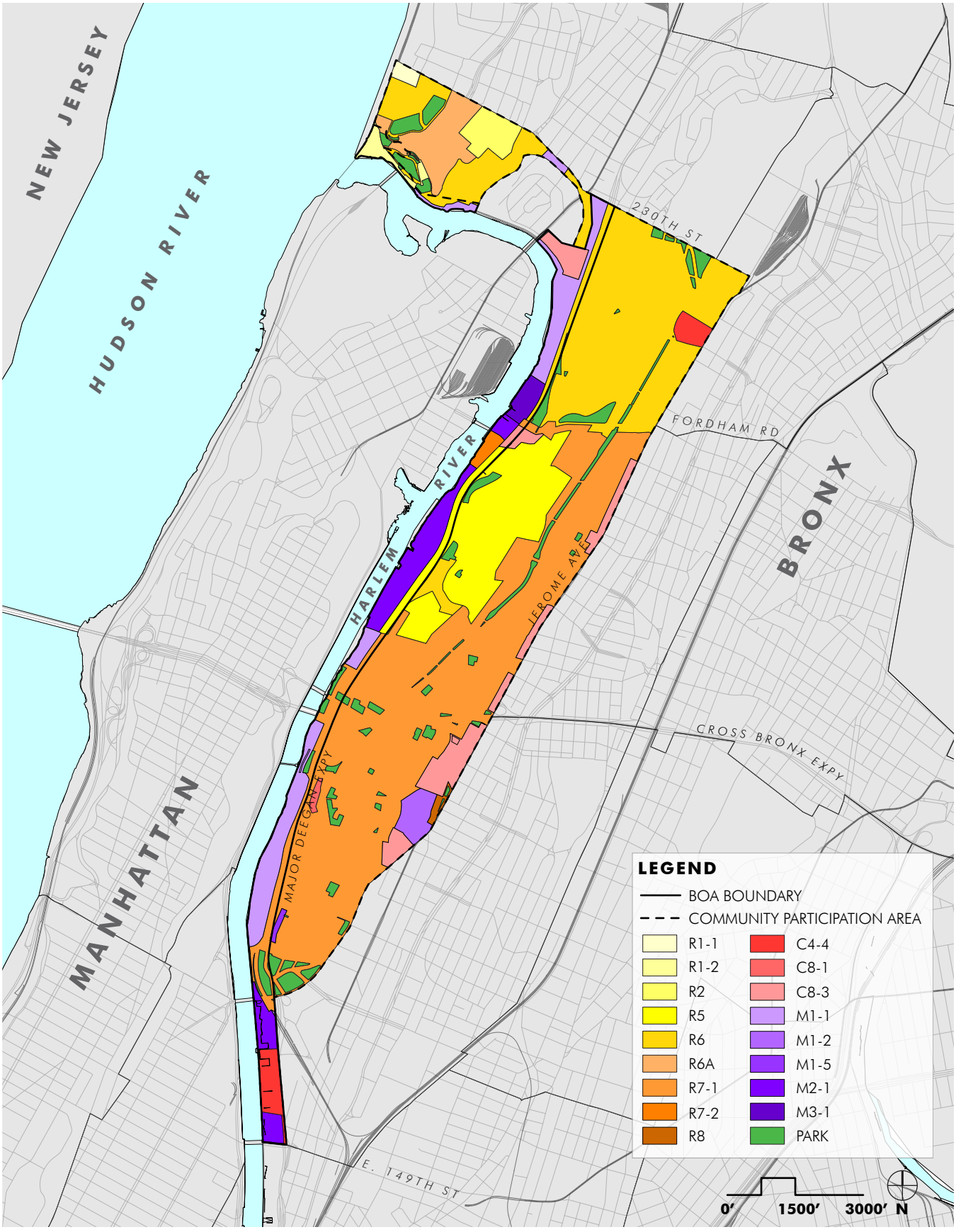


Figure 11. Existing Zoning Map (Source: ABB based on NYCDCP data)

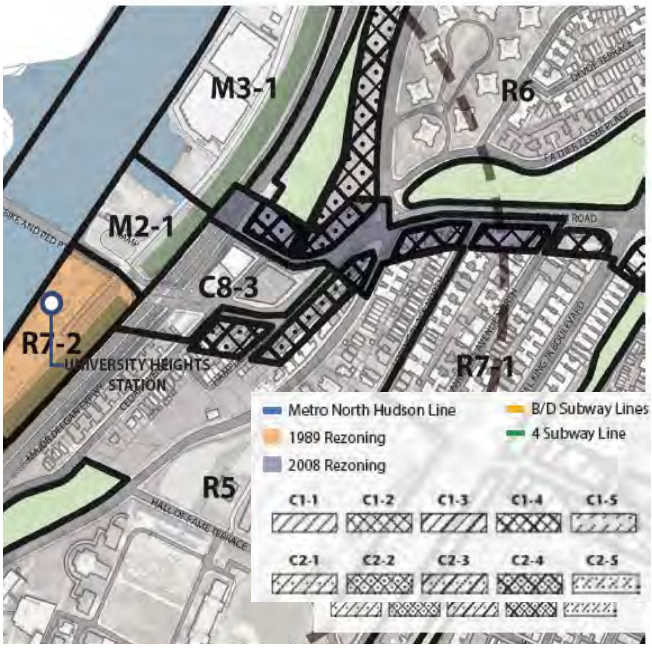


Figure 12. Zoning in University Heights Area
(Source: DCP Sustainable Cities Metro-North Study)

Notes: Existing Land Use and Zoning

1 The Zoning Designation section is based on excerpts from the BCEQ, "Harlem River Waterfront" study, as well as information supplied by NYCDCP.

2 Bronx Borough President, "Special Harlem River Waterfront District," http://bronxboropres.nyc.gov/pdf/bronx-bp-waterfront-report.pdf (n.d.).

3 U.S. Department of Housing and Urban Development, "Empowerment Zones," accessed September 22, 2015, http://portal.hud.gov/hudportal/HUD?src=/huNYC Parksograms/empowerment_zones.

4 Communication between JLP+D and BOEDC.

BROWNFIELD, ABANDONED AND UNDERUTILIZED SITES

KNOWN DATA ABOUT THE ENVIRONMENTAL CONDITIONS OF THE PROPERTIES IN THE AREA: Early in the BOA Step 2 process (fall 2014), consultants conducted a preliminary site assessment screening for a total of 63 properties of interest in the proposed Harlem River BOA; of these, 51 were categorized as having slight potential for contamination, eight parcels with moderate potential, and one parcel with high potential.

At this juncture in the process, the HR BOA Steering Committee narrowed the list of sites for further investigation to 29 tax lots within the potential Strategic Sites and/or Strategic Connections in the BOA area. (Note that some individual tax lots may be considered a Strategic Site in-and-of-themselves, while in other cases, multiple tax lots may be aggregated into a "Strategic Site.") The process for narrowing the list from 63 properties to 29 entailed first eliminating active rail corridors, rail yards and other properties where redevelopment in accordance with the BOA goals is extremely unlikely. The Steering Committee, in consultation with the consultant group, then devised and approved specific criteria for selecting the Strategic Sites, as discussed in more detail in the Key Findings and Recommendations section. The complete criteria for selection of the Strategic Sites and Connections is reproduced in Appendix I.

Subsequently, the environmental investigation delved further into the environmental concerns and potential for contamination on this subset of 29 tax lots in the Central Focus Area.

The Draft Environmental Report indicates that of the 29 tax lots investigated, environmental concerns were identified either onsite or within a 400 foot buffer for all of them. Of these 29 lots, 20 have environmental concerns that were identified onsite and the remaining 9 have environmental concerns that were identified within a 400 foot buffer. All of these properties, therefore, meet the definition of a "brownfield" set forth in the BOA guidance: "any real property, the development or reuse of which may be complicated by the presence or potential presence of a contaminant."

Underutilized site north of High Bridge acquired by NYC Parks

The environmental concerns identified for the Strategic Sites are primarily associated with historic uses, imported fill materials and reported contaminant generation and releases on site or within the 400 foot buffer. The historic uses of the identified sites and surrounding area were primarily industrial and manufacturing including loading docks, railways, dairy product manufacturing and construction and freight yards. Both current and historic uses with the BOA Area contribute to the nature of the potential contamination.

Several sites are located in close proximity to bridges and infrastructure erected prior to 1978, when lead based paint restrictions were introduced, leading to the potential for release of lead. Several of these bridges are listed in state and federal environmental databases as hazardous waste generators of lead. The NY SPILLS database lists petroleum spills reported on many adjacent or nearby properties. Through various migration pathways, these offsite sources of contamination may be cause for environmental concern, particularly since the BOA is located along the Harlem River and situated downgradient of these sources.

The majority of the sites identified in the area are located directly on the shoreline of the Harlem River. A review of Historic Sanborn fire insurance maps dating back to 1891 reveals the shoreline has been altered to reach the current configuration. This suggests the shoreline was extended with unknown fill material that likely contained contaminants. An investigation at the Former Kennel Site revealed a layer of historic fill consisting of debris, brick fragments, burnt wood, coal, ash and gravel and analysis identified polychlorinated biphenyls (PCBs) exceeding NYSDEC's Unrestricted Use Soil Cleanup Objectives. Impacted historic fill is commonly found throughout the New York City area and often contains contaminants including metals, PCBs and semi-volatile organic compounds consisting of polycyclic aromatic hydrocarbons (PAHs), all of which are a concern for protection of human health.

The nature of contamination has been evaluated through historical maps and records review for all sites as well as previous subsurface investigations at select sites. The full extent of contamination throughout the

BOA would be better defined by performing additional subsurface and remedial investigations.

SITE PROFILES: Profiles of all 29 underutilized tax lots which have been identified as Strategic Sites or Strategic Connections can be found in the Strategic Site Profiles section, Appendix E. Numbers shown on the Existing Site Status Maps on the following pages correspond to Site Profile numbers in Appendix E.

SITES THAT MAY BE CANDIDATES FOR SITE ASSESSMENT FUNDING: Of the 29 underutilized tax lots discussed in the Site Profiles, 27 of these are believed to be brownfield sites that, with the consent of the owner, may be candidates for future site assessment funding (i.e. a Phase II investigation) following the BOA Area Designation, should assessment funding be available. As noted in Appendix D “HR BOA Previous Environmental Reports Reviewed,” only two tax lots among those included in the 29 investigated sites are known to already have had Phase II investigations performed. The two Phase II reports were provided by NYC Parks for the parcels at Depot Place: the Former Kennel Site (Block 254, lot 122) and the Former Junkyard Site (Block, 2541, Lot 159). Both of these sites were investigated with the assistance of the Trust for Public Land when TPL aquired these properties for Parks. As far as is known, Phase II investigations have not been performed on any of the other 27 tax lots and all would be candidates for future BOA program assistance.

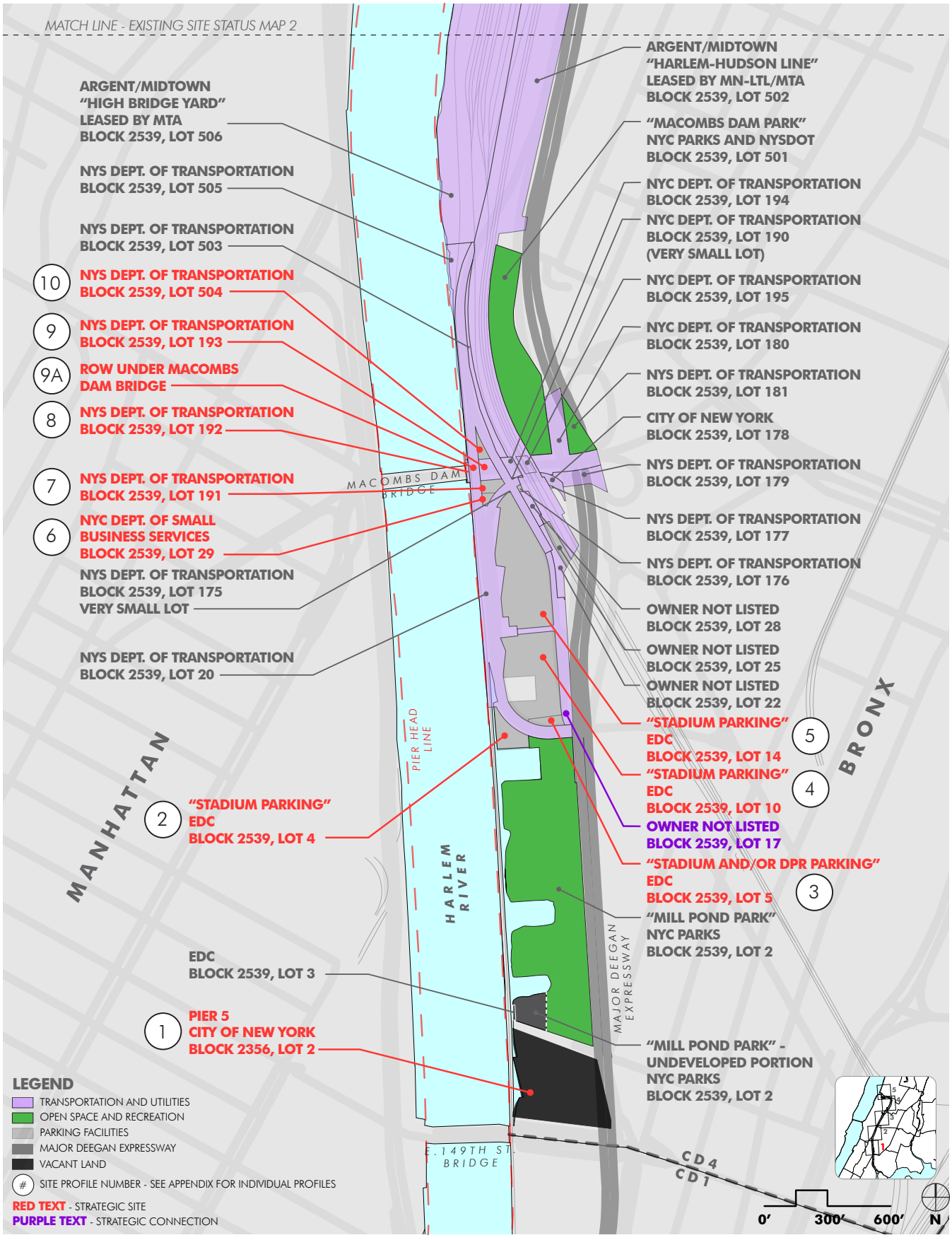


Figure 13. Existing Site Status Map 1--CD4 (Source: See Land Ownership/Jurisdiction Methodology in Appendix F)

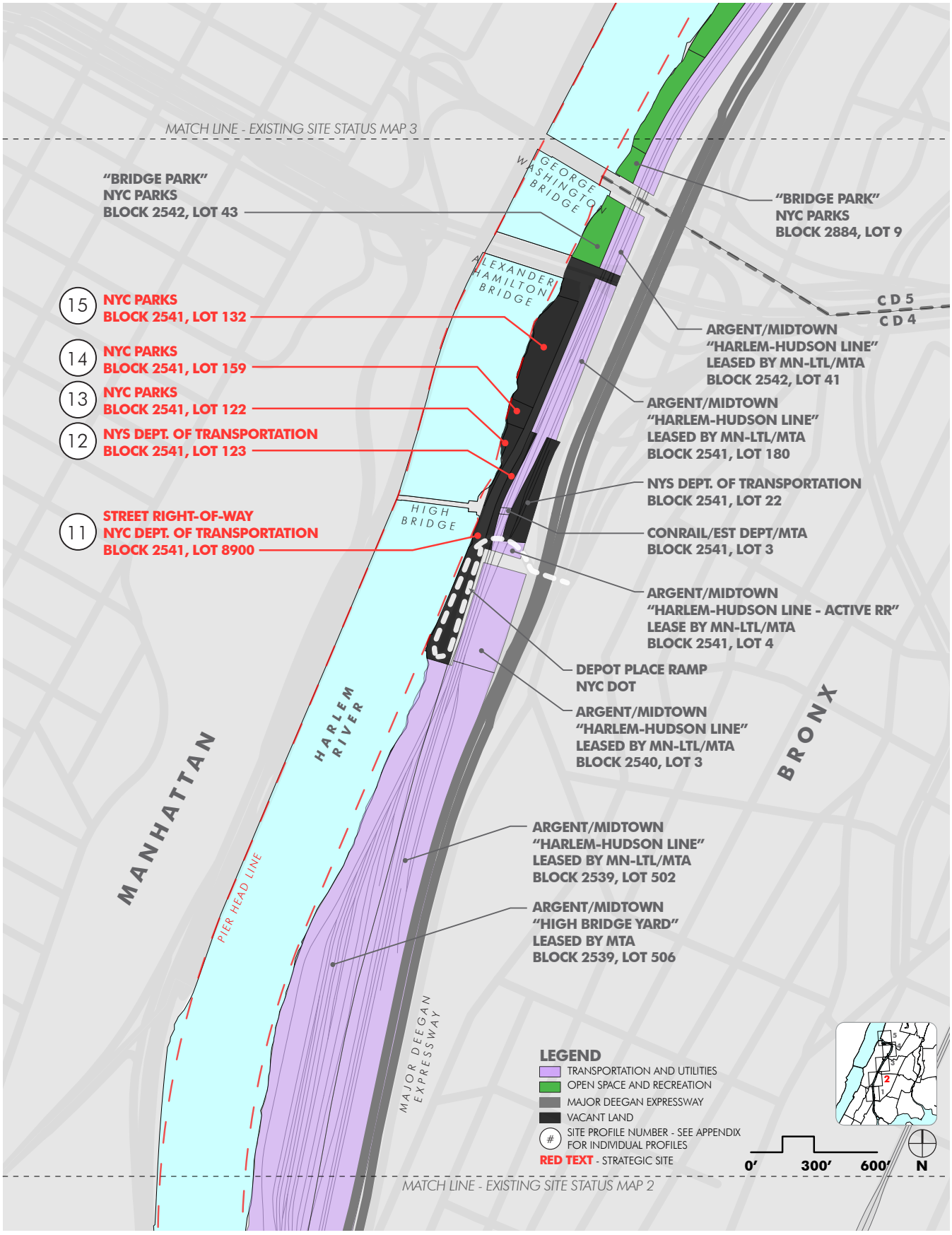


Figure 14. Existing Site Status Map 2--CD4 & CD5 (Source: See Land Ownership/Jurisdiction Methodology in Appendix F)

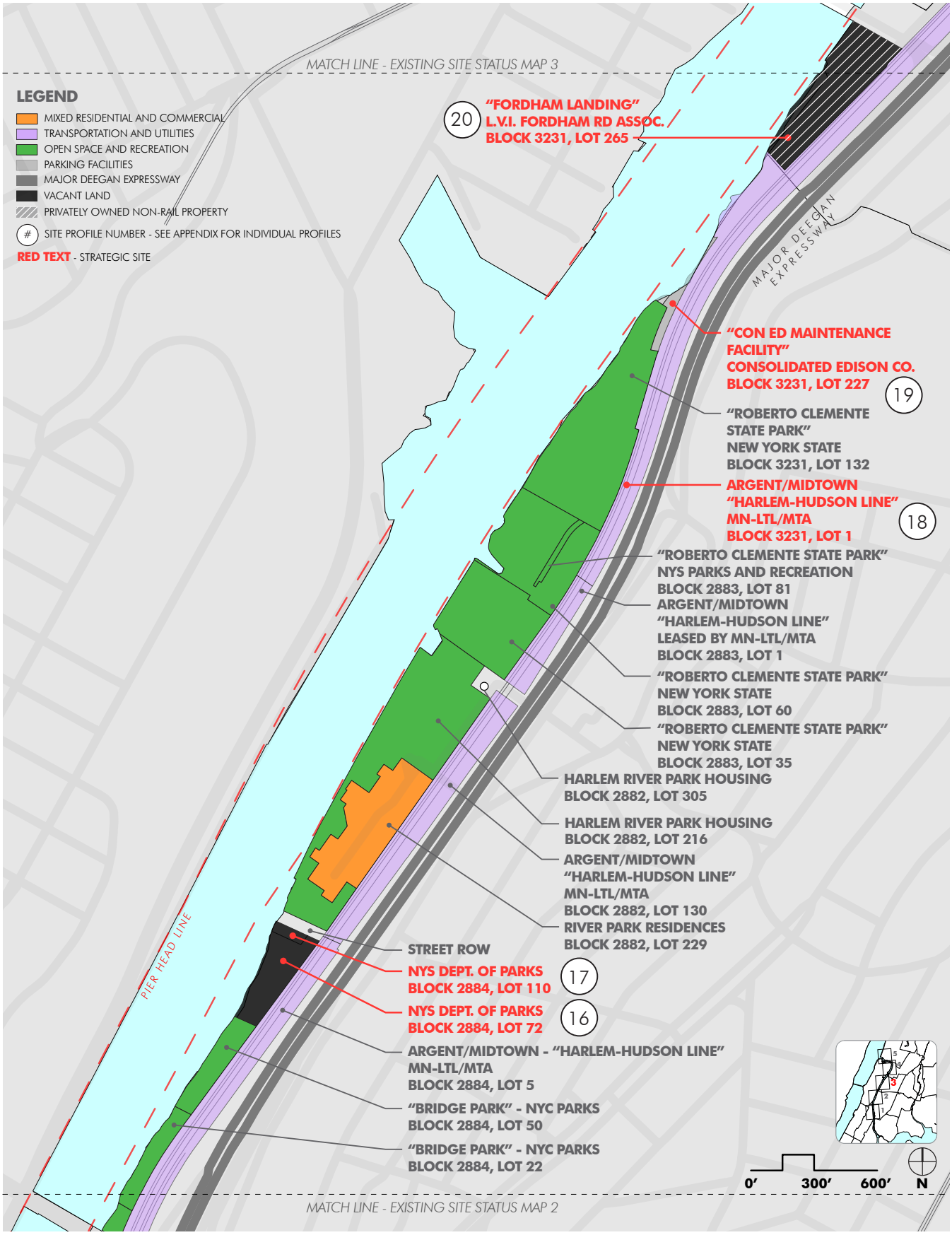


Figure 15. Existing Site Status Map 3--CD5 (Source: See Land Ownership/Jurisdiction Methodology in Appendix F)

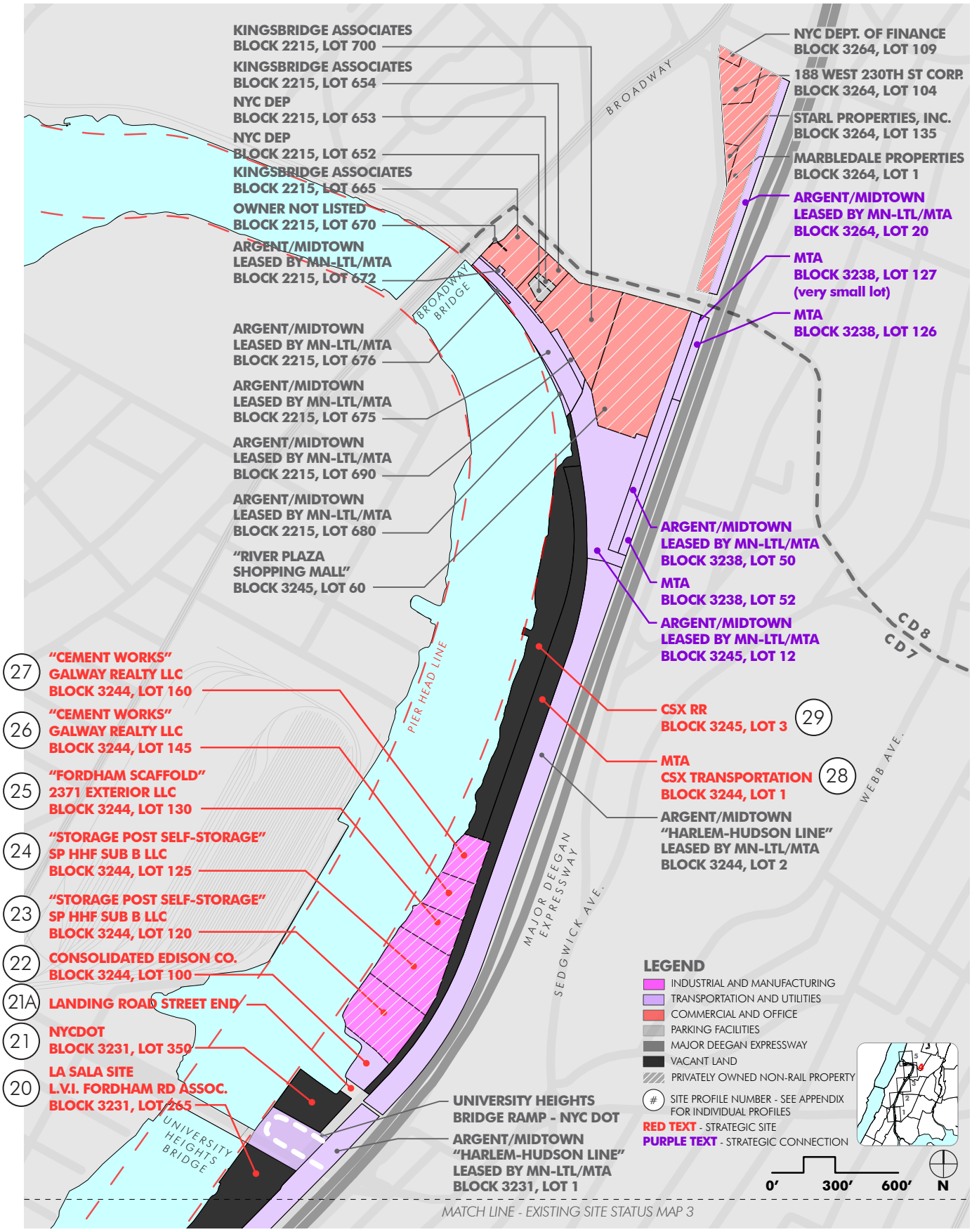


Figure 16. Existing Site Status Map 4--CD7 & CD8 (Source: See Land Ownership/Jurisdiction Methodology in Appendix F)

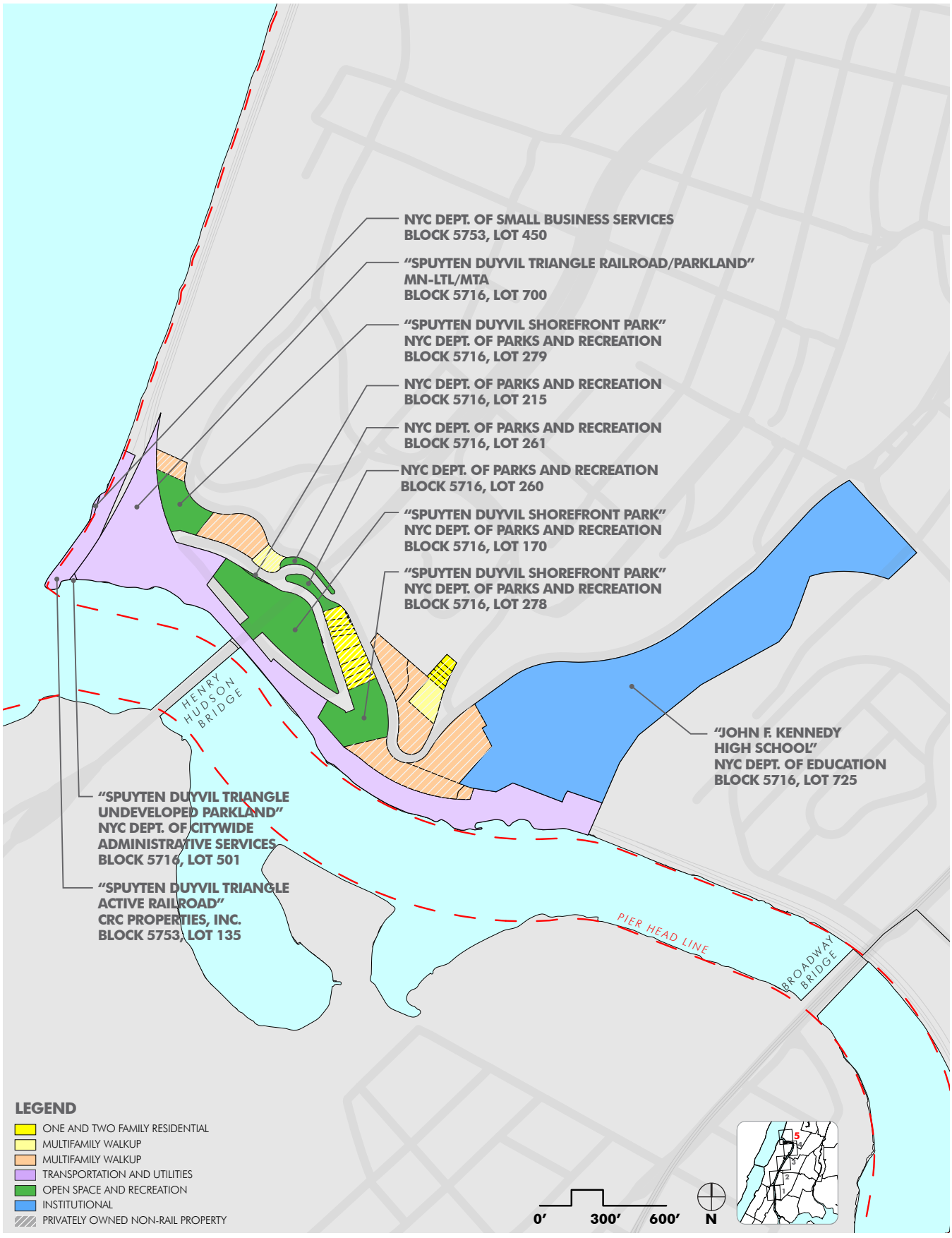


Figure 17. Existing Site Status Map 5--CD8 (Source: See Land Ownership/Jurisdiction Methodology in Appendix F)

LAND OWNERSHIP AND JURISDICTION PATTERNS

LAND OWNERSHIP/JURISDICTION PATTERNS; BOA AREA OVERVIEW:[1] The Harlem River BOA Central Focus Area spans over 4 miles of waterfront plus a five block northern extension between 225th-230th Streets, while the Spuyten Duyvil Focus Area adds another mile of shoreline. The HR BOA takes in the lion's share of the Harlem River shoreline and encompasses the majority of the western boundary of the Bronx. The total acreage within the Harlem River BOA Central Focus area is 139.8 acres, excluding I-87/MDE, while the acreage within the Spuyten Duyvil Central Focus Area is just under 19 acres. In the Central Focus Area, approximately 24 acres are in private ownership (excluding rail properties), 31 acres in public ownership and nearly 85 acres are owned and/or leased by rail entities. In the Spuyten Duyvil BOA Area, approximately 1.6 acres are privately owned, with over 4 acres in public ownership and approximately 13 acres owned and/or leased by railroads.

