



Phase 1A Archaeological Documentary Study

Rutgers Slip

Between Cherry and South Streets

New York, New York

Prepared for:

Lower Manhattan Development Corporation

One Liberty Plaza, 20th Floor

New York, NY 10006

Prepared by:

AKRF, Inc.

440 Park Avenue South

New York, New York 10016

May 2009

Management Summary

SHPO Project Review Number: 06PR06649

LPC Project Review Number: HUD/106-M

Involved Agencies: New York City Department of Parks and Recreation
Lower Manhattan Development Corporation

Phase of Survey: Phase 1A Archaeological Documentary Study

Project Location: Rutgers Slip between Cherry and South Streets

Minor Civil Division: 06101: Manhattan

County: New York County

Location Information:

Survey Area Length: Approximately 375 feet (114.3 meters)

Survey Area Width: Approximately 45 feet (13.7 meters)

Number of Acres Surveyed: Approximately .4

USGS 7.5 Minute Quadrangle Map: Brooklyn

Report Author: Elizabeth D. Meade, RPA

Date of Report: May 2009

Table of Contents

1: Introduction

A. Project Overview	1
B. Research Goals and Methodology	1
C. Site File Research Results	2

2: Environmental Setting

A. Geology and Topography	5
B. Hydrology	5
C. Soils	6
D. Paleoenvironment	6
E. Current Conditions	6

3: Precontact Period

A. Prehistoric Context	7
B. Previously Identified Native American Archaeological Sites	8

4: The Historic Period

A. Introduction – The East River Waterfront	9
B. 17th Century Site History	10
C. 18th Century Site History	11
D. 19th Century Site History	14
E. 20th Century Site History	17

5: Subsurface Infrastructure: Landfill and Existing Utilities

A. Creating Land	19
B. Subsurface Utilities	19

6: Conclusions, and Recommendations

A. Sensitivity Assessment	21
B. Recommendations	22

References	23
------------------	----

Figures and Photographs

List of Figures

- Figure 1:** Project location and Location of Previously Identified Precontact Archaeological Sites. USGS Map, Brooklyn and Jersey City Quadrangles.
- Figure 2:** Project Site Boundaries. Sanborn Insurance Map, 2007.
- Figure 3:** Map showing original high and low water marks; from the Manhattan Topographical Bureau, 1638-1873.
- Figure 4:** *Sanitary and Topographical Map of the City of New York*. E. Viele, 1865.
- Figure 5:** *Map of Rutgers Farm*. Bridges and Poppleton, 1813.
- Figure 6:** *Hooker's New Pocket Plan of New York City*. Hooker, 1824 .
- Figure 7:** *Map of the City of New York* W. Perris, 1852.
- Figure 8:** *Atlas of the City of New York*, G.W. Bromley, 1934
- Figure 9:** Areas where Archaeological Testing is recommended.

List of Photographs

Index Indicating Camera Angles

- Photograph 1:** Transformer vault in sidewalk along western side of Rutgers Slip.
- Photograph 2:** Elevated basketball court at southern end of Rutgers Park; looking northeast.
- Photograph 3:** Playground at northern end of Rutgers Park; looking northwest.
- Photograph 4:** Streetbed of Rutgers Slip, looking south from Cherry Street.
- Photograph 5:** Streetbed of Rutgers Slip and elevated Rutgers Park; looking north from South Street.
- Photograph 6:** Southern end of Rutgers Park; looking north from South Street.
- Photograph 7:** Benches in northern section of Rutgers Park; looking northwest.
- Photograph 8:** Aerial Photograph, 2006.

List of Tables

Table 1: Previously Identified Archaeological Sites Within One Mile of the Project Area	2
Table 2: Street Elevation Changes.....	5
Table 3: Previously Identified Native American Archaeological Sites	8
Table 4: Water Lot Grants.....	10
Table 5: Street Width Changes Over Time.....	15

A. PROJECT OVERVIEW

AKRF, Inc. has been retained by the Lower Manhattan Development Corporation (LMDC) to prepare an Environmental Assessment (EA) for the East River Waterfront Access Project. The East River Waterfront Access Project would provide community amenities and significantly improve the pedestrian connections between the East River Waterfront and its neighboring Lower Manhattan areas—the South Street Seaport District, Chinatown, the Lower East Side, and the East River Park. The Access Project is critical to improving public access to and utilization of the waterfront area. The project, which would be led by New York City’s Department of Parks and Recreation, would enhance the historic Catherine, Peck, and Rutgers Slips as well as Montgomery Street. Now active roadways, these streetbeds were once an integral part of the working waterfront community involved with commerce, ship-building, repair, and maintenance, but today function only as city streets and roadbeds. The Access Project would redesign these areas as median open spaces with unifying elements such as seating, paving, and landscaping. The project would improve the existing conditions on these slips by providing multiple easy and attractive pedestrian access points from the waterfront to the interior of Lower Manhattan. It would also enhance existing spaces, provide more usable public open space, and increase direct public access to the East River.

The EA will analyze the environmental impacts of the proposed improvements at three locations adjacent to the East River Waterfront in Lower Manhattan: Catherine Slip, Rutgers Slip, and Montgomery Street. These improvements would be implemented by the New York City Department of Parks and Recreation (DPR), and funded with US Department of Housing and Urban Development (HUD) funds administered by LMDC. The proposed projects would be subject to review under Section 106 of the National Historic Preservation Act, the National Environmental Policy Act (NEPA), and the State Environmental Quality Review Act (SEQRA).

The following Phase 1A Archaeological Documentary Study focuses on the area formerly known as Rutgers Slip (see Figure 1). The archaeological Area of Potential Effect (APE) for this proposed project includes the streetbed of Rutgers Street, between Cherry and South Streets (see Figure 2). As part of the proposed project, new crosswalks would be constructed across Rutgers Slip along the southern side of Cherry Street and the northern side of South Street. The eastern and western curbs of Rutgers Slip would be repaved and new trees would be planted. New catch basins and storm sewers will be constructed at the intersection of Rutgers Slip and South Street to replace existing street drains. The new storm sewers will be connected to existing manholes. In other locations throughout the project site, manholes will be relocated, benches will be installed, and other improvements made to improve access to the East River via Rutgers Slip. The excavation necessary to complete the proposed project is expected to be approximately 1 to 2 feet throughout the majority of the site but it may extend as deep as 4 to 5 feet in certain locations. Excavation will be deepest for the installation of the new storm sewers and catch basins and for the excavation of tree pits.

B. RESEARCH GOALS AND METHODOLOGY

The goal of this archaeological documentary study is to determine the likelihood that potential archaeological resources have survived within the project site despite the destructive forces of time, including East River currents, tidal disturbance, utility installation, and wharf, dock, pier, and bulkhead construction and demolition. It has been designed to satisfy the requirements of the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) and the New York City Landmarks Preservation Commission (LPC) and it follows the guidelines of the New York Archaeological Council (NYAC). The study documents the history of the proposed project site as well as its potential to yield archaeological resources including both precontact and historic cultural remains. In addition, it also documents the current conditions of the project site and previous cultural resources investigations which have taken place in the vicinity of the APE.

As part of the background research for this Archaeological Documentary Study, various primary and secondary resources were analyzed including historic maps and atlases, historic photographs, conveyance records, newspaper articles, local histories, and building records. These published and unpublished resources were consulted at various repositories, including the Main Research Branch of the New York Public Library (including the Local History and Map Divisions), the New York Historical Society, the Municipal Archives, and the South Street Seaport Museum Library. File searches were conducted at LPC, OPRHP, and the New York State Museum (NYSM). Other source material was reviewed at the Manhattan Office of the City Register, and the Manhattan Topographic Bureau. Attempts were made to obtain sewer and water line installation records from the New York City Department of Environmental Protection Bureau of Water and Sewer Operation and soil boring records from the Department of Design and Construction, but such records were not obtained by the time of this writing. On-line textual archives such as Google Books and the Internet Archive Open Access Texts were also accessed.

C. SITE FILE SEARCH RESULTS

File searches at OPRHP and LPC indicate that many cultural resource investigations have been conducted within one mile of the project site, leading to the discovery of at least 22 precontact and historic period archaeological sites (see Table 1). Many of these sites, including the Schermerhorn Row Block, the Assay, Barclay's Bank, Whitehall Ferry Terminal, Telco Block, 175 Water Street, and 209 Water Street sites, have yielded historic landfill and landfill retaining devices, like those presumably used to create land within the Rutgers Slip project site. The wooden landfill-retaining devices at these sites were found at varying depths, with the tops of some being very close to the ground surface while others were more deeply buried below the ground surface.

The wooden structures identified at these sites were mostly in the form of wharves; however they also included barrels, boxes, pilings, and bulkheads. In addition, two sites, 175 and 209 Water Street, contained wooden ships that had been converted into landfill retaining structures. These ships were both found at relatively great depths; at 209 Water Street the top of the ship was approximately 5 feet below a building's foundation and extended an additional 13 feet, where excavations ceased (Schuyler et al. 1978). At 175 Water Street, the ship was discovered during excavation of deep test trench units (Soil Systems, Inc. 1983). Wooden landfill-retaining devices are discussed in greater detail in Chapter 5.

The closest previously conducted cultural resource investigation to the Rutgers Slip project site was the *Two Bridges Urban Renewal Area, Manhattan, New York; Phase 1A Archaeological Study*, completed by Historical Perspectives, Inc. in 1995. The project site, which included Block 248, immediately west of Rutgers Slip between Water and South Streets, was determined to have low potential for the recovery of archaeological resources as a result of intensive disturbance during the 20th century.

Table 1
Previously Identified Archaeological Sites Within One Mile of the Project Site

Site Name	OPRHP Site #	NYSM #	Time Period	Site Type	References
Shell Point/ Werpoes	----	<u>NYSM</u> : 4059	Precontact	Native American village and shell middens	Parker (1922) Bolton (1920)
Nechtanc	----	<u>NYSM</u> : 4060	Precontact/ Contact	Native American village used as a retreat during 17th century wars with the Dutch	Parker (1922) Bolton (1920)
South Ferry Terminal Project	A06101.05768 A06101.015598 A06101.016196	----	18th-early 20th century	Battery Wall built during the French and Indian War, Whitehall Slip, and landfill deposits and landfill retaining structures	AKRF (2009)
Schermerhorn Row Block	A06101.006763	Survey #20	18th-19th century	Historic landfill with wooden fill-retaining structures; structural remnants	Historic Sites Research (1991)

Table 1 (continued)

Previously Identified Historic Archaeological Sites Within 1 Mile of the Project Site

Site Name	OPRHP Site #	NYSM #	Time Period	Site Type	References
Tweed Courthouse Area	A06101.013335	----	19th century	Human Burials, Structures, and other deposits	Hartgen Archaeological Associates, Inc (2003)
The Assay Site (Block 35)	A06101.001284	----	18th-19th century	Historic landfill, landfill retaining structures (cobb wharves), wharf, bulkheads, and containing Revolutionary War-era Cannon	Louis Berger and Associates (1990)
City Hall Park	A06101.001304	----	Early to Late 18th century	Human remains, Almshouse, Revolutionary War barracks	Landmarks Preservation Commission (1990), Grossman and Associates (1991), Hunter Research (1994)
Barclay's Bank Site/75 Wall St.	A06101.001283	----	18th-20th century	Historic structures, wooden pilings, barrels containing fill, fill-retention walls, cobb wharves	Louis Berger and Associates (1986)
Barclay's Bank Site/100 Water St.	----	Survey #9	18th-19th century	Historic structures	Louis Berger and Associates (1983)
Telco Block (Block 74W)	A06101.000623	Survey #56	18th-19th century	Wood pilings, cobb wharves, wooden cribbing	Rockman (1982) Harris (1980) Soil Systems, Inc. (1982)
175 Water St.	A06101.001271	----	18th-19th century	Wooden boxes, 18th century merchant vessel, commercial deposits	Soil Systems, Inc. (1983) Geismar (1983)
209 Water St.	A06101.000604	Survey #5	18th-19th century	Cellar of standing structure; historic landfill; 18th century ship	Shuyler, Askins, Henn, and Levin (1978)
Fulton St. opposite Everitt St. at soldier beam #2 (Brooklyn)	A04701.000179	----	17th century	Historic dock remnant	Solecki (1981)
Corporation House; Fulton St. opposite Elizabeth St.	A04701.000102	----	18th-19th century	Historic tavern foundation	Solecki (1981) Stiles (1884)
Empire Stores (within the Fulton Ferry Historic District, Brooklyn)	A04701.000074	----	19th century	Man-made land in East River	Kearns and Kirkorian (1982)
Foley Square Courthouse/ African Burial Ground	----	Survey #38	18th century	Burial Ground	Howard University and John Milner Associates (1993)
Foley Square Courthouse/ Five Points Site	----	----	18th-19th century	Historic structures	John Milner Associates (2000)
Federal Hall National Memorial	A06101.013768 A06101.000014	Survey #45	18th - 19th century	Historic structures	Hartgen (Stull) (2004)
Columbus Park	Project # 02PR03416	Survey #57	----	Historic structures	Loorya and Ricciardi (2005)
Fulton Street Transit Center	----	Survey #55	----	Historic Structures	Geismar (2005)
Whitehall Ferry Terminal	----	----	----	Cobb wharf	Louis Berger and Associates (2000)

Table 1 (continued)

Previously Identified Historic Archaeological Sites Within 1 Mile of the Project Site

Site Name	OPRHP Site #	NYSM #	Time Period	Site Type	References
Broad Financial Center Site; Broad and Pearl Sts.	-----	-----	17th-19th Century	Original Dutch Ground surface features, 18th-19th century deposits, features	Greenhouse Consultants, Inc (Grossman, et al) (1985)
Stone Street Historic District	-----	Survey #33 (1), #33 (2)	-----	Historic Structures	Tracker Archaeology Services (Stehling) (2000) Sutphin (1997)

A. GEOLOGY AND TOPOGRAPHY

The island of Manhattan is found within a geographic bedrock region known as the Manhattan Prong of the New England (Upland) Physiographic Province. This region is composed of heavily metamorphic and sedimentary rock (including quartzite, dolomitic marble, marble, schist, and gneiss) that dates to the Cambrian and Ordovician ages. These hard rocks, which are oriented northeast-southwest, are interspersed with softer Inwood marble (New York State Office for Technology [NYSOFT], 2004). The bedrock slopes downward from north to south, and has been found to be approximately 100 feet below the earth's surface at the southern end of Manhattan.

There are a number of deposits which overlay the bedrock region, but nearly all of Manhattan is covered by anywhere from 3 to 164 feet of glacial till. There are also some lacustrine sediments covering a 1.5 square-mile area between the Manhattan and Williamsburg Bridges (NYSOFT 2004). These deposits were left behind by massive glaciers of up to 1,000 feet thick that retreated from the area towards the end of the Pleistocene. There were four major glaciations that affected Manhattan until roughly 12,000 years ago when the Wisconsin period—the last glacial period—came to an end. The glacial movements also brought about the creation of hundreds of sand hills, or kames, some of which were nearly one hundred feet tall. These hills were contrasted by many small streams, rivers, and lakes that were fed by the glacial runoff.

Manhattan had a much narrower and more irregular shape in the days before systematic landfilling created the regimented shoreline of piers and promenades that we see today. The southern tip of Manhattan, known as *Kapsee*, was a rocky point jutting out into the harbor forming a small cove that was possibly used as a canoe landing by Native Americans. Throughout the historic period, the landscape was permanently altered not only by the creation of land, but also by filling in streams and leveling hills. Several historic maps include data regarding elevations at street corners. This data is presented in Table 2, below, which shows that minimal changes have occurred to the elevation of the project site streetbeds since the late 19th century. As seen in the table, the elevation of Rutgers Slip in the vicinity of Cherry Street has increased since before 1865, however, the APE has remained relatively unchanged since the late 19th century.

Table 2
Street Elevation Changes

Year/ Source	Elevation of Rutgers Street at its intersection with:		
	Cherry Street	Water Street	South Street
1865 Viele Map	3	<i>Not provided</i>	<i>Not provided</i>
1885 Robinson Atlas	8	<i>Not provided</i>	5
1891 Bromley Atlas	8.1	5.3	5
1923 and 1951 Sanborn Maps	9	7	4
2007 Sanborn Map	8.1	<i>Not provided</i>	5
NOTES: Some of the maps included above do not indicate the datum from which the elevation was measured while others present elevations "above high tide." Therefore, it is assumed that all measurements are with respect to sea level.			

B. HYDROLOGY

Although the entire APE is currently composed of dry land, before European contact, a large portion was inundated by swampland or the East River. In the immediate vicinity of Rutgers Slip, the area that is now occupied by Cherry Street was the original location of the high water mark while the low water mark was located near modern Water Street (Figure 3). The Viele map of 1865 suggests that the area between high and low water was a marshy meadowland, with tall hills to the north of Cherry Street (Figure 4).

As glacial runoff ceased, the small water courses that had been formed in the wake of retreating glaciers were transformed into swamps and marshlands. The majority of the project site was originally inundated by the East River. Not far from the project site was the Collect Pond, which was drained by two marsh-bordered streams. The westernmost of these streams flowed along the line of present-day Canal Street through Lispenard's Meadows, a large stretch of marshland in today's Greenwich Village. The other branch extended from the Collect Pond to the southeast and emptied out into the East River in the area near modern-day James and Catherine Slips (different historic maps depict the stream in different locations and it is possible that its path was altered during the historic period). Swampy marshland bordered this stream on either side (Figure 4). An additional marshy stream or outlet was located immediately north of the project site. It drained the surrounding meadows and emptied out into the East River at a point just east of the intersection of Rutgers Slip and Cherry Street (Stokes 1967).

C. SOILS

Soils in this area are defined as urban land and are characterized by wet substratum, 0 to 5 percent slopes, and more than 80 percent covered by impervious pavement or buildings (New York City Soil Survey Staff 2005). These soils are generally found over filled swamp or areas in urban centers that were formerly inundated by water (ibid). The portion of the project site that is south of modern Water Street is composed of landfill while the area between Cherry and Water Streets was originally fast land, portions of which were inundated by marshland.

D. PALEOENVIRONMENT

Due to the extended glacial period that left the Northeast blanketed in thick ice sheets for thousands of years, the area was not inhabited by humans until approximately 11,000 years ago. As temperatures increased, a variety of flora and fauna spread through the region. At this time, large open forests of spruce, fir, pine, and other tree species expanded across the Northeast, interspersed with open meadows and marshland. A wide variety of animal life could also be found, including large mammals such as mammoth, mastodon, caribou, musk ox, moose, as well as smaller mammals such as fox, beaver, hare, and many kinds of marine animals.

Climate changes continued to re-shape the environment of the Northeast as time progressed. As the climate grew increasingly warmer, jack pine, fir, spruce, and birch trees were replaced with hardwood forests of red and white pine, oak, and beech (Ritchie 1980). Furthermore, a decrease in glacial runoff resulted in the creation of small bodies of water such as lakes as well as, later on, low-lying marshes and swampy areas. By the time of the Early Archaic period, beginning approximately 10,000 BP, there was "considerable environmental diversity, with a mosaic of wetlands, oak stands, and a variety of other plant resources...[making it]...an attractive and hospitable quarter for both human and animal populations" (Cantwell and Wall 2001: 53).

Warmer temperatures forced the herds of large mammals to travel north before eventually dying out. The new surroundings attracted other animals such as rabbit, turkey, waterfowl, bear, turtles, and white-tailed deer. The expanded water courses became home to a variety of marine life, including many varieties of fish, clams, oysters, scallops, seals, and porpoises, among others (Cantwell and Wall 2001).

By 5,000 BP, sea levels were only a few meters lower than their current locations (Hunter Research 1996) and the modern climate in the northeast was established by approximately 2,000 BP (Louis Berger & Associates, Inc. 2001). By that time, the Native American population was flourishing in the area and had developed an intricate culture tied to the natural resources of the region (see Chapter 3).

E. CURRENT CONDITIONS

Both natural forces and the actions of humans have permanently changed the geographic setting of Lower Manhattan. A large portion of the Rutgers Slip project site was once located under the East River. It was human intervention, through landfilling, slip, dock, pier, and wharf building and bulkheading, which transformed the waterfront. Rutgers Slip currently functions as a city street and is paved with asphalt and has a concrete sidewalk along its west side. To the east of the streetbed is Rutgers Park, which was constructed on a raised platform (approximately one to three feet above the street surface) with a paved surface featuring basketball courts, a playground, and several large trees. It is enclosed by a chain-link fence along the south and east sides and a decorative wrought iron fence along its western side, facing Rutgers Slip. The current conditions of the slip are documented in Photographs 1 through 8.

A. PREHISTORIC CONTEXT

Archaeologists have divided the time between the arrival of the first humans in northeastern North America and the arrival of Europeans more than 10,000 years later into three periods: Paleo-Indian (11,000-10,000 BP), Archaic (10,000-2,700 BP), and Woodland (2,700 BP–AD 1500). These divisions are based on certain changes in environmental conditions, technological advancements, and cultural adaptations, which are observable in the archaeological record.

As mentioned in Chapter 2, human populations did not inhabit the Northeast until the glaciers retreated some 11,000 years ago. These new occupants included Native American populations referred to by archaeologists as Paleo-Indians, the forbearers of the Delaware—also called the Lenape Indians—who would inhabit the land in later years. Archaeological evidence suggests that the Paleo-Indians were likely highly mobile hunters and gatherers who utilized a distinct style of lithic technology, typified by fluted points. They appear to have lived in small groups of fewer than 50 individuals (Dincauze 2000) and did not maintain permanent campsites. In addition, most of the Paleo-Indian sites that have been investigated were located near water sources. Because of the close proximity of Paleo-Indian sites to the coastline, few have been preserved in the New York City area.

The Archaic period has been sub-divided into three chronological segments, based on trends identified in the archaeological record which reflect not only the ecological transformations that occurred during this period, but the cultural changes as well. These have been termed the Early Archaic (10,000–8,000 BP), the Middle Archaic (8,000–6,000 BP) and the Late Archaic (6,000–2,700 BP) (Cantwell and Wall 2001). The Late Archaic is sometimes further divided to include the Terminal Archaic (3,000-2,700 BP). The abundance of food resources which arose during this period allowed the Archaic Native Americans to occupy individual sites on a permanent or semi-permanent basis, unlike their nomadic Paleo-Indian predecessors. Fishing technology was developed during the Middle Archaic in response to an increasing dependence on the area's marine resources. Tools continued to be crafted in part from foreign lithic materials, indicating that there was consistent trade among Native American groups from various regions in North America throughout the Archaic period. Few Early and Middle Archaic archaeological sites have been identified in New York City, although numerous Late Archaic sites have been identified in the area.

The Woodland period represents a cultural revolution of sorts for the Northeast. During this time, Native Americans began to alter their way of life, focusing on a settled, agricultural lifestyle rather than one of nomadic hunting and gathering. Social rituals become visible in the archaeological record at this time. Composite tools, bows and arrows, domesticated dogs, and elaborately decorated pottery were introduced to Native American culture at this time and burial sites grew increasingly complex. Woodland-era sites across North America indicate that there was an overall shift toward full-time agriculture and permanently settled villages. Archaic sites in New York City, however, suggest that the Native Americans there continued to hunt and forage on a part-time basis. This was most likely due to the incredibly diverse environmental niches that could be found across the region throughout the Woodland period (Cantwell and Wall 2001, Grumet 1995).

The Woodland period ended with the arrival of the first Europeans in the early 1500s. The Native Americans lived in villages consisting of multiple longhouses and practiced some farming, but subsisted mostly on food resources obtained by hunting, gathering, and fishing (Grumet 1995). With the introduction of European culture into the indigenous society, the way of life once maintained by the Native Americans was thoroughly and rapidly altered. European guns, glass beads, copper kettles, and alcohol soon became incorporated into the Native American economy, while European diseases brought about the demise of huge portions of the population.

Native Americans at first maintained the village sites they had established near water sources and the two groups co-existed. As trade with European settlers intensified, they became increasingly sedentary and as the European population grew and required more land, the relationship between the two groups soured. Fierce wars broke out

between the Dutch and the Indians. Being armed with far more guns than the natives, the Dutch quickly forced the Indians out of the region. According to Grumet (1981), most of the Native Americans left lower Manhattan soon after the island was famously sold to the Dutch in 1626 in exchange for \$24 worth of trade goods. Those who remained in the area (and who managed to survive the violent conflicts with the Dutch that occurred throughout the mid-17th century and the European diseases that ran rampant throughout the native population) had retreated from lower Manhattan before the end of the 18th century (Cantwell and Wall 2001).

B. PREVIOUSLY IDENTIFIED NATIVE AMERICAN ARCHAEOLOGICAL SITES

A review of the files at the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP), the New York State Museum (NYSM), the New York City Landmarks Preservation Commission (LPC), and cultural resource surveys of projects in the immediate vicinity indicated that there were at least two Native American archaeological sites, both villages, near the project site (see Table 3). Both sites are located less than one mile from the project site.

Table 3
Previously Identified Native American Archaeological Sites

Site Name	Site #	Approximate Distance from APE	Time Period	Site Type	References
Shell Point/ Werpoes	<u>NYSM</u> : 4059	.56 miles (3,000 feet)	Pre-Historic	Native American village and shell middens	Parker (1922) Bolton (1920)
Nechtanc	<u>NYSM</u> : 4060	.19 miles (1,000 feet)	Pre-Historic, Contact	Native American village used as a retreat during 17th century wars with the Dutch	Parker (1922) Bolton (1920)
Notes: See Figure 1.					

One village, recorded as NYSM site #4059 was located north of City Hall Park, the former location of the Collect Pond, known to the Native Americans as the *Klock* (Bolton 1975) and to the Dutch as “Kolch,” meaning small pond or pit-hole. It has also been referred to as *Warpoes*—possibly derived from the word *Wapu*, meaning “a hare”—or “Shell Point,” a name derived from the many shell middens which characterized the site during the Contact Period (ibid).

Another site, NYSM site #4060, was located at present-day Corlear’s Hook. This site is most commonly referred to as *Nechtanc*, meaning “sandy place” (Grumet 1981), but is also known as *Rechtauck* or *Naghtogack* (Bolton 1975). This village was used as a refuge by Lower Hudson River Delaware Indians from other parts of the New York City area during the brutal wars with the Dutch which took place in the early 1640s. It was not a safe haven for them, however, and in February, 1643, the Dutch staged a nighttime attack on several Native American villages, including *Nechtanc*, at which time many Native Americans were killed in their sleep (Grumet 1981).

Other Native American place names in the area included the aforementioned *Kapsee*, the rocky ledge at the southern end of the island between Whitehall Street and Battery Place; *Catemiuts*, a fort and hill located near the modern-day intersection of Pearl Street and Park Row, and *Ashibic*, a rocky cliff north of today’s Beekman Street that abutted a marshy tract (Grumet 1981).

A series of Native American trails connected these locations with the villages discussed above as well as other Native American habitation sites further north. A major Native American thruway—known as *Wickquasgeck*—ran along the southern line of modern Broadway before splitting into two roads; one angling to the northeast and continuing northward along the approximate path of today’s Bowery Road, and the other continuing east towards *Nechtanc*. West of the fork in the trail, two smaller trails extended from the main road; one traveling northward towards *Warpoes* and the other heading south towards the East River shore in the vicinity of the Brooklyn Bridge (Grumet 1981, Bolton 1934, Homberger 1994). The latter appears on Bolton’s 1922 map of Native American trails to follow the path of the southern outlet of the Collect Pond (in the vicinity of Catherine and James’ Slips) which would have been located to the west of the project site. Therefore, it is likely that Native Americans used these trails to access the varied resources provided by the wetlands along the East River Shoreline.

A. INTRODUCTION – THE EAST RIVER WATERFRONT

In 1621, the States-General in the Netherlands chartered the Dutch West India Company (WIC) to consolidate Dutch activities in the Atlantic World. New Amsterdam was an ideal company town; a small, easily defensible outpost at the tip of Manhattan Island, situated at the confluence of the East and North (Hudson) Rivers, and with one of the finest harbors in all of North America. The settlement was sustained by trade and it quickly became filled with people of diverse national origins and cultural traditions. New Amsterdam functioned as the major center for commercial activity from Fort Orange in Albany on the upper Hudson River to the Delaware Bay in the south.

In 1626, the Dutch purchased the Island of Manhattan from the *Munsee* for the value of sixty guilders. The Native Americans believed that land was for hunting and planting and did not share the European view that it could be owned in perpetuity. In exchange for furs, entrepreneurs and government officials supplied Native Americans with a wide range of goods. These included not only conventional adornments such as finger rings, glass beads and wampum, but utilitarian objects such as axes, kettles and cloth.

In an era of speculation and opportunity, private traders converged on Manhattan after 1640, motivated by personal gain. They became dissatisfied with the WIC's administration and sought more reliable local protections. On February 2, 1653, New Amsterdam's municipal charter was officially proclaimed, establishing a city government similar in form and function to that of Amsterdam in Holland. This municipal framework remained unchanged throughout the 17th century. Almost immediately, the Dutch set about to alter their landscape. To combat erosion, a seawall was constructed in the 1650s, which extended to the palisade wall at present-day Wall Street.

After the English conquest of New Amsterdam in 1664, the colony was renamed New York and development of the waterfront continued. The Dongan Charter of 1680 had the most profound effect upon the transformation of the waterfront. This charter permitted the city government to raise money by selling water lots (see Figure 3 and Table 4), "or the right to build wharves and 'make land' out into the rivers between the low and high watermarks, a distance of 200 feet" (Cantwell and Wall 2001: 225). These lots would be sold in the same manner as lots composed of solid ground. The Montgomery Charter of 1731 extended the range to 400 feet, well beyond the low water mark. The new owners of these lots were charged with filling them in and with building wharves, piers, and/or bulkheads along the shore to prevent further erosion caused by the swift river currents (Historical Perspectives 2001b). The shoreline in the vicinity of the project site was originally located near modern Water Street and it was extended to South Street, where the shoreline exists today, by the early 19th century.

Land-making accomplished two goals. First, it extended the shoreline beyond the shallow water near the natural shore so that ships could dock at landside wharves instead of anchoring far out in the East River. Second, the waterfront's close proximity to the trade ships led to the construction of markets, storefronts, warehouses, and other commercial structures which were "conveniently close to landings where farmers could moor their boats and unload livestock and produce for sale" (Cantwell and Wall 2001: 226). In this way, land-making had a crucial impact on the development of New York's burgeoning economy.

After the Revolutionary War, Americans developed new appetites for imports such as tea and porcelain. In the 1790s, merchants established networks for both domestic and foreign trade in the area that is today's South Street Seaport Historic District. With the continued success of New York's trade enterprises, more and more land along the East River was required for commercial purposes and the creation of terrain via landfilling was rapidly augmented. All the materials, parts, and provisions needed to sustain sea-going vessels were now located a stone's throw from where the ships were moored. The opening of the Erie Canal in 1825 and the development of packet services to distant American and European ports, led to expanded reciprocal trade between local merchants and the rest of the country. In the years preceding the American Civil War in the mid-19th century, "New York City handled two-thirds of America's imports, and dominated exports and passenger trade" (Novek 1992:24).