Fragmentation characterizes the land ownership/jurisdiction pattern in the HR BOA Area, which is one of the major challenges that must be overcome in order to achieve the vision of an "ecologically healthy, recreation-oriented waterfront district providing a continuous greenway." In total there are 95 parcels in the Central Focus Area and 11 in the Spuyten Duyvil Focus Area (the Spuyten Duyvil Area also includes 20 single- and multi-family residential properties that have not been inventoried individually, though their locations are shown on Map 5). These are owned and/or controlled by a diverse array of different parties, including railroad entities with extremely complicated histories, relationships and business arrangements; several different state and municipal agencies; quasi-private, quasi-public entities such as state authorities and public benefit corporations; and private owners.

Railroad ownership/lease arrangements dominate a substantial portion of the land area, with the remainder in diverse ownership and land uses.

LAND IN PUBLIC OWNERSHIP/JURISDICTION: Publicly owned lands, including state and municipally-owned parks, streets, rights-of-way and undeveloped properties make up the majority of the non-railroad parcels. Private property is the exception rather than the rule in the BOA Central Focus area, in terms of number of parcels, average sizes of parcels and overall acreage. On the positive side, existing parks and/or park properties now blanket much of the waterfront and adjacent areas in the Central Focus Area, with RCSP (NYS), Mill Pond Park (NYC), Macombs Dam Bridge Park (NYC) all developed and functioning as recreational areas and the northern portion of Bridge Park (NYC) recently opened. The waterfront between Depot Place and Bridge Park is mostly aggregated under NYC Parks jurisdiction and ready for revitalization as a public park as soon as funding can be identified for the Harlem River Promenade.[2] To the north of West Fordham Road/University Heights Bridge, a City-owned parcel (Block 3231, Lot 350) is poised to become Regatta Park, with funding already allocated and design expected to commence this year through NYC Parks's Design Excellence Program. It is anticipated that this work will provide for basic site access and stabilization, for future phases to build upon. In the Spuyten Duyvil Focus Area, Spuyten Duyvil Shorefront Park is City-owned and under NYC Parks jurisdiction.

In Community District 4, most of the waterfront is City-owned property under the jurisdiction of New York City Economic Development Corporation (EDC). Surface parking lots north of Mill Pond Park are in the EDC asset management portfolio (Block 2539, Lot 4, Block 2539, Lot 10, and Block 2539, Lot 14), functioning as parking leased for the Stadium Tennis Center or for game-day short-term parking leased and managed by Bronx Parking Development Corporation. South of Mill Pond Park, the undeveloped Pier 5 site is currently City-owned and under NYC Parks jurisdiction.

ROADS AND VEHICULAR PARKING: Publicly-owned, paved vehicular and parking infrastructure is especially densely concentrated in the area from Macombs Dam Bridge south to Mill Pond Park, covering over 15 acres of waterfront and adjacent lands. This vehicular infrastructure is largely devoted to vehicular circulation and parking for events at Yankee Stadium. Beneath and between the roadway infrastructure are the parking lots under the ownership/jurisdiction of NYCEDC that are leased to private concessionaires for game-day parking, as well as some year-round use for the Stadium Tennis Center at Mill Pond Park.

Near these lots, on and off-ramps take up significant real estate, and are dedicated primarily to facilitating special event traffic flows. This dense vehicular infrastructure is impervious, exacerbating polluted stormwater runoff and intensifying urban heat island effects. It is also obstructionist to pedestrians and cyclists seeking waterfront and park access and upland connections, overall interfering with the Harlem River BOA's goal of

establishing a linear greenway along the entirety of the waterfront.

In addition to the paved infrastructure in public ownership/jurisdiction in the BOA Areas, it should be noted that there are also two undeveloped, mapped street ends that meet the waterfront. One is East 150th Street, which extends west beyond the Major Deegan/ Exterior Street to the shoreline between Mill Pond Park and Pier 5. The other unmapped street end is Landing Road, which is of interest since it adjoins the NYC Parks lot just north of the University Heights Bridge that is soon to become Regatta Park.

On the Depot Place waterfront, the Exterior Street segment north of the High Bridge to just south of West 171st Street is a city-owned mapped street, which is not required for access to any developed properties. Consequently, it could be demapped and formally added to Bridge Park at a later date.[2]

PRIVATELY OWNED LAND: Most of the sites in private ownership along the waterfront in the Central Focus Area are relatively small, with the majority of the underutilized privately-owned sites clustered around the University Heights Bridge, just north and south of West Fordham Road. The largest of these, the La Sala Site, is 3.72 acres. This site is sometimes referred to as Fordham Landing, but that name is avoided here to avoid confusion with properties north of the University Heights Bridge, including the end of the mapped street called Landing Road. North of the bridge, there are also five small parcels of approximately 1 acre to 2.3 acres each that make up a district that is currently still zoned for manufacturing (M3-1). These sites are currently occupied by self-storage, scrap metal and concrete plant businesses.

At the north of the Central Focus Area, private ownership predominates. The River Plaza Shopping Mall properties form an end-cap on the waterfront portion of the Central Focus Area, stretching upland from the shoreline and Metro-North corridor to 225th Street from Broadway to the old Putnam spur (leased by MTA) adjoining the Major Deegan. Just to the north of the Target parking entrance, the oblong block bounded by 225th Street, 230th Street, the Major Deegan and Exterior Street (Block 3264), which was added to the BOA Central Focus Area during the course of the Step 2 strategic site selection process, is predominately in private ownership.

At the time of the Harlem River BOA Step 1 report, completed in 2007, a significant cluster of key waterfront parcels was still in private ownership in the Depot Place area. However, these properties have since been successfully purchased and aggregated under NYC Parks ownership/jurisdiction with the help of the Trust for Public Land and the Port Authority. These acquisitions are a major leap forward in reaching the goal of an ecologically healthy, recreation-oriented waterfront district. The parcels are currently undeveloped land previously having served as a staging area for the High Bridge restoration. Although NYC Parks does not yet have sufficient funding to build out the site, this area is poised for redevelopment as public park space when adequate funding can be allocated.

LAND IN RAILROAD OWNERSHIP: The Harlem River BOA Area encompasses one of the major rail corridors in New York State, with the Harlem-Hudson Line of Metro-North passing through the corridor and the Highbridge Yard located on the waterfront between Macombs Dam Bridge and Depot Place. Railroad ownership is highly complex, and it is difficult to even classify whether the railroad properties should be considered "publicly" or "privately" owned, because of the intricate web of ownership/lease arrangements, bankruptcies followed by other railroads gaining jurisdiction over former holdings of defunct rail corporations (e.g. Conrail), and existing quasi-governmental, quasi-private entities. For example, the Metropolitan Transportation Authority (MTA) is a "public benefit corporation" under New York law, with a board of directors appointed by elected officials. Another example of the complexity of the rail ownership situation is the case of Argent/Midtown Trackage Ventures. The ventures are privately owned companies with major rail holdings in the BOA area (and elsewhere, including Grand Central Terminal), from which MTA leases property.

The property research process for this Harlem River BOA Step 2 report involved outreach to ascertain more details about railroad property and lease issues. Communications with MTA included review of properties along railroad rights-of-way with attorneys from the MTA Real Estate Department, as well as review of MTA "val maps." Key points of information gained during this process:[3]

- The MTA indicates that it does not control the land along the commuter rail rights of way, nor does it control the sale of any available air rights associated with land parcels within the BOA Area. MTA states that Metro-North (MTA/MN) has a 200+ year term track right-of-way lease and assumes operational control, but the land is owned by Argent

/ Midtown Trackage Ventures (a.k.a. Midtown TDR Ventures, LLC). The right to sell any such air rights, if they exist, would belong to the land owner Argent/ Midtown. According to available online and media sources, Argent Ventures is a privately held real estate company based in NYC that owns extensive railroad track land leased by Metro-North Railroad and is also the owner of Grand Central Station.

- MTA confirmed that there is an approximately 17-foot-high volume easement above the Metro-North rights of way in the BOA Area.
- It can be assumed that properties identified in public

MTA Metro-North passenger train northbound alongside RCSP

records as being in Conrail ownership are within the control of the MTA and/or CSX with respect to potential future uses; this is especially relevant for the northernmost section of the BOA, near the remnants of the north-south "Putnam Line."

- According to MTA Real Estate Department officials, development on properties adjacent to Metro-North/MTA operated rail lines typically require a setback 50 feet from centerline of railway. (The BOA properties for which this may be relevant include the cluster of underutilized parcels around the University Heights Bridge. It is also particularly relevant for the strip of waterfront between RCSP and the La Sala site, where the tracks hug the waterfront. To make a linear greenway connection at this point, the 50' setback would mean that a greenway path will have to be constructed outboard of the shoreline, if permits can be obtained.
- The MTA further advises that any future proposals for pedestrian flyovers, new paths in close proximity to operating railways, and the like should be discussed with the Metro-North Planning Department.

WATERFRONT PROPERTY OWNERSHIP ISSUES: In general, on waterfront sites, property ownership extends to the pier line. In researching and analyzing the property data for the BOA Area, no issues emerged regarding uncertain ownership of underwater lands. However, one anomaly that should be noted is Block 2539, Lot 3, a 1.5 acre lot adjoining Mill Pond Park and Pier 5, which contains predominately underwater land. This lot appears in the public records as being under the jurisdiction of NYCEDC. It is an active rail line right-of-way for the Oak Point Rail Line, built by NY State just offshore alongside Pier 5, Mill Pond Park and the EDC-controlled parking lots. While acknowledging its role in the region's economy, the rail line has been recognized as an obstruction to waterfront access, particularly for the purposes of creating new direct water-based transportation and recreation opportunities across the Harlem River.

Notes: Land Ownership/jurisdiction Patterns

1 See Appendix F for Land Ownership/jurisdiction Methodology.

2 The linear lot that encompasses Exterior Street is still in NYCDOT jurisdiction and still a mapped street as of 2015, though a ULURP process and street demapping is potentially feasible.

3 Communications between JLP+D and David Roth, Senior Real Estate Manager for MTA.

PARKS AND OPEN SPACE

PARKS OVERVIEW: The proposed BOA Central Focus Area features existing and proposed parklands under the jurisdictions of the State and City and operated by State and City Parks agencies, respectively. The 25-acre Roberto Clemente State Park (RCSP), which opened in 1973, is by far the best-known Harlem River waterfront park and the most heavily used by residents of the BOA neighborhoods. NYC Parks also cares for three existing parks within or adjoining the Central Focus Area: Macombs Dam Park (established 1899) and Mill Pond Park and Bridge Park, both of which were constructed or reconstructed in recent years. A small section of greenway was also recently added to Macombs Dam Park on the west side of the Major Deegan.

Proposed new parks or parkland acquired for park expansions include parkland now owned by New York City at Depot Place that is earmarked for the Harlem River Promenade; two tax lots now under State jurisdiction slated for a southern extension of RCSP; and the proposed Regatta Park on a lot just north of the University Heights Bridge. Also, on the north end of the Central Focus Area, NYC Parks is working with NYCDEP on concepts for the daylighting of Tibbets Brook, an interagency project that could potentially entail a future major linkage of regional greenway systems; in this area, the City is also in negotiations with CSX railroad to acquire transportation easements to extend the Putnam Greenway south of Van Cortlandt Park to 230th Street.

EXISTING PARKS, OLD AND NEW:

MACOMBS DAM PARK (COMMUNITY DISTRICT 4): The 17-acre Macombs Dam Park is the oldest of the parks along the Harlem River and the only one that dates to the 19th century. The park first opened in 1899, "drawing neighborhood children and aspiring athletes to its extensive recreational facilities including a track, baseball fields, tennis courts, comfort stations, and a playground. The quarter-mile track was a favorite for local and European runners," according to NYC Parks. A playground at Macombs Dam Park opened in 1914 when the Parks and Playgrounds Association established new playgrounds in eight parks across the Bronx. The park's proximity to the original Yankee Stadium, completed in 1923 on the site of a former lumberyard to the east of the park, gave it a special connection to the ballfield's great Bronx heroes and legends.[1]

The complex redevelopment of Macombs Dam Park began in 2005, when New York City agreed to site a new Yankee Stadium one block north of the original ballfield.[2] As part of the project, the city promised to replace "parkland displaced by the construction of the new Yankee Stadium, while also providing additional recreational space."[3] Thus commenced a $195 million effort to create eight new or renovated parks around the stadium, which opened in 2009.[4] Some of the replacement park space is within the BOA Central Focus area, particularly Mill Pond Park just west of Exterior Street/the Major Deegan, while the majority of the original Macombs Dam Park and new construction is just outside the Central Focus Area, east of the Major Deegan. The existing 161st Street pedestrian bridge connects a small strip of new greenway west of I-87/the MDE and north of Macombs Dam Bridge to the main promontory of Macombs Dam Park on the east side of the MDE corridor.

Among the recently constructed facilities is a 7-acre section of Macombs Dam Park constructed atop a two-story parking garage. This section features the Joseph Yancey Track and Field, including a state-of-the-art, 400-meter track, as well as a synthetic turf all-weather field that can be used for soccer or football, with grandstand seating for up to 600 patrons. There are also handball courts, four basketball courts, and a setting for adult fitness activities.

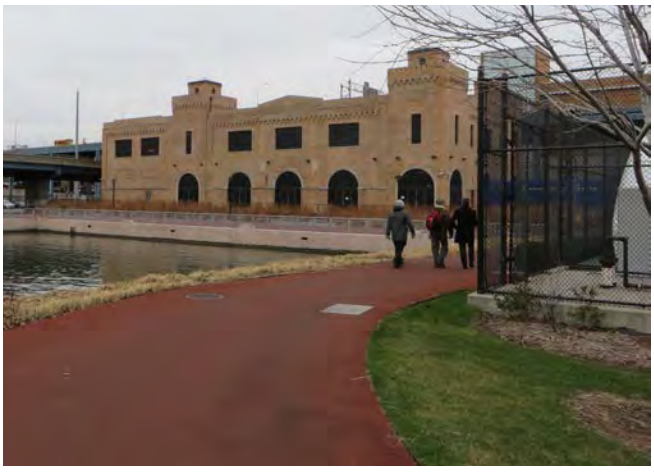
In 2011, an additional 10 acres of the park opened as Heritage Field, featuring three championship-quality grass ballfields on the site of the original Yankee Stadium. The southernmost field is built in the footprint of the original diamond, "which means that you can step up to the plate where Babe Ruth, Joe DiMaggio, Yogi Berra, Mickey Mantle, Derek Jeter, and all the Yankee greats once stood."[5]

MILL POND PARK (COMMUNITY DISTRICT 4): As part of the Yankee Stadium redevelopment, $64 million was allocated to construct Mill Pond Park along the Harlem River. Completed in October 2009, this 10-acre NYC Parks facility hosts 16 tennis courts surfaced with materials like those used at the U.S. Open and the Olympic Games. The Stadium Tennis Center at Mill Pond Park operates the tennis center and adjacent café concession through a license agreement with NYC Parks. Twelve of the 16 courts are enclosed under a state-of-the-art bubble from October through April. South of the tennis center, the park features sand and spray shower play areas, an outdoor classroom, and

an ADA-accessible esplanade for walking and jogging. The picnic area with barbecue facilities—offering one of the few places to grill in a public park—is particularly popular with area residents.

As noted by NYC Parks when the park was featured as "Park of the Month" in February 2010, "Mill Pond Park is the first significant City park to open on the Bronx bank of the Harlem River. Construction of the park included rehabilitation of the sea wall and four piers, bringing new vitality to what was only recently a decaying, unused industrial waterfront."[6] With a master plan and schematic design by Rogers Marvel Architects and landscape architecture by Thomas Balsley Associates, the project also cleaned up contamination and constructed new waterfront infrastructure. The high level of funding for the park entailed preservation and adaptive re-use of the 25,800-square-foot historic Power House building for a new comfort station, tennis clubhouse, café, and a new Parks district office, topped by a green roof. The renovation marked the first LEED Gold certified building in a New York City park.[7] South of Mill Pond Park, on the southwest corner of Block 2939, Lot 3, is a remaining undeveloped City-owned site currently assigned to NYC Parks.

ROBERTO CLEMENTE STATE PARK (COMMUNITY DISTRICT 5): This 25-acre park's existing facilities, which draw approximately 1.3 million visitors per year for recreational and cultural activities, include an Olympic-size pool complex, a multi-purpose recreation building, ballfields, basketball courts, picnic areas and playgrounds, and a waterfront promenade. The park adjoins the Harlem River along 3,700 linear feet of waterfront. Approximately 2,000 linear feet is bulkheaded, while the remainder consists of unstructured revetments and riprap shoreline. Amidst the portion stabilized with riprap is the only boat launch



Mill Pond Park and renovated LEED Gold Power Plant Building

location on the Bronx side of the upper Harlem River. The ramp and floating dock, which is a suitable location for launching small non-motorized craft for rowing, canoeing, and kayaking, is under the joint jurisdiction of the Land and Water Conservation Fund of the National Park Service and the New York State Office of Parks, Recreation and Historic Preservation, according to signage at the entrance to the ramp.

An ambitious round of investment was launched after Hurricane Sandy, when the park was inundated by approximately 3 feet of flooding over the top of its 40-year-old bulkhead. Inspections revealed severe corrosion and loss of backfill, prompting the closing of the esplanade and the allocation of up to $46.5 million of Community Development Block Grant – Disaster Recovery (CDBG-DR) program funds for bulkhead replacement, other shoreline repairs, and overall improvements to the park.[8] Among ecological enhancements, a new 9,000-square-foot intertidal

Roberto Clemente State Park

area will provide naturalized portions of shoreline to help buffer flooding, while native plant species will improve terrestrial habitat. In addition, improvements to the Lower Plaza area will reduce hardscape and create a more attractive public gathering space. Athletic fields are also slated for reconstruction and/or new construction, along with rehabilitation of the maintenance building and plaza facilities.[9] These investments follow additional upgrades since 2007, including the rehabilitation of the park's aquatic facility and basketball courts (2008), a new playground (2013), and baseball field improvements (2014).

BRIDGE PARK (COMMUNITY DISTRICTS 4 & 5): Bridge Park opened in 2104 as a part of the city's greenway network. Before the construction of I-87/the MDE in the 1950's, Bridge Park had provided local

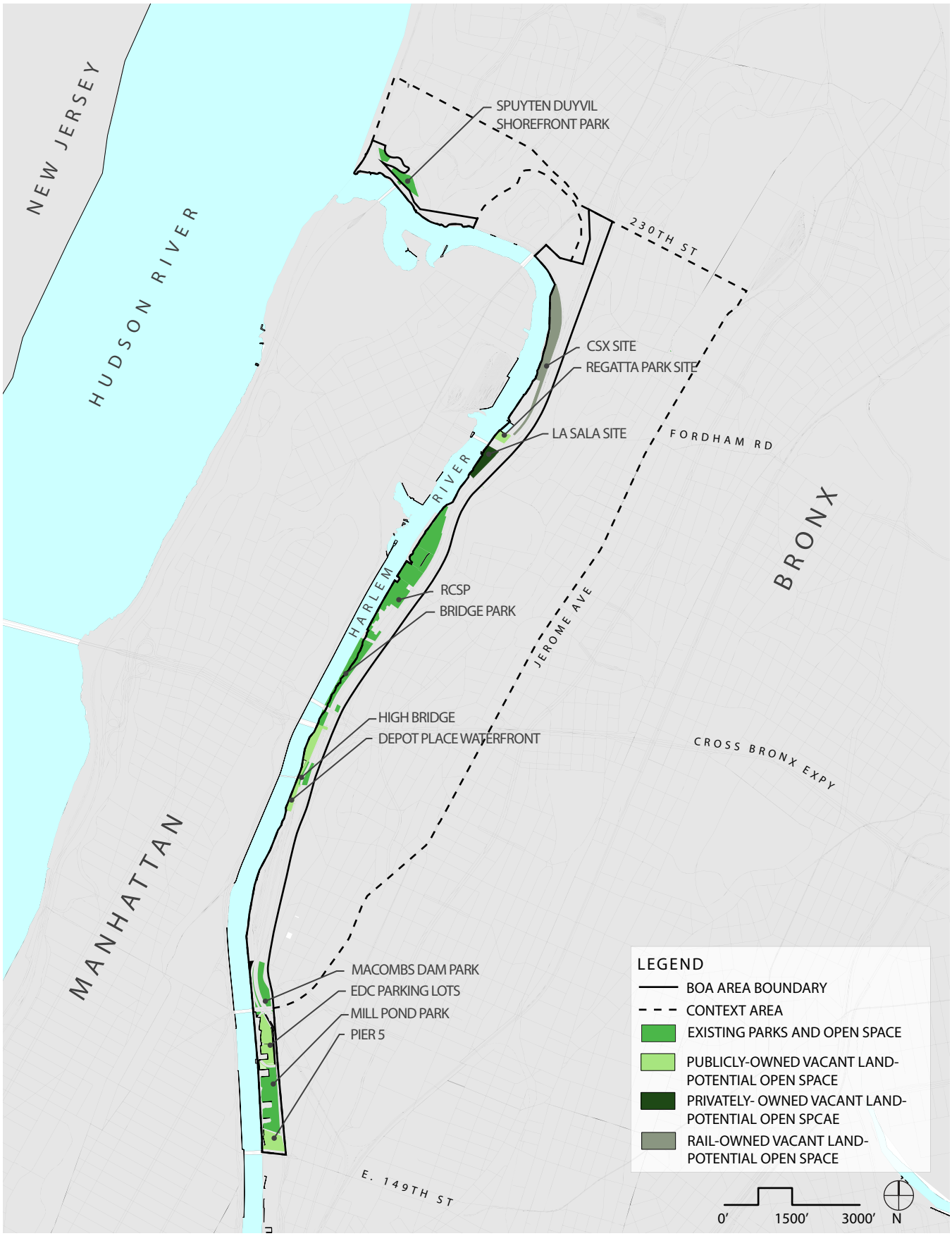


Figure 18. Parks and Open Space Map (Source: ABB based on multiple data sources)

Harlem River Greenway through Bridge Park

residents with opportunities for passive recreation and access to the Harlem River waterfront. Construction of the Expressway, however, led to the majority of the park being condemned, with the exception of the waterfront, which fell into disrepair in subsequent years. The rejuvenation of Bridge Park provides new opportunities for local communities to have safe access to the waterfront and connect with RCSP to the north. Bridge Park was designed by ABB Landscape Architects through NYC Parks' Design Excellence Program.

An accessible bicycle and pedestrian route runs through this 3.4-acre park, connecting with Exterior Street to the south and RCSP to the north. The Bridge Park segment of Class 1 greenway adds 1,650 linear feet of prime waterfront greenway toward the vision of a continuous Harlem River Greenway. Bike signage guides local residents from the nearby community to the Entrance Plaza at the south end of the park, where an open lawn, seating, and a plaza overlook provide a view of the Harlem River. The project preserved a historic granite staircase leading to the park and reconstructed a portion of the old cobblestone pavement. Seating areas are provided along the length of the bikeway, and security lighting enhances safety the park.

Bridge Park sets a precedent on the Harlem River for a continuous greenway coupled with ecological improvements along the waterfront. In years prior to the construction of Bridge Park, the New York Restoration Project had begun the reclamation of this area by reconstructing rock gardens and adding mulch pathways meandering through native meadow plantings. NYC Parks' Bridge Park construction project capitalized on these previous improvements while also stabilizing the shoreline and adding habitat value with more native plantings. On the river's edge, the existing revetment was rebuilt or reinforced in order to stabilize the embankment. Additional native trees and shrubs, as well as wildflower and riparian meadows, add habitat value, visual interest and absorbent pervious surface along the riverbank. On the east side of the pathway, a buffer of native plants visually separates the bikeway and the Metro-North Railroad.

HIGH BRIDGE (COMMUNITY DISTRICT 4): The city's oldest standing bridge reopened in July 2015 after an extensive $62 million rehabilitation project. The bridge, a remnant of the Old Croton Aqueduct, restores a park and critical greenway connection that has been closed to the public for four decades. The newly restored architectural landmark provides access to pedestrian and bicycle greenways on both sides of the Harlem River for residents of the BOA and Washington Heights, and will strengthen linkages to and from well-developed waterfront parks and greenways on the Hudson River waterfront. In particular, the bridge will connect the Highbridge neighborhood to Upper Manhattan and the recreational amenities of Highbridge Park.

On the Bronx side, the High Bridge can be reached from Highbridge Park's main entrance on University Avenue just north of 170th Street or the alternate entrance on University Avenue just south of 170th Street (pedestrians only via stairs). A lack of developable land, challenging topography, and physical infrastructure barriers on the Bronx side of the bridge limit development potential in the area, which might seek to capitalize on the increased pedestrian activity over the newly reopened river crossing.

On Sedgwick Avenue just north of Depot Place, a stone staircase connects the High Bridge to the street level of Sedgwick. This is the nearest connection between the High Bridge (and Highbridge Park on the Manhattan side) and the potential new waterfront park at Depot Place. Because Sedgwick is across the Major Deegan from the waterfront, and approximately 150 feet above


High Bridge as seen from Depot Place Bridge

the grade of the waterfront, this is unfortunately not a direct connection between the High Bridge and the Bronx side of the Harlem River shore. However, it is less than 600 feet from the bottom of the staircase to the waterfront, so the links between the High Bridge and the Depot Place reach of the waterfront will be achievable on foot, at least for intrepid walkers.

SPUYTEN DUYVIL SHOREFRONT PARK (COMMUNITY BOARD 8): This 6-acre park is situated directly beneath the Henry Hudson Bridge and adjacent to Metro-North Railroad's Spuyten Duyvil station. Its Halve Maen (Half Moon) Overlook offers a vista over forested cliffs to the Hudson River, while a small pond helps make the park "a natural stopover for songbirds migrating near the Hudson."[10] Together with Henry Hudson Park, just 150 feet north across Palisade Avenue, the park contributes to the community's scenic and recreational amenities. However, Spuyten Duyvil Shorefront Park has been noted as one of the city's poorest-performing parks.[11]

RECENT PARKLAND ACQUISITIONS AND PROPOSED PARKS/GREENWAYS: In addition to these existing parks, the community vision of an "ecologically healthy, recreation-oriented waterfront district providing a continuous greenway" has made considerable strides over the past several years with the public acquisition of several strategic parcels. NYC Parks and the state Office of Parks, Recreation and Historic Preservation (OPRHP) have acquired key properties along the Harlem River waterfront with the intention of creating new and expanded parks along the shoreline.

- With the help of the Trust for Public Land, NYC Parks now has jurisdiction over two additional tax lots between the Depot Place Bridge and the newly opened Bridge Park. An additional city-owned parcel was also added to NYC Parks's portfolio, and NYC Parks seeks to unite these parcels, quite possibly along with a linear lot under NYCDOT jurisdiction, through an as-yet-to-be-funded expansion of greenway and construction of a proposed Harlem River Promenade. The Harlem River Promenade Plan is discussed in the Planning and Development context section (CD4).
- The properties now being maintained by RCSP at the south end of the park will add 2.34 acres of additional space to RCSP, while also establishing a direct link between Roberto Clemente and the adjoining newly constructed greenway of Bridge Park (CD5).
- Just north of the University Heights Bridge in CD7, NYC Parks is currently (as of 2015) initiating the design process through the Design Excellence Program for a 3.68-acre parcel dubbed Regatta Park/Fordham Landing (Block 3231, Lot 350). The design intent of the proposed Regatta Park project is to provide public open space with access to the Harlem River where there is currently no safe access. According to the RFP, historic maps and aerial photos indicate that the site was open water until at least 1954, then was created by filling the Harlem River with unknown material between 1954 and 1966. The project objective is to transform it from an unimproved lot utilized by NYCDOT as a staging and vehicle storage area into a passive public park space with circulation, parking, a sitting area, and potentially a water access point. Due to the brownfield nature of the site, site investigations, including a Phase II Environmental Site Assessment Report, are required. Depending on the cost of site remediation and the availability of funding, landscape architectural design consultants will propose design alternatives. At a minimum, the intent is to construct a perimeter treatment, fence or guardrail, parking if necessary, sitting area, landscaping, circulation, water edge stabilization, and a water access point. Phasing may be necessary depending on the extent of contamination and necessary clean-up. Currently, approximately $1.38 million is allocated to this Regatta Park/Fordham Landing project.
- South of Van Cortlandt Park connecting to the Harlem River BOA Central Focus area, NYC Parks is in negotiations with CSX railway to purchase transportation easements in an abandoned railroad corridor for a southern extension of the Putnam Greenway. The overall goal of the Putnam Greenway acquisition has been to create greenway connectivity along the Putnam Line, which will ultimately link with segments of the old Putnam Rail Line in Westchester and Manhattan. The Putnam Rail Line provides an excellent opportunity for development as a recreational hiker-biker trail. The Putnam Rail Line in Westchester has already been developed as a paved greenway, within a system of 50 miles of bike paths. The segment south of Van Cortlandt Park has the potential to connect to Manhattan trails, while also possibly accommodating the daylighting of Tibbets Brook--an interagency project with DEP that could have tremendous positive impact on Harlem River water quality if deemed feasible.