Table 4
Water Lot Grants

Modern Block #	Date	Grantee	Liber/Page	Notes
248	9/9/1772	Rutgers, Hendrick	D/256	
248	11/13/1772	Rutgers, Elizabeth, Anthony and Mary and LeRoy, Jacob	D/292	see also D/297
248	9/9/1772	Burke, Ann	D/217	see also D/220
248	8/19/1772	Dodge, Thomas	D/197	see also D/201
248	9/9/1772	Pell, Gilbert	D/226	see also D/230
248	8/13/1772	Cheeseman, Thomas	D/184	see also D/187
248	9/9/1772	Provoost, Eve	D/209	see also D/213
248	2/3/1773	Rutgers, Hendrick	D/358	see also D/354
248	8/4/1817	Buchanan, George, Jean, and others (heirs of Thomas B.)	F/544	see also F/594
246 and 247	11/28/1806	Rutgers, Henry	E/296	
246 and 247	5/1/1817	Rutgers, Henry	F/539	
250 South	11/13/1772	Rutgers, Elizabeth, Anthony and Mary and LeRoy, Jacob	D/297	
250 South	9/1/1784	Ann Bancker	64/28	Includes lots formerly numbered 633 and 638 (see Figure 5)
250 South	9/1/1784	Henry Rutgers	24/208	Includes lots formerly numbered 630, 632, 635, and 639 (see Figure 5)
250 South	9/1/1784	Margaret McCrea, wife of Stephen McCrea	175/356	Includes lots formerly numbered 631 and 636 (see Figure 5)
250 South	9/1/1784	Catherine Bedloe, wife of William Bedloe	179/68	Includes lots formerly numbered 634 and 637 (see Figure 5)
Notes: Historic water lots do not always correspond to modern lot locations and boundaries.				
Sources: Water lot grantee indices on file at the New York Topographical Bureau.				

The East River waterfront maintained a prominent role in the shipping industry until the mid-19th century, when the invention of steam-powered ships forced the focus of New York's trade economy to shift to the deeper waters of the Hudson River. In 1879, there were four times as many sailing vessels arriving in New York from abroad as compared to steamships, but the latter—now too large for East River piers—had taken over the lucrative fine cargo and passenger businesses which soon followed the steamships to the west side of Manhattan. Regardless, some steamboats continued to land “daily at [East River] Slips, bringing people and goods from Connecticut and Long Island. Seaport businesses run by people from those locales developed to serve their hometown neighbors. For example, the owners, captains, and crews of vessels from Mystic often did their buying and selling with (other) Connecticut men in the District—banking, receiving mail, and even lodging with them” (Novek 1992:27).

Manhattan's waterfront was unique; unlike other major cities such as Boston and Philadelphia, New Yorkers did not construct many piers that jutted out into the East River. Instead, “fill was added out into the water on either side of the ends of the larger streets that ran perpendicular to the shore, forming slips or inlets where small boats could moor” (Cantwell and Wall 2001: 226). The city's boundaries were pushed further as old slips were filled in and others constructed along the expanding shoreline. The older piers and wharves were therefore transformed into bulkheads which could support new structures (Historical Perspectives 2001a). Landfill construction technology is discussed further in Chapter 5.

B. 17TH CENTURY SITE HISTORY

After New Amsterdam was established in the early 17th century, the WIC created several large farms known as *bouweries* that they intended to grant to individual settlers. One of these, known as Bouwery Number 6, was located immediately north of the project site. The farm extended as far south as modern Madison Street and as far west as the “Old Kill” in the vicinity of modern James and Catherine Slips. Separating the farm from the East River was a tract of marshland known as the “upland parcel.” It appears that the WIC reserved the land to the south of Bouwery Number 6 for the common good rather than granting it to a specific individual. This reserved parcel, which extended south from Madison Street to the shoreline of the East River (and would therefore have included the entire Rutgers Slip APE) was instead set aside by the WIC as “a suitable place in which ships, sloops, or barges could be laid

down, or to be repaired and caulked” (*Van Rappard, Doc C*; cited in Stokes 1967 VI: 134). However, it is also possible that the marshy tract was used exclusively by the tenants of Bouwery Number 6 (Stokes 1967).

The WIC first granted Bouwery Number 6, in 1630 to Wolphert Gerritsen van Couwenhoven. He held the property until 1636 and as a result, the marshy meadowland to the south became known as “Wolphert’s Marshes” (Stokes 1967). In 1639, Bouwery Number 6 was leased to Jan Cornelissen van Vorst, although a few months later the WIC re-leased the property to Abraham Pietersen Gorter for a period of 20 years (*ibid*). In 1647, after less than 10 years, the land was transferred to Cornelis Jacobsen Stille. Stille and his heirs retained the western half of the bouwery for the remainder of the century. In addition, Stille appears to have “claimed” the land between the bouwery and the East River (Stokes 1967: 135).

While Stille and his descendants retained the western half of his property through the end of the century, the eastern half, which would have included the land immediately north of the project site, was transferred by Stille to Augustine Herman¹ at an unknown date (Stokes 1967). The land was sold in two separate transactions, one for the eastern half of the Bouwery and the other for the upland parcel between the bouwery and the East River (*ibid*). Herman was a “soldier, scholar, artist, merchant, land-surveyor, speculator, and manorial proprietor” from Prague who maintained a warehouse on Pearl Street near the southern tip of Manhattan and amassed several large tracts of land on the island during the second half of the 17th century (Innes 1902: 281). The cobblestone floor of Herman’s warehouse was found during archaeological excavations in the early 1980s (Greenhouse 1984a).

In 1685, one year before his death (Innes 1902), Herman’s daughter, Francina, transferred the northern part of the property formerly belonging to Bouwery Number 6 to Wolphert Webber and Hendrick Cornelissen, a descendant of Stille (Stokes 1967). However, a piece of salt meadow, possibly the one to the north of the APE, then “under the tenure of” a man named Walter Dobs, was not included within the sale (*ibid* VI: 135).

The upland parcel, with the exception of the marsh mentioned above, was sold by Herman to John Payne² in 1672 (*ibid*). It is possible that Herman sold additional property to the south of the project site to Payne at the same time (Innes 1902). The deed for the transaction, which was not officially recorded until 1692, described the property as “being upon this Island Manhatans beyond the fresh water neere Corlaers hoeck, having to the East the fresh Mash [sic] or Meddow to the South the River & Schipper Louws point” (Stokes 1967 VI: 135). Schipper Louw’s Point was located to the west of the project site, near the outlet of the Collect Pond in the vicinity of Catherine and James Slips (*ibid*). Payne and his descendants owned the property through the end of the 17th century.

As the original high water mark was located at modern Cherry Street, the project site was almost completely inundated by the East River throughout the 17th and 18th centuries (Figure 3). However, because the low water mark was located near modern Water Street, there would have been occasions when the tides were low and the land along Rutgers Slip between Cherry and Water Streets would have been exposed. Despite this, the city remained confined to the southern tip of Manhattan during the 1600s, and there was minimal development of roads, structures, or landfill along the waterfront as far north as Rutgers Slip at that time.

C. 18TH CENTURY SITE HISTORY

The waterfront is clearly depicted in Burgis’ view depicting the East River waterfront circa 1716-1718. Although Rutgers Slip is not shown in this image, the view depicts numerous shipyards along the East River waterfront, as well as many slips, wharves, bulkheads, and structures resting atop wooden pilings driven deep into the river bottom. While some locations to the southwest of the project site were by that time filled out as far as modern Water Street, the original shoreline does not appear to have been affected in the areas closer to the project site, where the shoreline merely slopes down towards the sandy beaches. Furthermore, tall, tree-covered hills are depicted to the north of the developed portions of the city, indicating that those areas were largely undeveloped frontier.

In 1728, Stille’s heirs sold their farmland to Harmanus Rutgers, Jr. At the time of this purchase, the property contained a farm house, barns, and outbuildings, however, their locations are not known and it is not likely that they would have been located in or near the project site. The remainder of the adjacent land, the former upland parcel

¹ Also spelled, Augustyne Heermans or Harmans.

² Also spelled, Paine.

(including the project site), was sold to Rutgers by Thomas Fayerweather, the grandson of John Payne, in 1732 (Stokes 1967).

The Rutgers farm included a substantial portion of the area later known the Seventh Ward of New York City as well as part of what would be defined as the city's Fourth Ward (Crosby 1886). Harmanus Rutgers, Jr. was a brewer (as was his father) and he grew barley on the property for that purpose (Crosby 1886). The Rutgers farmhouse was located to the northwest of the project site near modern Oliver Street and East Broadway, while a barn was situated along Catherine Street, west of the APE (Crosby 1886).

Around the time of Harmanus Rutgers, Jr.'s land acquisition, docks and shipyards lined the East River waterfront, as seen on the Lyne map of 1731, which does not depict the island as far north as Rutgers Slip. It does not appear that significant waterfront development occurred near the project site during the first decades of the 18th century. The Grim map, drawn in 1813 but depicting the city as it appeared in the early 1740s, does not indicate the presence of any structures near the area that would later become Rutgers Slip. The map indicates that a small marshy stream was extant to the east of the project site, and it also depicts a small country lane, a precursor to Cherry Street, running along the southern edge of the Rutgers farm. A significant amount of land is shown between this lane and the East River, although it is unclear if this is meant to reflect landfill or if it is simply an inaccuracy on the part of the cartographer (because the map was drawn decades later, the latter is likely more accurate).

Harmanus Rutgers, Jr. died in 1753, "a very eminent brewer of this city and a worthy, honest man" (Crosby 1886: 87). His son, Hendrick, who was born in 1712, had already been living on the property by the time of his father's passing along with his wife, Catharine. By 1754, the Rutgers' had constructed a new farmhouse closer to the river, in the area now bounded by Jefferson, Clinton, Monroe, and Cherry Streets. It is depicted in a 1768 drawing by J. Kirk (see cover), which also shows the undeveloped countryside surrounding the project site.

The newer Rutgers house is also depicted on the 1766 Montresor and Ratzer/Ratzen maps. The Ratzer maps may also depict a country road which would have been a precursor to modern Rutgers Street. As seen on the map, the road ran adjacent to the marshy section immediately east of the project site, but did not continue south of early Cherry Street. The maps also show several wharves along the coast of the East River to the west of the project site, which the earlier Ratzer map labels as ship yards.

EXPANSION OF THE WATERFRONT

Like many neighborhood residents in the early 1770s, the Rutgers family began to add to their real estate holdings through the acquisition of water lots. The lots were granted to them by the city with the condition that the new owners fill in the land and then construct city streets across the landfill. Hendrick Rutgers was granted two water lots in the area bounded by modern Cherry and Water Streets and Rutgers and Pike Slips. Elizabeth, Anthony, Mary, Leroy, and Jacobus Rutgers shared a single water lot in that area, as well. Hendrick Rutgers was granted the land immediately west of the slip in 1772. Water lots south of Water Street and to the east of Rutgers Slip were not granted until the early 19th century.¹

Montresor published an updated map in 1775 which suggests that Cherry Street was interrupted by the small stream seen on the earlier maps. While Ratzer's 1776 map indicates that it was a continuous thoroughfare the 1782 British Headquarters map, like Montresor's, also indicates that the road was interrupted by the stream. The British map also depicts a more irregular shoreline along the East River than that seen on earlier maps. More structures are evident to the north of the APE on the British map, including one which may be located on the south side of Cherry Street near the future location of Rutgers Slip. However, such a structure is not depicted on any other maps. Furthermore, on the map a small inlet is evident to the west of the marshland, which may reflect the beginnings of a slip.

Hendrick Rutgers sided with the Americans during the Revolutionary War, and after the British captured New York in 1776, he fled to Albany, where he died in 1779 (Crosby 1886). In his absence, his property was occupied by the British army. The Rutgers home was used as a hospital and the "marks of confiscation were visible" on its exterior throughout the early 19th century (ibid: 90). It is also said that Nathan Hale, a patriot spy who was executed by the British for treason during the Revolutionary War, was hung in Rutgers' orchard, although it is more likely that he was hung near modern 66th Street and Third Avenue (Kelby 1893).

¹ These lots may have been granted earlier, but not formally recorded until the 19th century.

After the American victory and the subsequent British evacuation of New York in 1782, Henry Rutgers, son of Hendrick Rutgers, inherited most of his father's property including the portion of the Rutgers farm located between Rutgers and Clinton Streets. His siblings, Mary McRea, Catharine Bedlow, and Anne Bancker also received property in the area. Henry Rutgers never married and lived in a house to the east of the project site, gradually selling off pieces of his estate until his death in 1830 (Crosby 1886).

POST-REVOLUTIONARY GROWTH

With the war over, the development of the waterfront and the expansion of the city intensified. It is not immediately clear when Rutgers Slip was first constructed. In 1785, Henry Rutgers asked the city's Common Council to widen Cherry Street east of Catherine Street by 20 feet, which would allow him to extend his water lots further out into the East River (*Minutes of the Common Council* [MCC] 1784-1831 I: 168). It is likely that the slip was constructed around the same time that Rutgers began filling in his water lots in the late 18th century. In 1788, Henry Rutgers again petitioned the Common Council for a water lot adjacent to his land along the East River (MCC 1784-1831 I: 422). However, it is not clear if this lot was in the vicinity of Rutgers Slip.

The first significant development near Rutgers Slip is evident on the 1789 McComb map which shows that a large block of landfill had been constructed along the west side of the slip. In 1787, the Common Council noted in their minutes that Thomas Buchanan was constructing a pier along the western side of Rutgers Slip, and this is likely the development seen on the McComb map (MCC 1784-1831 I: 303). In exchange for his work, Buchanan asked the council to allow him exclusive access and ownership of the pier for a period of 30 years after he completed its construction; however, they granted him use of the pier for just 15 years (MCC 1784-1831 I: 303). The wharf became known as "Buchanan's Dock" and the "Upland and Water Lots" map drawn ca. 1797 suggests that Buchanan was in possession of a 56 by 120 foot lot adjacent to the west side of Rutgers Slip between Cherry and Water Streets. It does not appear that Buchanan owned the lot as additional maps dating to the late 18th and early 19th centuries created by John Holmes and William Bridges and Thomas H. Poppleton (Figure 5), suggest that the Rutgers family owned the property.

These maps also depict the area as extending as far as South Street. However, this is most likely proposed development based on the dimensions of the water lots that had been granted by that time rather than actual landfilling episodes. The aforementioned Holmes map, published in 1874 but depicting the project site circa 1784, indicates that by the late 18th century, the land on either side of Rutgers Slip did not yet extend completely to Water Street, although the line of Water Street had been mapped out in preparation for future landfilling. This map also shows that the late Hendrick Rutgers had divided the property along the western side of the slip and conveyed it to his daughters Anna Bancker, Margaret McCrea, and Catherine Bedlow, as well as his son Henry. The map shows a large wharf along the eastern side of the slip, however, this only appears on maps depicting the area in the early 19th century and may be anachronistic on the Holmes map.

Rutgers Slip and the surrounding area became an important location for the shipping trade during the last years of the 18th century. In the 1790s, a man named Foreman Cheeseman established a shipyard near the end of Rutgers Street (Burrows and Wallace 1999). The great length of Buchanan's dock proved to be useful to those involved with ship building and repair. In 1790, the slip was emptied out so that Samuel Ackerly, who owned a wharf further to the west, could work on a very long ship that was too large for any other dock (MCC 1784-1831 I: 560). The slip's popularity continued to increase through the end of the 18th century, to the dismay of Henry Rutgers, who in 1796 complained that "sea vessels [occupied] the slip to the exclusion of riverboats" (MCC 1784-1831 II: 300).

THE END OF THE CENTURY

The southward expansion of the East River Waterfront continued as the century drew to a close. In 1791, a new bulkhead was proposed and nearby water lot grantees were ordered to fill in their lots so that Rutgers Street could be further extended and the length of the slip lessened (MCC 1784-1831 I: 651). That same year, it was also ordered that all public slips and wharves were to be cleaned out and deepened (MCC 1784-1831 I: 651).

By 1793, Thomas Buchanan was ordered to "make and fill up a street" at Rutgers Slip, presumably along the western side, near his dock (MCC 1784-1831 II: 12). The Minutes of the Common Council note that in 1796, the permanent line for what would later become South Street, was determined (MCC 1784-1831 II: 215). However, the determination of the line of South Street did not hasten its development. Cherry Street, two blocks to the north, was not completely filled in between Clinton and Rutgers Streets until at least 1797 (MCC 1784-1831 II: 337). The 1797

Taylor Roberts plan indicates that Rutgers Slip was located immediately south of Cherry Street and that a large wharf, presumably Buchanan's Dock, was located to the west. The map depicts the slip as being significantly wider than other slips along the East River, although this may be the result of the incomplete landfilling in the block bounded by Rutgers, Cherry, Jefferson, and Water (formerly Crown Point) Streets. The width of the slip may have been reduced in 1799, when the Common Council ordered all water lots located between Catherine and Rutgers Slips to be outfitted with wharves (Stokes 1967).

D. 19TH CENTURY SITE HISTORY

The population surges and post-Revolutionary development that swept through New York in the early 19th century resulted in the division of large farms, resulting in the rapid urbanization of the Lower East Side. The Rutgers farm was no exception. Early in the century, Rutgers, who "held a geographic monopoly of the...Seventh Ward" and owned at least twelve houses elsewhere in the city, divided his farm into small lots which were then leased individually (Blackmar 1989). In order to ensure that the land was properly developed, Rutgers insisted that each lessee construct no more than one "good, substantial, and workmanlike brick building" of at least two stories on each lot and that the lease could not be transferred to another individual without Rutgers' consent (ibid: 41).

The lots on the Rutgers property were mostly leased by merchants, professionals, entrepreneurs, and shipbuilders who flooded the Seventh Ward's waterfront during the early 19th century. The more prosperous residents lived in the northern parts of the ward, while the working classes tended to live on or near the new landfill closer to the waterfront. For the first time, domestic residences and workspaces were no longer included within the same building and the high rents along the East River forced many merchants and shipbuilders to live elsewhere (Blackmar 1989).

In 1804 and again in 1806, Rutgers Street — known until 1812 as "East Rutgers Street" — was regulated and paved between Division Street to the north and the East River Bulkhead to the south (MCC 1784-1831 III: 504). At that time, the bulkhead was located just south of modern Water Street, as seen on the 1804 Bonar and 1808 Longworth maps. In addition, piers stretched out into the East River on either side of the slip. The wharf along the western side of the slip appears to have been completed by 1806 (MCC 1784-1831 IV: 249). In addition, the Longworth map indicates that the line of Water Street had been laid out although it had not yet been constructed through the area. At that time, the street was nothing more than a wharf extending along the East River Waterfront.

The piers within and adjacent to Rutgers Slip were frequently extended, repaired, and/or otherwise altered during the 19th century. The Minutes of the Common Council note that one of the piers in the slip was in poor condition in 1809 (MCC 1784-1831 V: 627). The Bridges and Poppleton map of 1813 (Figure 5) indicates that by that time, the lots on either side of the slip barely reached the line of future Water Street. The pier on the western side of the slip ran to a point midway between Cherry and Water Streets before making a 90 degree turn to the west and again continuing to the south. The pier on the eastern side of the slip was also irregularly shaped, although the side adjacent to the slip ran in a straight line almost to the northern line of future Front Street.

In 1813, Henry Rutgers was among a group of individuals who offered to cede land to the city so that all the streets in the area bounded by Catharine, Montgomery, and Division Streets and the East River could be widened in order to "render [that] part of the city more commodious and healthy" (MCC 1784-1831 VII: 436). However, it does not appear that any street widening took place at this time (see Table 5, below). The same group also asked the Common Council to change the "intended permanent line on the East River...so as to run in a direct line along Front Street from Montgomery to Catharine Street" (ibid: 437).

Table 5
Street Width Changes Over Time

Year/Source	Rutgers Slip	Cherry Street	Water Street	South Street
ca. 1785 Georck Map	Rutgers Street north of Cherry Street = 60 feet Approximate Slip width = 168 feet	60 feet	45 feet	40 feet
1848 Sage Map	Rutgers Street north of Cherry Street = 60 feet Slip = 174.10 feet	60 feet	50 feet	<i>No measurements provided</i>
1879 and 1891 Bromley Atlases	Rutgers Street north of Cherry Street = 60 feet Slip = 174.9 feet	60 feet	50 feet	<i>No measurements provided</i>
1894 Sanborn Map	Rutgers Street north of Cherry Street = 59.6 feet	59.6 feet	East of Rutgers Slip = 50 feet West of Rutgers Slip = 49 feet	<i>No measurements provided</i>
1905, 1922, and 1951 Sanborn Maps	Rutgers Street north of Cherry Street = 59.6 feet Approximate Slip width (including Park) = 175 feet	59.6 feet	50 feet	125 feet
1976 Sanborn Map	Rutgers Street north of Cherry Street = 100 feet	West of Rutgers Slip = 75 feet East of Rutgers Slip = 80 feet	50 feet	125 feet
2005 Sanborn Map	Rutgers Street north of Cherry Street = 100 feet Approximate width of Slip, including Park = 160 feet	West of Rutgers Slip = 75 feet East of Rutgers Slip = 80 feet	<i>De-mapped</i>	125 feet

While it is not clear exactly when the city approved the extension of the waterfront in the vicinity of the project site out to South Street (also referred to as Front Street in this part of the city), the waterfront's extension continued at a rapid rate after the request of Rutgers and his peers. In 1814, additional filling had taken place at Rutgers Slip and city records indicate that "A. Stagg" completed the work (MCC 1784-1831 VIII: 52). In 1816, the Common Council ordered all lot owners on either side of the slip to make wharves and piers out to the southern line of South Street (ibid: 587). That same year, Henry Rutgers had been cited by the Common Council for having a "nuisance" lot in Rutgers Street, although no further information is provided about this lot (ibid: 563).

In the early 19th century, it appears that Henry Rutgers maintained a store at Rutgers Slip, although its exact location is unclear (MCC 1784- 1831 IV: 241). The Minutes of the Common Council note that in 1817, the heirs of Thomas Buchanan owned a store that was "placed right on the slip and [encroached] 4'6" on Cherry Street," although it may not be the same store previously belonging to Rutgers (MCC 1784-1831 IX: 187). That same year, Buchanan's heirs submitted an inquiry to the city to find out if the store was located on public land but the Minutes of the Common Council do not provide an answer nor do they suggest that the conflict was ever resolved. No structures are depicted as entering the streetbeds of either Cherry Street or Rutgers Slip on any early 19th century maps of the area, although a map of Buchanan's estate dating to 1848 created by former City Surveyor Gardiner Sage depicts a brick store at the northwest corner of Rutgers Slip and Water Street. AS depicted on that map, however, the building was not situated in the streetbed.

In 1810 and again in 1811, it was suggested that a new pier be run along the southern side of the slip and that the western pier be extended to South Street, although it is not clear if either development ever took place at that time (MCC 1784-1831 VI: 205, 481). By 1817, a new bulkhead had been constructed by Abraham Storms along the southern line of Water Street (MCC 1784-1831 IX: 102). That same year, water lots were granted for the first time on the western side of Rutgers Slip south of Water Street and on the east side south of Cherry Street. The water lot adjacent to the western side of the slip south of Water Street was granted to the heirs of Thomas Buchanan, who requested permission to continue Buchanan's pier through to South Street and to keep their store in the same location near Cherry Street (MCC 1784-1831 IX: 164-5). A large water lot bounded by the original high water mark, Rutgers Slip, Clinton Street, and modern South Street, was granted to Henry Rutgers, who had previously asked for

lots in 1792 and some of it may have been granted to him in 1806, but the entire area appears to have been formally granted to him on May 1, 1817 (Figure 3).

The new water lot grants allowed the extension of the waterfront to continue. By 1822, a group of landowners in the area, including Henry Rutgers, ceded land back to the city so that the roads between Catherine and Montgomery Streets could be widened, although this does not appear to have affected any of the streets in the project site (MCC 1784-1831 XII: 514). Two years later, the city ordered Rutgers Street to be regulated and paved between Cherry Street and the bulkhead, which was then located at the southern line of Water Street (MCC 1784-1831 XIII: 670). A few months later, the street's sidewalks were also paved and crosswalks were installed (MCC 1784-1831 XIV: 780).

The 1824 Hooker map (Figure 6) shows that Rutgers Street had been completely filled out to Water Street. In addition, the land on either side of Rutgers Street between Cherry and Water Streets had been developed and the piers on either side of the slip had been extended out to the line of future South Street. A small shaded area which may depict an individual structure or a small developed area containing more than one structure is depicted at the southwest corner of Water Street and Rutgers Slip. This may reflect the presence of one or more buildings which could have extended into the streetbed of Rutgers and/or Water Street. This possible structure (or structures) is depicted on subsequent versions of Hooker's map, although it does not appear on other maps or atlases dating to the first half of the 19th century.

The practice of landfilling continued aggressively in many parts of the East River waterfront throughout the 1820s and 1830s. In 1825, the Common Council ordered all vacant lots adjacent to Rutgers Street to be filled in and fenced off (MCC 1784-1831 XV: 13, 35). The 1832 Burr map shows that the water lots granted to Henry Rutgers to the east of Rutgers Slip had been filled out to South Street, while only a pier stretched that far south on the western side of the slip. However, an updated map published by Burr in 1834 depicts the areas on either side of the slip extending to South Street while the slip remained open as far north as Water Street. The 1836 Colton map depicts that same amount of landfill, but suggests that most of the land adjacent to the slip south of Water Street had not yet been developed and that South Street had not yet been constructed and/or opened.

By the time of the publication of the Dripps and Perris maps of Manhattan in 1852 (see Figure 7), many buildings had been constructed on the newly made land adjacent to Rutgers Slip. Subsequent maps and atlases suggest that the streetbed of Rutgers Slip was never widened to the extent that it now covers any former historic lots. Therefore, no 19th century buildings appear to have been constructed within the project site itself, although the lots adjacent to the streetbed became heavily developed. The maps indicate that Rutgers Street was lined with brick and stone dwellings as well as many commercial structures, and coal and lumber yards. An updated version of the Perris atlas published in 1857 and J.T. Lloyd's 1867 *Mammoth Map* showed that some of the former open areas formerly used as coal and lumber yards had been developed with structures.

Despite the increased development in the area, during the second half of the 19th century the Hudson River grew more prominent in the shipping industry and the industries that once characterized the neighborhood began to relocate to other parts of the city. The neighborhood's transformation was not limited to commerce, however, and a new class of people moved into the area. In the second half of the century, the Seventh Ward, in which Rutgers Slip was situated, was notoriously occupied by the working class, including mechanics, longshoremen, and sailors (Smith 1864). The Lower East Side quickly became littered with overcrowded slums, filth, and disease, and it was considered by many to be one of the worst neighborhoods in New York City. Sanitary inspection reports of the Seventh Ward describe the squalid conditions of the neighborhood in 1864. The tenements were overcrowded, diseases including typhus and small pox ran rampant, and infant mortality rates were higher than 44 percent (Smith 1864). Liquor stores were a constant presence, as "rum and poverty [went] hand in hand," (ibid: 106).

Overcrowding was a major factor in the deterioration of living conditions during the late 19th century. Late 19th century atlases including the 1879 Bromley, 1885 Robinson-Pidgeon, and 1891 Bromley atlases, suggest that nearly all of the lots bordering the streetbed of Rutgers Slip were occupied by brick structures, some with open rear yards. As the 19th century drew to a close, the shipping industry's presence in the area continued to dwindle. In 1888, a *New York Times* article noted that the dry docks and ship yards along the East River waterfront between Rutgers and Pike Slips were no longer in use and "the block which begins at Rutgers Slip...[had] a very tumble-down appearance" (NYT 5/17/1888: 12). In addition, the dock at the foot of the street was used as a dumping ground where ashes and garbage were tossed into the East River (NYT 5/14/1891). In 1891, such dumping was outlawed so that the eastern two-thirds of Rutgers Slip could be converted into a park and playground which would serve as "a breathing

spot for the poor...[during the] summer” (ibid: 9). Rutgers Park¹ first appears on a Sanborn Insurance map dating to 1894.

E. 20TH CENTURY SITE HISTORY

In the first years of the 20th century, the neighborhood surrounding Rutgers Slip continued to evolve into a “ghetto district” as the living conditions within the Lower East Side slums worsened (Cope 1901: 333). Industrial development continued adjacent to the residential areas and newly constructed waterfront piers and a new bulkhead that were constructed in 1901 became “scenes of great activity” (*NYT* 8/25/1901). By 1927, “dumpy” railroad barges “[used] the slip as their parking place” much to the delight of the children playing in the “well-supplied” playground nearby (Reinitz 1927: XX2).

No significant developments are depicted on any maps until 1934. The Bromley atlas of that year (Figure 8) depicts increased development within Rutgers Park as two structures were located there at the time. More importantly, however, the map depicts the line of a subway tunnel running beneath the park and the streetbed of Rutgers Slip. The structures appearing within the northern Park on the Bromley atlas may have been temporary structures relating to the subway construction, as they are not depicted on any subsequent maps. Rutgers Slip had been identified as a potential location of a new subway tunnel as early as 1900 (*NYT* 2/7/1900). However, it was not until 1929 that the Secretary of War approved plans for a tunnel to be constructed between Rutgers Slip and Jay Street in Brooklyn (*NYT* 9/8/1929). Those plans also included the construction of a “permanent revetted clay blanket on the Manhattan bank of the River from the pier head in the vicinity of Rutgers Slip to a point in the river channel where it intercepts the original river bottom at a depth of not less than forty feet below mean low tide” (ibid: 17).

Even though the tunnel was planned by 1929, it was not actually constructed for several years. The subway tunnel was constructed as part of the Houston/Essex line of the city’s Independent Subway System (IND), which was established in 1924 in response to the city’s expanding population and to compete with the privately owned Interborough Rapid Transit (IRT) and Brooklyn-Manhattan Transit (BMT) lines (Hood 1993). The Rutgers Street tunnel, which within Manhattan ran between Rutgers and 53rd Streets, was one of five sub-aqueous tunnels constructed at the time (Parsons Brinckerhoff Quade and Douglas, Inc 1991a). The tunnel was constructed using the “shield method,” which entails the use of “a movable cylinder slightly larger than the diameter of the finished tunnel...equipped with a heavy steel cutting edge...shoved forward through the ground by hydraulic jacks” while segments of the tunnel lining are laid down in its wake (Parsons Brinckerhoff Quade and Douglas, Inc 1994: 8). A vertical shaft is dug first, followed by the lateral tunnel construction. The tunnel, which led from Brooklyn to the station at Rutgers Street and East Broadway, was opened in 1936 (Parsons Brinckerhoff Quade and Douglas, Inc 1991b).

Because of the Secretary of War’s regulations, the four additional East River subway tunnels constructed by the shield method—the Joralemon/State Street, Clark Street/Old Slip, Montague/Whitehall Street, and Cranberry/Fulton Street tunnels connecting Brooklyn and Manhattan—and presumably Rutgers Slip as well, were all located at depths of at least 45 feet below mean high water and often extended to maximum depths of between 87 and 94 feet (Parsons Brinckerhoff Quade and Douglas, Inc 1994). Profile drawings of those subway stations indicate that the subways’ depths decrease after the tunnels exit the river. Therefore, at South Street the tunnels are at great depths, approximately 25 to 45 feet below the ground surface at South Street, and they get shallower to the north (ibid). Ventilation shafts are located at the southern end of Rutgers Park, which would have required cut-and-cover excavation between the ground surface and the depth of the tunnels.

The subway did not have any apparent impact on the surface of Rutgers Street or Rutgers Park, and no changes are visible on a Sanborn map dating to 1951. That map also shows that several of the lots adjacent to the western side of the slip between Cherry and South Streets had been cleared and were being used for industrial purposes (iron works, scarp metal yards, etc.). The western side of the slip was redeveloped several times in the late 20th century. In 1986, a 10-story senior housing center was constructed along the western side of the Slip between Cherry Street and the

¹ Another park known as Rutgers Square was located near the intersection of East Broadway and Canal Street, just south of modern Seward Park. This park was sometimes referred to as “Rutgers Park,” (*NYT* 11/28/1894).

former Water Street, which was demapped by that time. In 1996, a 21-story residential tower was constructed along the western side of the slip between the former line of Water Street and South Street. Sanborn maps do not indicate whether either structure was constructed with a basement and both structures still stand there to this day. To the east of Rutgers Park, the Lands End housing project was constructed in 1979. It is likely that the park was redesigned and the basketball court and the raised platform that surrounds it were constructed around the same time.