Publicly owned site north of UH Bridge slated for Regatta Park

Altogether, these acquisitions and projects, both built and planned, indicate the momentum that is building for bringing the community vision of a publicly accessible recreational waterfront with continuous greenway access to fruition.

NEED FOR ADDITIONAL PARKS AND QUALITY OPEN SPACES: In spite of these existing and up-coming parks, there is still a documented need for additional developed park space, shore public walkways and other publicly accessible, quality open spaces along and near the Harlem River waterfront. The neighborhoods of the BOA Central Focus Area are located in some of New York City's most park-starved districts. According to the most recent New Yorkers for Parks statistics, in City Council District 16 (Highbridge and portions of Morris Heights), only 4 percent is parkland, compared to a citywide average of 14 percent. In District 14 (University Heights and Kingsbridge Heights), 8 percent is parkland. And while District 11 (Spuyten Duyvil) is 36 percent parkland, most of that land is located far from Spuyten Duyvil in Van Cortlandt and Bronx parks.[12]

Even given the limited park space in these community districts, parkland is especially scarce for neighborhoods along the Harlem River waterfront, with no ready access to the borough's larger, more generous upland parks. Further, the topographic and infrastructural barriers in the area have long hindered the development of inclusive community open spaces.

OPEN, UNDERUTILIZED AND/OR UNDEVELOPED WATERFRONT PARCELS: In addition to land under NYC Parks jurisdiction that is being explored for recreational open space, the following sites are waterfront properties where alternative uses have been and are being envisioned by various parties. These explorations place importance on the availability of open space and waterfront connectivity in and through these sites.

Pier 5 (identified as Strategic Site #1): The 4.4 acre parcel known as Pier 5, located just north of East 149th Street (Block 2356, Lot 2), is currently undeveloped, City-owned land, with only a single gantry remaining from its years as an Erie Railroad Freight Yard from 1928 to 1981. A prototype "pop-up wetland," installed by BCEQ on the east side of the site, treats stormwater runoff from the Major Deegan.

As the northernmost parcel within the study area for the Mayor's Lower Concourse infrastructure investment announced in early 2015, this site is being studied by EDC in partnership with City Hall, along with other sites outside of the Harlem River BOA Study Area, as part of the mayoral affordable housing initiative. EDC states that they will devise multiple development scenarios for the site that will seek to balance the goals of maximizing open space and affordable housing objectives, and will enlist stakeholder and agency input as the plan is drafted.

Stadium Parking Lots (Strategic Site #2): Between the Macombs Dam Bridge and Mill Pond Park is an expanse of asphalt-paved surfaces used as surface parking lots. The southernmost parking lot (Block 2539, Lots 4 and 5) primarily serves the Stadium Tennis Center (also known as "Building J") in Mill Pond Park, while Block 2539, Lots 10 and 14, are leased by NYCEDC on a long-term basis to the Bronx Parking Development Corporation and operated as Quik Park parking facilities, mainly serving Yankee home games. According to news reports and to visual inspection on a season-opening game day, parking designated for game events is underutilized on major game days, and parking garages close to the stadium are also underutilized. Further analysis would be needed to examine utilization rates of these facilities over a longer period of time. The MIT Department of Urban Studies and Planning study, "Bronx: Meet Your Waterfront" envisioned these lots, combined with several very small parcels under NYS jurisdiction at the northern tip of the parking lots, as a hybrid space paved with permeable pavements that could be used by local residents as park space when not in use for game parking; the northern tip was proposed as a constructed stormwater wetland for treating run-off.

Northern BOA Central Focus Area Open Space: The northern section of the BOA study area near University Heights Bridge and north to the River Plaza Mall is predominantly underutilized open space. Challenges

in providing access (both pedestrian and vehicular) and infrastructure have hindered more desirable uses in recent decades, along with market and economic factors. The largest such parcels are the La Sala site (Strategic Site #6), portions of the Fordham Landing North cluster (Strategic Site #7) and former railroad sites (Strategic Site #8) (CD7). Additionally, Strategic Connection #2 (south of West 225th Street) and Strategic Connection #3 (from West 225th to West 230th Street) are abandonned rail corridors that have potential as key greenway connections.

La Sala site: Although the La Sala site is currently used as a milk distribution location, this use mainly entails truck parking rather than any significant structures, and much of the site south of the trucking center is unoccupied. The La Sala site has long been eyed as a potential northern extension of Roberto Clemente State Park, but is being marketed as a high-density residential site, with an asking price of $31 million; to date, it has not been feasible to acquire as parkland.

Fordham Landing North sites: The waterfront in CD7 north of the University Heights Bridge consists largely of underutilized and/or undeveloped open space. Potential scenarios for these sites have been studied in numerous planning studies, such as those dicussed earlier in the Planning Context section of this report.

CSX site: The former railroad sites to the north (Block 3245, Lot 3 and Block 3244, Lot 1), sometimes referred to collectively as "the CSX site," form a roughly 1800' foot long linear parcel on the waterfront that has potential as parkland if it could be acquired and if a pedestrian/bike bridge could be installed to cross the MTA/Metro-North rail tracks from the north. It is currently accessible from the south only through the Cement Plant on Exterior Street.

Notes: Parks and Open Space

1 NYC Department of Parks and Recreation, "Macombs Dam Park," accessed September 22, 2015, http://www.nycgovparks.org/parks/macombs-dam-park and www.nycgovparks.org/parks/macombs-dam-park/history.

2 "A Public Park to Rival the Yankees' Playground," *The New York Times*, April 5, 2012.

3 NYC Parks, "Yankee Stadium Park Redevelopment Project," accessed September 22, 2015, http://www.nycgovparks.org/park-features/future-parks/yankee-stadium-redevelopment.

4 "A Public Park to Rival the Yankees' Playground."

5 "Macombs Dam Park," http://www.nycgovparks.org/parks/macombs-dam-park/.

6 NYC Parks, "Mill Pond Park: Mill Pond Park is February's Park of the Month," http://www.nycgovparks.org/parks/mill-pond-park/pressrelease/20898, February 24, 2010.

7 "Yankee Stadium Redevelopment Project".

8 "Governor Cuomo Announces Plan to Strengthen Roberto Clemente State Park Waterfront; Protect Morris Heights Neighborhood." June 2014.

9 New York State Homes and Community Renewal, prepared by AKRF, "Roberto Clemente State Park Environmental Assessment," July 24, 2014, p. 1 and RCSP website, http://www.nysparks.com/parks/140/details.aspx.

10 New York City Audubon Society,"Birding the Hudson River Parks," accessed September 22, 2015, http://www.nycaudubon.org/bronx-birding/the-hudson-river-parks.

11 New Yorkers for Parks, "The Report Card on Parks 2007," http://www.ny4p.org/research/report-cards/rc-op07.pdf. Note that a more recent (2012) report card focused on large parks, but Spuyten Duyvil was not large enough to be included in that survey. For smaller parks, the 2007 survey is still the most recent report card available.

12 New Yorkers for Parks, District Profiles, accessed September 22, 2015, http://www.ny4p.org/research/ccd-profiles.

BUILDING INVENTORY

There are very few buildings located within the 140 acres of the Harlem River Central Focus area. The notable structures within the Focus Area are:

- **Stadium Tennis Center (Building J) in Mill Pond Park (CD4):** The 26,000 s.f. building, built in the early 1800s, was originally the Power House Building, which provided power to the food refrigeration warehouse at the Bronx Terminal Market. Its current use is the Stadium Tennis Center clubhouse and café, and it also houses the NYC Parks district office and a comfort station for the park. Additionally, there are plans to convert the second floor of the building into the Children's Discovery Center. This adaptive reuse project, including a green roof, was completed in March 2010. It is the first facility in a New York City Park to earn the LEED® Gold certification from the U.S. Green Building Council (USGBC).
- **River Park Towers (CD5):** consists of two towers, 42- and 44-stories. It was built in 1974 under the Mitchell-Lama affordable housing program and has remained a residential property since that date. River Park Towers is a single census tract, number 053, housing more than 4,600 residents.
- **Roberto Clemente State Park Recreation Building (CD5):** Constructed in 1973, the headquarters houses a multi-purpose recreation center with gymnasium, food concessions, and community meeting space.
- **PS 203 / IS 229 (CD5):** This public school building constructed along with RCSP and River Park Towers is the first and so far only project to be constructed atop decking over I-87/the MDE and rail tracks.
- **River Plaza Shopping Mall (CD7):** This shopping center at the northern end of the Central Focus Area at West 225th Street added approximately 230,000 s.f. of structures to the Harlem River waterfront, the first major construction on the Harlem River since the 1970s.

Most other structures within the Central Focus area are more utilitarian, including several added relatively recently:

- **Tennis bubble at Mill Pond Park:** A temporary structure erected seasonally October through April over 12 tennis courts.
- **Structures at the MTA High Bridge Yards** for washing passenger rail cars.
- **Self-storage buildings** north of University Heights Bridge.

The shell of a single historic rail transformer house building stands next to the rail tracks just south of River Plaza Mall, the only structure of possible interest for preservation and adaptive reuse.

For the complete Building Inventory, see Appendix G.

River Park Towers, two housing towers at 42 and 44 stories

HISTORIC AREAS, ARCHEOLOGICALLY SIGNIFICANT AREAS AND HISTORIC DISTRICTS

The western Bronx is home to a collection of historic assets that together tell a richly layered story of New York City's physical and social development during the heyday of its urban expansion in the nineteenth century. Within the proposed BOA Central Focus Area, the major resources constitute a series of magnificent bridge crossings—built over a nearly fifty-year period from High Bridge in 1848 to the University Heights Bridge in 1895—linking Manhattan with the mainland during a time of extraordinary growth and transformation. These engineering marvels embody not only some of the city's finest bridge design and detailing, but also the aspirations of working- and middle-class New Yorkers as they migrated from Manhattan to burgeoning neighborhoods like Morris Heights and the Grand Concourse in search of affordable, livable communities—much like New Yorkers today. That story gains depth and context within the broader BOA Context Area, where landmark apartment houses, churches, schools, and other institutions offer tangible links to the Bronx's origins and touchpoints for themes of immigration, labor history, housing innovation, and economic opportunity that continue to shape the borough and its people.

HISTORIC HARLEM RIVER CROSSINGS

- ***High Bridge, Aqueduct, and Pedestrian Walk (Community District 4):*** A monument to the original Croton Aqueduct—New York's first reliable public water supply, carrying Westchester County water to a 42nd Street reservoir—High Bridge is a feat of 19th-century engineering and testament to the Bronx's role in the creation of a visionary metropolitan water system. Completed in 1848 with graceful, Roman-style arches stepping across the water, the bridge remains an admirable work of civic architecture despite the replacement of its central piers with a steel arch in 1923 to aid river navigation.

  In 2015, High Bridge's long-closed public walkway reopened following a $61.7 million rehabilitation, making the spot once again a popular promenading ground, and forging a new link in New York's waterfront greenway. Though the bridge is the most visible remaining feature of the Croton system, other portions are still extant, including a small stone gate house constructed circa 1890 as part of the New Croton Aqueduct at West Burnside Avenue and Phelan Place,[1] and, further east, Aqueduct Walk, a linear raised embankment engineered to keep the gravity-fed system's water flowing toward Manhattan. Linking West Kingsbridge Road to the north with the University Malls to the south, the Aqueduct Walk offers intriguing potential to connect neighborhoods and historic resources along its route. *National Register of Historic Places (1972); New York City Landmark (1970).*

Newly renovated and reopened High Bridge

- ***Washington Bridge (Community District 5):*** Built in 1888 to link booming northern M***a***nhattan neighborhoods with the Bronx, this beautiful steel-arch span was the product of a design competition intended to ensure the bridge compared favorably with the High Bridge to the south. Looking down from atop its twin main arches, urban gawkers could take in the spectacle of the Harlem River Speedway (now the Harlem River Drive) below. The bridge carried traffic from the George Washington Bridge until a second deck added to the GW required construction of the eight-lane Alexander Hamilton Bridge, built to the south of Washington Bridge in 1963. *National Register of Historic Places (1983); New York City Landmark (1982).*

- ***Macombs Dam Bridge (Community District 4):*** A steel swing bridge set atop stone end piers, the Macombs Dam Bridge was completed in 1895 on the site of an earlier 1814 bridge and dam constructed by Robert Macomb. It is considered the oldest swing-type bridge still in its original form in New York City. With its steel approach road linking to Jerome Avenue, and a long viaduct on the western side of the river connecting to 155th Street, the bridge remains a heavily used route from Manhattan to Yankee Stadium. *New York City Landmark (1992).*

- ***University Heights Bridge (Community District 7):*** Originally opened in 1895 as the Harlem Ship Canal Bridge, this steel swing bridge linked the northern tip of Manhattan with the Bronx across the canal's freshly-dredged navigation channel. Floated to its current location between 1905 and 1908, the University Heights Bridge was soon deemed the prettiest of the Harlem River swing bridges, with an unusually elegant profile and ornamental detailing befitting a highly visible urban focal point. *New York City Landmark (1984).*

Paddling south under Washington, Hamilton and High Bridges

HISTORIC NAVIGATION CHANNEL

- ***Harlem Ship Canal (Community Districts 7 & 8):*** Though not a designated New York City landmark, the Harlem Ship Canal should be considered a significant historic resource in its own right. Proposals had been made since at least 1826 to create a navigable channel incorporating part of Spuyten Duyvil Creek to connect the Harlem and Hudson rivers. In particular, the creek's tight course up around Marble Hill proved inhospitable to vessels seeking passage to and from the Hudson. As larger steamships began to ply New York City's waters later in the 19th century, construction of the Harlem River Canal Company in 1863. Completed in 1895, the canal cut through what was known as Dyckman's meadow, separating Marble Hill from Manhattan Island and ultimately creating a 15-foot-deep, 400-foot-wide navigation channel.[2] When the remaining creekbed to the north of Marble Hill was subsequently filled in, the Marble Hill island became physically attached to the Bronx, although Marble Hill remains politically a unit of Manhattan. The Ship Canal's origins and development possess considerable historic interest, and, though its story is not well known, it has reshaped the rugged geography of northern Manhattan and the southwestern Bronx, and continues to have consequential impacts on adjacent communities.

SIGNIFICANT BUILDINGS AND HISTORIC DISTRICTS: Within the BOA Central Focus Area and the Spuyten Duyvil Focus Area, there are no historic districts and only two buildings of any historic significance. The two historic structures are the renovated Power House Building in Mill Pond Park built in the early 1800's and the rail transformer house just south of the River Plaza Mall. On the other hand, the Context Areas do lay claim to one NYC-designated historic district and several landmarked buildings that may be of interest for tourism development initiatives. More detailed descriptions of these historic assets can be found in the Appendix H, Historic Resources Supplemental Information.

- ***Grand Concourse Historic District (CD4):*** A one-mile stretch includes more than 60 Tudor, Moderne, and Art Deco apartment houses defining the neighborhood's special sense of place. *National Register of Historic Places (1987); New York City Landmark (2011).*

- ***Union Reformed Church of Highbridge, Public School 11, and Noonan Plaza Apartments (Community District 4):*** A trio of Highbridge landmarks reflects the evolving face of social institutions that defined public life in the Bronx in the late 19th century. *Union Reformed Church of Highbridge: New York City Landmark (2010); Public School 11: National Register of Historic Places (1983); Noonan Plaza Apartments: New York City Landmark (2010)*

- ***Park Plaza Apartments and (Former) American Female Guardian Society and Home (Community District 4):*** Two highly regarded architectural gems in CD4 reflect the development of Highbridge as one of the densest districts in New York City in the early 20th century. *Park Plaza: National*

Register of Historic Places (1982), New York City Landmark (1981); American Female Guardian Society: New York City Landmark (2000)

- ***Bronx Community College and Hall of Fame for Great Americans (CD5):*** Overlooking the Harlem River near the University Heights Bridge, this stunning architectural and cultural collection deserves to be better known and more frequently visited. The domed Gould Memorial Library of the former NYU campus designed by renown architect Stanford White crowns the campus and beckons to visitors from the distance, while the open-air colonnade, the Hall of Fame for Great Americans is lined with bronze portrait busts of celebrated honorees. The campus also boasts a landmark of modern architecture designed by Marcel Breuer. *National Register of Historic Places (1979); New York City Landmark (1966 & 2002).*
- ***Messiah Home for Children (CD5):*** Originally an orphanage for young children, this towered-and-turreted structure was designed by Boston architect Charles Brigham. Now the Department of Labor's South Bronx Job Corps Center, the building remains an important institutional anchor for the Morris Heights neighborhood. With its vocational training curriculum, as well as leadership, volunteer, and community support opportunities for young students, the Center should be considered a constituent for the Harlem River waterfront's revival. *New York City Landmark (1997).*
- ***Kingsbridge Armory (CD7):*** This splendid 1917 example of military architecture at the intersection of Kingsbridge Road and Jerome Avenue remains one of New York City's largest and most impressive armories. Vacant since 1996, the landmark structure is expected to reopen beginning in 2018 as the Kingsbridge National Ice Center, a nine-rink complex envisioned as the world's largest ice-skating venue. With an anticipated 2 million visitors per year, the center has the potential to be a significant sports, educational, and community destination.[3] Its location at the northern end of Aqueduct Walk and proximity to the greenway connection at W. 225th Street (which becomes W. Kingsbridge) is strategic for tourism development in the BOA vicinity. *National Register of Historic Places (1982); New York City Landmark (1974).*

ARCHAEOLOGICALLY SIGNIFICANT AREAS: Previous assessments of portions of the BOA Area have noted an extensive prehistoric Native American presence in the north and western Bronx, with aboriginal sites and middens identified along the Harlem River.[4] OPRHP indicates areas of recorded archaeological resources throughout the entire Context Area and on both sides of the Harlem River.[5] By the time of early Dutch colonization of the area, subgroups of the Lenape peoples occupied seasonal encampments on and near the Harlem River, and tended planting fields as nearby as in the present-day Van Cortlandt Park.[6]

However, the major alterations made to the riverfront over the last century, including the creation of the Harlem River bulkhead, dredging of the Harlem Ship Canal, and the construction of bridges, railroad berms, and I-87/MDE, have obliterated most of the original shoreline and small islands likely to have been occupied by prehistoric peoples. Given the large-scale reshaping of the waterfront, the presence of archaeological resources in the HR BOA Area is highly unlikely. As a 2004 study of a riverfront site north of the University Heights Bridge concluded: "The likelihood that prehistoric resources are extant within much of the site, considering the extreme land manipulation, is minimal."[7]

Hall of Fame of Great Americans, BCC Campus near University Heights Bridge

Revolutionary War resources have also been documented in this area of the Bronx, particularly along Fordham Heights ridge at some remove from the waterfront. Again, the uneven nature of the shoreline and the tidal action of the river suggests that sites adjacent to the river should not be considered sensitive for cultural deposits dating to the Revolutionary War era. Similarly, early historical resources, such as remnants of agricultural structures or dwellings dating from the seventeenth to nineteenth centuries, are also unlikely to be found along the Harlem River.[8] This being said,

the proposed greenway links to Van Cortlandt Park are points north that are noteworthy for their Native American, early Colonial and Revolutionary War past.

Notes: Historic and Archeologically Significant Areas

1 New York City Department of Environmental Protection, "Final Supplemental Environmental Impact Statement for the Croton Water Treatment Plant at the Harlem River Site," June 30, 2004, Section 7.12, p. 11.

2 Ibid., p. 5.

3 "Mayor Bloomberg Announces Plans to Transform Kingsbridge Armory in the Bronx into World's Largest Indoor Ice Facility," April 23, 2013. http://www.nycedc.com/press-release/mayor-bloomberg-announces-plans-transform-kingsbridge-armory-bronx-worlds-largest.

4 NYCDEP, "Final Supplemental Environmental Impact Statement for the Croton Water Treatment Plant at the Harlem River Site," p. 12.

5 Cultural Resource Information System (CRIS), https://cris.parks.ny.gov, retrieved June 2, 2015, New York State Office of Parks, Recreation, and Historic Preservation.

6 Edwin G. Burrows and Mike Wallace, *Gotham: A History of New York City to 1898* (Oxford: 1999) and NYC Parks Van Cortlandt Park website.

7 NYC DEP, "Final Supplemental Environmental Impact Statement for the Croton Water Treatment Plant at the Harlem River Site." p. 12.

8 Ibid.

TRANSPORTATION SYSTEMS

EXISTING TRANSPORTATION SYSTEMS OVERVIEW: Generally speaking, access to the Harlem River Waterfront is the greatest challenge to its successful revitalization. Although seven different modes of transportation are available in the vicinity of the waterfront (pedestrian, bicycle, bus, subway, commuter and freight rail lines, automobile and at least partially, boat), actual connections are relatively few and far between. Achieving connectivity between the waterfront and the upland neighborhoods at key points, as well as linear connectivity, is the number one challenge.

OVERALL PEDESTRIAN AND BICYCLE ACCESS: Except at the southern end of the Central Focus Area at and near Mill Pond Park, pedestrian access to much of the Central Focus Area currently ranges from difficult to impossible. On the southern end at Pier 5 and Mill Pond Park, pedestrian access is at grade and accessible, even if rather daunting and dangerous at the intersection of E. 149th St./ River Avenue/Gateway Center Boulevard. Moving north, pedestrian access to the waterfront becomes increasingly more difficult, with obstacles including highway infrastructure, grade changes of up to 150' feet between the waterfront and the adjacent upland area, and few bridges over the Major Deegan and rail corridors to the waterfront. Access to the north end of the Central Focus Area is currently blocked by the rail infrastructure and the River Plaza Mall, with no pedestrian bridge over the railway.

The Step 1 report describes the situation well for the areas where there are steep grade changes:

> *The highways, train tracks, and topography all conspire against waterfront access. Going down to the river (never mind getting back home) by foot or bicycle requires athletic stamina. Steep step streets – some of them over 200 steps long -- are built into the steep slopes throughout the area as shortcuts to circuitous, steep streets. Narrow sidewalks pass alongside and under the highway and through desolate areas. In Spuyten Duyvil, the steps near the bridge at the top of the hill have been closed by MTA for several years. The steep street leading down to the train station and the park has no sidewalk.*[1]

The Step 1 report also summarizes pedestrian and bike access to and from Manhattan:

> *Currently pedestrians and bicyclists make use of four bridges in the BOA to travel between the Bronx and Manhattan for employment and recreation opportunities: Macombs Dam, Washington, University Heights, and Broadway. The Henry Hudson Bridge is open to pedestrians, but little used because of local access problems on both sides. The high bridges bring people to the upland area, so do not help people get to the waterfront. Manhattan residents use the University Heights Bridge to reach the Bronx waterfront, but often resort to a dangerous shortcut along the tracks to get to Roberto Clemente State Park.*[2]

Step street at West Tremont Avenue typical of grade changes from adjacent neighborhoods

On a more positive note, two current NYCDOT initiatives are tackling mobility and safety concerns for pedestrians and bikes trying to reach the waterfront or the bridges over the Harlem River. In response to community requests for better access to the newly reopened High Bridge and the recently completed Bridge Park and greenway segment on the Harlem River, DOT is installing a series of bicycle and pedestrian improvements in the High Bridge neighborhood of the Bronx through the High Bridge and Bridge Park Access--Pedestrian and Bicycle Connections project. This project establishes West 170th Street as a highly visible pedestrian and bicycle corridor leading up to the High Bridge. One of the main goals is to enhance safety, particularly at challenging intersections. Of greatest impact for the Harlem River waterfront are the new bike connections and signage from the High Bridge landing on University Avenue to and from the waterfront at Depot Place.

The Harlem River Bridges Access Plan, which is presently studying all bridges across the river through community meetings and internal agency planning,

should generate a number of priority pedestrian-bike projects that can be achieved on the short term. The Access Plan will also help identify priorities for longer-term capital projects, some of which could be helpful in creating better access to the Harlem River BOA Area, particularly at 149th Street, the Macombs Dam Bridge and the University Heights Bridge.

In the larger context, the Harlem River Greenway is part of the overall system of greenways envisioned in DCP's 1993 *Greenway Plan for New York City,* much of which has been constructed in the intervening years. The NYC 2015 Bike Map also shows the greenway the full length of the waterfront as a "potential future bike path" along Exterior Street.

As of 2015, linear access along the Harlem River on foot or on bike is possible on two segments of the waterfront: through Mill Pond Park, where the pedestrian and bike path skirts the cove inlets and along a one- mile segment through the new Bridge Park and RCSP. In other locations, the Harlem River Greenway exists only on paper as a strongly held community vision, which was recently summarized by the Harlem River Greenway plan.

OVERALL BUS AND SUBWAY ACCESS: Access to subway lines and bus service in the vicinity of the Harlem River BOA is considered excellent for the "outer boroughs," even though there is little access directly to the waterfront. Subway access is most convenient on the southern end of the HR BOA Area, where there are multiple options of trains at the nearby Yankee Stadium and at the Hub. In the central part of the BOA Area (e.g. Depot Place, RCSP) the nearest subways are approximately a quarter mile away: not an unpleasant walking distance, but complicated by the very steep grade changes just east of the Major Deegan and need to cross the I-87/MDE/ rail line transportation corridor.

Despite the relative abundance of bus lines in the area:

> *Public transportation to the waterfront is limited. Only three places along the [Harlem River] waterfront can be reached by bus: Target in Kingsbridge, Fordham Landing, and Roberto Clemente State Park. A line running along Sedgwick Avenue stops several blocks from Depot Place and requires crossing the Deegan .* [3]

OVERALL RAIL ACCESS: The rail corridor along the Harlem River is a major linkage for both passenger and freight rail in the region.

The five Metro-North Stations within or immediately adjacent to the Harlem River BOA Focus Areas are an underutilized resource, with current day-to-day ridership at these stations notably low due to the high cost of short rides and the availability of much more convenient and economical subway and bus alternatives in the upland neighborhoods. Morris Heights and University Heights are within the Central Focus Area. The new Yankee Stadium-E. 153td Street station (which is heavily used at least on game days) and the Marble Hill and Spuyten Duyvil stations are outside of the Central Focus Area, but inside or in close proximity to the Context Areas.

As part of the Full Freight Access Program initiated in the 1980s, a 1.9 mile section of track call the Oak Point Link was built on trestles just off the Bronx shore of the Harlem River. Its purpose was to provide a direct connection between the Highbridge Yard and Harlem River Yard, eliminating the need for a zig zag route on the Port Morris Branch and to avoid crossing commuter tracks. The Oak Point Link became operational in 1998. Raising of bridge clearances to 18 feet to allow stacked Trailers on Flat Cars (TOFC) to enter into the Bronx and Harlem Yard was completed in 2005.[4]

The major goals of the NYSDOT Full Freight Access Program were to improve and thereby increase freight rail access into the Bronx, create an intermodal facility at Harlem River Yard, reduce truck traffic leading into and out of the city and thereby improve economic development for the Bronx. Given various reasons, this goal has not been fully achieved. Currently the Harlem River Yard is classified as an industrial site. Only one tenant, Waste Management as of 2015; Waste Management runs four freight trains a day, each with an average of 75 rail cars, along the main line through the Bronx, compared with two trains a day seven years ago, per CSX. The cargo carried on the four daily trains would fill about 900 trucks.[5]

RAIL OPERATIONS GROWTH: Both passenger train volumes and freight volumes are expected to grow over the coming decades. With improvements in rail container transport over the previous decades, freight rail is becoming more economically competitive with trucking. Based on studies by the New York Metropolitan Transportation Committee (NYMTC) the freight forecast within the New York tri-state region is

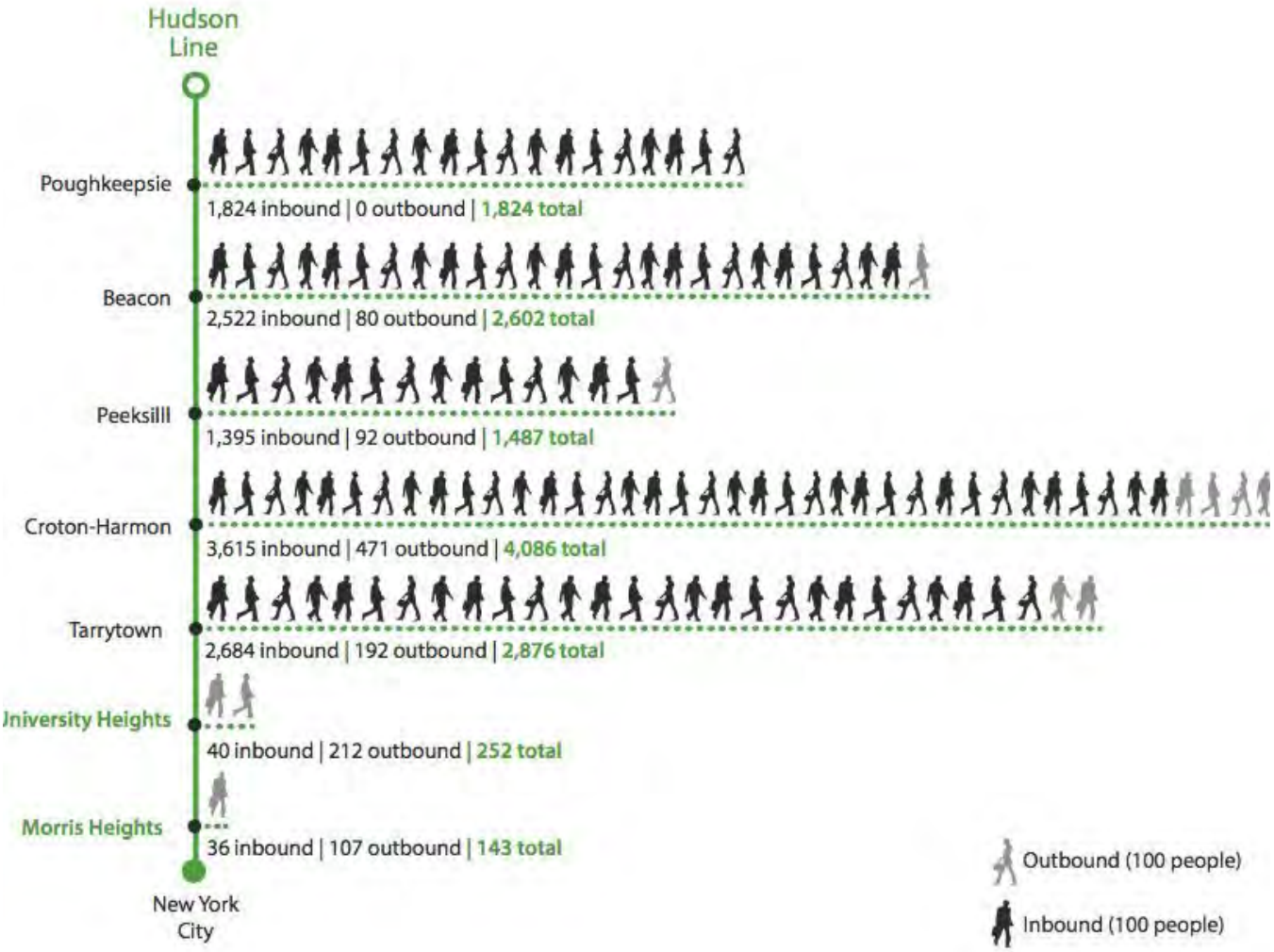


Figure 19. Metro-North Ridership Study (Source: DCP Sustainable Communities in the Bronx Study, p. 21)

expected to grow by 47 percent between 2007 and 2040, from 10.2 million to 15.1 million tons.

CSX has noted on their website that they have obtained funding to upgrade the crossovers, rebuild track and increase clearances at the east and west ends of the Oak Point Yard in the Bronx, which will improve the yard's ability to receive and process trains. These upgrades will help increase capacity of the three major rail lines entering the yard; northwest from Selkirk via Hudson Line, northeast from Cedar Hill via Amtrak/ MNR New Haven Line, and south from Fresh Pond via Fremont Secondary.

A major capacity constraint is that all of the major freight access routes are also primary passenger routes, i.e. Metro-North. Approximately 40 Amtrak and 160 Metro-North trains operate over the Hudson Line on a typical weekday. Passenger train volumes are also expecting growth, making it more difficult to handle increased freight volumes. These constraints are particularly evident in that freight operations are generally permitted only during nighttime hours.

OVERALL MOTOR VEHICLE ACCESS: From an environmental justice standpoint, the Step 1 report rightly summarizes that:

> *The Harlem River waterfront is dominated by two transportation modes, neither of which serves the needs of local residents -- expressways and railroads."*[6]
>
> *The north-south Major Deegan Expressway runs within the BOA Central Focus Area on the BOA area's eastern boundary. The average daily traffic volumes along the I-87/MDE of*

Figure 20. Transportation Map (Source: STV)

107,000 vehicles includes heavy truck traffic, and the Cross Bronx Expressway, which crosses over the BOA area is even more heavily traveled, with trucks making up about a quarter of its average 175,000 trips per day.[7]

Despite this enormous volume of traffic through the HR BOA Area, vehicular access to the waterfront from the Major Deegan and from local streets is extremely limited. There are only five locations along a 4 mile stretch of the shoreline where east-west streets meet the waterfront.

Vehicular access to the waterfromt is best at the southern end of the Central Focus Area, where 149th Street intersects with Exterior Street, a.k.a. Gateway Center Boulevard, which runs under the Major Deegan alongside the Pier 5 site and Mill Pond Park. Between Mill Pond Park and Macombs Dam Bridge, highway ramps claim the entire waterfront with heavy infrastructure; there is no accessible shoreline here, and vehicles on ramps are bound for other destinations. North of Mill Pond Park, the next access point is 1.25 miles to the north at Depot Place. Vehicular access at this location is via a single ramp over the Major Deegan and rail tracks. The next entrances, are the RCSP/River Park Towers entrances at Sedgwick Avenue Overpass and the West Tremont Avenue Overpass; these bridges are 1.7 miles and 1.9 miles north of Depot Place, respectively. From West Tremont to the next vehicular access point, the ramp down from West Fordham Road to Exterior Street next to University Heights Bridge, is another 1.5 miles. In the 1.6 mile reach of waterfront above the University Heights Bridge, there are no other direct vehicular connections. At River Plaza Mall, it is possible to drive near the waterfront by entering the rear mall parking lot, but the rail tracks curve along the shoreline at this point, preventing any further access.

As the 2007 Step 1 BOA report discussed:

In June 2004 the New York State Department of Transportation (NYSDOT) completed the Bronx Arterial Needs Major Investment Study,[8A] *which focused on the Cross Bronx Expressway and I-87/MDE. Its purpose was to "develop multi-modal solutions that will improve the mobility of the Bronx and those who travel there." Most of its recommendations focused on highway modification. Several will have an impact on the BOA study area:*

- *A new Harlem River bridge at the Highbridge Interchange (will require major funding and a multi-year EIS)*

Rare at-grade connection on south end of BOA Focus Area, Mill Pond Park to Exterior Street/Gateway Center Boulevard

- *Continuous Cross-Bronx connector road (now being coordinated with the current rehabilitation of the Harlem River bridges)*
- *N/B auxiliary lane for West 179th Street (making use of abandoned water tunnels to route traffic onto Alexander Hamilton Bridge)*
- *Reconstruction of Major Deegan S/B Service Road from Highbridge Interchange to Yankee Stadium and Bronx Terminal Market*
- *Entrance ramp to Fordham Road Exit Ramp*
- *Reconstruction of West Fordham Road Interchange to Single Point Interchange*
- *Reconstruction of ramp at W. 230th Street to service Target Mall*

These projects are in various stages of design and development (some, like the new bridge, only conceptual), each which will need to be monitored closely for their impact on physical and visual access to the waterfront. While trucking is the dominant mode, as the container revolution has spread to intermodal rail, freight rail is increasingly competitive.[8]

As of 2015, NYSDOT's Statewide Transportation Improvement Program (STIP) for Region 11 includes:

1. *PIN X72039 – Rehabilitation of Major Deegan Expressway Bridges over abandoned subway and Metro-North rail yard in Bronx County to ensure structural integrity/motorist safety. BINS 1067451 and 1067452. These bridges are on southbound I-87/MDE Exit 6 ramp to East 153rd Street/River Avenue. This project is scheduled to be in detailed design in 2015 with construction in 2017.*

Major Deegan, Cross Bronx Expressway and 181st Street infrastructure criss-cross the waterfront

2. *PIN X72699 – Cross Bronx Expressway Bridge Rehabilitation on Highbridge Interchanges (BINs: 1066870, 1066850, 106685B). These bridges include:*

    a. I-87 South to I-95 North over Sedgwick Avenue
    b. I-95 South to I-87 South
    c. I-95 South to I-87 North over Sedgwick Avenue

This project is in preliminary design and has no future funding years or sources.

3. *PIN X77217 – Revitalize Highbridge step-street at 170th Street. Under construction.*

4. *PIN X720.30 – Replacement of concrete deck and minor rehab to I-87/I-87/MDE between 138th and 161st Street/Macombs Dam Bridge Interchange – Currently under construction*

OVERALL FERRY ACCESS AND RECREATIONAL BOAT ACCESS: Currently, the only ferry service to and from the Harlem River is on a few selected Yankee home game days, to and from the New Jersey Highlands, operated by Seastreak. Game day ferry service was provided within New York City in recent years, but did not continue due to low ridership.

The Circle Line Ferry operates multiple daily trips on the Harlem River as a part of its popular two-and-a-half hour tour around the island of Manhattan. This trip provides visual access to the Harlem River waterfront to tourists, but makes no stops in its round trip to and from Pier 42 in midtown Manhattan. The Circle Line is one of the rare ways for most people to view the Harlem River waterfront from the water; however,the trip's cost and the distance of the boarding point from the Harlem River mean that the vast majority of people who see the Harlem River from the water are out-of-town tourists rather than local residents.

RECREATIONAL BOAT ACCESS: While there is once again access for recreational boats, primarily rowers, from the Sherman Creek Boathouse on the Manhattan side of the river, small craft can currently launch at only one location within the Harlem River BOA Area. The boat ramp/ floating dock in Roberto Clemente State Park under the jurisdiction of OPRHP and NPS is appropriate only for canoes, kayaks or small rowboats.

The portion of the Harlem River from the High Bridge to the University Heights Bridge and the portion of the Harlem River between the Spuyten Duyvil trestle and the Broadway Bridge were designated as "No Wake Areas" in 2006.[9]

Notes: Transportation Systems--Overall

1 BCEQ, "Harlem River Waterfront," 2007, p. 17.

2 Ibid.

3 Ibid.

4 Benjamin Miller, "An Evaluation of New York's Full Freight Access Program and Harlem River Intermodal Rail Yard project," (CUNY: 2005).

5 Winnie Hu, "Rail Yard Reopens as City's Freight Trains Rumble Into Wider Use," http://www.nytimes.com/2012/07/20/nyregion/65th-street-rail-yard-reopens-in-brooklyn.html, July 19, 2012.

6 "Harlem River Waterfront," p. 16.

7 Ibid., p. 18.

8 Ibid.

8A Bronx Arterial Needs Major Investment Study (BAN MIS): http://www.dot.state.ny.us/reg/r11/bxmis/index.html.

9 Chapter 1, Title 10 of the NYC administrative code, sections, 10-158.1 and 10-158.2 and NYC Parks flyer "Safe Boating Advisory--Idle Speed, No Wake Areas," prepared by Parks Marina Operations, March, 2006.

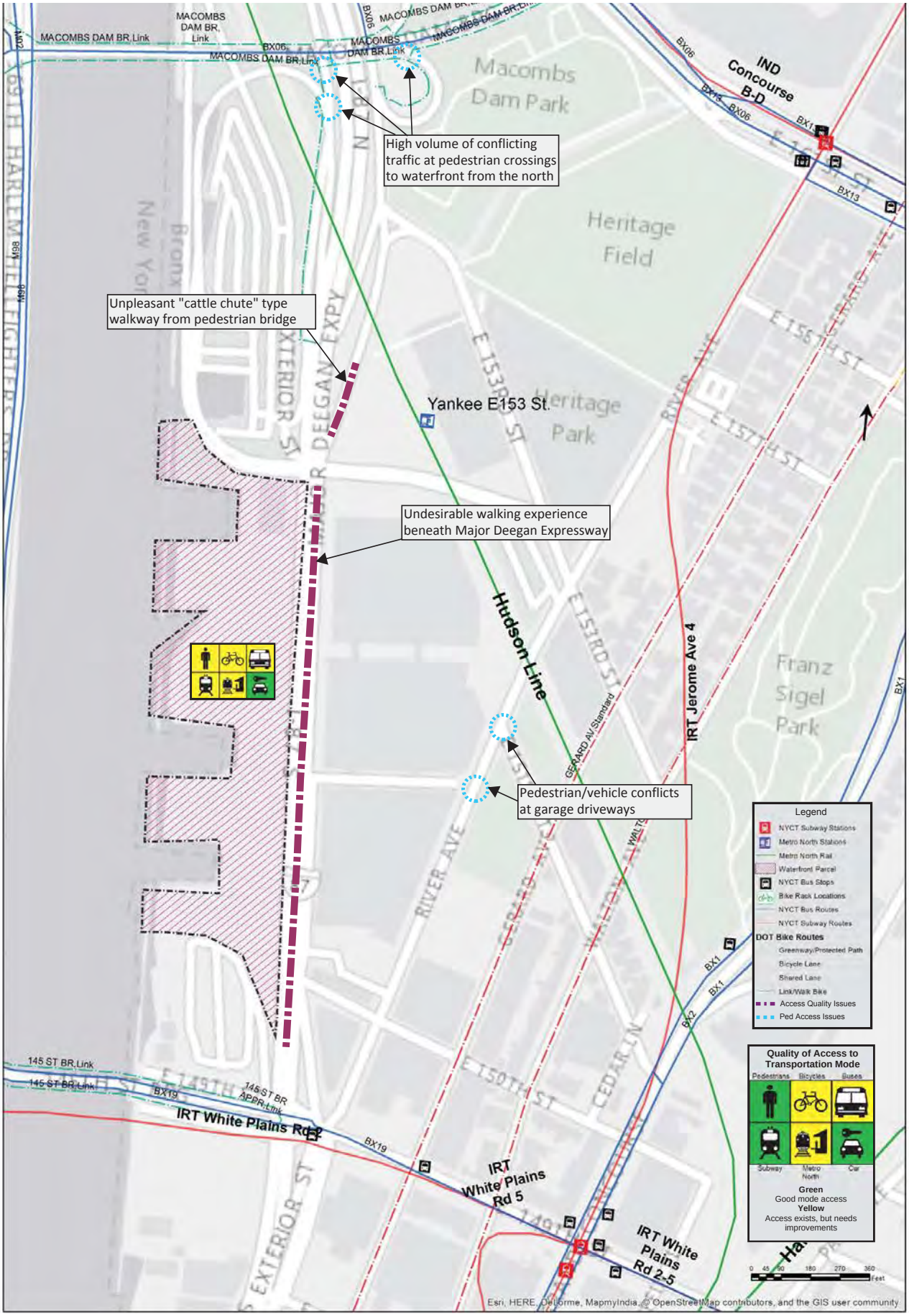


Figure 21. Macombs Dam Transportation Access Map (Source: STV)

TRANSPORTATION: MILL POND PARK/YANKEE STADIUM AREA (CD4)

Pedestrian Access: Pedestrian access to the Mill Pond Park waterfront is along Gateway Center Boulevard (formerly Exterior Street), which is located below I-87/MDE west of the Gateway Center at the Bronx Terminal Market (Figure 21). There are various gated entrances into the park along Gateway Center Boulevard, between 150th and 153rd streets. Gateway Center Boulevard runs from 150th Street northward until it merges with the I-87/MDE north and southbound on-ramps and southbound off-ramp, which are at 153rd Street.

Sidewalks line both sides of the boulevard; these are wide and in good condition. However, since the boulevard is at the back of Gateway Center and under I-87/MDE, walking along this stretch of Gateway Center Boulevard is uninviting, so it is relatively lightly used by pedestrians. The overhead I-87/MDE limits the amount of natural light that reaches the street level; consequently, pedestrians walking along or across the boulevard are typically in the shade/shadows of the structure. Additionally, the columns supporting the expressway line the sidewalks on each side of the street, restricting sight distance and pedestrian visibility. There is a very limited street-level retail presence on the west side of Gateway Center Boulevard, as this is the rear of the Center, which also discourages pedestrian activity along the boulevard. Furthermore, the retail entrances are approximately four feet above street level; consequently, the east sidewalk is bordered by a retaining wall with intermediate stair locations. This situation further separates the street from the retail development, and creates an undesirable walking environment.

To access Gateway Center Boulevard, and eventually across the street to Mill Pond Park, pedestrians connect from 149th, 150th, and 151st streets; all of the streets provide sidewalks on both sides. The parking garage entrances to Gateway Center are located near 150th and 151st streets on River Avenue, which creates undesirable pedestrian/vehicle conflicts at these sidewalk locations that lead toward Mill Pond Park. There is no crosswalk across Exterior Street between the ferry landing point/stadium parking lots and the access points toward Yankee Stadium, despite heavy pedestrian volumes on game days.

Pedestrian access to waterfront under elevated I-87/MDE at Exterior Street/ Gateway Ctr. Blvd. (waterfront at left, Bronx Terminal Market/ Gateway Ctr. on right)

From further north, pedestrian access is much more complicated and even less hospitable. Pedestrians can reach the boulevard from a pedestrian bridge that crosses the Metro-North Railroad tracks at the new Yankees-East 153rd Street station that opened in 2009 along with the new Yankee Stadium. Stairs to the pedestrian bridge are located in Heritage Field Park, across the street from Yankee Stadium. Heritage Field Park can be entered from 157th and 161st streets, as well as from the Ruppert Plaza garage and the 153rd Street garage. Walking alongside these parking garages is generally unpleasant as the building face is typically a continuous wall with fencing in the wall openings. On the west side of the Metro-North pedestrian bridge, the pedestrian route is an undesirable cattle chute-type walkway that is lined by concrete barriers with fencing on top of the barriers that lead to Gateway Center Boulevard.

The third way to reach Gateway Center Boulevard and Mill Pond Park is from the Macombs Dam Bridge, which spans across the Harlem River with walkways on both sides. From the south walkway of the bridge on the Bronx side, where the bridge intersects with the southbound off-ramp of the I-87/MDE, there is a walkway along the west side of the off-ramp which pedestrians could follow to reach the boulevard below. However, to access the waterfront sidewalk from the Bronx, pedestrians must cross the northbound I-87/MDE on-ramp, the southbound I-87/MDE on-ramp from Macombs Dam Bridge, and the southbound I-87/MDE on-ramp from Gateway Center Boulevard (these three intersections to/from Macombs Dam Bridge are circled in the Macombs Dam Transportation Access Map, Figure 21). Two of these on-ramp pedestrian crossings are located at uncontrolled crosswalk locations where vehicles are approaching along a curve. Motorists would not readily anticipate pedestrians to be crossing at these curve locations, which is a safety concern. The walking experience along these high-traffic volume roadways is unpleasant. Most of the walk route is channelized between fencing and concrete barriers installed for safety purposes.

Narrow ramp between Macombs Dam Bridge and Gateway Center Blvd.

Bicycle Access: New York City identifies three types of bicycles routes: Class I routes are physically protected from vehicle traffic, Class II routes are exclusive bicycle lanes painted on the street, and Class III routes are shared lanes, indicated with arrows painted on the street.

Bicyclists could use the pedestrian path described above from the Macombs Dam Bridge to reach Gateway Center Boulevard since the route is a NYCDOT-designated protected path. However, bicyclists must walk their bikes along Macombs Dam Bridge as the path is shared by bicyclists and pedestrians and narrows to less than five feet in some locations, such as at the corners near the I-87/MDE ramps. On the Bronx side, Macombs Dam Bridge connects with the Jerome Avenue shared bike route, which could be a difficult route for novice riders given the relatively high traffic volumes on Jerome Avenue and the narrow 60-foot roadway width that also accommodates four motor-vehicle travel lanes and two curb parking lanes. On the Manhattan side, the protected path runs along West 155th Street until it connects with the Harlem River Drive Greenway and the St. Nicholas Avenue bicycle lanes. East of the waterfront, there are north-south bicycle lanes along Gerard and Walton avenues, but no bike routes intersect with the waterfront between 145th Street and Macombs Dam bridges. South of Mill Pond Park, the 145th Street Bridge also provides a shared protected path, along which bicyclists can walk their bikes and connect with the Harlem River Drive Greenway in Manhattan.

Bus Service: At the north end of the Mill Pond Park area is the Bx6 bus route, which provides east-west service between Riverside Drive in Manhattan and Hunts Point in the Bronx, and traverses the Macombs Dam Bridge. The Bx6 provides connections to the Bx13, which provides north-south service along River and Ogden avenues. The nearest bus stops are located at the intersection of Jerome Avenue and 161th Street. The Bx1 and 2 bus routes along the Grand Concourse are next closest north-south routes, located about a half mile east of the river. These two routes connect with Bx13 at 161st Street and the Bx19 at 149th Street. The Bx19 is an east-west bus route south of Mill Pond Park that crosses over the 145th Street Bridge and has a stop at Gateway Center Boulevard and 149th Street.

Subway Service: The area is very accessible by subway, with five lines within ¼-quarter mile of the river on the Bronx side. From the south, the IRT 2, 4, and 5 subways intersect at the 149th Street station and the Grand Concourse. All three lines run through Brooklyn, Manhattan, and the Bronx. The 4 goes along Jerome Avenue to connect with the B and D subways at 161st Street next to Yankee Stadium. These five subway lines provide connections to/from the entire city.

Rail Service: The closest rail station is the Metro-North Railroad (MNR) Yankees-East 153rd Street Station. Opened on May 23, 2009, the station provides daily local service on the Hudson Line. For baseball games played at Yankee Stadium, there is also special train service on MNR's Harlem and New Haven lines stopping at this station before and after games. Metro-North also provides additional train service between Grand Central Terminal and Yankees-East 153rd Street Station on game/event days at Yankee Stadium.

Ferry Service: Seastreak will provide ferry service to selected 2015 Yankee home games from Highlands, New Jersey. Seastreak is currently scheduled to provide ferry service to 18 of the team's 81 home games in the 2015 season with one trip to and from each game. The dock is located north of Mill Pond Park, between two parking lots, the Harlem River South Lot and the Harlem River Lot. NY Waterway canceled their Yankee

Concrete walls thwart pedestrian and bike connections to waterfront

Clipper Ferry service in 2010 due to low ridership. Also, at one time Delta Air Lines sponsored free ferry service to Yankee Stadium on New York Water Taxi, but this ferry service has also terminated.

Automobile Access: The Grand Concourse is a major thoroughfare in the Bronx; the roadway acts as collector from the northern Bronx to the southern Bronx. The Grand Concourse is approximately a quarter mile east of the river. Intersecting with the Grand Concourse are two main cross streets, 149th and 161st streets. Besides curbside parking, there are many parking lots in the area due to the adjacent Gateway Center and Yankee Stadium. A 2012 *Bloomberg Businessweek* news article indicated that the Yankee Stadium parking garages operate at less than 50 percent capacity.[1]

The I-87/MDE is elevated above Gateway Center Boulevard. Traveling northbound, vehicles can exit at Exit 5, just before Macombs Dam Bridge, near Yankee Stadium. Vehicles coming from the north would also use Exit 5, which will take them directly down to Gateway Center Boulevard. The north and southbound I-87/MDE on-ramps are accessible from East 153th Street and Gateway Center Boulevard.

Notes: Transportation--Mill Pond Park/Yankee Stadium

1 Sam Handler, "Yankee Stadium Parking Garage Company Defaults," *Mobilizing the Region*, October 12, 2012, accessed July 2, 2015, http://blog.tstc.org/2012/10/12/yankee-stadium-parking-garage-company-defaults/.

TRANSPORTATION: DEPOT PLACE AREA (CD4)

The Depot Place waterfront segment spans from the bottom of the Depot Place ramp (a two-way roadway between Sedgwick Avenue and Exterior Street at the waterfront) north to the end of Exterior Street under the Alexander Hamilton Bridge. Depot Place is bordered by the MTA's Metro-North train storage facility, the Highbridge rail yard to the south and the newly opened Bridge Park to the north.

Pedestrian Access: Pedestrians can access the waterfront from several locations north and east of the site. All pedestrians must cross both the I-87/MDE and Metro-North Railroad to access the waterfront. From the north, pedestrians would cross over the expressway and the tracks at the RCSP Bridge and West Tremont Avenue overpasses into RCSP. Once pedestrians have taken the stairs down to the state park, they could walk south, pass the River Park Towers complex along a waterfront promenade that now connects to the recently constructed Bridge Park. The walking distance from RCSP through Bridge Park to the undeveloped Depot Place site is a little over a quarter mile.

The newly constructed Bridge Park that continues south approximately 1,500 feet from RCSP to the Washington Bridge is a linear waterfront greenway with some seating areas and a shared pedestrian/bike path. From the south, pedestrian access from the Depot Place Bridge through the Depot Place waterfront to Bridge Park is currently undesirable, as pedestrians must walk along Exterior Street, a narrow two-way street that is bordered by the undeveloped segment of waterfront.

The main southern pedestrian entry to the Depot Place waterfront is from Sedgwick Avenue, where pedestrian safety and walking experience is currently very problematic. Sedgwick Avenue in the vicinity of Depot Place has a sidewalk on the east side of the street only; however, NYPD vehicles are almost always parked on this sidewalk as well as on the west side of the street overhanging into the street. Between Depot Place and 167th Street, the sidewalk on Sedgwick Avenue is completely occupied by parked police vehicles near the Bronx Task Force police building. These parked cars force pedestrians to walk in the street. Except for a few buildings near Depot Place, there are few land uses that front Sedgwick Avenue in the vicinity of Depot Place, creating an undesirable barren pedestrian environment. The intersection of Depot Place at Sedgwick Avenue is an unsignalized stop-controlled location with no pedestrian crosswalks. Once onto the Depot Place Bridge, more police vehicles are frequently parked on the sidewalk on the north side of the ramp, again forcing pedestrians to walk in the street.

Northeast of the Depot Place entry point, a stairway leads south from the High Bridge and the intersection

Pedestrian walking in street over Depot Place Bridge where police vehicles routinely park on sidewalks

Figure 22. Depot Place Area Transportation Access (Source: STV)

of University Avenue and West 170th Street down to Sedgwick Avenue. This stairway is overgrown with trees and shrubs, with high walls that provide limited visibility. The NYC Parks removed some of this vegetative overgrowth in preparation for the reopening of the High Bridge in the summer of 2015.

From the north, Undercliff Avenue, which merges into Sedgwick Avenue just north of the High Bridge and Depot Place, provides a slightly better pedestrian experience than Sedgwick Avenue, with sidewalks on both sides of the street. However, the west sidewalk ends just north of Sedgwick Avenue, and the east sidewalk is overgrown with vegetation. With no active land uses or buildings along Undercliff Avenue by Depot Place, the street appears desolate.

Bicycle Access: Along the waterfront, cyclists can access the Depot Place site from the north, through the newly constructed Bridge Park and the older Roberto Clemente Park Greenway. The Bridge Park/Roberto Clemente segment of greenway currently functions primarily for recreational purposes, since there are as yet no completed greenway or street connections to major destinations at either end of the route.

Newly installed signage directs cyclists from High Bridge to Harlem River


Newly installed dedicated bike lane on University Avenue connecting to High Bridge


Looking north at Depot Place Bridge, where structural problems are delaying greenway installation and impacting vehicular lanes

Recently, the partially completed "High Bridge and Bridge Park Access – Pedestrian and Bicycle Connections" project has established clear bike connections between the High Bridge and the existing bicycle network and provides new bicycle routes and wayfinding signage to and from the waterfront via University Avenue, Boscobel Place, Undercliff Avenue and Sedgwick to the Depot Place Bridge. Much of this bike and signage infrastructure is already installed, with the exception of the Depot Place Bridge, where ramp conditions have delayed bike infrastructure installation to date. The High Bridge-Bridge Park connection will also designate a temporary greenway path along the waterfront from Depot Place to the Bridge Park greenway.

Inland, there are north/south bikes lanes along Edward L. Grant Highway/Dr. Martin Luther King Jr. Boulevard, about a quarter mile east of the site. There is a protected pedestrian/bike path on the Washington Bridge that links Manhattan with Edward L. Grant Highway in the Bronx, and provides an important inter-borough bike connection. Note that this route spans high over the waterfront; consequently, bicyclists must travel approximately ½-mile inland to touch down in the Bronx from the Washington Bridge, and then back track down to the waterfront. Also, bicyclists are required to walk their bikes on this bridge path.

On-street shared and signed routes allow cyclists to access Manhattan bike routes via the Macombs Dam Bridge to the south via Jerome Avenue., though protected bike paths are lacking. To the north, the route would connect to the existing Jerome Avenue/Edward L. Grant Highway/University Avenue Class II and III bike routes, major north-south bike routes in the Bronx.

Depot Place Bridge, a key connector to the Harlem River Waterfront (High Bridge Rail Yard beyond)

Bus Service: There are five bus lines (Bx 3, 11, 15, 35, 36) that currently serve the area near the site, all providing access to/from Manhattan via the Washington Bridge. However, the nearest stops are more than a half mile away from Exterior Street at Depot Place.

The Bx18 line stops at the intersection of Undercliff and Sedgwick avenues, one block from Depot Place. It serves the residential communities northeast of the site. Headways range from 15 minutes during the weekday AM periods to 30 minutes during off-peak periods. Although the Bx18 stops closest to the site, compared to the other bus routes, it has the least frequent service.

The Bx11, 13, and 35 routes provide service from areas south and east of the site, connecting to the 4 and B/D subway lines. The walk from both bus stops to the waterfront is downhill. The walk route could include using the stairs at the eastern terminus of the High Bridge at University Avenue. Each route has low headways, generally 14 minutes or less at all times.

Subway Service: The elevated 4 train is the closest subway line to the waterfront, generally running parallel to the Harlem River in this area of the Bronx, following the route of River and Jerome avenues. The 4 line is approximately a half mile from the waterfront. The closest subway stations to the site are at 167th and 170th streets, with walking distances approaching a mile away. The B/D subway lines run under Grand Concourse, approximately a quarter mile east of the 4 line, with the closest stations to the site at 167th and 170th streets.

Rail Service: The MNR Hudson Line runs along the waterfront; however, the closest station is Morris Heights, approximately one mile to the north. The station is located adjacent to RCSP with its entrance on the West Tremont Avenue overpass. The most direct route to the Depot Place waterfront from the Metro-North station is via the RCSP promenade to the new greenway through Bridge Park.