A. CREATING LAND

Work at several archaeological sites along New York City's East River waterfront has uncovered the original wooden cribwork that was used to create artificial land within water lots (Table 1). These sites include the Assay and Barclay's Bank Sites, the Whitehall Ferry Terminal, the Telco Block, the Schermerhorn Row Block, and at the sites located at 175 and 209 Water Street.

Landfill retaining structures built along the New York City waterfront prior to the mid 19th century were most often built of stacked horizontal timbers constructed in a manner similar to log houses. They were most often notched at the corners to create a box like 'crib' form. Less frequently, fill retaining structures were built as log-construction retaining walls, timber-pile bulkhead walls, or stone seawalls.

Archaeologists have theorized two broad categories of fill strata: primary fill and secondary fill. Primary fill, the first-deposited, and largest of the stratum, would be the landfill placed within the cribbing interstices. Few artifacts are to be expected in this stratum (aside from the support structure and clean fill itself, which are technically artifacts), because through time, decaying, artifact-rich garbage would compress unevenly, settle at varying rates, and cause instability. Although the activity is poorly documented, various references suggest that clean landfill material was generally obtained from grading and construction projects (i.e. basement excavation) in other parts of Manhattan. Secondary fill is utilized to cover the rough and rocky primary landfill, providing a working surface for construction. It contains less rock than primary landfill, and is where most of the artifacts recovered by excavations are found. This corresponds to recorded historical observations of the filling of water lots by their owners. Archaeologists have concluded that such landfill included merchandise broken in transit, ballast from ships, garbage dumped on or near the docks, household trash, dredged material from nearby slips, and detritus from artisans' workshops, or clean fill, such as dirt and rock from leveled hills. Many archaeologists believe that the most complete picture of early life in New York often comes from the garbage of the individuals who lived there. These landfill deposits reveal what people ate and wore, the games they played, and how they worked. They also provide useful information about trade networks.

With the invention of the steam-powered pile driver in the 19th century, earlier methods of creating landfill became obsolete in favor of wharves constructed of vertical pilings. Wharves built atop deeply embedded piles quickly became standard (Kardas and Larrabee 1991). Such structures were uncovered at both the Assay and Telco Block sites.

A variety of methods was used to ensure that the retaining structures could support the weight of the buildings constructed atop the fill. The wharf types mentioned in the preceding paragraphs would have worked best when resting directly on a hard, rocky surface, although they were also functional atop soft silt, so long as it had been dredged to produce a flat surface (Bergoffen 2002). A significant amount of dredging took place near most of Manhattan's riverfront slips, piers, and wharves (Greenhouse 1984b). In some cases, stone foundations were placed either directly on the original river floor or atop sturdy platforms of wooden planks (Cantwell and Wall 2001). However, there was a tendency for only the wealthy or industrial institutions to create such sturdy structures, while small private wharves tended to lack these reinforcements and were prone to tipping and/or sinking (Historical Perspectives 2005).

B. SUBSURFACE UTILITIES**HISTORIC UTILITIES IN THE APE**

Despite its status as one of America's largest and most industrial cities, New York did not have reliable network of water and sewer lines until the mid-19th century. Utilities do not appear to have been installed in the APE until several years after the area was filled out to South Street. Instead, water and waste management in domestic lots was

handled by the use of privies, cisterns, and wells and within streetbeds, sewers typically emptied out into the East River.

The first water pipes were installed in the early 19th century by the Manhattan Company, the precursor to the Chase Manhattan Bank. These wooden pipes carried water from local sources (i.e., the Collect Pond) to other areas of lower Manhattan. Examples of these early pipes were discovered in 1889 under Peck Slip, southwest of the Rutgers Slip APE, during construction for a sewer line. Those cedar logs measured eight feet in length and twelve inches in diameter, with two-inch holes bored in the center (*NYT* 7/16/1889). By 1829, the city had constructed a reservoir near the intersection of modern 13th Street and the Bowery (Burrows and Wallace 1999). An iron pipe ran between the reservoir and Catherine Street, bringing water to the Lower East Side (*ibid*).

The initial water supply system could not be sustained for very long because local water sources became too polluted. It was not until 1842 that the Croton Aqueduct system brought significant amounts of clean water into Manhattan. A map of the complex distribution system associated with the Croton waterworks published by Endicott in 1842 depicts water lines and stop cocks running through Rutgers Street between Cherry and South Streets (although the latter had not yet been fully constructed in the vicinity of the APE). Additional water lines were present in Cherry and Water Streets running across the APE. Although water lines were present by 1842, sewers were likely installed beginning in the 1850s (Pickman 2006). Therefore, the use of privies would have continued on domestic lots until sewer lines were constructed. After the mid-19th century, as clean water was pumped in and waste was carried away, the city's sanitation efforts were greatly improved.

The 1879 Bromley atlas shows that fire hydrants were present within the slip and the adjacent park, indicating that water lines, and likely sewers, were also present at that time. However, neither the water nor the sewer lines are themselves depicted. An 1891 version of the Bromley Atlas is the first to clearly show the utility lines that ran through the streetbed of Rutgers Slip and through Rutgers Park. That map shows that 6-inch water lines ran in various locations throughout the slip, while a sewer line was located through Rutgers Park and led out to the East River. Water and sewer lines were also installed in Cherry, Water, and South Streets and ran east-west through the APE in those streetbeds. Twentieth century maps and atlases depict the advancement of utility access in the area, and larger water mains were installed as were high pressure water lines. After a comfort station was added to Rutgers Park, additional utility connections were added as well.

MODERN UTILITIES IN THE APE

Water lines are generally installed at a depth of approximately five feet, while sewer lines are generally placed at a depth of 10 feet or more. Twentieth century utilities—such as telecommunications and gas lines—are usually found at depths of 2-3 feet and electrical utilities are usually found 1-2 feet below grade, although they are occasionally located at greater depths.

Current maps of utilities within the APE indicate that numerous utility lines run through APE. Water, electric, and gas lines run north-south within the western half of the streetbed of Rutgers Slip parallel to telecommunications lines that run along the eastern side, adjacent to the park. Utilities including sewer, electric, and telecommunications lines only run perpendicular to these lines in several locations, including the streetbeds of Cherry and South Streets and the former streetbed of Water Street. Numerous transformer vaults and manholes are visible in several locations within the APE. Storm water catch basins are also visible within the APE at the northwest and northeast corners of Rutgers Slip and South Street. Finally, large subway ventilation shafts are visible within the sidewalk along the southern side of Rutgers Park, immediately east of the APE.

A. CONCLUSIONS

As part of the background research for this Phase 1A Archaeological Documentary Study, various primary and secondary resources were analyzed, including historic maps and atlases, historic deeds, historic photographs, newspaper articles, local histories, census records, and historic directories. The information provided by these sources was analyzed to reach the following conclusions.

DISTURBANCE ASSESSMENT

The documentary record includes multiple accounts of the paving and grading of the streetbed of Rutgers Slip dating to as early as 1804. The street has been graded and repaved numerous times since that time. As a result, the entire APE is likely disturbed to a depth of 1 to 2 feet below grade due to this roadwork.

Relative to other streetbeds in the same area, Rutgers Slip has experienced only moderate disturbance as a result of the installation of utility lines within the streetbed. However, several electric, gas, and telecommunications lines are present within the APE, which are likely at depths of 1 to 3 feet below grade. Therefore, their installation likely disturbed between 2 and 4 feet below the ground surface. Most of these lines are located in the western half of the streetbed and are not located beneath the sidewalk throughout most of the APE. A water line also runs within the streetbed (also east of the western sidewalk) which likely would have resulted in 5 to 6 feet of disturbance. One sewer line is depicted on maps of the utilities in the area running east-west through the center of the APE along the former line of Water Street. This could have generated disturbance of 8 to 10 feet or more below the ground surface.

Existing catch basins and manholes are present within the APE near the intersection of Rutgers Slip and South Street. Existing utility plans suggest that this storm drainage system is shallower than is typical. On the western side of the slip, the existing manhole (and presumably the existing catch basin) extends to depths of approximately 3 feet, and therefore more than 4 feet was likely disturbed as a result of their construction. The catch basin and manhole on the eastern side of the slip appear to be at a slightly greater depth of almost 5 feet below the ground surface.

Existing subway ventilation shafts to the east of the APE would have required cut-and-cover excavation to very great depths and it is possible that some of that excavation could have disturbed a portion of the project site. The subway tunnel itself appears to have been constructed via tunneling, and therefore it would not have resulted in disturbance to the upper levels of the project site.

PRECONTACT SENSITIVITY ASSESSMENT

The precontact sensitivity of project sites in the New York City is generally evaluated by proximity to high ground (but not exceeding 30 percent slopes), fresh water courses, well-drained soils, and previously identified precontact archaeological sites. Because the project site is situated in an area that was formerly inundated by marshland or the East River, it is unlikely that Native American habitation, hunting, or camping sites would have been located within the APE. Although there were periods of time when the water levels were lower, leaving the project site dry enough for human exploitation, documentary research suggests that the coastal area of Lower Manhattan was rocky and not ideally suited for precontact habitation. The varied resources provided by both the wetlands and the river would have been essential to Native American life, however, and it is highly likely that such resources were frequently exploited. The presence of a Native American trail leading to the East River situated immediately west of the project site confirms this.

Despite the likelihood that Native Americans used the project site as a temporary hunting or fishing location, the swift currents of the East River and the frequent dredging which took place in the 18th and 19th centuries, would most likely have disturbed any precontact archaeological resources which could have been located there at one time. Therefore, the project site is determined to have no sensitivity for precontact archaeological resources.

HISTORIC SENSITIVITY ASSESSMENT

The project site was almost entirely inundated by the East River or by marshland prior to the 18th and 19th century landfilling episodes which converted it into made land. The slip was gradually filled between the late 1760s, when maps indicate the shoreline in the area did not extend past Cherry Street, and the early 1850s, when maps first depict the entire project site as fast land. Therefore, the majority of the APE rests atop a network of landfill and landfill retaining devices of unknown construction.

The documentary record suggests that historic wharves, piers, and docks were most likely incorporated into this landfill. These appear to have been associated with the 18th and 19th century ship yards and maritime industries that were located along Rutgers Slip at the time. In addition, it is likely that collections of debris including both commercial and domestic refuse were dumped into the slip by individuals who lived and worked nearby. These refuse deposits would be present within the fill many feet below the ground surface. The practice of dredging in the 18th and 19th centuries could have significantly disturbed any historic period archaeological resources within the open waterway at Rutgers Slip. However, dredging did not always clear a slip completely and it is possible that some garbage deposits could have survived within the APE. However, these, too, would be very deeply buried and are not likely to be impacted by the proposed project.

No maps depict specific structures that were situated within the APE, although some early 19th century maps suggest that a small area to the west of the APE may have been developed with structures which may have partially entered the streetbed of Rutgers Slip. However, there is no explicit evidence which suggests that any commercial or residential structures were ever located within the boundaries of the APE.

The project site is composed of landfill and landfill retaining structures. These features do not appear to have been disturbed by the installation of utilities at varying depths. Because the elevation of the streetbed has not changed significantly since the late 19th century, landfill deposits and landfill retaining structures may be present at relatively shallow depths where utility disturbance is minimal. Therefore, the entire project site is sensitive for landfill deposits and landfill retaining structures at depths greater than 2 feet below the ground surface. The proposed project could impact these resources except in the locations of existing utility lines.

B. RECOMMENDATIONS

As discussed above, potential archaeological resources including landfill deposits and landfill retaining devices could be impacted by the proposed project, depending upon the location, size and depth of subsurface impacts. Negative impacts could occur if construction disturbance extends into potentially sensitive levels. Conversely, negative impacts may be avoided if disturbance is restricted to the strata above potentially sensitive areas. The proposed project is expected to disturb approximately 1 to 2 feet below the ground surface throughout the majority of the APE. The project site has already been disturbed to this depth as a result of road paving and grading. However, in other locations, the depth of disturbance could extend to between 4 and 5 feet. This deeper disturbance will be necessary for the proposed tree pits along the eastern side of the APE and the new storm sewers and catch basins at the northwest and northeast corners of Rutgers Slip and South Street. The relocation of two manholes on the western side of the slip may also require excavation to this depth, although the new locations of those manholes are not known at this time.

Further study in the form of a Phase 1B archaeological investigation or archaeological monitoring is recommended for those areas where excavation for the proposed project will exceed 2 feet below the ground surface. A map of those areas where archaeological testing is recommended is included in this report as Figure 9.

References

- Aerials Express, LLC.
2006 Aerial Photographs of Manhattan (Photograph 8).
- Bergoffen, Celia
2002 *Historic Front Street Development, Block 97, Lots 18, 32, 37, 58, NYCDCP, Borough of Manhattan, NY, Phase 1A Archaeological Assessment Report.* Prepared for Philip Habib & Associates, New York.
- Blackmar, Elizabeth
1989 *Manhattan for Rent, 1785-1850.* Ithaca: Cornell University Press.
- Boesch, Eugene
1994 *Archaeological Evaluation and Sensitivity Assessment of Staten Island, New York.* For: The New York City Landmarks Preservation Commission.
- Bolton, Reginald Pelham
1922 "Indian Paths in the Great Metropolis." In *Indian Notes and Monographs*. Miscellaneous #22. New York: Museum of the American Indian, Heye foundation.
1934 *Indian life of long ago in the city of New York.* New York: J. Graham.
1975 *New York City in Indian Possession.* Museum of the American Indian, Heye Foundation, New York.
- Bridges, William and Thomas H. Poppleton
1813 *Bridges and Poppleton's map of Rutgers farm 1813.* Copied by Roswell Graves, 1831.
- Bromley, G.W. and Company
1879 *Atlas of the City of New York, Complete in One Volume.* New York: George W. Bromley and E. Robinson.
1891 *Atlas of the City of New York, Manhattan Island, From Actual Surveys and Official Plans.* Philadelphia: G.W. Bromley & Co.
1899 *Atlas of the City of New York, Manhattan Island, From Actual Surveys and Official Plans.* Philadelphia: G.W. Bromley & Co.
1915 *Atlas of the City of New York, Borough of Manhattan, From Actual Surveys and Official Plans.* Philadelphia: G.W. Bromley & Co.
1924 *Atlas of the Borough of Manhattan, City of New York: Desk and Library Edition.* Philadelphia: G.W. Bromley & Co.
1930 *Land Book of the Borough of Manhattan, City of New York: Desk and Library Edition.* New York: G.W. Bromley & Co.
1934 *Atlas of the Borough of Manhattan, City of New York: Desk and Library Edition.* Philadelphia: G.W. Bromley & Co.
- Burr, David H.
1832 *Map of the City and County of New York with the Adjacent Country.* Second Edition. New York: Simeon DeWitt, Surveyor General.
1834 *Map of the City of New York for New York as it is in 1834.* New York: J. Disturnell.
- Burrows, Edwin G. and Mike Wallace
1999 *Gotham.* New York: Oxford University Press.