Automobile Access: The site can be accessed by private vehicles only via Depot Place. Access from the I-87/MDE is via Sedgwick Avenue. From both directions on the expressway, vehicles would exit at Macombs Dam Bridge, near East 161st Street, and travel northbound on Sedgwick Avenue to Depot Place. Access from Manhattan is via Washington Bridge, which leads to Ogden Avenue, West 168th and 167th streets, and Sedgwick Avenue to Depot Place. Vehicles approaching from east of Jerome Avenue (including the Cross Bronx Expressway) would access the Depot Place site via Jerome and Shakespeare avenues, and West 168th Street. From north of the site, vehicles would use Nelson Avenue to get to West 168th Street. From south, vehicles would use Sedgwick Avenue to Depot Place.

Structural issues on the waterfront at the end of the Depot Place Bridge have necessitated temporary barriers closing off a portion of the roadway, which affects vehicular, bike and pedestrian access. Existing parking facilities at the site consist of curb parking on Exterior Street. Nearby, curbside parking is possible along some portions of Sedgwick and Undercliff avenues and on West 167th Street.

TRANSPORTATION: ROBERTO CLEMENTE STATE PARK AREA (CD5)

Roberto Clemente State Park spans approximately ¾-mile along the Bronx River waterfront, from the new Bridge Park at the south end, to north of the RCSP softball fields to the point where the Metro-North Railroad tracks begin to immediately abut the waterfront. The park is primarily bordered by the Metro-North Railroad and I-87/MDE to the east. Through the middle section of the park, the River Towers Apartment complex and PS 230 / IS 229 school border the park.

Pedestrian Access: Pedestrians can access RCSP from the RCSP Bridge, which spans from Sedgwick Avenue to Richman Plaza near River Park Towers, and via the West Tremont Avenue overpass. Both of these bridges provide pedestrian and vehicular access to the waterfront. The RCSP Bridge provides sidewalks on both sides of the road and high-visibility crosswalk markings at the Cedar Avenue/Sedgwick Avenue intersection. The north sidewalk is approximately 15 feet wide, and is the primary walk route for students to PS 203 / IS 229. At the West Tremont Avenue Bridge,

Poor pedestrian access to RCSP at West Tremont, a key entry to RCSP and the Harlem River Waterfront

there is only a sidewalk on the north side of the street and no crosswalks across Cedar Avenue.

Despite the importance of West Tremont Avenue Bridge as the direct connection to the RCSP entry plaza and a key entry point to the waterfront, pedestrian access at this location from east of the I-87/MDE is poor. This pedestrian approach has no crosswalks on Cedar Avenue, inadequately sized curb ramps, poor sidewalk conditions, and a brick-paved roadway in poor condition that leads to a flight of step-street stairs between Cedar and Sedgwick avenues (see photo, page 107). There are no traffic controls (i.e., stop signs, crosswalk markings, or yield-to-pedestrian signs) on Cedar Avenue that would require motorists to stop for pedestrians at West Tremont Avenue.

There is stair and ramp access to the park from the west end of West Tremont Avenue at the RCSP entry plaza, as well as a staircase from the end of the RCSP Bridge. A waterfront promenade is provided through the park extending from Bridge Park to the south, past the Richman Plaza apartment complex, and around the pool complex and playing fields to the north. RCSP provides ADA access to the ball fields, waterfront and playgrounds via an ADA access ramp located north of the community recreation buildings from West Tremont Avenue. ADA access to the waterfront level and swimming pool areas is also provided through the community recreation building.

Bicycle Access: The RCSP Greenway is 0.6-miles long, running through RCSP and along Richman Plaza from Bridge Park to the north end of Roberto Clemente. Bicyclists have previously not been allowed to share space along the waterfront with the pedestrian promenade, but shared access is planned as part of the RCSP Revitilization Plan. Some bike maps indicate a bike route along Richman Plaza, which would require cyclists to enter the parking garage in order to connect with the park north of Richman Plaza. Consequently, this would not be considered a preferred bike route. As noted earlier the Roberto Clemente and Bridge Park stretch of greenway provides local recreational bike infrastructure, but at present is still difficult to access as a throughway for distance recreational riders or cycling commuters. From RCSP Bridge and West Tremont Avenue, bicyclists could access the waterfront by riding their bikes down Richman Plaza, or by carrying their bikes down stairs, or by walking them down an ADA access ramp to the park.

Also, as previously noted, there are north/south bikes lanes along Edward L. Grant Highway/Dr. Martin Luther King Jr Boulevard, about a quarter mile east of the waterfront. There are, however, no bike route connections east/west between these bike lanes and the waterfront on the stretch between the Depot Place Bridge and the RCSP Bridge.

Bus Service: The Bx18, 40, and 42 bus routes currently serve the area near RCSP, with stops along Sedgwick Avenue near the RCSP Bridge. The Bx40 and 42 provide east/west service between Morris Heights and Fort Schuyler (Bx40) and Throgs Neck (Bx42). The Bx18 provides local bus service between Morris Heights and the B and D subway station at 170th Street in Morrisania via Macombs Road.

Subway Service: The elevated 4 train continues northward running closest to the waterfront of the subway lines, still generally following the route of River and Jerome avenues approximately a half mile from the shoreline. The nearest subway station to RCSP is the Burnside Avenue Station, where visitors can transfer to the Bx40 or 42 routes. Approximately a quarter mile east of the 4 line, the B/D subway lines run under Grand Concourse, with the most convenient station to

Morris Heights Metro-North Station at W. Tremont Avenue, an underutilized asset

RCSP being 170th Street. From 170th Street, visitors can transfer to the Bx18 bus to Morris Heights or walk.

Rail Service: The MNR Hudson Line runs along the waterfront, and the Morris Heights MNR Station is located adjacent to RCSP with its entrance on the West Tremont Avenue overpass. The Morris Heights Station is one of the least utilized stops on the Harlem line, but it is an asset that could be better capitalized on for revitalization of the BOA area.

Automobile Access: The park can be accessed by private vehicles in only two locations, via West Tremont Avenue from Sedgwick (the steep grades change and step street condition between Cedar and Sedgwick prevent direct east-west vehicular connections via West Tremont) and over the RCSP Bridge. Northbound I-87/MDE motorists can access RCSP via the West 179th Street exit and southbound I-87/MDE motorists can use the Fordham Road exit. Access from Manhattan is via the Washington or University Heights bridges, from which motorists can proceed to Sedgwick and Cedar avenues closer to the park. A public parking garage is located south of the RCSP Bridge.

TRANSPORTATION: UNIVERSITY HEIGHTS BRIDGE/WEST FORDHAM ROAD AREA (CD7) (FIG. 24)

Pedestrian Access: The only pedestrian access to this location is from the University Heights Bridge via a U-shaped pedestrian ramp from the bridge to Exterior Street on the north side of the bridge. A sidewalk runs alongside the vehicle lane on the ramp. The vehicle ramp connects to Exterior Street near the waterfront below. No sidewalks are provided on Exterior Street.

Ramp from W. Fordham Road to Exterior Street, sole access point to CD7 waterfront

Pedestrians conflict with a high volume of traffic when crossing the often congested intersections of West Fordham Road and the I-87/MDE ramps to reach this ramp down to Exterior Street. Pedestrian infrastructure across the Major Deegan and connecting east of the I-87/MDE on West Fordham Road is poor, with undersized sidewalks and pedestrian islands leaving pedestrians exposed amidst heavy traffic both across the University Heights Bridge and north-south on the I-87/MDE access road.

Bicycle Access: The University Heights Bridge includes a narrow, protected shared bike/pedestrian path on the south side of the bridge only. There are no bike routes that connect with the protected path on the bridge. On the Bronx side, the nearest bike route is along University Avenue, approximately a quarter mile east. On the Manhattan side, the 10th Avenue bike route is the closest. Both of these routes are Class III shared bike lanes.

Bus Service: The Select Bus Service Bx12 route runs along Fordham Road, providing connections between Manhattan (including the 1 train just across the river), the University Heights MNR Station and the 4, B/D, and A line subway stations to the east. The cross-Bronx Bx12 also provides a nearby connection with many north-south bus lines along its route, such as the Bx1, 2, 3, and 32.

Subway Service: The University Heights area has many transit options. The 1 line is located a quarter mile across the University Heights Bridge on the Manhattan side, with the closest station at 207th Street and 10th Avenue. The 4, B/D, and A subways all have stations within a mile of the University Heights Bridge.

Rail Service: The Metro-North University Heights Station is located at the south side of the bridge. Besides stairs down to the platform, there is an elevator for handicapped access to the platform. The station provides access to Grand Central Terminal in approximately 20 minutes, and provides access north to Poughkeepsie with key stops at Yonkers, Tarrytown, and Croton Harmon. Connection to Amtrak routes is available at Yonkers, Croton Harmon, and Poughkeepsie. This station, similar to the Morris Heights Station, is currently underutilized but is seen as a major asset to the future development of the waterfront.

Automobile Access: Vehicles can access the waterfront via the two-way ramp located off of West Fordham Road/University Heights Bridge just west of the intersection with the southbound I-87/MDE on- and off-ramps. I-87/MDE runs adjacent to the MNR line and the Harlem River, with north and southbound exit and entrance ramps on West Fordham Road, just east of the University Heights Bridge. The expressway connects to I-287 to the north, where it crosses the Tappan Zee Bridge, going north to Albany. The southbound expressway provides connections to I-95 (New Jersey and Connecticut) and I-278 (for Queens, Brooklyn, and Staten Island).

Constrained pedestrian infrastructure and no bike infrastructure looking west on W. Fordham Road toward waterfront

TRANSPORTATION: KINGSBRIDGE AREA (CD8)

Pedestrian Access: There is no direct pedestrian access to the waterfront area in the vicinity of the River Plaza shopping center, given that the MNR tracks run at the very edge of the river. Pedestrian access to the triangle of land behind the shopping center and in the vicinity of the former Putnam Rail Line can be made via the River Plaza parking lot behind Applebee's. This parking lot, which lies just east of Broadway, can be accessed from West 225th Street. The railroad tracks curving along the river also cut off the access to the CSX waterfront site just south of River Plaza Mall. This waterfront site can only be accessed by walking north along Exterior Street from West Fordham Road, where no sidewalks are provided, and it is unclear whether Exterior Street terminates at the Cement Plant and becomes private property or is actually still public street.

Bicycle Access: The closest bike route is a Class III type along University Avenue, which is approximately a half mile east from the river roughly parallel to the waterfront. Class II and III bike routes are provided along Marble Hill and Tibbett Avenues, which are approximately one-third of a mile to the west. There are no east-west bike routes on 225th Street or on any other nearby east-west streets in the Kingsbridge area of the Bronx.

Bus Service: The Bx9 is a cross-Bronx bus route with stops in front of River Plaza Mall, connecting with the 4 and B/D subways to the east. The Bx7 and 20 bus routes run from Riverdale to Manhattan, with stops along Broadway bordering the BOA Central Focus Area. Approximately a quarter mile east is the Bx3 route, which travels along Sedgwick Avenue.

Subway Service: The closet subway is the 1 line, which runs from Van Cortlandt Park – 242nd Street to South Ferry at the very southern tip of Manhattan. The 225th Street station is located at Broadway and 225th Street, immediately adjacent to the northern end of the Central Focus Area. Within a mile to the east are the 4 and B/D subway lines.

MTA Metro-North train and River Plaza parking lot on riverfront looking southeast from 225th Street 1 train station

Rail Service: The MNR Marble Hill Station is located just west of Broadway on the Harlem River waterfront. The station entrance is on West 225th Street with stairs downhill from street level. The station is not handicapped accessible. The Metro-North tracks hug the shoreline around the bend of the river until the river curves from its north-south course turning westward toward the Hudson. Marble Hill is a fairly well utilized station for passengers to/from both the Bronx and Manhattan due to its proximity to the 1 train, taxis and livery cabs, and buses at the intersection of Broadway and West 225th Street.

Automobile Access: The northern part of the Central Focus Area is a fairly major vehicular crossroads where the northern tip of Manhattan meets the Bronx, divided by the Harlem River. Broadway runs the length of Manhattan, over the Broadway Bridge, through the Bronx, to Westchester County to the north. In the Marble Hill and Kingsbridge areas, it runs under the elevated 1 subway. Just north of the Harlem River, Broadway intersects with West 225th Street, which turns into West Kingsbridge Road past the Grand Concourse, and is a major thoroughfare in the Bronx. Kingsbridge Road intersects with Sedgwick and Undercliff avenues, providing connections with the other sites along the Harlem River.

As with pedestrian access, the nearest vehicular access to the waterfront in the Kingsbridge area is the River Plaza shopping mall parking lot, though railroad tracks lining the waterfront prevent direct access. Vehicles turn into the parking area from West 225th Street, east of Broadway. There is also an on-structure parking deck for Target, which is also accessed from West 225th Street at the intersection of 225th and Exterior Street.

TRANSPORTATION: SPUYTEN DUYVIL AREA (CD8)

Pedestrian Access: There is no direct pedestrian access to the immediate waterfront area in the vicinity of the Spuyten Duyvil Shorefront Park, as the MNR tracks run at the very edge of the Harlem River and steep slopes down to the waterfront make access difficult. The Spuyten Duyvil Shorefront Park can be accessed from Edsall Avenue, beneath the Henry Hudson Bridge, and is bordered by the Spuyten Duyvil MNR Station to the southwest. There are no sidewalks along Edsall

Avenue, and most pedestrians approaching the park or the MNR station walk within the narrow two-way street that can only accommodate one direction of traffic in some locations.

Approaching Edsall Avenue from the south and east, sidewalks are provided along the south side of Johnson Avenue. From the north and west, a stair connection is provided to Edsall Avenue from Palisade and Independence avenues. The sidewalk along Palisades Avenue leads to the Half Moon Overlook, a small park that overlooks the Harlem and Hudson rivers and the Spuyten Duyvil Triangle. A staircase from Half Moon Overlook down to the Triangle exists, but has been locked at the time of site visits and appears to be kept locked at all times. Further north along Palisade and Independence avenues is Henry Hudson Park. About 200 feet west of the Palisade Avenue stairs on Edsall Avenue is a pedestrian bridge that connects to the pedestrian overpass at the MNR Spuyten Duyvil Station.

Bicycle Access: There are no bike routes in the vicinity of the Spuyten Duyvil Shorefront Park. The nearest bike route is a shared bike lane along Tibbett Avenue, which is nearly a mile east of Edsall Avenue. The 2014 NYCDOT Bike Map indicates that Kappock Street, and Johnson, Independence, and Palisade avenues are potential future bike routes.

Bus Service: The nearest NYCT bus stop is located at the intersection of Johnson Avenue and Kappock Street, which is about a quarter mile walk from Edsall Avenue. The Hudson Rail Link is a feeder bus system operated by Logan Bus Company for MNR that connects the Spuyten Duyvil Station to adjoining neighborhoods. This service accepts MetroCards, and operates on weekdays only, connecting with MNR. A bus stop is provided on Edsall Avenue directly across from the pedestrian bridge to the MNR Spuyten Duyvil Station.

Commuter parking along Edsall Avenue, where no sidewalks are provided for pedestrians

View looking south from Spuyten Duyvil Shorefront Park; steep slope and railroad tracks block waterfront access

Subway Service: Similar to the Kingsbridge waterfront site, the closet subway is the 1 line, which runs from Van Cortlandt Park – 242nd Street to South Ferry at the very southern tip of Manhattan. The 225th Street station is located at Broadway and 225th Street, more than a mile east of the Spuyten Duyvil Waterfront Park.

Rail Service: The MNR Spuyten Duyvil Station is located just south of the Spuyten Duyvil Shorefront Park and beneath the Henry Hudson Bridge. Pedestrian and vehicle access to the station is via Edsall Avenue, and a pedestrian bridge that connects to the station's pedestrian overpass takes advantage of the steep shorefront topography to minimize pedestrian walk distances.

Automobile Service: Auto access to the Spuyten Duyvil Shorefront Park is provided along Edsall Avenue. Some curbside parking is permitted along Edsall Avenue and 50 parking spaces are provided at the MNR Spuyten Duyvil Station. Motorists would use Johnson Avenue and Kappock Street or use Palisade and Independence avenues to access the Henry Hudson Parkway, a major north-south limited-access arterial in the study area. Further east are the local north-south routes of Riverdale Avenue and Broadway and West 225th Street,

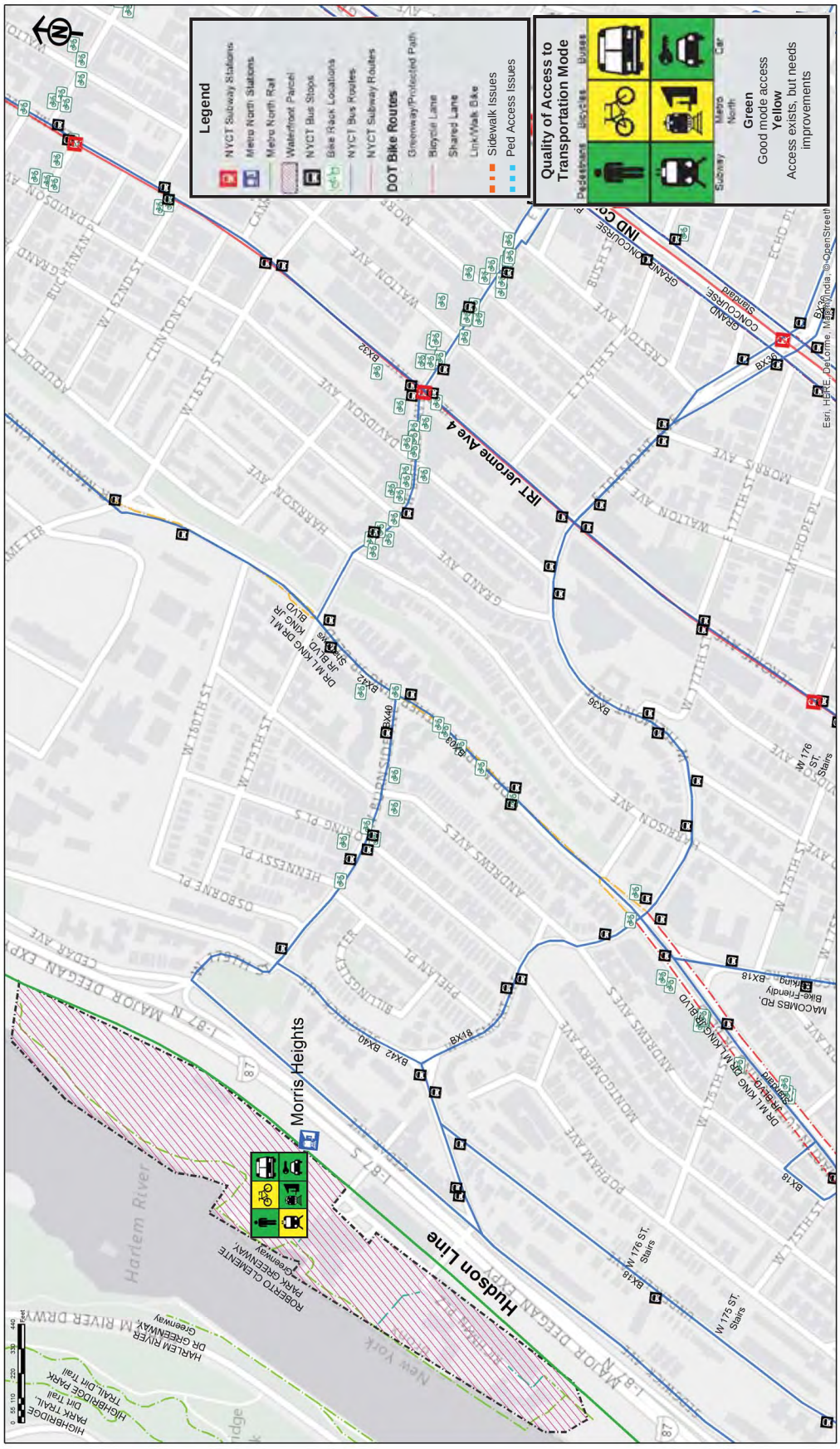


Figure 23. Roberto Clemente State Park Area Transportation Access (Source: STV)

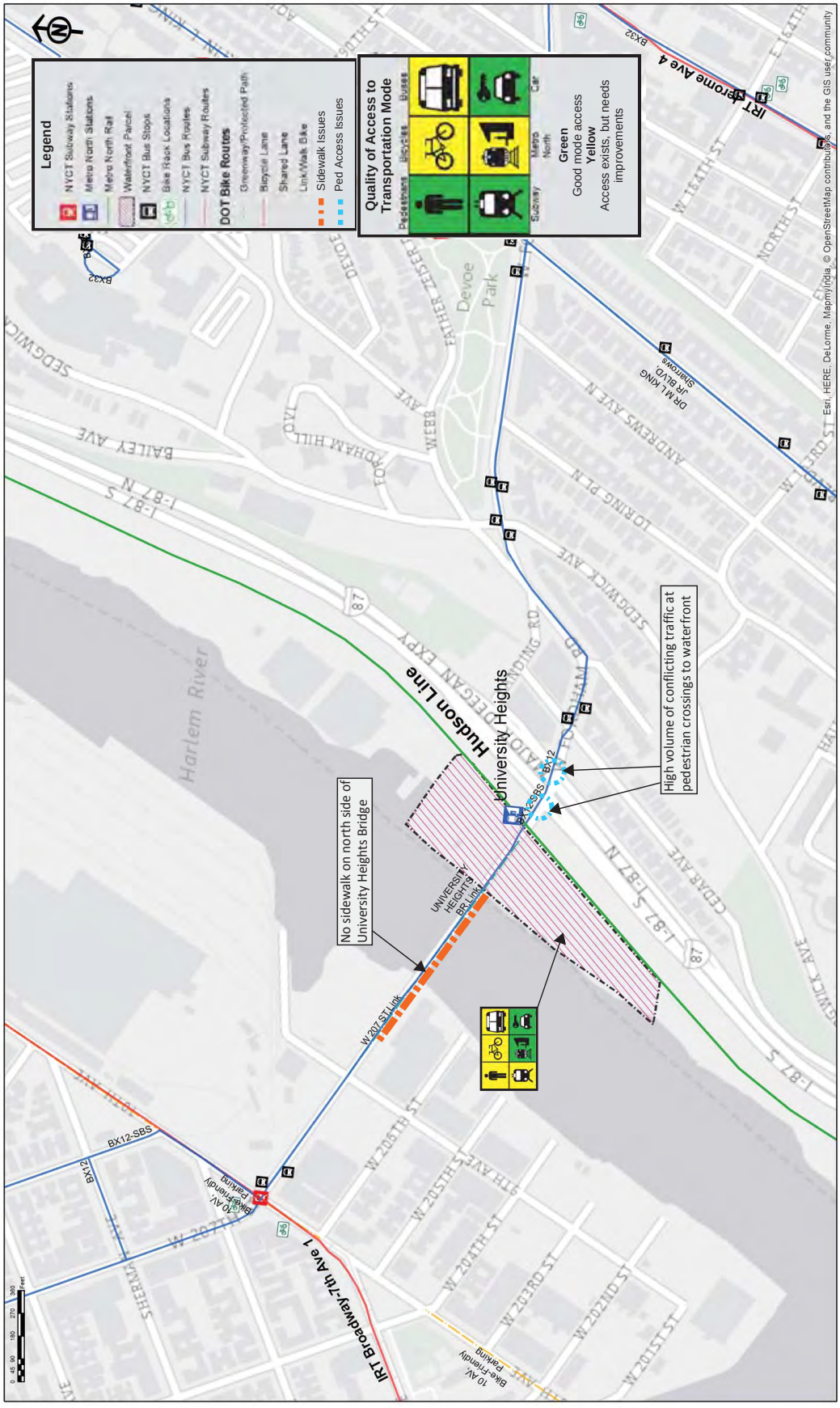


Figure 24. University Heights Area Transportation Access (Source: STV)

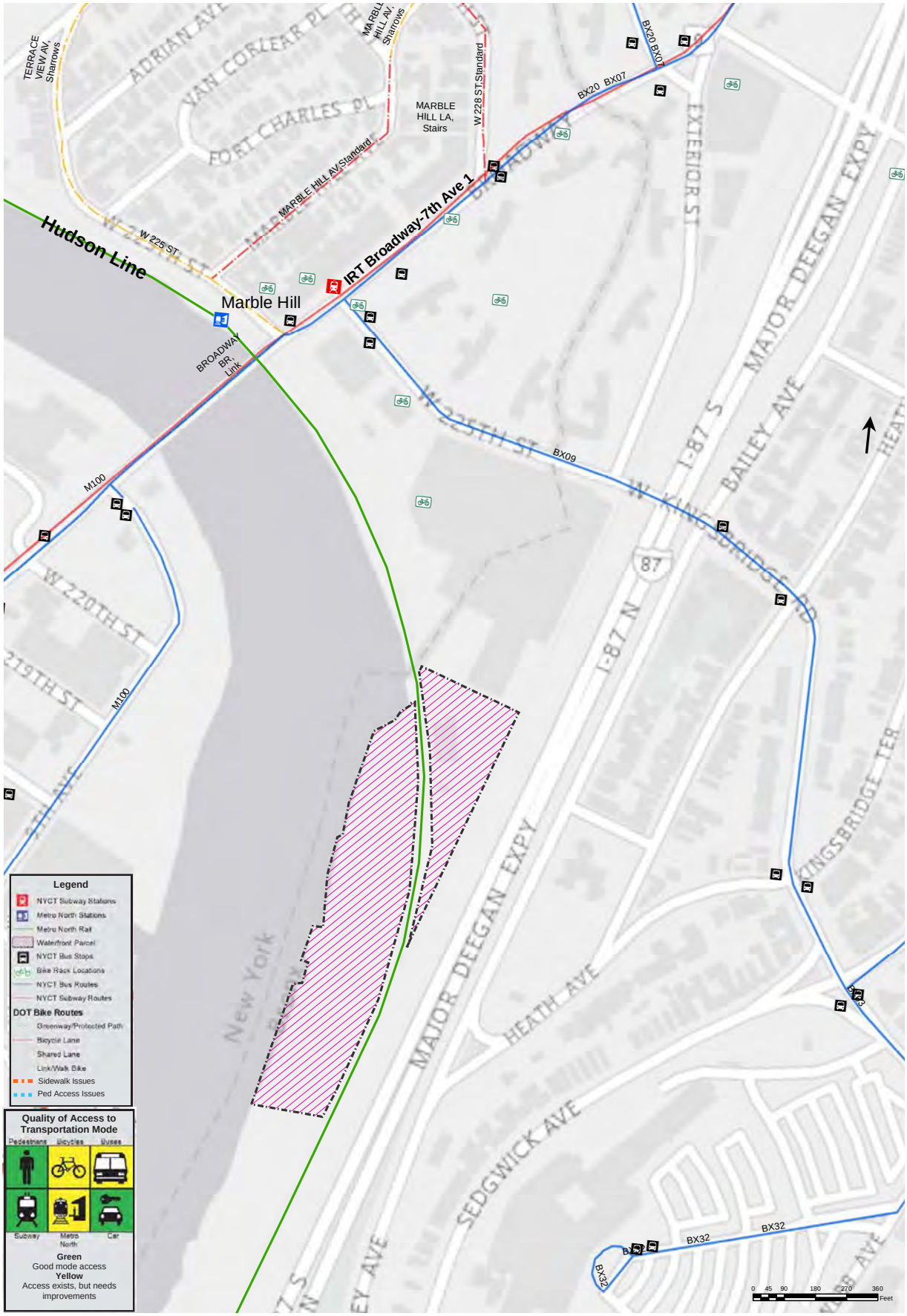


Figure 25. Kingsbridge Area Transportation Access Map 1 (Source: STV)

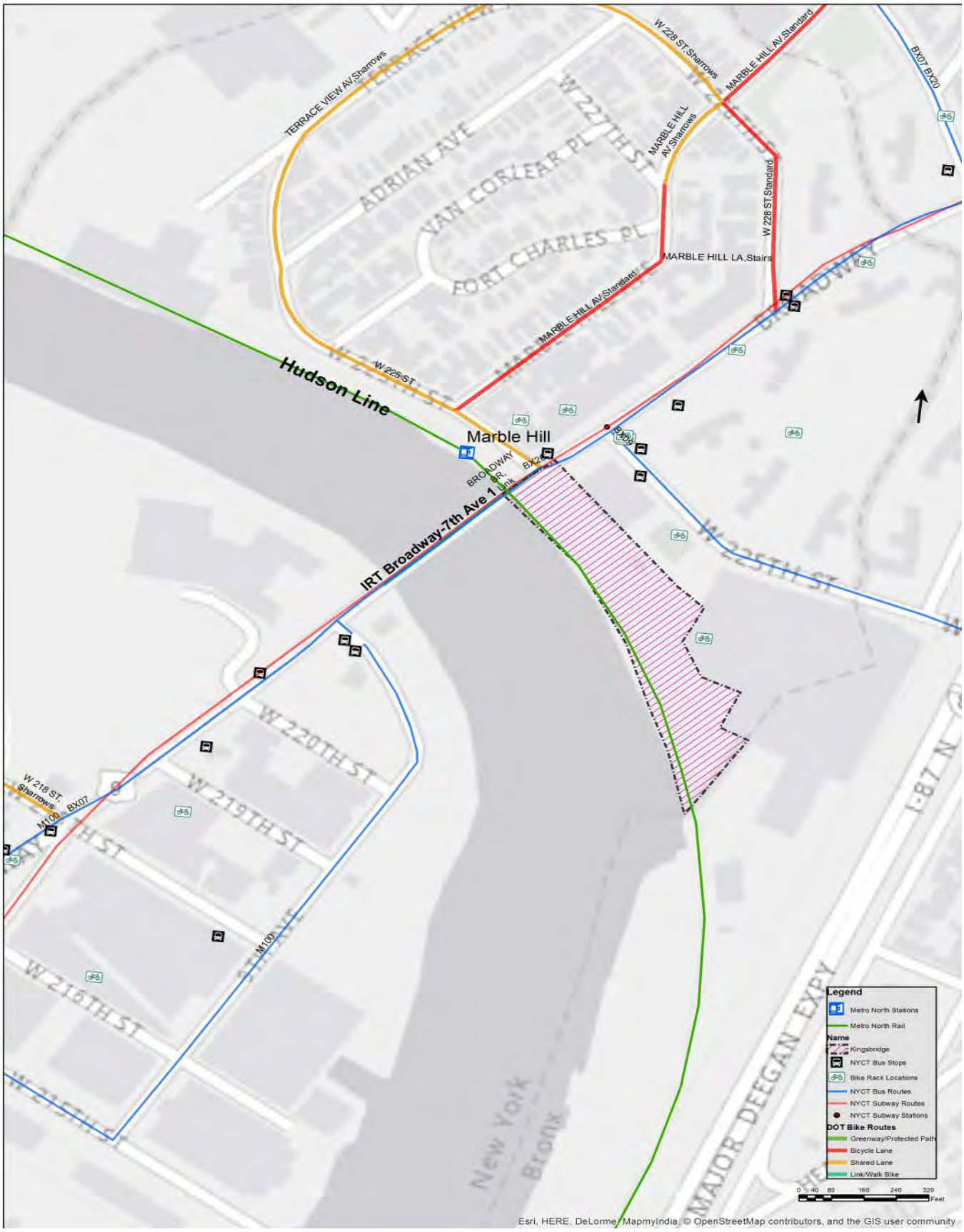


Figure 26. Kingsbridge Area Transportation Access Map 2 (Source: STV)

INFRASTRUCTURE

Throughout the Harlem River BOA Study Area, combined sewage overflows into the river, as well as storm drainage from roadways and parking lots that discharge directly into the river, present the most pressing infrastructure issues. In order to address these conditions with green infrastructure or a combination of green and gray infrastructure improvements, it is necessary to first understand the drainage systems along the shoreline and the catchment areas for each outlet.