- Buttenweiser, Ann L.
1987 *Manhattan Water-Bound: Planning and Developing Manhattan's Waterfront from the Seventeenth Century to the Present*. New York: New York University Press.
- Cantwell, Anne-Marie and Diana diZerega Wall
2001 *Unearthing Gotham: The Archaeology of New York City*. New Haven: Yale University Press.
- Cohen, David Steven
1981 "How Dutch Were the Dutch of New Netherland?" In *New York History*, 62 (January 1981): pp43-60.
- Colton, J.H.
1836 *Topographical Map of the City and County of New York and the Adjacent Country*. New York: J.H. Colton and Co.
- The Common Council of the City of New York
1905 *Minutes of the Common Council of the City of New York 1674-1776*. In Eight Volumes. New York: Dodd, Mead and Company published under the authority of the City of New York.
1917 *Minutes of the Common Council of the City of New York 1784-1831*. In Nineteen Volumes. New York: The City of New York.
- Cope, Francis Jr.
1901 "Tenement House Reform: Its Practical Results in the 'Battle Row' District, New York." *The American Journal of Sociology* 7 (3): 331-358.
- Crosby, Ernest H.
1886 "The Rutgers Family of New York." In *The New York Geographical and Biographical Record* 17 (2): 82-93.
- Dincauze, Dena F.
2000 "The Earliest Americans: The Northeast." *Common Ground: Archaeology and Ethnography in Public Interest*. Washington, D.C.: National Park Service.
- Dripps, Matthew
1852 *Map of the City of New York Extending Northward to Fiftieth St Surveyed and Drawn by John F. Harrison*. New York: M. Dripps.
1867 *Plan of New York City from the Battery to Spuyten Duyvil Creek*. New York: Matthew Dripps.
- Endicott
1842 "Map of the Croton Water Pipes with the Stop Cocks."
In *Manhattan in Maps* by Paul E. Cohen and Robert at. Augustyn. New York: Rizzoli (1997).
- Geismar, Joan G.
2004 *Fulton Street Transit Center Archaeological Report, CM-1252*, prepared for Ove Arup & Partners Consulting Engineers P.C. and MTA - New York City Transit, New York.
- Greenhouse Consultants, Inc.
1984a *The Excavation of Augustine Heerman's Warehouse and Associated 17th century Dutch West India company Deposits: The Broad Financial Center Mitigation final Report*. Written by Joel Grossman, et al. On file at LPC.
1984b *Pre E.I.S. Cultural Resources Sensitivity Evaluation for the East River Landing Project (Joel W. Grossman, Diane Dallal, et al.)* Prepared for Energy and Environmental Analysts, Inc. New York.
2000 *Archaeological and Historical Sensitivity Evaluation 250 Water Street, Borough of Manhattan, New York, New York*. For: Milstein Properties, Inc.

- Grim, David
1855 *Reminiscences of the City of New York and Its Vicinity*. New York: Privately printed. Originally published in various editions of Valentine's "Manual of the Corporation of the City of New York," but compiled by the author.
- Grumet, Robert S.
1981 *Native American Place Names in New York City*. New York: Museum of the City of New York.
1995 *Historic Contact*. Norman, OK: University of Oklahoma Press.
- Historical Perspectives, Inc.
1995 *Two Bridges Urban Renewal Area Manhattan, NY, CEQR No. 94-HPD-091M*. Prepared for Ethan Eldon Associates, Inc., Westbury, NY.
2000 *Archaeological and Historical Sensitivity Evaluation: 250 Water Street, Borough of Manhattan; New York, New York*. Prepared for Milstein Properties Corp. New York, New York. On file at LPC.
2001a *Stage 1A Archaeological Assessment 55 Water Street Manhattan*. Prepared for Allee King Rosen and Fleming, Inc.
2001b *Stage 1A Archaeological Study for Proposed Improvements to Coenties Slip for the Office-Trading Facility at 55 Water Street, New York, NY*. For Allee King Rosen and Fleming, Inc., New York.
2005 *Phase 1A Archaeological Assessment: Brooklyn Bridge Park Project, Draft DEIS*. Prepared for AKRF, Inc.
- Holmes, John B.
1874 *Map of the Rutgers Farm as it existed in 1784*.
On file at the New York Historical Society.
- Homberger, Eric
1994 (and 2005) *The Historical Atlas of New York City: A Visual Celebration of New York City's History*. New York: An Owl Book, Henry Holt and Company.
- Hood, Clifton
1993 *722 Miles: The Building of the Subways and How they Transformed New York*. Baltimore and London: The Johns Hopkins University Press.
- Hooker, William
1824 *Hooker's new pocket plan of the city of New York / compiled & surveyed by William Hooker, A.C.S.A., hydrographer & engraver*. New York: William Hooker.
1828 *Hooker's new pocket plan of the city of New York / compiled & surveyed by William Hooker, A.C.S.A., hydrographer & engraver*. New York: William Hooker.
1838 *Hooker's new pocket plan of the city of New York / compiled & surveyed by William Hooker, A.C.S.A., hydrographer & engraver*. New York: William Hooker.
- Hunter Research
1996 *A Phase 1B Archaeological Survey of the Arthur Kill Factory Outlet Center, Staten Island, Borough of Richmond, County of Richmond, New York City, New York [CEQR 95-DCP-058R]*. For Bellemead Development Corporation, Roseland, New Jersey.
- Innes, J.H.
1902 *New Amsterdam and its People*. Port Washington, Long Island: Ira J. Friedman, Inc. Reissued 1969.
- Johnston, Henry Phelps
1901 *Nathan Hale: 1776, Biography and Memorials*. New York: Privately Printed.

Kardas, Susan and Edward M. Larrabee (Historic Sites Research)

1991 *Summary Report of 1981-1983 Archaeological Excavation, The Schermerhorn Row Block.* For: Bureau of Historic Sites, New York State Office of Parks, Recreation, and Historic Preservation and New York City Public Development Corporation. On file at the New York City Landmarks Preservation Commission.

Kelby, William

1893 “Site of the Execution of Captain Nathan Hale.” Published in *The New York Historical Society Quarterly Bulletin, Index, Volume I April 1917-1918*. Published 1918. New York: The New York Historical Society.

Lloyd, J.T.

1867 *Lloyd's Mammomth Map.* On file at the New York Public Library Map Division.

Longworth, D.

Ca. 1808 (1830) *Plan of the city of New York.* In the American Philosophical Society Realms of Gold Digital Map Collection.

Louis Berger and Associates, Inc.

2001 *Cultural Resource Assessment: Proposed NYCT Department of Buses Storage and Maintenance Facility: Arthur Kill Road, Staten Island, New York.* For: New York City Transit, New York, New York.

Louis Berger Group, Inc.

2004 *Proposed Fulton Street Transit Center.* Prepared for New York City Transit, New York, NY.

Lyne, James

1731 *Map of New York City: From an Actual Survey.* (Lyne-Bradford Plan). New York: William Bradford. Depicts New York in 1730.

Manhattan Topographical Bureau

1638-1873 “Map showing original high and low water marks.” On file at the Bureau.

McComb, John

1789 *Plan of the city of New York.* New York: unknown.

Montrésor, John

1767 *A plan of the city of New-York...Survey'd in the winter, 1766. P. Andrews, sculp.* London: unknown.

1775 *A plan of the city of New-York...Survey'd in the winter, 1775 [i.e. 1766] P. Andrews, sculp.* London: sold by A. Dury.

New York State Office for Technology [NYSOFT]

2004 *Draft Generic Environmental Impact Statement (DGEIS) New York Statewide Wireless Network (SWN).* Prepared by Deorsetz Stinziano Gilberti Heintz and Smith, P.C., Spectra Environmental Group, Inc., and CASmith, LLC., New York.

New York Times

9/18/1885 “Causing a Big Blaze,” p. 2.

5/17/1888 “Fallen From Greatness: An Industry Rusting Away in Idleness,” p. 12.

7/16/1889 “Primitive Water Pipes,” p. 8.

5/14/1891 “Plans for Cheap Fresh Air Excursions for the Poor, p. 9.

11/28/1894 “To Accept Mr. Schiff’s Gift,” p. 1.

- 2/7/1900 "New River Tunnel Plan," p. 14.
 8/25/1901 "The Massive Sea Wall Which Will Encompass Manhattan," p. SM10.
 9/8/1929 "Good Approves Plans for East River Tubes," p. 17.
 7/26/1931 "Watering Troughs Still in Manahattan," p. RE20.
- Novek, Minda
 1992 "Sea Change." In *Seaport*. Winter 1992, p.24
- Parker, Arthur C.
 1922 *The Archaeological History of New York*. Albany: The University of the State of New York.
- Parsons Brinckerhoff Quade and Douglas, Inc.
 1991a *Phase I: Reconnaissance Level Historical Survey of Transit Authority Properties; Task 1 Report: The New York City Transit System — Historical Context and Evaluation Parameters*. Submitted by Parsons Brinckerhoff Quade & Douglas, Inc, in association with Historical Perspectives, Inc., Robert A. Olmstead, P.E., and LI/Saltzman, P.C.. Submitted to: New York City Transit Authority.
 1991b *Phase I: Reconnaissance Level Historical Survey of Transit Authority Properties; Task 31 Report: Final Report and Recommendations*. Submitted by Parsons Brinckerhoff Quade & Douglas, Inc, Historical Perspectives, Inc., and Robert A. Olmstead, P.E. Submitted to: New York City Transit Authority.
 1994, Rev. 1995 *Task 5: 100% Submittal, Volume III*. Submitted by Parsons Brinckerhoff Quade & Douglas, Inc, Historical Perspectives, Inc., and Robert A. Olmstead, P.E. Submitted to: New York City Transit Authority.
- Perris, William
 1852 *Maps of the City of New York Surveyed Under Directions of Insurance Companies of Said City*. New York: Perris and Browne.
 1857 *Maps of the City of New York: Third Edition*. New York: Perris and Browne.
- Pickman, Arnold
 2006 *Phase Ia Archaeological Documentary Study: Block 190, Lot 37; New York City, Borough of Manhattan NLA/NL-CEQR-M*. Prepared for LHRE Company, LLC.
- Ratzer, Bernard
 1776a *Plan of the city of New York in North America: surveyed in the years 1766 & 1767 / B. Ratzer, lieutt. in His Majestys 60th or Royal American Regt. ; Thos. Kitchin, sculpt., engraver to His Late Royal Highness, the Duke of York, &c*. London: Jeffrys and Faden.
 1776b *To His Excellency Sr. Henry Moore, Bart., captain general and governour in chief, in & over the Province of New York & the territories depending thereon in America, chancellor & vice admiral of the same, this plan of the city of New York, is most humbly inscribed / by His Excellency's most obedient servant, Bernd. Ratzen [sic], lieutt. in the 60th Regt. ; T. Kitchin sculpt*. London: Jeffrys and Faden.
- Reinitz, Bernard
 3/27/1927 "Rival Playgrounds." *The New York Times*, p. XX2.
- Ritchie, William A.
 1980 *The Archaeology of New York State: Revised Edition*. Harrison, New York: Harbor Hill Books.
- Robinson, E. and R.H. Pidgeon
 1885 *Atlas of the City of New York, 1883-1888*. New York: E. Robinson
- Sage, Gardiner
 1848 "Map No. 3 of Lands Belonging to the Estate of Thomas Buchanan, Dec'd." In *Certified copies of original maps of property in New York City*. Hoboken, N.J.: Spielmann and Brush.

Sanborn Map Company

- 1894 *Insurance Maps of the City of New York*. New York: Sanborn-Perris Map Co.
1905 *Insurance Maps of the City of New York*. New York: Sanborn-Perris Map Co.
1922 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
1951 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
1968 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
1976 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
1985 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
1994 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
2007 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.

Schuyler, Robert L., William Askins, Roselle Henn, and Jed Levin.

- 1978 *The Water Street Site: Final Report on 209 Water Street*. On file at the New York City Landmarks Preservation Commission.

Smith, Oscar G.

- 1864 “Report of the Ninth Sanitary Inspection District” in *Report of the Council of Hygiene and Public Health of the Citizens’ Association of New York upon the Sanitary Condition of the City*. New York: D. Appleton & Co.

Soil Systems, Inc.

- 1982 *The Archaeological Investigation of the Telco Block, South Street Seaport Historic District*. New York, New York. Professional Service Industries, Inc. For: Jack Resnick and Sons, Inc. [Multiple authors]
1983 *Archaeological Investigation of the 175 Water Street Block, New York, New York: The (Ronson) Ship. Volumes 1, 2, & 3*. Professional Service Industries, Inc. For: HRO International. 81-506M

Stevens, B.F.

- 1900 *B. F. Stevens's facsimile of the unpublished British headquarters coloured manuscript map of New York & environs (1782) Reproduced from the original drawing in the War Office, London*.

Stokes, I.N. Phelps.

- 1967 (reprint) *The Iconography of Manhattan Island, 1498-1909* Volumes I-VI. New York: Robert Dodd.

Sutphin, Amanda / New York City Landmarks Preservation Commission

- 1997 *Draft Phase 1A Archaeological Documentary Study Stone Street Historic District (LP-1938)*. Revised and completed by: Amanda Sutphin, S.O.P.A.

Taylor, B. and J. Roberts (Taylor-Roberts Plan)

- 1797 A New and Accurate Plan of the City of New York. In Stokes (1967).

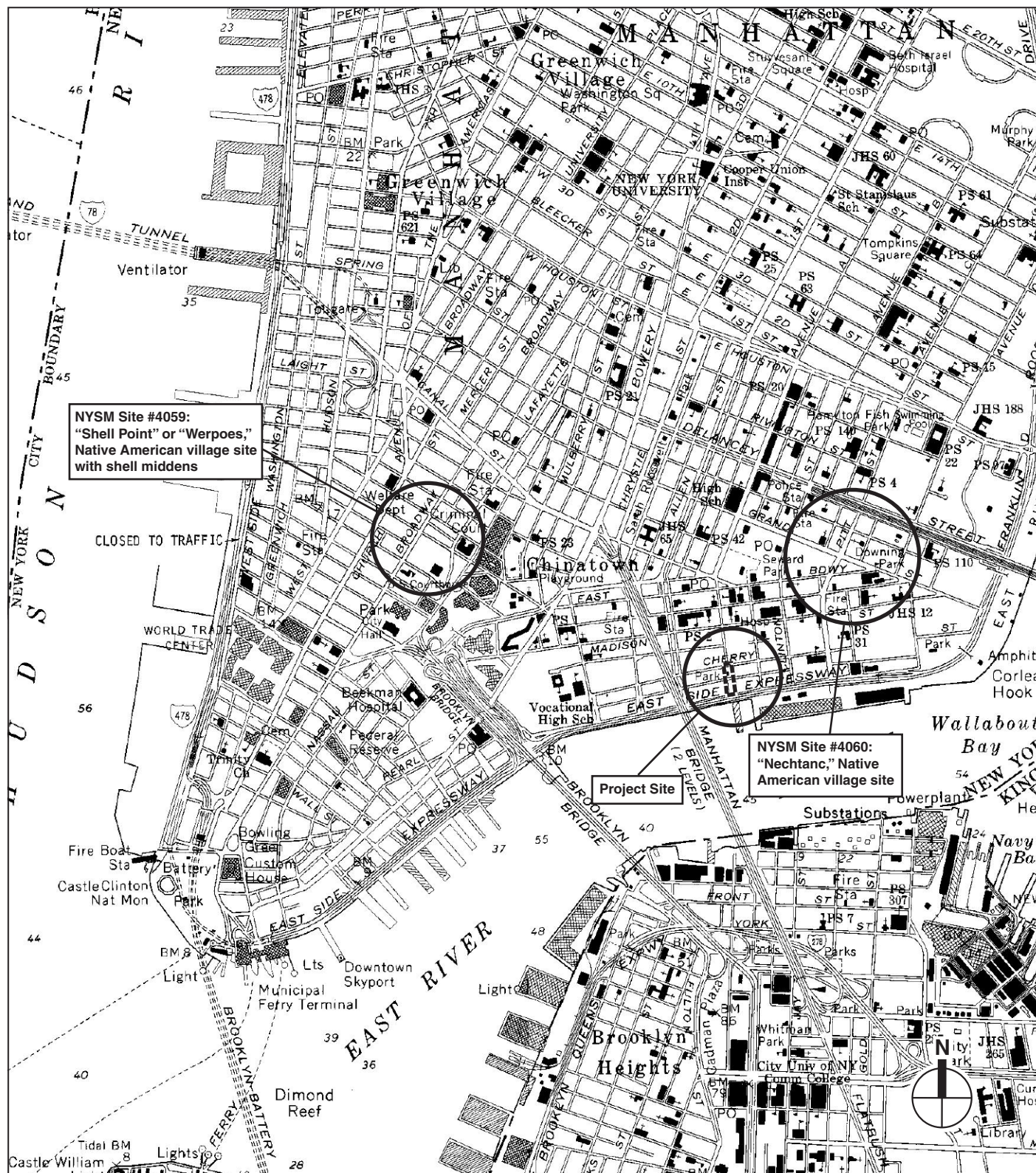
“Upland and Water Lots in the Out Ward”

- Ca. 1797-1809 On file at the New York Historical Society.