Additionally, in some areas, limited existing utilities infrastructure may be a constraint to some extent in adding new land uses to the waterfront. There is no sanitary sewer in Exterior Street and any new sanitary sewer would require pumping or a lift station from the waterfront to regulators which are at higher elevations inland. For initial recreational uses, composting toilets would be an option.

MILL POND PARK / MACOMBS DAM BRIDGE AREA (CD4)

Storm and Sanitary Sewers: Figures 27 and 28, Infrastructure and Drainage Maps 1 and 2, show the boundaries of the drainage areas, existing parks, the elevated highway and opportunity areas for street bioswales within this segment of the Central Focus Area. The drainage area for this section extends from the Grand Concourse, the upper ridge line to the east down to the Harlem River to the west. One of the major sewer trunk lines is within Jerome Avenue, capturing an area as far north as East 172nd Street and down to East 144th Street to the south. This is a combined sewer system with regulator chambers diverting low weather flow to the interceptor sewer and is part of the Wards Island Treatment Plant system.

An outfall at Mill Pond Park with Oak Point Rail Link over Harlem River beyond

There are four combined sewer outfalls (CSOs) within this section. There are two CSOs north of Macombs Dam Bridge from regulators number 60 and 60A (WI-049 and WI-62). The third CSO (WI-63) is just south of Macombs Dam Bridge for the parking areas along Exterior Street, the I-87/MDE and combined sewers on E. 157th Street. The fourth CSO (WI-64) is located just north of the East 149th Street Bridge. The three outfalls under Mill Pond Park appear to be for highway drainage from the elevated I-87/MDE only. Except where the prototype “Pop-Up Wetland” at Pier 5 captures stormwater from I-87/MDE, the I-87/MDE run-off directed to the river is untreated. The center outfall appears to be for the Gateway shopping center, though further investigation would be needed to determine this conclusively. The shopping center’s EA report notes that the property uses various Best Management Practices to provide water quality measures.

The 8’ -6” diameter interceptor is located in Sedgwick Avenue and crosses under I-87/MDE and MetroNorth just north of Macombs Dam Bridge to connect with Regulator Number 60. The interceptor then becomes a 10’ x 7’6” box and continues south within Exterior Street and Gateway Center Boulevard.

Water: The water mains within Sedgwick Avenue just north of Macombs Dam consist of a 48 inch, 1930 and a 12inch, 1930 main. In Exterior Street south of Macombs Dam Bridge, there is a 20 inch, 1930 water main which continues south in Gateway Center Boulevard to East 149th Street.

Electric and Communication: Underground electrical and communication lines are located within Sedgwick Avenue, Exterior Street south of Macombs Dam Bridge and Gateway Center Boulevard.

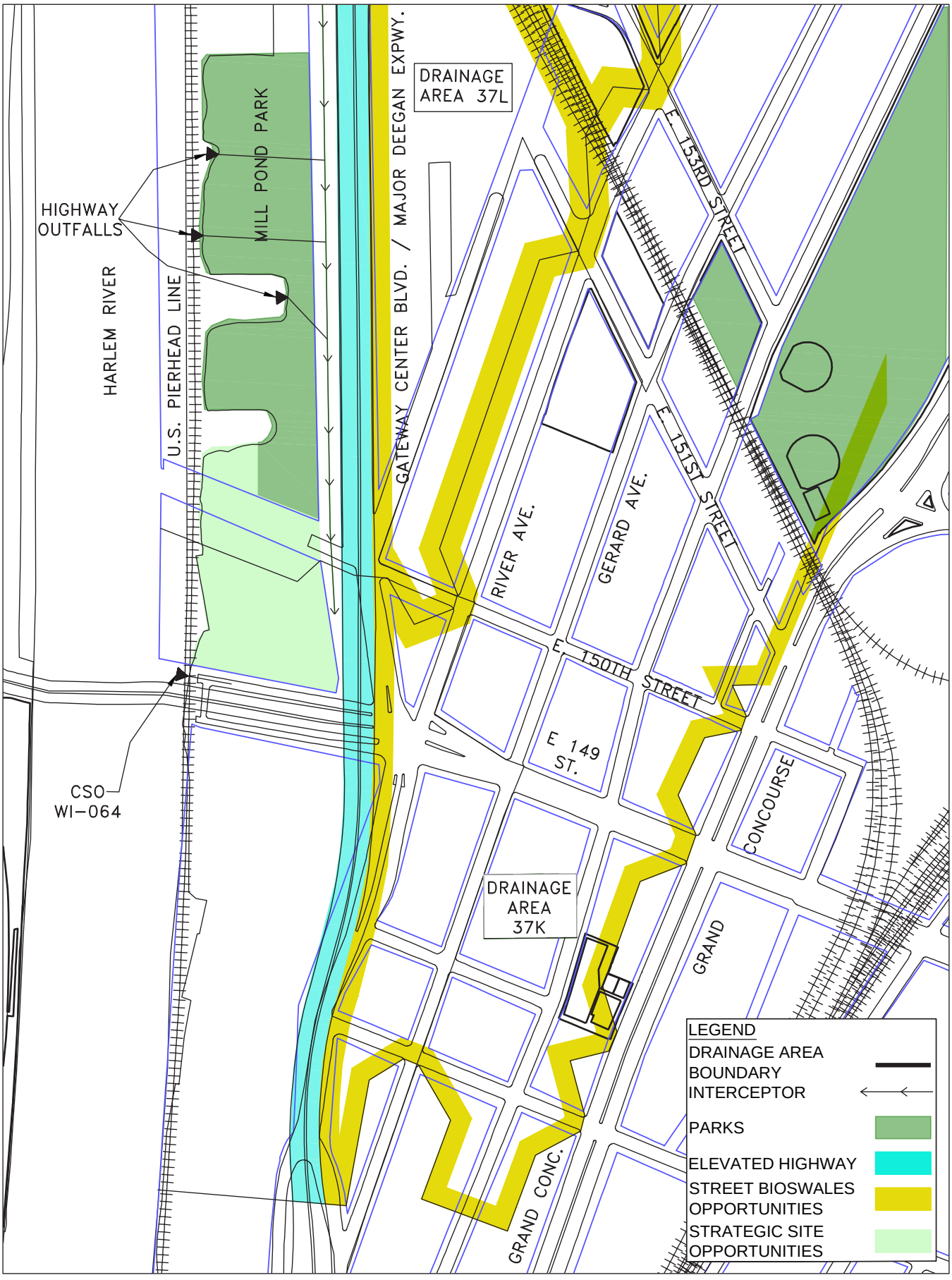


Figure 27. Infrastructure and Drainage Map 1: Mill Pond Park Area--CD4 (Source: STV, utilizing DEP drainage maps)

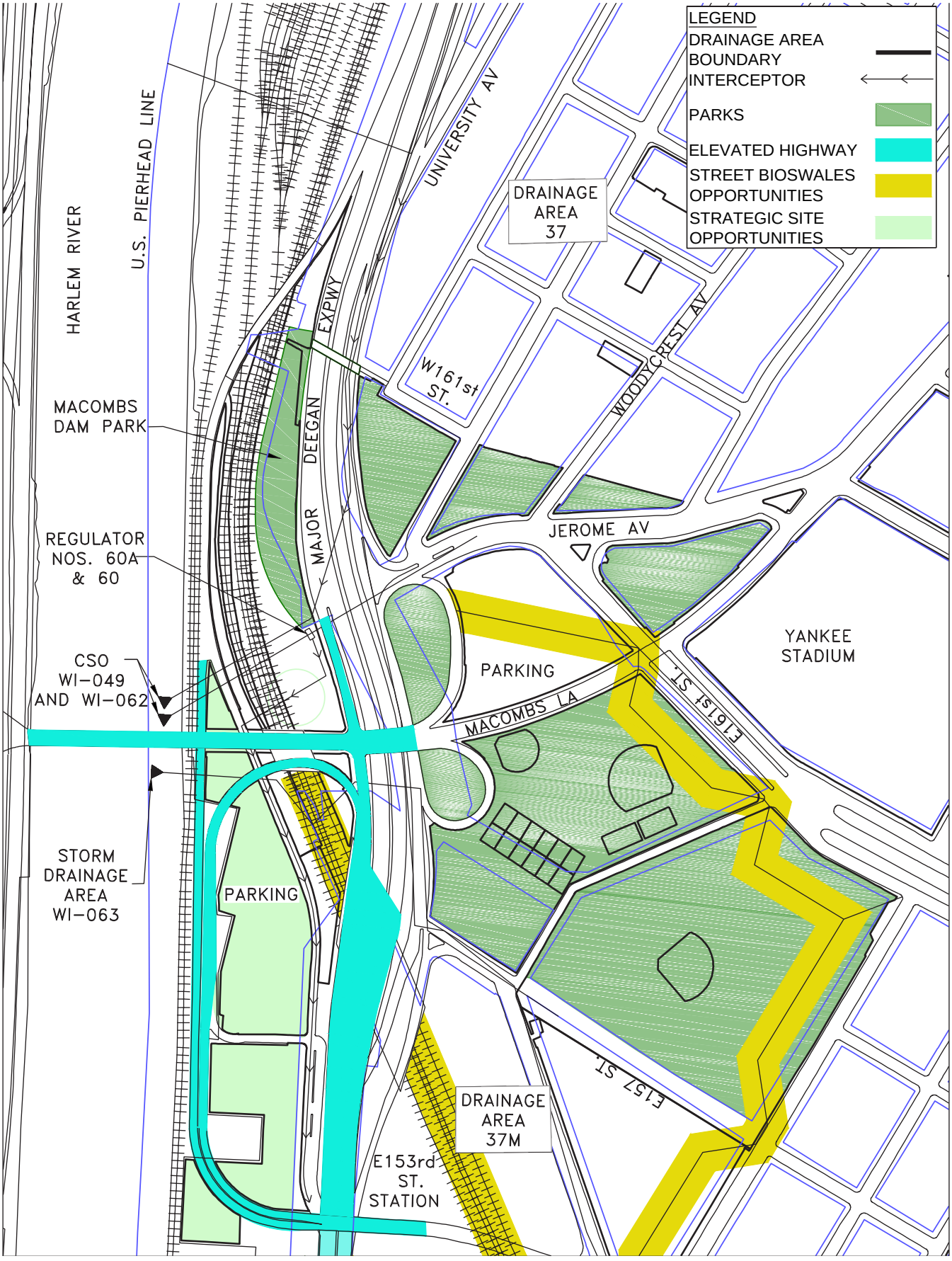


Figure 28. Infrastructure and Drainage Map 2: Macombs Dam Bridge Area--CD4 (Source: STV, utilizing DEP drainage maps)

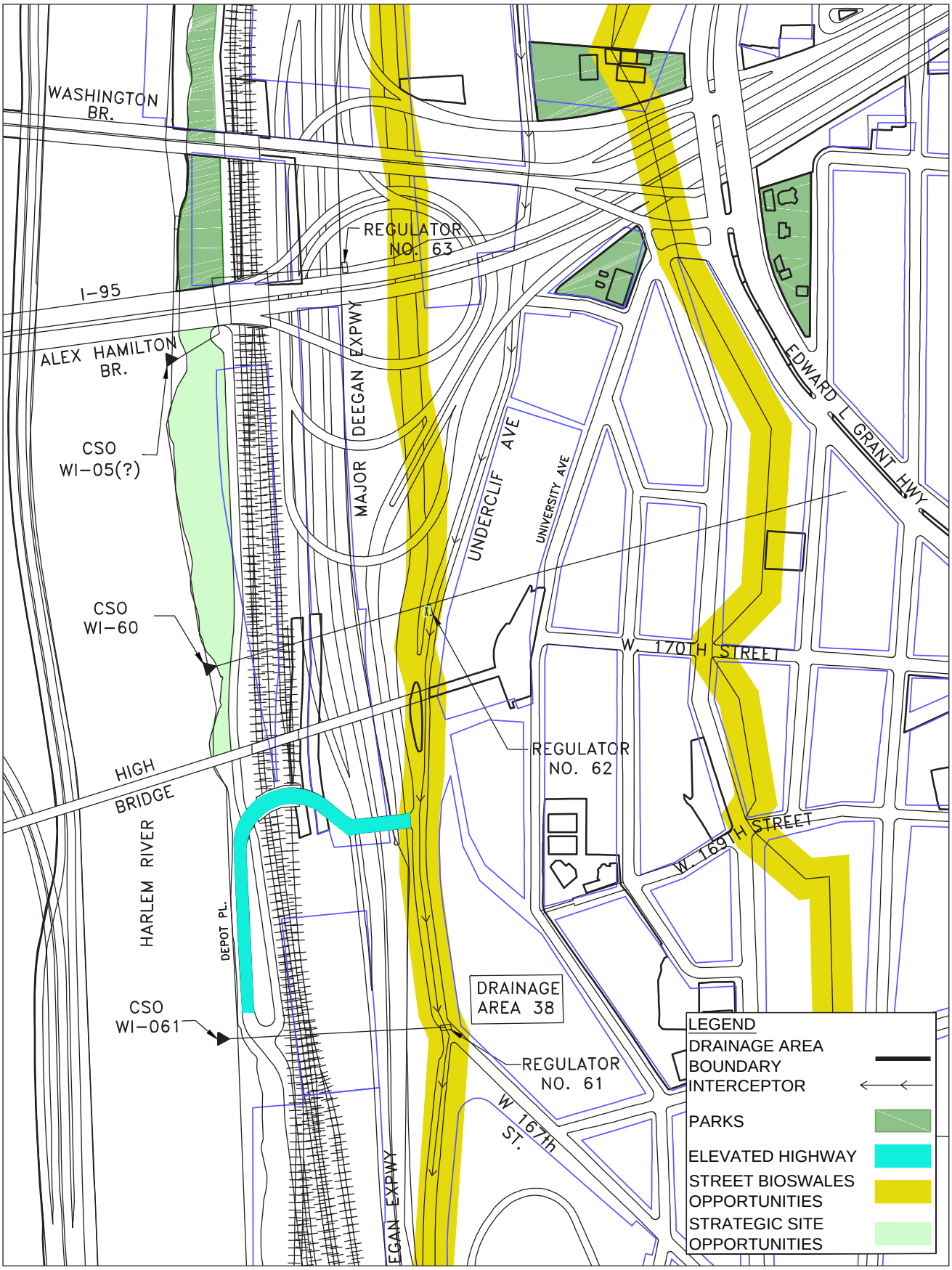


Figure 29. Infrastructure and Drainage Map 3: Depot Place Area--CD4 & CD5 (Source: STV, utilizing DEP drainage maps)

DEPOT PLACE TO SOUTH OF ROBERTO CLEMENTE STATE PARK AREA (CD4-CD5)

Storm and Sanitary sewers: See Figures 29 and 30, Infrastructure and Drainage Maps 3 and 4, respectively. The drainage area for this section extends from the Grand Concourse, westward, down to the Harlem River. It encompasses the area from East 176th Street to the north and to East 169th Street to the south. This is a combined sewer system with regulator chambers diverting low weather flow to the interceptor sewer and is part of the Wards Island Treatment Plant system. There are four CSOs within this section. The northerly CSO (WI-59) is just south of Roberto Clemente State Park from Regulator Number 64 that is in line with West 176th Street. The second CSO (WI-05 noted on DEP Drainage Plans but not on DEP's latest CSO listing) is south of Washington Bridge from Regulator Number 63. The third (WI-60) is just north of High Bridge from Regulator Number 62. The fourth (WI-61) is just south of Depot Place from Regulator Number 61. In addition, Depot Place and Exterior Street have storm / highway drains that outfall directly to the river.

The 7'-6" to 8'-6" diameter interceptor sewer flows north to south to the Wards Island Treatment Plant. Starting at the Bronx Community College, the interceptor is within Sedgwick Avenue, then at West Tremont Avenue aligns within Undercliff Avenue to Washington Bridge and then at Depot Place back into Sedgwick Avenue.

Combined sewers are located within Sedgwick Avenue to the east side of I-87/MDE, but not on Exterior Street adjacent to the Strategic Sites.

Because there is no sanitary sewer service at Depot Place, as the Harlem River Promenade study suggested, a composting toilet might be an option for initial start-up or limited recreational use.

The DEP website notes that the agency has amended the drainage plans in certain rezoned large waterfront areas with existing combined sewer systems, now requiring separate sewer systems to avoid large volumes of CSO discharge to the receiving waters. Gateway Center Boulevard – Harlem River is listed as one of these locations where separate sewer systems are now required.[1]

Water: There is a 12 inch water main that terminates at a hydrant north of Depot Place Bridge along Exterior Street. At the north end of Exterior Street where it abuts the developed portion of Bridge Park there is an 8 inch water main that terminates at a hydrant located within the cul-de-sac. There are no public water mains beyond this point to RCSP.

Electric and communication: Along Exterior Street from Depot Place to the Bridge Park south entrance, there are overhead electric and telephone service lines. There are no electrical or communication service lines south of RCSP.

Typical "Caution: Wet Weather Discharge Point" sign at a Depot Place outfall warns of untreated sewage discharges during wet weather

Figure 30. Infrastructure and Drainage Map 4: Bridge Park to RCSP Area--CD5 (Source: STV, utilizing DEP drainage maps)

UNIVERSITY HEIGHTS BRIDGE / WEST FORDHAM ROAD AREA TO WEST 225TH STREET (CD7)

Storm and Sanitary sewers: Although there are no combined or sanitary sewers along Exterior Street, water quality in the Harlem River is adversely impacted by combined sewer overflows, including one outfall with the largest flow volume of any in the city. The drainage area for this section extends from the Grand Concourse, the upper ridge line to the east, down to the Harlem River to the west. It extends from Van Cortlandt Park to the north and to Bronx Community College to the south. This is a combined sewer system with regulator chambers diverting low weather flow to the interceptor sewer and is part of the Wards Island Treatment Plant system.

There are two combined sewer outfalls within this section. About 1,400 feet south of west 225th Street/ West Kingsbridge Road or in line with the old 192th Street alignment is CSO (WI – 056) from Regulator Number 67, which is a double barrel 15 x 9 foot outfall structure. This CSO has been identified as having the largest CSO flow in the city. The sewer trunk that it outlets capturesTibbets Brook south of Van Cortlandt Park as well as other adjacent combined sewers as it flows south towards the river. Due to the significant exacerbation of combined sewer overflows into the river, DEP, in collaboration with NYC Parks, is currently studying concepts for daylighting Tibbets Brook south of Van Cortlandt Park in order to remove its flow from the combined sewer system.

The second CSO (WI-057) from Regulator Number 66, is in line with Landing Road. Regulator Number 66 is located within the I-87/MDE and handles most of the combined sewer flow from the Fordham Road area.

In line with the Heath Avenue and Bailey Avenue intersection, is a storm water / highway outfall for I-87/ MDE. At the University Heights Bridge ramp to Exterior Street there are street catch basins which appear to outlet directly to the river.

The 7 foot diameter interceptor sewer starts at Regulator Chamber Number 67, continues due east under the I-87/MDE, then south on Bailey Avenue which mergers into Sedgwick Avenue and then continues within the bed of Cedar Avenue south of Landing Road.

The absence of sewage infrastructure on the waterfront and the expense and difficulty of connecting to the upland sewage system is often cited as one of the reasons that the University Heights waterfront has not been developed. A pumping or lift station would be required to connect from the waterfront to the inland sewer system on the other side of the rail tracks and across I-87/MDE. There is an easement under the Metro-North rail tracks in line with Landing Road, so obtaining permission to install a sewer under the tracks should not be an issue. The construction requirements and track outage would, however, require extensive coordination.

Water: An 8 inch, 1971 water main is located within Exterior Street from West Fordham Road which becomes a 12 inch, 1967 main at the Landing Road crossing, where is connects with a 36 inch main that crosses under the river from Manhattan. The 12 inch water main continues to the north within the Exterior Road extension, but is identified as a private main.

Due to the direct connection to the 36 inch main, there should be additional water capacity if needed. DEP would need to be consulted for more specific information.

Electric and communication: There are overhead electric and telephone lines along Exterior Street north of University Heights Bridge to the concrete plant. There is also overhead electric south of the bridge.

Notes: Infrastructure

1 "New Separate Sewer Systems," NYCDEP, http://www.nyc.gov/html/dep/html/stormwater/other_investments_sep_sewer_systems.shtm, accessed December 16, 2015.

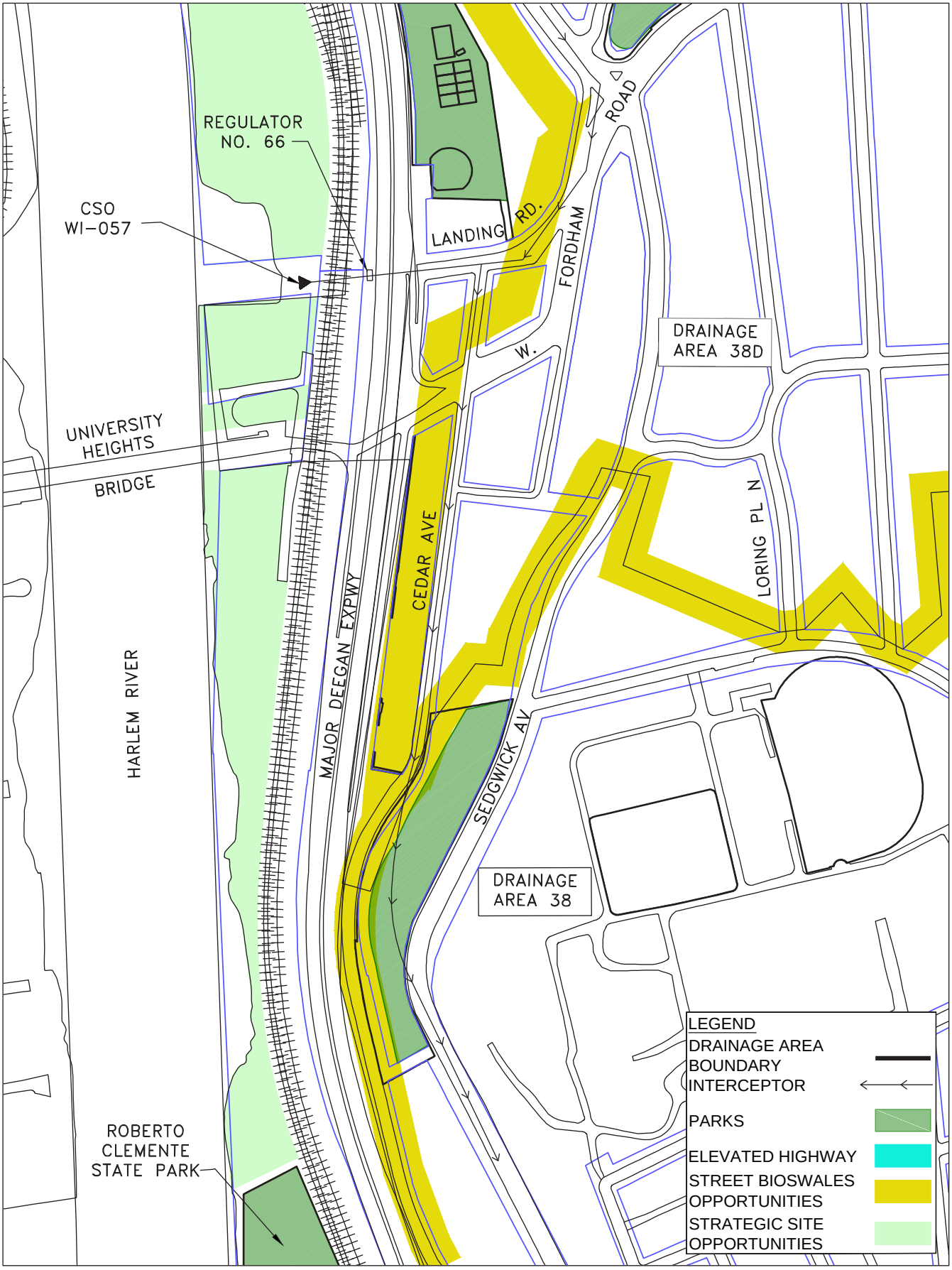


Figure 31. Infrastructure and Drainage Map 5: University Hts. Bridge/W. Fordham Road Area--CD7 (Source: STV, utilizing DEP drainage maps)

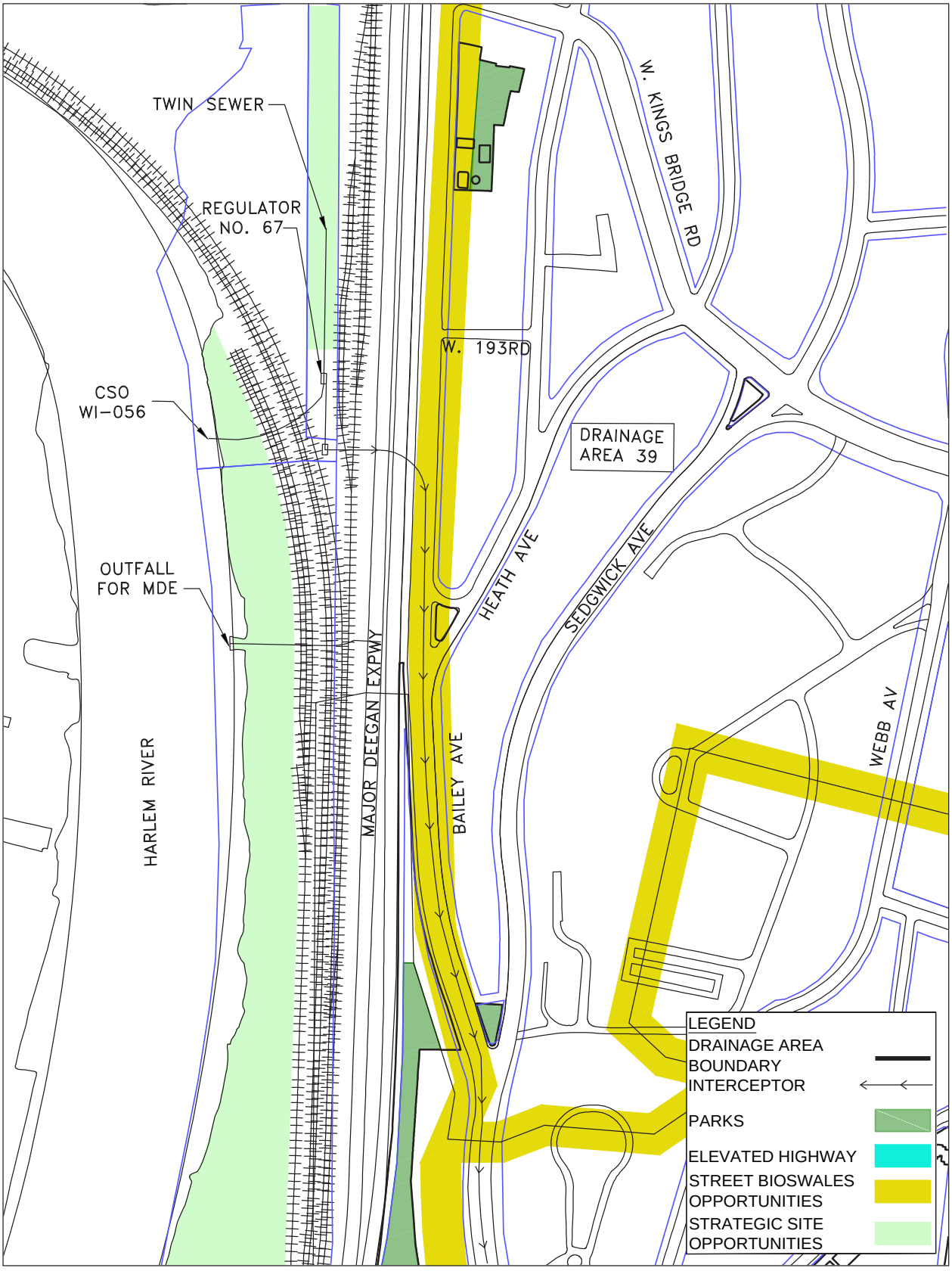


Figure 32. Infrastructure and Drainage Map 6: Kingbridge Area--CD7 & CD8 (Source: STV, utilizing DEP drainage maps)

MARITIME INFRASTRUCTURE

Maritime infrastructure is extremely important for developing the vision of the Harlem River waterfront as a place of recreational access to and from the water. The Shoreline Conditions map, Figure 34, shows the location of the sole launch point for hand-powered craft on the Bronx side of the river in RCSP and the ferry dock near Yankee Stadium. Rip rap, bulkhead and CSO locations are also indicated on the map.