Viele, Egbert L.

- 1865 *Sanitary & Topographical Map of the City and Island of New York*. New York: Ferd. Mayer & Co.

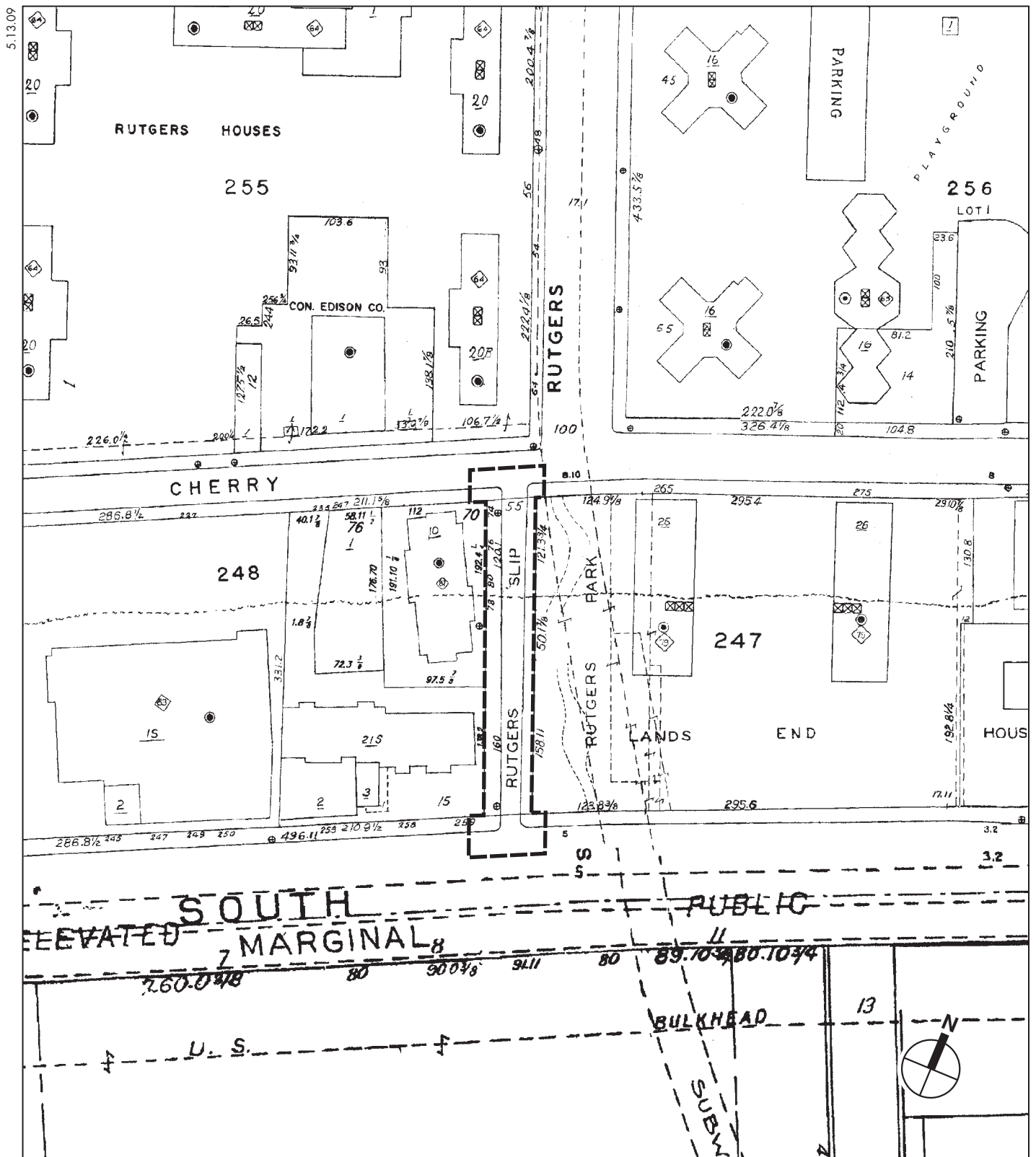
Figures



The location for both prehistoric archaeological sites has been approximated based on a map showing Native American place names (Grumet 1981: 68) as well as documentary evidence which describes the site (Historical Perspectives 2003, Louis Berger Group 2004, Sutphin 1997)

Archaeological APE

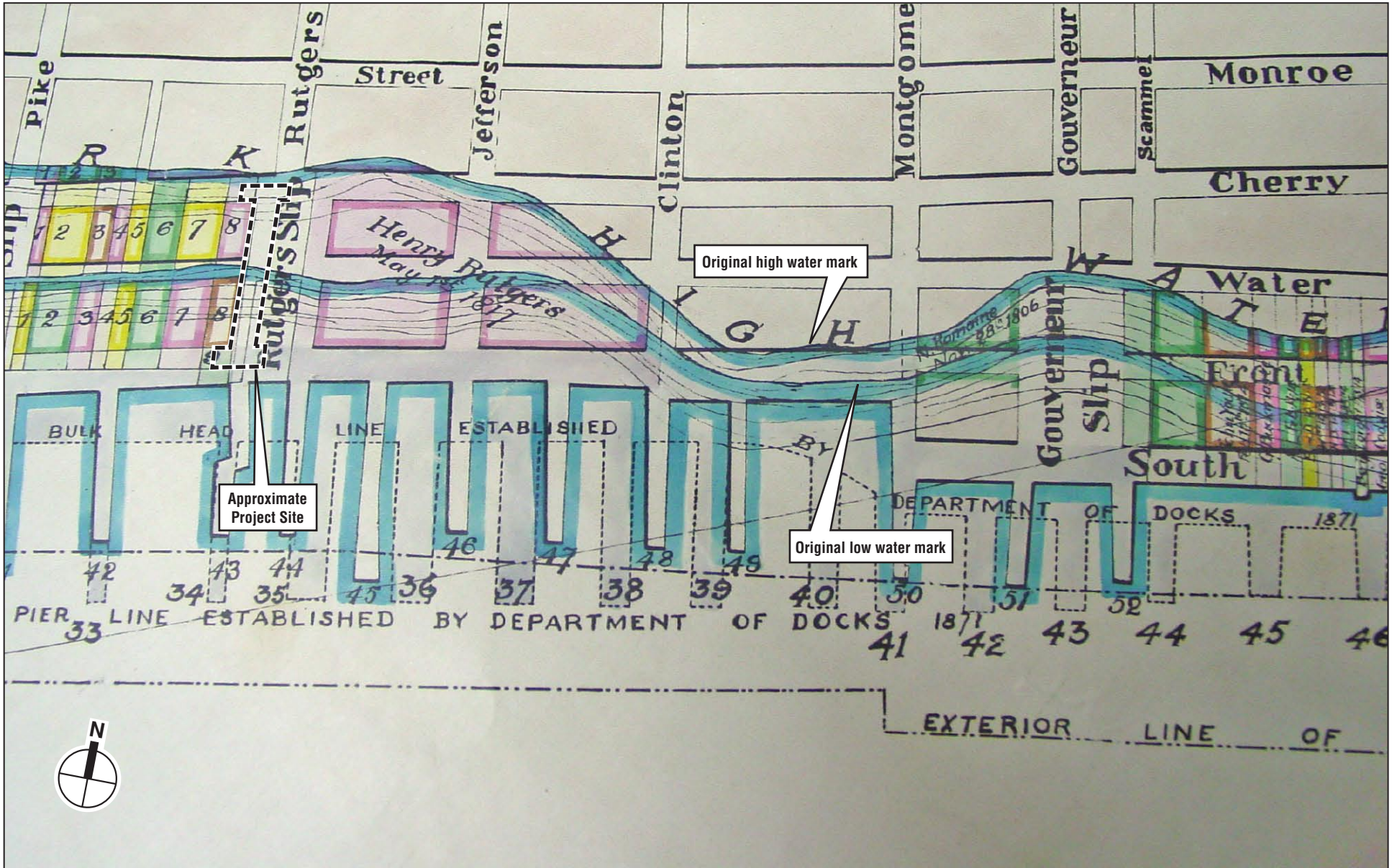
Archaeological Sites of Project Location and Location Previously Identified Precontact USGS Map, Brooklyn and Jersey City Quadrangles



Project Site

0 200 FEET
SCALE

Project Site Boundaries
Sanborn Insurance Map, 2007
Figure 2



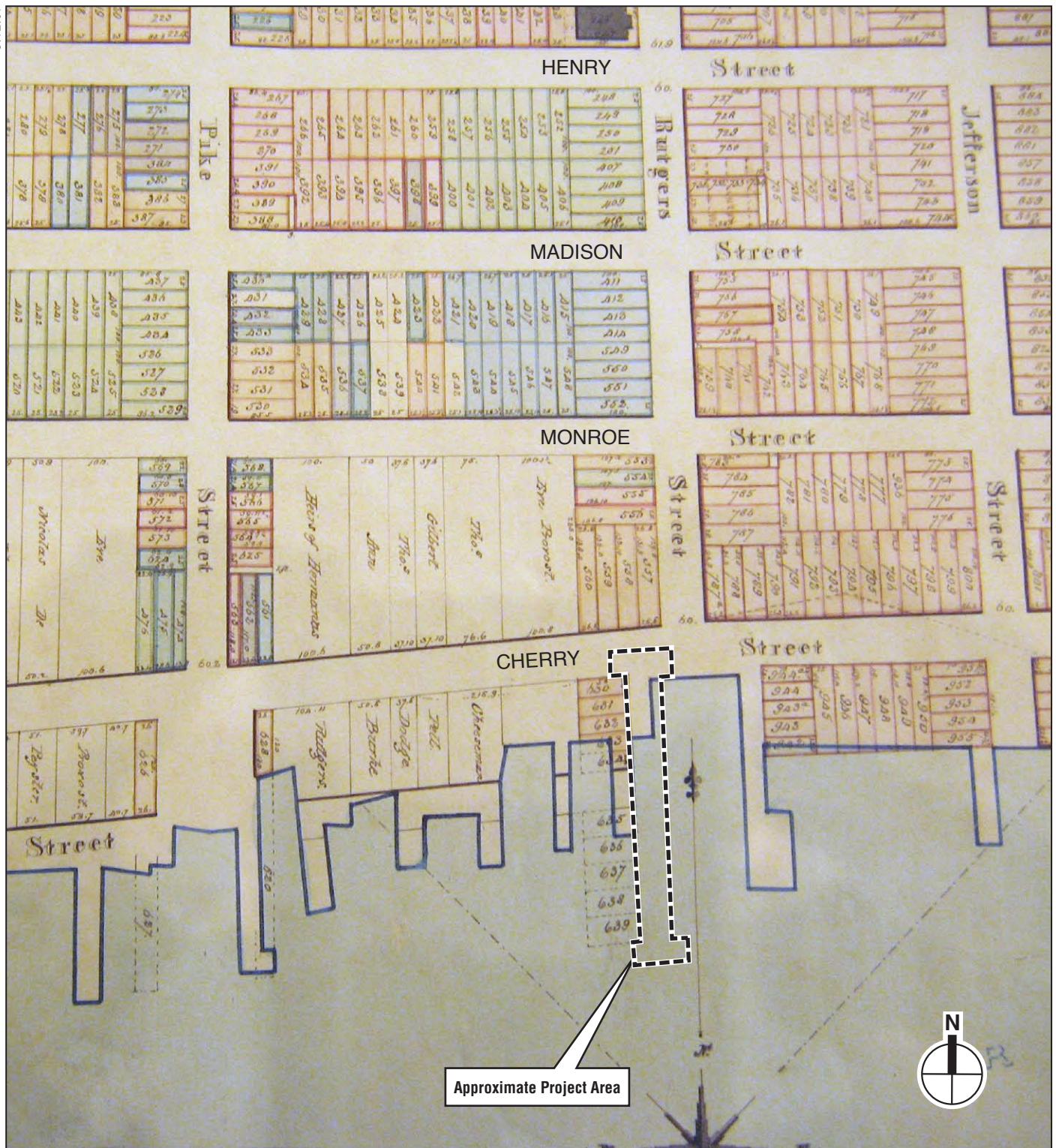
NOT TO SCALE

Map showing original high and low water marks.
From the Manhattan Topographical Bureau, 1638-1873



NO SCALE

Sanitary and Topographical Map of the City and Island of New York
E. Viele, 1865
 Figure 4

**KEY**

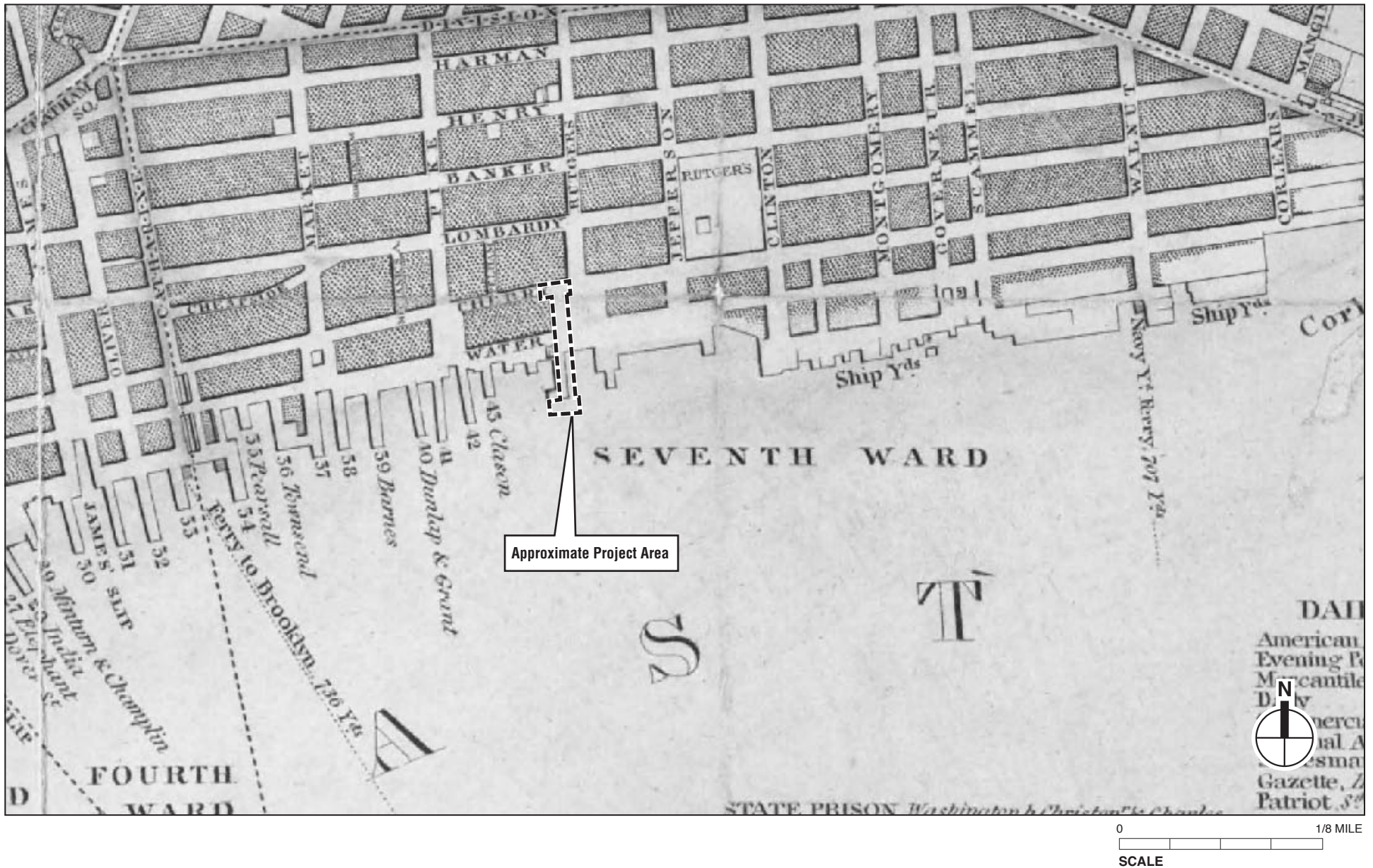
Lots granted to Henry Rutgers - red
 Lots granted to Anna Bancher - green
 Lots granted to Mary McCrea - blue
 Lots granted to Catharine De Peyster - indian ink

Lots granted to John Beekman - dark green
 Lots granted to Wm. B. Crosby - purple
 Lots granted to Catherine R. McCrea - brown
 Lots sold - orange

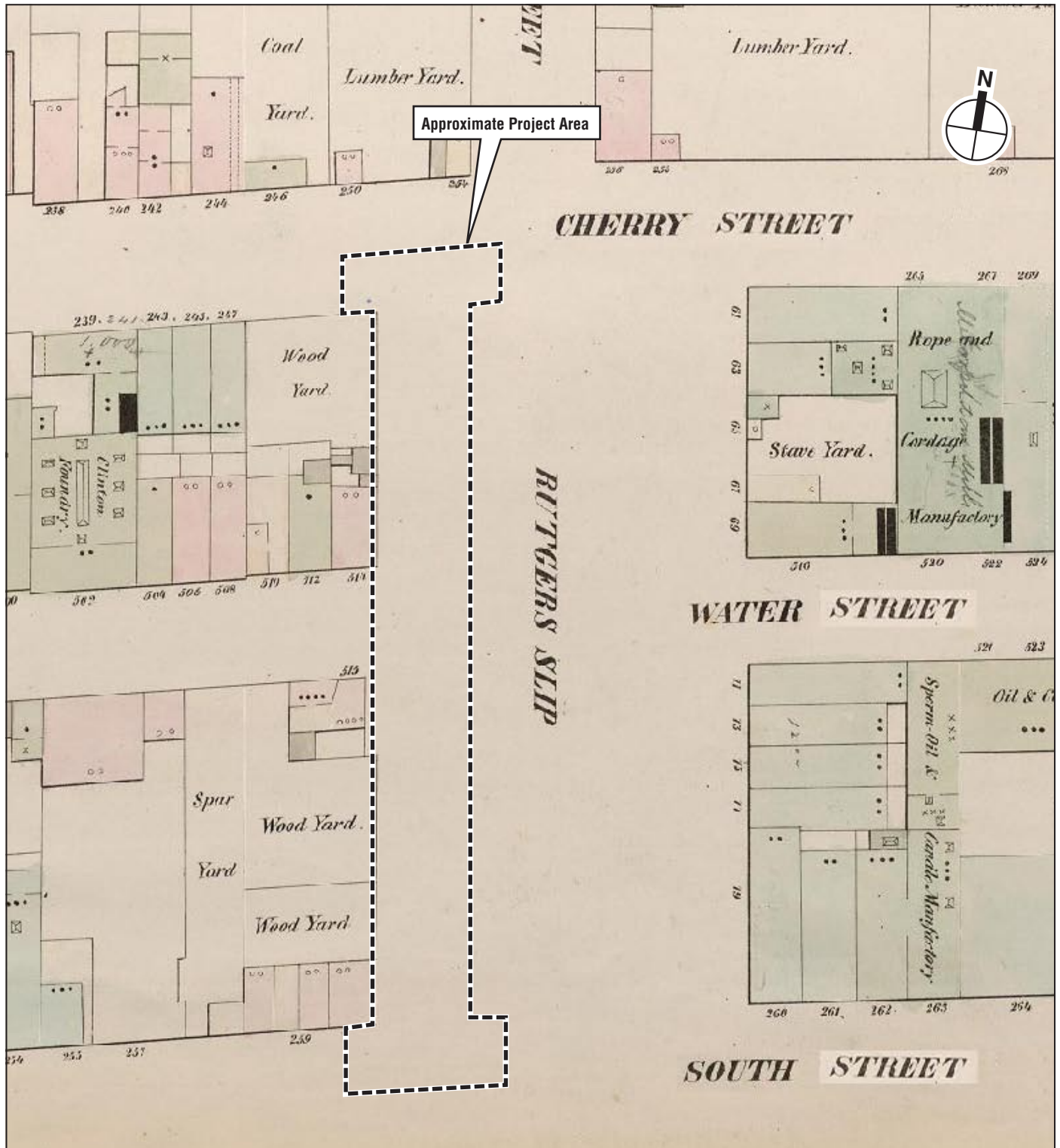
0 200 FEET
 SCALE

**Map of Rutgers Farm.
 Bridges and Poppleton, 1813**

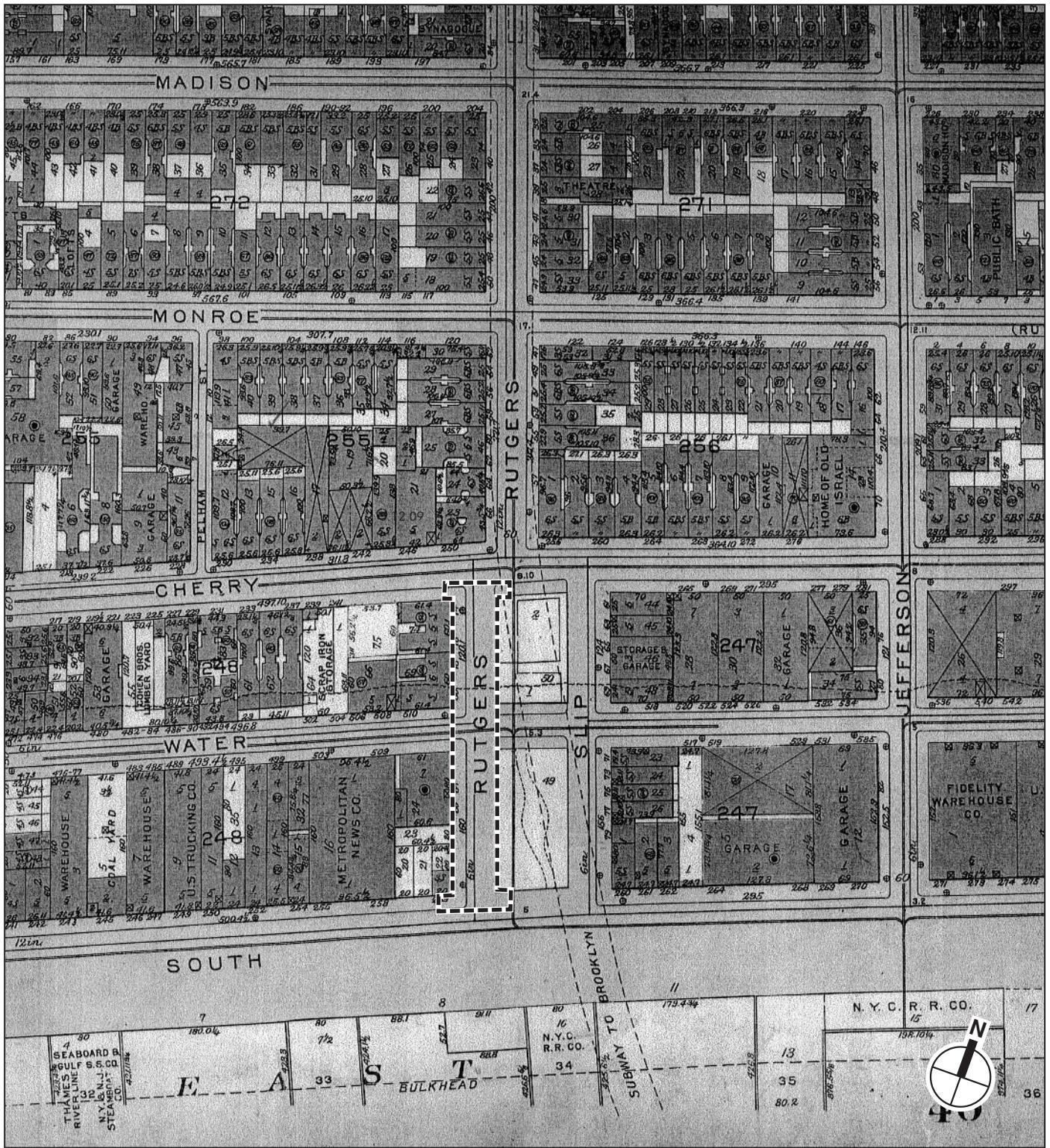
Figure 5



Hooker's New Pocket Plan of New York City
Hooker, 1824
 Figure 6



**Map of the City of New York
W. Perris, 1852**
Figure 7



 Project Site

0 200 FEET
SCALE

Atlas of the City of New York
G.W. Bromley, 1934
Figure 8

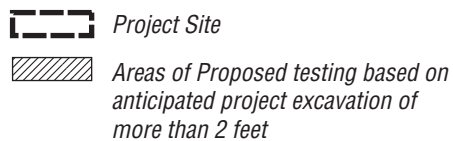
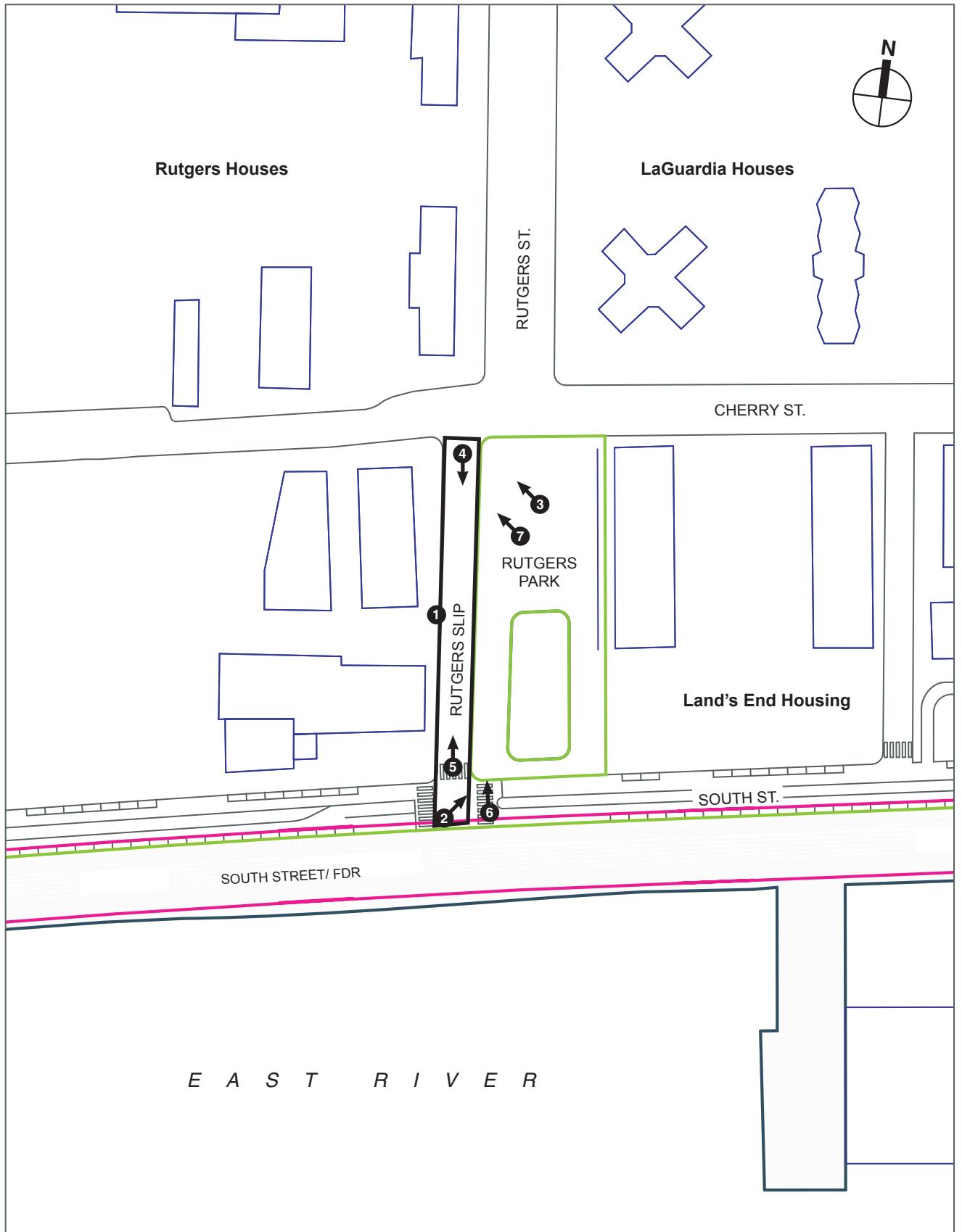


Figure 9

Photographs



— Project Site Boundary

➔ Photograph View Direction and Reference Number

0 200 FEET

SCALE



Transformer vault in sidewalk along western side of Rutgers Slip 1



Elevated basketball court at southern end of Rutgers Park; looking northeast 2



Playground at northern end of Rutgers Park; looking northwest 3



Streetbed of Rutgers Slip, looking south from Cherry Street 4



Streetbed of Rutgers Slip and elevated Rutgers Park; looking north from South Street

5



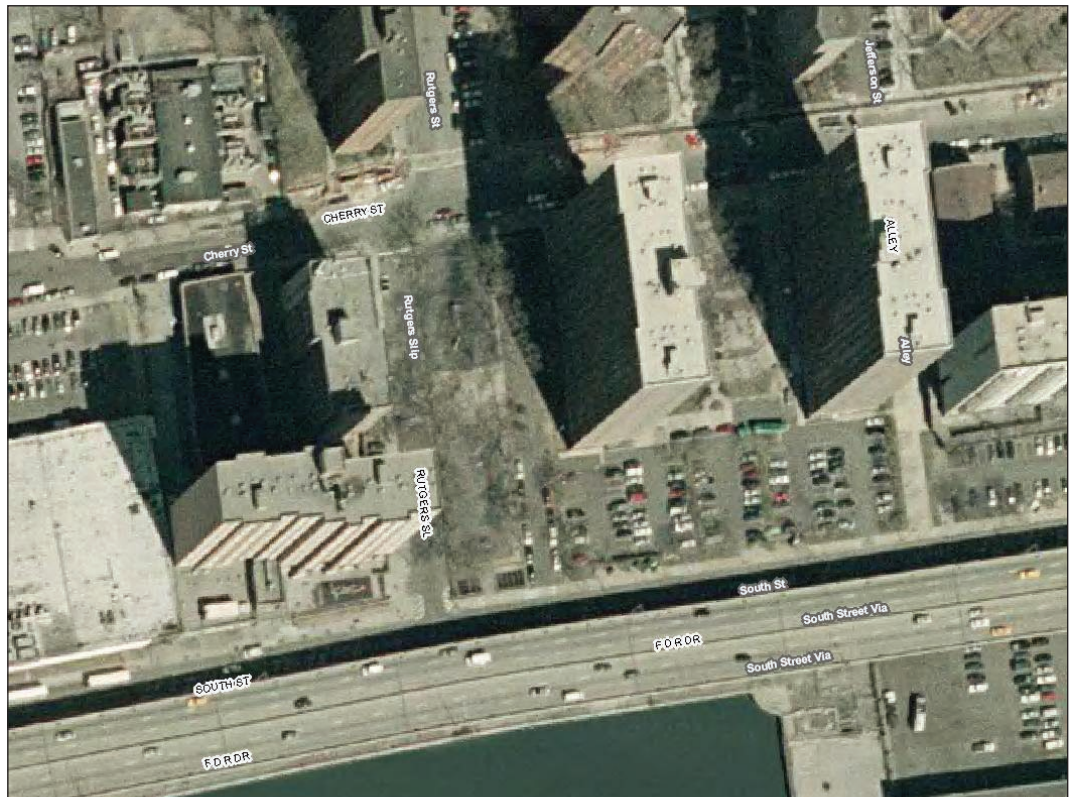
Southern end of Rutgers Park; looking north from South Street

6



Benches in northern section of Rutgers Park; looking northwest

7



Aerial Photograph, 2006

8