Stone rip-rap lines the banks of the Harlem River throughout most of the study area, with the occasional inclusion of a debris such as a junked car

SHORELINE CONDITIONS: The Harlem River edge consists mostly of stone rip rap, with isolated segments of bulkhead interspersed along the waterfront. The floating dock at RCSP is within one of the sections of rip rap edge. Nearby, the largest section of bulkhead is the 2,000 linear foot stretch in RCSP; the State has allocated funding to rehabilitate the RCSP's bulkhead that was damaged during Superstorm Sandy, among other improvements to the park. Near Fordham Road, the University Heights bulkhead is also in a state of disrepair, particularly along the La Sala property, where runoff is prevalent from the land into the river. At the foot of Depot Place, a bulkhead is also in poor condition. An intact bulkhead exists south of Macombs Dam Bridge at Yankee Stadium parking lots (Lots 13 & 14).

BRIDGES AND BOATING: Vertical clearances for the various bridges over the Harlem River are sufficient to allow tour boats to navigate the Harlem River as they circle Manhattan Island. The bridges also allow ample clearance for ferries and for smaller craft such as kayaks, rowboats and sculls that are already being launched in the river. Bridge clearances are shown in Figure 33. The rather limited vertical clearance and movable bridges have a maritime calming effect by limiting larger sized marine vehicles from using the Harlem River, creating conditions generally favorable for small craft.

Bulkhead at RCSP damaged by Superstorm Sandy before reconstruction and replacement of some portions with a more naturalized shoreline

Under a city ordinance passed in 2006 after a tragic boating accident, NYC Parks has also established a "No Wake" zone from High Bridge to University Heights Bridge in order to provide better safety and quality of boating experience for small craft boaters.

While existing launch infrastructure for small craft is limited on the Harlem side of the river to the floating dock at RCSP, the Peter Jay Sharp Boathouse at Swindler Cove/Sherman Creek Park provides access from northern Manhattan. Columbia University also maintains a rowing facility at the northern tip of Manhattan near the HR BOA Area, and university rowers from Columbia and other universities practice in the upper Harlem River.

Floating dock at RCSP is currently the only small boat launch point on the Bronx side of the Harlem in the BOA Study Area

On the southern portion of the HR BOA Area shoreline from Pier 5 through Macombs Dam Bridge, the Oak Point Rail Link over the water just offshore prevents access to the shore by any type of craft. The Oak Point Rail Link blocks any potential access to the coves at Mill Pond Park or to Pier 5 for even very small craft. The clearance between the water and the railroad bridge is only a few feet, varying with the tide. The ferry dock serving Yankee Stadium is just outside the Oak Point Link and passengers on the occasional game-day ferry cross the tracks to reach the dock.

On left, Peter Jay Sharp Boathouse on the Manhattan side of the river, from which small craft launch

Bridge	Bridge Type	Vertical Clearance (Ft)
145th Street	Swing	30
Macombs Dam	Swing	27
High Bridge	Fixed	112
Alexander	Fixed	103
Washington	Fixed	134
University Heights	Swing	25
Broadway	Lift	24
Henry Hudson Parkway	Fixed	142
Spuyten Duyvil	Swing	5

Figure 33. Summary of Harlem River Bridge Types and Vertical Clearances

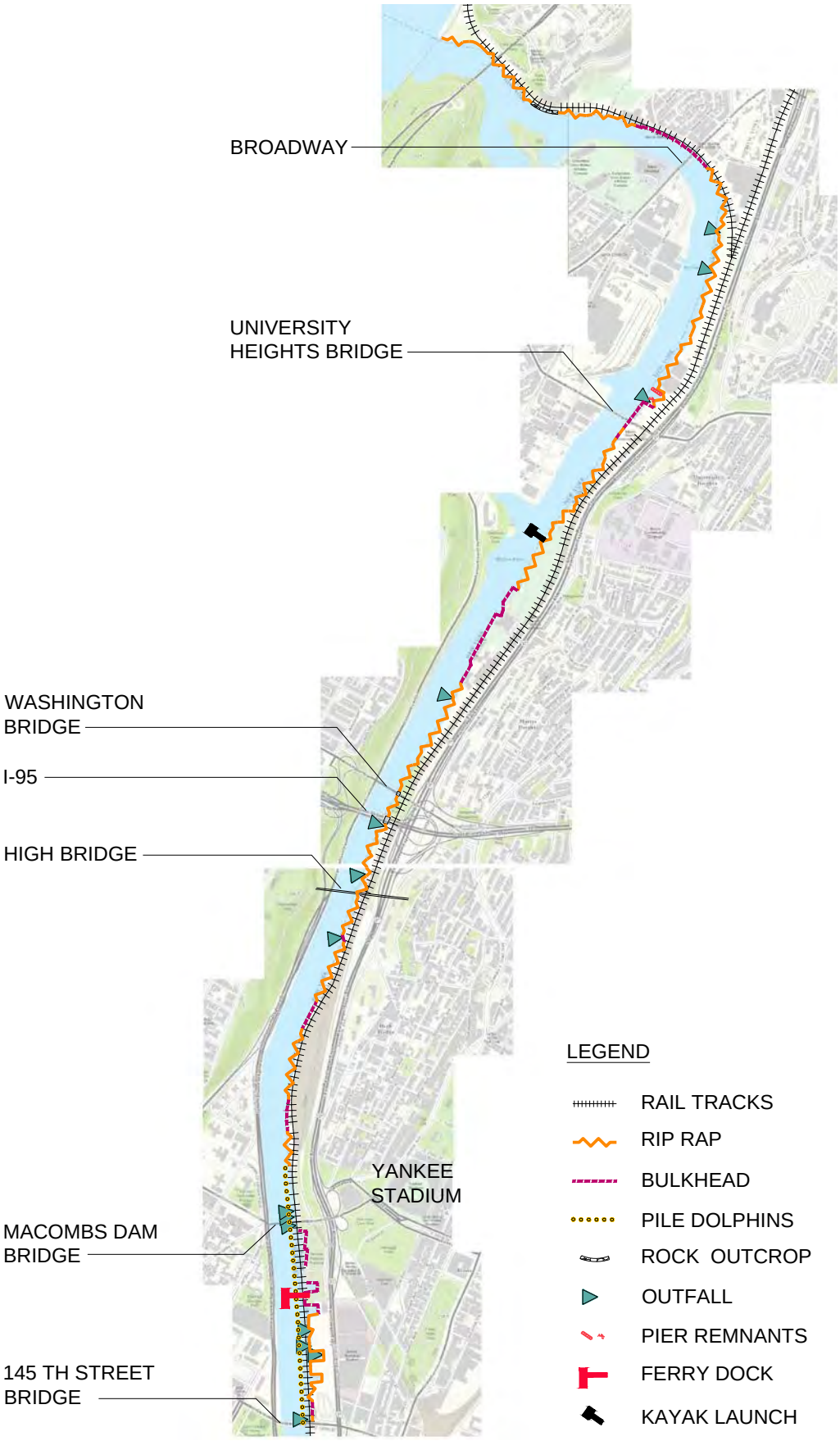


Figure 34. Harlem River Bronx Riverfront Shoreline Conditions (Source: ABB)

NATURAL RESOURCES AND ENVIRONMENTAL FEATURES

GEOLOGY: The Harlem River nestles itself between upland slopes on both the Bronx and Manhattan sides of the river. As Figure 35, the Geologic Cross-Section at the Cross-Bronx Expressway shows, the river valley carves into the underlying Inwood Marble where it meets a more prominent outcropping of Fordham Gneiss. Inwood Marble is softer and more easily dissolved than the adjacent Manhattan Formation, which is comprised of schist and gneiss, or the Fordham Gneiss to the west.

Fordham Gneiss outcroppings form the beautiful, but difficult to traverse, upland ridge on east side of the Major Deegan. Inwood Marble is visible on both sides of the river just outside the HR BOA Area at Marble Hill, where the Harlem River Ship Channel was chiseled through the rock formation to connect with the Hudson River to the west.

Despite the relative clarity of the simplified cross-section that is shown, the geology of the Bronx and Manhattan is quite complex, resulting from great folds and thrust faults associated with the Taconic shear zone running generally northeastward. Rock formations here date back to some of the oldest geological eras, with Fordham Gneiss from the Proterozoic Eon in the Precambrian period (over 540 million years ago). The Cambrian Manhattan Formation and the Cambrian-Ordovician Inwood Marble are slightly more recent, dating to the Age of Invertebrates.[1]

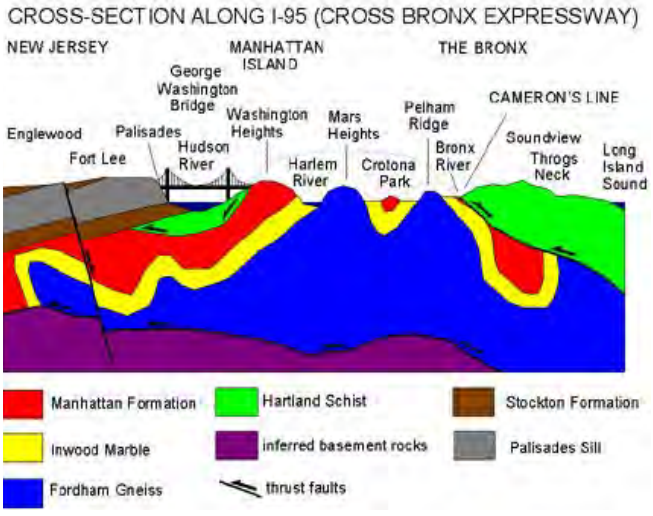


Figure 35. Geologic Cross-Section at Cross-Bronx Expressway (Source: USGS)

SOIL:[2] *One of the most valuable natural resources available to the Harlem River BOA is the soil underlying the waterfront and upland area. A soil survey suggests how the nutrient content and metals uptake capacity of the BOA and upland soils could be enhanced to contribute much more to the remediation of the downslope brownfields and to the public health of the upland communities.*[2A]

Much of the waterfront in the BOA's Central Focus Area is historic fill used in the construction of the Harlem Ship Canal and the railroad. The soil here is of the LaGuardia Ebbets series – very deep, well-drained soils that have formed on human created or modified landscapes in a thick mantle (>40 inches) of human transported soil materials mixed with construction debris. Coarse fragment (>2mm) content ranges from 10 to 35 percent by volume, with more than 10 percent human artifacts. Most of these (concrete, asphalt, bricks, coal, ash) will act like rock fragments. Permeability is moderate in areas where the soil has not been compacted at the surface, and moderately slow where it has surface compaction or platy structure. The Hydrologic Soil Group is B. . . .

The soil type of the Spuyten Duyvil waterfront and upland, as well as the band of land immediately upland of the BOA's Central Focus Area, is Chatfield Series. It consists of moderately deep, well-drained loamy soils that have formed in a moderately thick mantel of glacial till overlying granite, gneiss, or schist bedrock. Depth to bedrock ranges from 20 to 40 inches; solum thickness ranges from 16 to 36 inches. Rock fragments range from 5 to 50 percent in the A horizon and from 5 to 35 percent below. Permeability is moderate or moderately rapid; the Hydrologic Soil Group is C.

Much of the BOA upland is taken up by impermeable transportation infrastructure, with dense development of buildings, parking lots, and paved surfaces. This is characterized as the Pavement and Buildings Unit, areas in which 80% or more of the surface is covered by asphalt, concrete, buildings, or other impervious materials, so intermingled with other soils that it is not practical to map them separately. Substratum phases are added to provide additional information. The till substratum phase indicates a high probability

of unsorted and unstratified glacial till deposits in the substratum.

The upland has several significant areas characterized as Charlton Greenbelt. These are generally found in the area of the Old Croton Aquaduct and steep slopes running along the highway, service roads and railroad corridors. Charlton soils are very deep, well-drained loam that have formed in glacial till derived mainly from granite, gneiss, or schist. Depth to bedrock is greater than 60 inches; solum thickness ranges from 20 to 38 inches. Rock fragments range from 5 to 35 percent by volume to a depth of 40 inches, and up to 50 percent below. Permeability is moderate or moderately rapid; Hydrologic Soil Group is B.

The Greenbelt Series consists of very deep-to-bedrock, well-drained soils that have formed in more than 40 inches of loamy fill that has been piled on a natural surface that may or may not have had its topsoil layer removed before being covered. These soils do not have a fragipan or dense till within the top six feet, but the subsoil may have been compacted by heavy machinery as it was being deposited. Natural rock fragments range from 1 to 20 percent; these soils are relatively clean of human artifacts. Permeability is moderate in areas where the soil cap has not been compacted, but is moderately slow where it has been compacted and has platy structure; Hydrologic Soil Group is B.

AGRICULTURAL LANDS: Currently there are no agricultural lands within the proposed Harlem River BOA Focus Areas, due to their other uses within a densely urbanized area, e.g. transportation corridors, parking lots, industrial and former industrial sites, etc.) and due to contamination issues. However, urban agriculture is rapidly gaining prevalence and popularity in New York City and other urban areas, and future agricultural uses are entirely plausible. These agricultural uses could include, for example, community or demonstration gardens in raised at-grade beds, rooftop gardens, greenhouses or even possibly vertical farms in the more distant future. In fact, some of these urban agricultural uses have already been proposed for at least one area of the project site, in the Depot Place area, as part of the proposed Harlem River Promenade.[3]

WATER:

Surface Water and Tributaries: As noted in the Step 1 BOA report:

The Harlem River is part of the Hudson River Estuary, an ecosystem designated in 1987 as an Estuary of National Significance in the National Estuary Program (one of 28 in the U.S.). It is a tidal strait flowing 7.6 miles from the Hudson to the East River between the Bronx on the mainland and the island of Manhattan.

Its best use classification by NYSDEC is as a Class I saline surface water, making it suitable for secondary contact recreation, like boating, but not primary contact recreation, like swimming and shellfishing for marketing. ….

The Harlem River north of Macombs Dam Bridge is far cleaner and safer than either the lower Harlem or East Rivers, making it one of the most promising in the city for potential recreational development. A rigorous strategy to clean up the Brownfields, abate stormwater runoff (the main conduit of chemical contaminants) and combined sewer overflows (the major source of coliform bacteria and floatables) could raise the usage level to the legal requirement to permit swimming and fishing. This would catalyze the recreational value of the entire Harlem River Park with economic benefits to the adjacent communities.

Tibbets Brook flows south from Yonkers to the Harlem River, roughly along the route of the proposed Putnam rail trail. In the 1920s it was filled in and routed through a network of sewers south of Van Cortlandt Park. The Tibbett could one day be daylighted, as the Saw Mill River is in Yonkers, restoring it as an ecological and aesthetic feature of the waterfront and greenway, and mitigating rather than contributing to the pollution of the Harlem River.

Drainage

Stormwater flows in to the Harlem River when rains causing Combined Sewer Overflows (CSO's) to shut off flow to the Wards Island Water Pollution Control Plant. (See Infrastructure sections above for more details.)

Groundwater

The groundwater level in the proposed BOA fluctuates due to the proximity of the Harlem River. On average, groundwater levels are higher than the river and flow toward it. Groundwater in the Bronx is not used for potable water, which has left it vulnerable to weak enforcement of environmental regulations.[4]

View of Harlem River looking northwest from RCSP.: habitat on both sides of river is a rare resource in NYC.

WETLANDS, WATERWAYS AND FLOODPLAINS:

As the HR BOA Step 1 report goes on to note:

Wetlands

Less than a hundred years ago, this tidal strait had expansive wetlands in the northern reaches, connecting with the freshwater wetland system in the lower Tibbetts Brook. The river was once almost entirely lined with intertidal salt marsh, providing enormous habitat value for fish, local and migratory bird, and the substantial number of species that make salt marsh their permanent home, including Spartina alterniflora, ribbed mussels, and fiddler crabs. Oyster reefs, a keystone species of the estuary, were ubiquitous.[5]

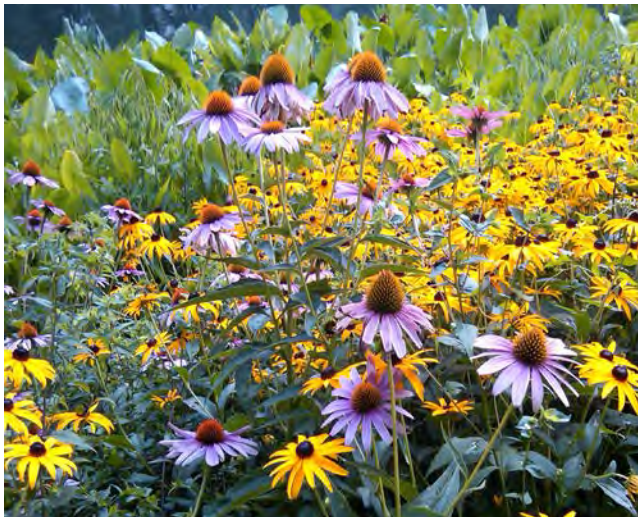
Today, there is little remaining intertidal wetland within the HR BOA study areas. The cove at Landing Road and the proposed Regatta Park is mapped on the NYS DEC Tidal Wetlands map under "Coastal Shoals, Bars and Mudflats." Just across the river on the Manhattan side, another inlet carries the same designation, underscoring the need for considering the river and its habitats as an ecological whole.

Although there are no intertidal marshes along the river within the HR BOA Central Focus area, the DEC map notes a small sliver of intertidal marsh just west of the Marble Hill Metro-North Station and another fragment in Inwood Hill Park on the Manhattan side. These could be important for reference for any future reintroduction of intertidal wetlands along the BOA Central Focus Area shoreline. The current RCSP Revitalization Project includes a new intertidal pool that will attempt a small reintroduction of an intertidal zone in a spot where it can be used for public education.[6]

No freshwater wetlands are depicted on the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map or the NYS Department of Environmental Conservation (NYSDEC) Freshwater Wetlands map for the study area. As the "Final Supplemental Environmental Impact Statement for the Croton Water Treatment Plant at the Harlem River" noted, "No freshwater wetlands, waterways or floodplains were evident ….. The presence of concrete bulkheads and concrete boulder riprap that lies along the entire accessible shoreline of the water treatment plant site may be one of the reasons for the lack of a bordering vegetated wetland."[7]

VEGETATION / WILDLIFE HABITAT: With the exception of the existing parkland in the Harlem River BOA Central Focus Area, the majority of the land is either paved with impervious surfaces (streets and parking lots) or has been cleared and maintained in a cleared state (e.g. railroad tracks and rail yard, distribution and manufacturing sites or construction staging areas). The reach between the University Heights Bridge and the River Plaza Mall in CD7 contains the bulk of the vegetated areas along the waterfront.

Vegetation along this reach of waterfront in CD7 consists of either "Urban Vacant Lot," "Successional Old Field," or "Successional Southern Hardwoods," according to the existing conditions survey for the proposed Croton Water Treatment facility. These plant communities are a mixture of non-native and native herbaceous and woody species, many of which fall into the category of invasives. Tree and shrub species found onsite include *Robinia pseudo-acacia* (Black Locust), *Populus deltoides* (Eastern cottonwood), *Ailanthus altissima* (Tree of Heaven), *Morus rubra* (Red mulberry), *Malus sp.* (Crabapple) and *Zelkova serrata* (Zelkova). The trees are all relatively small caliper, not mature individuals. *Artemesia vulgaris* (Common Mugwort), along with ragweed, goldenrods, wild sweet clover, thistles,



Echinacea and black-eyed susan blooming in Bridge Park

various grasses, vines and Japanese knotweed dominate the herbaceous layer.[8]

From the standpoint of habitat and ecological functioning, these vegetative communities found onsite, although certainly far better than barren impervious surfaces, are not considered optimal for food value or shelter for wildlife or for stormwater management purposes. There is considerable room for improvement in these areas through well planned and executed projects that include ecological enhancements.

FISH AND BENTHIC MACROINVERTEBRATES: As part of the estuary system that links the New York Harbor, the Long Island Sound and the Hudson River, the Harlem River is currently designated as Essential Fish Habitat (EFH) for 21 federally managed fishery species. EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The fish species that may spend at least a portion of their lifecycles in the Harlem River include many well-recognized and prized fish species. However, it should be noted that even though the Harlem River is classified as EFH for all of the species noted below, not all have actually been found in the Harlem and some may be unlikely to occur here due to species preferences for specific temperature and salinity levels.[9] The fish species that could possibly spend at least a portion of their life cycles in the Harlem River are: Atlantic cod *(Gadus morhua);* haddock *(Melanogrammus aeglefinus);* pollock *(Pollachius virens);* whiting *(Merluccius bilinearis);* offshore hake *(Merluccius albidus);* red hake *(Urophycis chuss);* white hake *(Urophycis tenuis);* redfish *(Sebastes fasciatus);* witch flounder *(Glyptocephalus cynoglossus);* winter flounder *(Pseudopleuronectes americanus);* yellowtail flounder *(Limanda ferruginea);* windowpane flounder *(Scophthalmus aquosus);* American plaice *(Hippoglossoides platessoides);* ocean pout *(Macrozoarces americanus);* Atlantic halibut *(Hippoglossus hippoglossus);* Atlantic sea scallop *(Placopecten magellanicus);* Atlantic sea herring *(Clupea harengus);* monkfish *(Lophius americanus);* bluefish *(Pomatomus saltatrix);* long finned squid *(Loligo pealeii);* short finned squid *(Illex illecebrosus);* Atlantic butterfish *(Peprilus triacanthus);* Atlantic mackerel *(Scomber scombrus);* summer flounder *(Paralichthys dentatus);* scup *(Stenotomus chrysops);* black sea bass *(Centropristis striata);* surf clam *(Spisula solidissima);* ocean quahog *(Artica islandica);* spiny dogfish *(Squalus acanthias);* tilefish *(Lopholatilus chamaeleonticeps);* king mackerel *(Scomberomorus cavalla);* Spanish mackerel *(Scomberomorus maculatus);* cobia *(Rachycentron canadum);* sand tiger shark *(Carcharias taurus);* dusky shark *(Carcharhinus obscurus);* sandbar shark *(Carcharhinus plumbeus).*[10]

Historically, oysters were plentiful throughout the Harbor Estuary system, but due to pollution their numbers dwindled radically. In parts of the New York Harbor system, there have been recent efforts to reintroduce oysters as part of ecological restoration efforts. Both the Bronx River and the Harlem River are part of the Urban Waters Federal Partnership. The Bronx River has already been the site of the construction of an experimental oyster reef installed through a partnership between federal and local partners. In the Harlem River, there are a number of locations where reintroduction of oyster reefs for water quality filtering and for their value as habitat for estuarine fish and invertebrates might be accomplished.

The Harlem River's importance as a part of the Hudson River/Raritan/Sandy Hook Bays, New York/New Jersey block of major estuaries, bays and rivers along the northeast coast of the U.S. points to the fact that the health of the Harlem River is not only of local significance for fisheries habitat, but of national and global significance as well.

MACROINVERTEBRATES: For the Croton FEIS, *in situ* sampling was conducted to sample for benthic macroinvertebrates in the vicinity of the proposed Harlem River Site, concluding that "Overall, the species diversity and abundance of the macroinvertebrate communities along the water treatment plant site are typical of a New England Estuary." No state or

federally endangered or threatened species were found in any of the samples. The sampling, which was conducted in 2002-2003 at six sites in the river, from near University Heights Bridge to just south of the River Plaza Mall, revealed 24 species of invertebrates, which tended to be species that are "very tolerant of a changing and somewhat polluted environment." Two of the sampling sites were in close proximity to combined sewer outfalls.[11]

It is clear that improvements to water quality through enhanced stormwater management on the Harlem River could benefit species diversity and richness of aquatic species in the river and in the estuary system as a whole.

AMPHIBIANS AND REPTILES: Turtles, toads, frogs, lizards and snakes comprise the list of amphibians and reptiles that might potentially occur today along the Harlem River, though none of these were sighted during ecological surveys in 2002. The list of potential amphibian and reptile inhabitants includes Common Snapping Turtles and Eastern Box Turtles, Eastern American Toad and Fowler's Toad, Green Frogs and Northern Spring Peepers, Italian Wall Lizards, and Northern Brown and Common Garter Snakes.[12] The FEIS list also provides scientific names of these species.

BIRDS: Despite its heavily urbanized land uses and reputation, the natural areas within New York City are key habitat for migratory birds stopping over along the Atlantic Flyway. The Harlem River shoreline offers current and/or potential habitat to at least 63 species of migratory birds. The list of potentially-occurring bird species includes shorebirds such as the Black-crowned Night-Heron (which has been seen on-site), Green Herons, Double-Crested Cormorants, Canada Geese, Mute Swans and a variety of ducks and gulls. Commonly recognized, urban tolerant birds such as starlings, robins, pigeons, cardinals, mockingbirds, sparrows and swallows join ranks with more elusive woodpeckers, vireos, chickadees, nuthatches and warblers, to name a few. Common and scientific names of the avifauna species potentially occurring at the site studied for the Harlem River Site for the Croton Water Treatment Plant are included in the Croton FEIS.[13]

Ducks inhabiting the Harlem River

With current concerns about rapidly declining bird populations due to incessant habitat losses and other factors, the Harlem River shoreline is a valuable resource with the potential for renewal of significant habitat. When combined with the heavily wooded Highbridge Park and mudflats at Sherman Creek and Inwood Hill Park on the Manhattan side of the river, as well as nearby inland parks and the Jerome Park Reservoir on the Bronx side, the Harlem River Valley can once again provide a significant patch of migratory bird habitat in a strategic location.

MAMMALS: Both the RCSP Environmental Assessment and the Croton SEIS determined that the mammals most likely to occur at sites along the Harlem River are small, urban tolerant mammals, particularly Norway rat *(Rattus norvegicus),* house mouse *(Mus musculus),* moles *(Scalpous sp.),* and gray squirrel *(Sciurus carolinensis).*[14] Additionally, Virginia Opossum, Eastern mole, various species of bats, Eastern Cottontail, Racoon and Striped Skunk could be expected to be found inhabiting vegetation along the Harlem River.[15]

These lists of mammals "most likely to occur" do not, of course, preclude the occasional appearance of other fauna or their reintroduction as environmental conditions improve. For example, beavers have famously made their reappearance on the Bronx River as water quality has been enhanced in recent years, and coyote, deer and the avian wild turkey have made news by making their way into densely populated boroughs of the city.

THREATENED AND ENDANGERED SPECIES: Although no rare, threatened or endangered species are known to appear within the Central Focus Area, a number of state or federally listed species have been recorded as inhabiting the New York City Harbor complex and/or terrestrial environments. It appears unlikely that any of these species would be found on sites along the Harlem River, but environmental reviews for any built projects, if required, would need to address any currently listed species. The "Roberto

Clemente State Park Shoreline and Park Improvements Environmental Assessment" notes that the "Harlem River is not considered Significant Coastal Fish and Wildlife Habitat by New York State Department of State (NYSDOS) (1992). NYSDEC has no current records of rare or state listed animals or plants, significant natural communities or other significant habitats, on or in the immediate vicinity of the project site."[16]

The RCSP Environmental Assessment goes on to discuss several species of flora and fauna that are in the area, but do not appear to be on-site or likely to be on-site.[17] These include:

- The state-threatened plant Yellow Giant-hyssop (*Agastache nepetoides*), which was last confirmed in Bronx County in 1997.
- Two federally listed species whose ranges extend over the New York City metropolitan area, including the project site: piping plover (*Charadrius melodus*, threatened), and northern long-eared bat (*Myotis septentrionalis*, proposed endangered). Neither of these are expected to inhabit RCSP or the vicinity since the area does not contain their preferred habitat characteristics.
- Peregrine Falcon (*Falco perigrinus*) is still listed as endangered in New York State after populations declined in the previous decades, though it is common in many other parts of the US and globally. The RCSP EA concluded that "peregrine falcons are unlikely to use these buildings for nesting habitat, since better nesting and foraging habitat is located elsewhere in the region, and they are not likely to be found in the project site, which lacks tall structures preferred by the falcons for nesting." [18]
- Cooper's hawk (*Accipiter cooperii*) remains a state-listed species of special concern, although experts believe that population in the Eastern US have recovered from previous declines. The RCSP EA noted that RCSP "does not contain deep interior forest that is preferred by Cooper's hawks for nesting, and no Cooper's hawks were observed during the field investigation. The Cooper's hawk is unlikely to nest in the project, particularly since there are more suitable habitats nearby (i.e., Bronx Park), and no adverse impacts would occur."[19] This conclusion would likely apply to other potential project sites in the proposed Harlem River BOA.
- It is possible, though unlikely, that two species of sturgeon which are federally listed as endangered species may occur in the Harlem River as occasional transients. Both Atlantic sturgeon (*Acipenser oxyrinchus*) and shortnose sturgeon (*Acipenser brevirostrum*) inhabit the Hudson River Estuary, but neither have been confirmed as being present in the Harlem River. The RCSP study concluded that if they did appear in the Harlem, it would be only as an occasional transient in the deeper navigation channel, which is away from the Bronx shoreline.[20]
- Seals sometimes appear in New York Harbor, but "Marine mammals are not commonly observed in the Harbor Estuary or the Harlem River, and it is unlikely that they would occur in the Harlem River unless they were unhealthy and/or lost."[21]
- Marine Turtles: The RCSP EA notes that four species of marine turtles - loggerhead (*Caretta caretta*); green (*Chelonia mydas*); Kemp's ridley (*Lepidochelys kempii*); and leatherback (*Dermochelys coriacea*) - all of which are state- and federally- listed (NYSDEC 2010b; USFWS 2010), can occur within the Harbor Estuary. However, none of these nest or are year-round residents in the Lower Hudson or Harlem Rivers. It is possible that occasional transient juvenile loggerheads or Kemp's ridley sea turtles might make their way into the Harlem River, although green sea turtles and leatherback sea turtles are usually only found in the higher salinity areas of the Harbor and are unlikely to inhabit the Harlem River.[22]

AIR QUALITY: As in many of the urban and suburban areas of the Northeast, New York City is in a "non-attainment" area as designated by the US EPA, meaning that it does not meet the National Ambient Air Quality Standards. NYC is within the New York-Northern New Jersey-Long Island, NY-NJ-CT Non-Attainment Area for 8-Hour Ozone. Since 2008, the status of the area has been considered "marginal."[23] On the one hand, air quality is reported to be the best it has been in over 50 years, according to New York City government announcements. This improvement is largely due to the city's Clean Heat program, which has been the impetus for replacement of some of the most highly polluting building heating systems.[24] However, even though air quality has improved over the previous two decades, NYC's air still does not meet federal air quality standards for two pollutants that are of particular concern for health reasons: fine particulate matter and ground level ozone.[25]

In the Bronx neighborhoods included in the proposed Harlem River BOA communities, air quality is generally worse than the overall city averages in most categories. New York City Health Department data summaries

Air quality in the HR BOA area suffers from vehicular and other pollution sources

available for three areas that overlap the BOA Focus Areas and Context Areas--Highbridge-Morrisania, Crotona-Tremont and Kingsbridge-Riverdale—offer a more detailed picture of the health burdens from air pollution in the BOA neighborhoods.[26]

"Outdoor Air and Health in Highbridge-Morrisania" reveals conditions worse than city averages for nitrogen dioxide, fine particulate matter and sulfur dioxide, though better than city summer averages for ozone over the two-year period of 2009-2010. Health burdens as indicated by asthma-related emergency department visits and deaths estimated to be attributable to air pollution, and well as hospitalization rates and death rates for cardiovascular and respiratory causes related to air pollution, were worse than the city-wide averages in almost all categories.[27]

In the Crotona-Tremont neighborhood "Outdoor Air and Health" summary, which covers the residential neighborhoods in the central section of the BOA study area, the situation is reported to be slightly better, but still far from ideal. Levels of fine particulate matter and sulfur dioxide have proven to be worse than the city averages, while nitrogen dioxide and ozone have been in the "middle range."[28]

On the northern end of the study area and in the Spuyten Duyvil Focus Area, the "Outdoor Air and Health in Kingsbridge-Riverdale" study paints a somewhat better picture, though still cause for concern and action. Nitrogen dioxide levels in the 2013 study period were better than the city-wide average, fine particulate matter in the middle range, while ozone and sulfur dioxide were worse than the overall city average. All of the health burden data on asthma, respiratory and cardiovascular illness and deaths were in the "middle" to "worse" than city average ranges.[29]

With air quality and health impacts generally more dire than the city-wide average, in a region whose air quality is among the most challenged in the nation, the need for improvements is urgent. The Health Department notes that under NYC's currently policies, "Air quality initiatives currently focus on reducing emissions from motor vehicles, reducing traffic and congestion, promoting the use of cleaner burning heating fuels and planting trees." The community vision for increased greenspace and a continuous bike/pedestrian greenway along the Harlem River would contribute to these overarching strategies.

Notes: Natural Resources

1 USGS, Geology of Parks, "3D and Photographic Tours; Northern Manhattan," accessed September 17, 2015, http://3dparks.wr.usgs.gov/nyc/highlands/manhattan.htm.

2 The Soil subsection presented here is excerpted directly from the "Harlem River Waterfront" Step 1 BOA report.

2A Footnote as of 2007: "This layer of the urban landscape is under active investigation by the Natural Resource Conservation Service, and this agency, together with the New York Soil and Water Conservation District, has made New York City the most comprehensive urban soil survey yet undertaken. (Paul Mankiewicz, PhD. NYC Soil and Water Conservation District).

3 BOEDC & Starr Whitehouse, "Harlem River Promenade."

4 BCEQ, "Harlem River Waterfront," 2007, pp 63.

5 Ibid., p. 63-64.

6 New York State Homes and Community Renewal, prepared by AKRF, "Roberto Clemente State Park Environmental Assessment, "July 24, 2014.

7 NYC Department of Environmental Protection, "Final Supplemental Environmental Impact Statement for the Croton Water Treatment Plant," Section 7: "Water Treatment Plant at the Harlem River Site," 7.14 "Natural Resources," 2004, pp. 4-5, accessed September 22, 2015, http://www.nyc.gov/html/dep/html/environmental_reviews/crotoneis.shtml. The proposed Croton site (which was not chosen for the Croton facility) is the reach of the waterfront north of West Fordham Road/University Heights Bridge. Since another location was ultimately chosen for the Croton Water Treatment Facility and little other activity has since occurred at the Harlem River site, it is fair to assume that this report offers a still- relevant portrait of the northern section of the Central Focus Area.

8 NYCDEP, "Final SEIS for CWTP," pp. 1-4.

9 Ibid., pp. 19-25.

10 National Marine Fisheries Service, "Summary of Essential Fish Habitat (EFH) Designation," accessed May 18, 2015, http://www.nero.noaa.gov/hcd/STATES4/conn_li_ny/40407350.html.

11 NYC DEP, "Final SEIS for CWTP," pp. 10-18.

12 NYC DEP, "Final SEIS for CWTP," pp. 26.

13 Ibid., p. 26-28.

[14] Ibid., p. 29.

[15] Ibid.

[16] Ibid., p. 30.

[17] NYSHCR, "RCSP EA," pp. 5-10.

[18] Ibid., p. 7.

[19] Ibid.

[20] Ibid., p. 6.

[21] Ibid., p. 6-7.

[22] Ibid., p. 7.

[23] U.S. Environmental Protection Agency, "Current Non-Attainment Counties for All Criteria Pollutants," accessed May 18, 2015, http://www.epa.gov/airquality/greenbook/ancl.html.

[24] NYC Office of the Mayor, "Mayor Bloomberg Announces New York City's Air Quality has Reached the Cleanest Levels in More Than 50 Years," http://www1.nyc.gov/office-of-the-mayor/news/311-13/mayor-bloomberg-new-york-city-s-air-quality-has-reached-cleanest-levels-more-than#/0, September 26, 2013.

[25] Clean Air New York, "Air Quality Information," accessed May 18, 2015, https://511nyrideshare.org/web/clean-air-ny/air-quality-information.

[26] NYC Department of Health and Mental Hygiene, "Environmental and Health Data Portal," accessed May 18, 2015, http://a816-dohbesp.nyc.gov/IndicatorPublic/publictracking.aspx.

[27] NYC DOH, "Environmental and Health Data Portal," accessed May 18, 2015, "Outdoor Air and Health in High Bridge, Mor http://a816-dohbesp.nyc.gov/IndicatorPublic/NewQuickView.aspx

[28] Ibid., "Outdoor Air and Health in Crotona-Tremont."

[29] Ibid., "Outdoor Air and Health in Kingsbridge-Riverdale."

FLOOD HAZARDS: As with other locations in the Hudson-Raritan Estuary system, with the natural resource benefits also come risks. The Harlem River is impacted by the geographic phenomenon of the "New York Bight," where the New York and New Jersey coastlines meet at a right angle, a configuration that magnifies a hurricane's effects by funneling storm surge directly into New York City, amplifying flooding and related damage.[1] This situation was keenly felt during Superstorm Sandy, bringing much greater governmental and public awareness to the issue.

Within New York City's system of six different evacuation zones for coastal areas during hurricanes, the entire Harlem River BOA Central Focus Area is in either Zone 2 or Zone 3 based on the 2013 zone revisions. Zone 1 (found in the area south of this BOA) consists of the lowest-lying areas in locations most at risk of flooding from storm surges, with higher zones indicating gradually reduced risk. In the BOA Central Focus area, the High Bridge divides Zone 3 to the south and Zone 2 to the north. According to the NYC Office of Emergency Management, "these hurricane evacuation zones are based on coastal flood risk resulting from storm surge — the "dome" of ocean water propelled by the winds and low barometric pressure of a hurricane — the geography of the city's low-lying neighborhoods, and the accessibility of these neighborhoods by bridge and roads. The City may order residents who live in a zone to evacuate depending on a hurricane's forecasted strength, track, and storm surge." Roughly 3 million New Yorkers live within these six evacuation zones, and numbers are expected to increase.[2]

As separate but related issues, FEMA Flood Insurance Rate Maps (FIRMS) delineate areas at high risk for flooding. Flood risk is recognized to be worsening throughout the city due to a combination of sea level rise and land subsidence. Property owners with federally-backed mortgages on buildings identified in the high-risk areas on the FIRMs are required to purchase flood insurance.

On Preliminary FEMA Flood Insurance Rate Maps (PFIRMS), essentially all of the Central Focus Area is classified as either A/AE/AO (High Risk: Flooding) or X (Moderate Risk). None of the Central Focus Area is classified as VE (High Risk: Flooding & Waves), though the Hudson River side of the Spuyten Duyvil Focus Area, including the Spuyten Duyvil Triangle, is rated as VE.

The City, led by the Mayor's Office of Recovery and Resiliency (ORR), has developed a multifaceted plan for improving the city's resiliency--the ability

RCSP suffered flood damage in Superstorm Sandy necessitating closing off esplanade edge until reconstruction

of its neighborhoods, buildings and infrastructure to withstand and recover quickly from flooding and climate events. Currently, multiple city agencies and ORR are working with communties to understand the risks they face and support the vitality and resiliency of neighborhoods through the "Resilient Neighborhoods" initiative. This work builds on and compliments DCP's resiliency planning efforts, including a series of zoning text amendments as well as studies such as "Retrofitting Buildings for Flood Risk," "Urban Waterfront Adaptive Strategies" and the "Resilient Retail" study that are applicable for the Harlem River BOA Area.[3] NYC Parks Department is also placing a high priority on resiliency planning, building on and moving beyond earlier strategies laid out in the High Performance Landscape Guidelines.[4]

In addition to the flood damage that was suffered at RCSP during Superstorm Sandy, the storm also took a toll on low-lying regional rail track and highlighted the need for more resiliency measures to prevent damage during future storms. During Sandy, approximately 50% of the MTA's Hudson Line, which runs alongside the Harlem and Hudson Rivers, was flooded during the storm, causing immediate damage to tracks and signal systems, as well as reducing the life-expectancy of surviving infrastructure that was flooded with salt water. As was seen during Sandy, in areas where the tracks are immediately adjacent to the water, storm surges can undermine the tracks by washing away stone ballast and ripping out track infrastructure. A recently announced federal grant will allow MTA to build 92 elevated steel equipment platforms along 30 miles of track between the South Bronx and Croton-Harmon in Westchester County in order to protect critical signal, power and communications systems from future storm surge damage.[5] Activities such as these point to the need and potential for coordinating rail line resiliency projects with shoreline restoration projects that can have broader ecological and recreational benefits, while also helping to protect transportation infrastructure.

Climate change projections indicate that coastal flooding hazards will keep increasing in the NYC region throughout the 21st century due to sea level rise and increased incidence of extreme weather events due to global warming trends. For the Harlem River, projected sea level rise is shown in the table below and on the Flood Risk Map (see fig. 37).[6] Clearly, the low-lying topography of the Harlem River BOA Area will require planning and design that takes into account the flood-prone nature of the sites.

Notes: Flood Hazards

1 NYC Department of Emergency Management, "Coastal Storms and Hurricanes," accessed September 22, 2015, http://www1.nyc.gov/site/em/ready/coastal-storms-hurricanes.page.

2 NYC Department of Emergency Management, "Know Your Zone," http://www1.nyc.gov/assets/em/html/know-your-zone/knowyourzone.html.

3 See NYC Department of City Planning, accessed September 22, 2015, "Resilient Neighborhoods", http://www.nyc.gov/html/dcp/html/resilient_neighborhoods/index.shtml. Other relevant DCP studies include "Retrofitting Buildings for Flood Risk," (2014) "Urban Waterfront Adaptive Strategies, " (2013) and the "Resilient Retail"study (ongoing as of 2015).

4 See "Resiliency Plans" NYC Parks, http://www.nycgovparks.org/planning-and-building/planning/resiliency-plans.

5 Metropolitan Transit Authority, "MTA Announces Receipt of $20.8 Million Federal Grant to Make Metro-North Railroad's Hudson Line

Sea Level Rise Projections	Low-end (10th Percentile)	Middle Range (25th-75th Percentile)	High-end (90th Percentile)
2050s	8 inches	11-21 inches	30 inches
2080s	13 inches	18-39 inches	58 inches
2100	15 inches	22-50 inches	75 inches

Figure 36. Sea level rise projections for New York City (Source: NYC Panel on Climate Change)

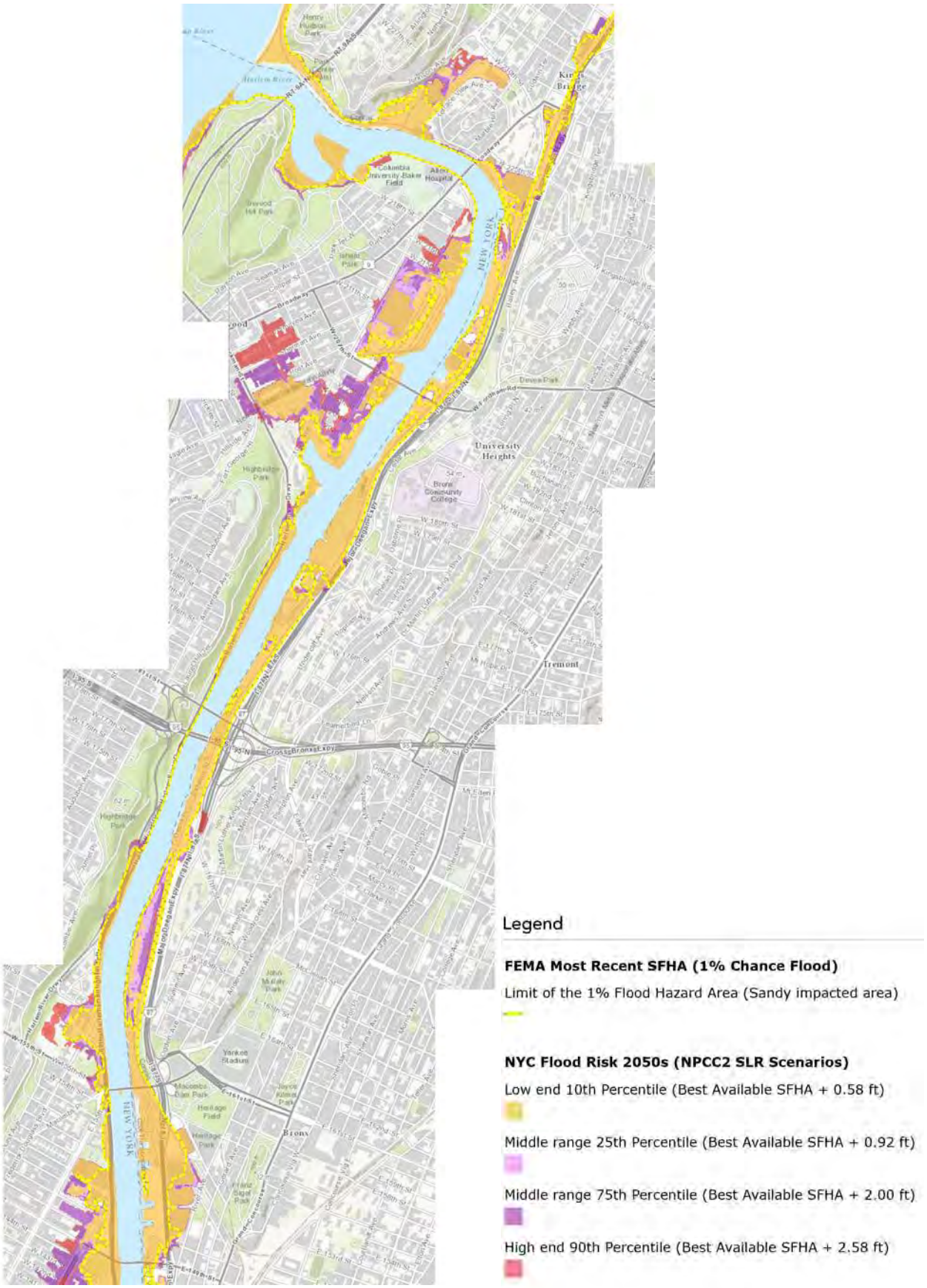


Figure 37. Flood Risk Map (Sources: Compiled from NOAA Geoplatform Map, "Future Sea Level Rise and Most Recent Special Flood Hazard Area," ArcGIS map last modified June 16, 2015, and New York City Panel on Climate Change, Climate Risk Information 2013 (June 2013)

Resilient Against Future Storm Surges, " August 21, 2015, http://www.mta.info/news-metro-north-hudson-line-superstorm-sandy-sandy/2015/08/21/mta-announces-receipt-208-million.

6 NYS Department of Environmental Conservation, "Sea Level Rise: What is Expected for New York State," (based on ClimAID), accessed September 22, 2015, http://www.dec.ny.gov/energy/45202.html.

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3.C. ECONOMIC AND MARKET TRENDS ANALYSIS

The following is a high-level scan of market-relevant demographic and economic indicators for the HR BOA Area. These figures are assessed at the level of Community District, due to the low population density within the BOA boundaries and to more fully illustrate the potential market base for new development. Bronx Community Districts 4, 5, and 7, which contain the Strategic Sites in this study, are included here, and are ranked among New York City's 59 Community Districts and assessed against borough-wide and citywide indicators.[1]

POPULATION

The combined population of Bronx Community Districts 4, 5, and 7 is 397,000 (2013); when including CD1, home to much of the development activity that sets the context for opportunities discussed in this report, the total population is 555,000. This represents a significant proportion of the total population of the Bronx (1.4 million) and is a large market area for potential visitors and users of proposed Strategic Sites throughout the BOA. The three core CDs (4, 5, and 7) have the three highest population densities among the twelve CDs in the borough, and thus present comparatively strong opportunities to reap positive benefits from the private and public investments in mixed-use development, transportation, and public realm investments discussed in this BOA study.

Residents of the Bronx are much more likely to identify as Hispanic (55%) and are much less likely to identify as white (10%) than are residents of the city as a whole (where 29% are Hispanic and 33% are white). Residents of CDs 4, 5, and 7 are more likely again to be Hispanic than are Bronx residents, with 63% of CD4, 68% of CD5, and 66% of CD7 residents identifying as such. White residents are noticeably fewer (2%, 2%, and 8%, respectively) than Bronx borough residents. The percentage of black residents in CDs 4 (33%) and 5 (27%) are similar to the percentage in the Bronx (30%), but much higher than the percentage in CD7 (16%), where white (8%) and Asian (7%) residents are more common than in other areas studied here.

EMPLOYMENT AND EARNINGS

The Bronx has the highest unemployment rate, at 14.6% (2013), among NYC boroughs; this compares to a citywide unemployment rate of 9.8%. Community Districts 4, 5, and 7 have much higher unemployment rates than the borough, at 17.5%, 18%, and 16.3%, ranking third, second, and fifth borough-wide, respectively. Although unemployment has fallen in the borough and NYC since 2010, it has risen in CD5 and CD7.

Residents of the Bronx have the lowest median household income ($33,400) among the five boroughs; the citywide median is $52,900 (2013). The three subject Community Districts have median incomes lower than the Bronx median, and rank near the bottom for median household income citywide: $26,100 in CD4 (52nd of 59), $24,800 in CD5 (53rd), and $30,900 (48th). Income distribution in the boroughs and in each of the subject CDs has increased in the two lowest income brackets (below $40,000) since 2000; in each CD more than two-thirds of residents now have household incomes below this threshold.

Poverty rates in the subject CDs are among the highest in the city: 38.9% in CD4 (4th of 59) (2013), 41.9% in CD5 (3rd), and 31.9% in CD7 (8th). While the overall Bronx rate is slightly lower, at 30.9%, the borough is highest among the city's five. The overall poverty rate in New York City stands at 20.9%.

While these figures suggest a weak market basis for development in immediate areas surrounding the BOA Strategic Sites, the market for new development in the BOA Context Area and throughout the southern and western Bronx shows signs of increasing strength. Proximity to Manhattan, particularly to express train service in East Harlem, is generating new development activity in CD1; residential product here is expected to be competitive for residents priced out by the rising property costs in upper Manhattan, bringing more

Densely populated neighborhoods of Context Area beyond the waterfront

population to this area of the Bronx. Demand for new residential development near new public waterfront and recreational amenities in areas near Yankee Stadium may grow as a publicly accessible waterfront becomes a reality. By contrast, development demand in the northern sections of the BOA and its adjacent neighborhoods is comparatively limited by market softness and more significant access and infrastructure challenges. However, additional commitments to infrastructure investments and the creation of an attractive civic waterfront may together make these areas more attractive to new development and private investment.

Moreover, new development that provides a new public waterfront, housing opportunity for a broad mix of incomes, and new retail amenities that complement existing shopping destinations can together be catalysts that generate enormous and transformative economic benefits over time. These underinvested communities can also benefit in terms of quality of life measures: meeting demand for housing near transit, with excellent connectivity to waterfront parks and recreational amenities, can improve health outcomes and connect residents to the regional economic opportunities that begin to positively transform the economic, employment, and income metrics described above.

RECENT AND PLANNED DEVELOPMENT

Examples of recent and planned development in the Harlem River BOA Context area impacting local economic and market trends include:

- The redevelopment of Yankee Stadium and related areas increased the impact of the stadium on employment and the local economy. According to NYCEDC, the stadium now employs over 4,000 people, an increase of over 1,600 jobs compared to the former stadium.
- *Bronx Terminal Market / Gateway Mall* — Opened in 2009 and now includes Target, Home Depot, and BJ's Wholesale Club as tenants in a 913,000 square foot, $500 million complex.[2]
- *Mill Pond Park* — Part of the Yankee Stadium Redevelopment Project, the $64 million, 15-acre park opened in 2009, including the tennis center and cafe.
- *Bronx Post Office* — Redevelopment of a historic post office building on Grand Concourse at East 149th Street into a market and additional retail, with a rooftop restaurant. Approved by Landmarks Preservation Commission in February 2015. Young Woo & Associates paid $19 million for the 175,000 square foot building ($108 per square foot).[3]
- *110 E. 149th Street* — New boutique hotel and affordable housing development.
- *984 Woodycrest Avenue* – A new supportive housing development with 48 units for veterans, with additional community and social space, in the Highbridge section.
- *987-989 Ogden Avenue* – In the Highbridge section near Yankee Stadium, four 14-unit market-rate residential buildings are approved for construction on land purchased for $745,000 ($42 per built square foot as approved, or $32 per buildable square foot). The project will leave approximately 5,000 developable square feet unused, suggesting a possible mismatch between zoning and actual market strength.
- *Bronx County Hall of Justice* — nine-story 775,000 square foot court facility on 161st Street, completed in 2007, relieves overcrowding in the nearby Bronx Family/Criminal Courthouse.

TRANSPORTATION INDICATORS

On average, 71% of commuters in New York City commute without a car (2013), similar to figures for the Bronx and the subject CDs. Bronx residents go without a car at a rate of 70%. Seventy-eight percent of residents of CD4, 73% of CD5, and 79% of CD7 residents get to work without a car (ranking 25th, 18th, and 24th among city CDs, respectively). Community Districts 4, 5, and 7 have mean commute times to work at or near the citywide average of 40 minutes: 40 minutes in CD4 (36th of 59), 42 minutes in CD5 (24th), and 43 minutes in CD7 (20th). Boardings for Metro-North at University Heights

West Fordham Road mixed-use corridor near UH Bridge

A scrap metal business, a recent addition to the University Heights waterfront under current manufacturing zoning

and Morris Heights are the lowest on the Hudson Line; attracting new development near those stations in conjunction with improved service levels and enhanced pedestrian connections to stations may reduce travel times significantly for nearby residents and further reduce dependency on cars in the BOA and borough.

LAND AVAILABLE FOR DEVELOPMENT

In the city of New York, one-third of all properties have been developed to an extent that is less than what the city's zoning regulations permit for those parcels. The figures for this excess developable square footage, referred to as a parcel's "unused development potential," are even higher in the Bronx, at 42.7%. In and around the HR BOA study area, the figures are higher still: in CD4 (51.3%, 5th of 59 CDs), CD5 (46%, 11th of 59), and CD7 (46%, 11th of 59). These figures may reflect the relatively weak market demand that exists under current conditions without public incentives and public improvements. The numbers also indicate the capacity for intensified development within the BOA and in adjacent neighborhoods under conditions which incentivize private investment, such as commitment of public funds for infrastructure improvements or public-benefit bonuses, at targeted sites.

TYPES OF POTENTIAL FUTURE LAND USES

The Community Vision prefers to see waterfront sites devoted to purely recreational uses while channeling housing or mixed-use development into adjacent upland areas. This strategy has the advantage of preserving the waterfront, previously in manufacturing use and a barrier to public recreation and access, for permanent public enjoyment as open space. A challenge to this strategy, however, is finding adequate public funding to construct and maintain a purely recreational waterfront without the aid of the private investment in a public waterfront that would be required by law for waterfront developments under a model like that used in the Special Harlem River Waterfront District plan.

By contrast, the City, through its waterfront esplanade plan as expressed in the SHRWD plan, has demonstrated an interest in facilitating development directly on the waterfront (with direct provision of a public esplanade in exchange for those rights). Demand for such development is demonstrated in other locations in the city, particularly on East River waterfront sites. Decisions about future land uses at the waterfront will need to take a thoughtful approach to balancing those market demands with expressed community desires.

Whether new buildings are assumed to rise at the waterfront or near it, it is anticipated that any residential development within or near the Harlem River BOA will have an affordable housing component. Median asking rents for residential units are among the lowest among districts in the city: $1,350 in CD4 (48th of 59), $1,185 in CD5 (52 of 59), and $1,175 in CD7 (53 of 59), as compared to the $1,450 borough-wide and $1,129 citywide medians. Despite relatively low rents, high demand for housing is demonstrated by relatively low vacancy rates in the borough (2.8%) and the subject CDs (3.5% in CD4, 3% in CD5, and 2.8% in CD7), compared to 3.5% citywide. The combined vacancy rate in Inwood, just across the Harlem River from the University Heights portion of the BOA, stands at just 1.3% (2013), providing additional demand that could be met in mixed-use and mixed-income residential development on upgraded and well-connected strategic sites in the BOA, such as at La Sala and Fordham Landing North.

From the economic development standpoint, mixed-use development, as opposed to exclusively residential development, if deployed on the limited sites where upland street connections can be extended and enhanced, would present the best opportunity to increase the economic impact of private investment on strategic development sites. The BOA is already home to the Gateway Center/Bronx Terminal Market, a one million square foot retail center located near 149th Street that serves as a destination for residents arriving by car and transit from across the borough. The north end of the BOA Central Focus Area is served by the River Plaza shopping center, anchored by Target and Marshall's.

Additional neighborhood-serving retail is available on nearby corridors, such as on Fordham Road, but is limited in the immediate study area; for any new development in the BOA, ground-floor retail should thus be built at a scale that serves residents and workers and complements and builds upon, rather than erodes, the existing base of shoppers that are already drawn to Gateway Center and other nearby retail destinations in the Bronx and Manhattan. Relative isolation from transit, and the somewhat isolated waterfront location, suggest that opportunities for larger-format destination retail, and for office space, are not likely to be viable economic uses at these locations, with the possible exception of near Gateway Center and Yankee Stadium.

The BOA has a legacy of manufacturing uses, including some continuing operations that limit redevelopment potential for some sites absent changes to underlying zoning and/or infrastructure upgrades. Any manufacturing uses that remain should be considered for compatibility with the character of recreational and/or mixed-use residential and high-quality ground floor retail that have the highest economic development potential in the BOA. New creative manufacturing uses, if introduced as potential job-creation opportunities, should be planned for inclusion only on a basis of compatibility with the community vision of an accessible waterfront, pedestrian-oriented streetscapes, and a mixed-use neighborhood realm.

Notes: Economic and Market Trends Analysis

1 Data in this section from Furman Center for Real Estate and Urban Policy, New York University, "State of New York City's Housing & Neighborhoods in 2014."

2 "Retailers Take A Chance on Mall in the Bronx." New York Times, 1 Sept 2009. http://www.nytimes.com/2009/09/02/realestate/commercial/02bronx.html

3 "Youngwoo Picks Up Landmarked Bronx Post Office Site." The Real Deal, 4 Sept 2014. http://therealdeal.com/blog/2014/09/04/youngwoo-buys-bronx-postal-office-building/