Two Bridges Large Scale Residential Development

SITE 4 (4A/4B) (BLOCK 248, LOTS 15, 70, AND 76); SITE 5 (BLOCK 247, LOTS 1 AND 2); AND SITE 6A (BLOCK 246, LOTS 1 AND 5)

NEW YORK, NEW YORK

Phase 1A Archaeological Documentary Study

Prepared for:

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and

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Management Summary

CEQR Number:	17DCP148M
Lead Agency:	New York City Department of City Planning (DCP), acting on behalf of the New York City Planning Commission (CPC)
Phase of Survey:	Phase 1A Documentary Study
Location Information	
Location:	Manhattan
Minor Civil Division:	06101
County:	New York County
Site 4 (4A/4B) Survey Area	
Block/Lot:	Block 248, Lots 15, 70, and 76
Length:	Approximately 210 feet
Width:	Approximately 330 feet
Area:	Approximately 1.59 acres
Site 5 Survey Area	
Block/Lot:	Block 247, Lots 1 and 2
Length:	Approximately 450 feet
Width:	Approximately 330 feet
Area:	Approximately 3.33 acres
Site 6A Survey Area	
Block/Lot:	Block 246, Lots 1 and 5
Length:	Approximately 400 feet
Width:	Approximately 200 feet
Area:	Approximately 1.60 acres
USGS 7.5 Minute Quadrangle Map:	Brooklyn Quadrangle
Report Author:	Elizabeth D. Meade, MA, RPA
Date of Report:	July 2017

Table of Contents

List of Figures

List of Photographs

*See **Figure 2** for camera angles*

Chapter 1: Introduction and Description of Proposed Projects

A. INTRODUCTION

Cherry Street Owner, LLC, an affiliate of JDS Development Group and Two Bridges Senior Apartments LP; Two Bridges Associates, LP, a joint venture between CIM Group and L+M Development Partners; and LE1 Sub LLC are proposing the development of three new mixed-use buildings within the existing Two Bridges Large Scale Residential Development (LSRD) along the East River waterfront in Lower Manhattan within the boundaries of the former Two Bridges Urban Renewal Area (TBURA) (see **Figure 1**). The LSRD includes all or portions of the blocks bounded by Cherry Street to the north and South Street to the south between a midblock point west of Rutgers Slip and a midblock point east of Clinton Street. The proposed developments would be located on three project sites, referred to as Sites 4A/4B, 5, and 6A, which are described in greater detail below (see **Figures 2 and 3**).[1] The proposed projects each require a minor modification to the existing Two Bridges LSRD. The three proposed projects are unrelated, with separate developers, approvals, and financing; however, they are being evaluated together for environmental review purposes and are therefore discussed together in this Phase 1A Archaeological Documentary Study.

The proposed minor modifications to the Two Bridges LSRD are subject to City Environmental Quality Review (CEQR). DCP, acting on behalf of the City Planning Commission (CPC), is the lead agency for the environmental review. Pursuant to CEQR, the New York City Landmarks Preservation Commission (LPC) was contacted regarding the project sites' archaeological sensitivity. In a comment letter issued on March 2, 2017, LPC determined that each of the lots included within Sites 4 (4A/4B), 5, and 6A potentially possess archaeological significance. LPC requested that a Phase 1A Archaeological Documentary Study ("Phase 1A study") of the project sites be prepared to determine the sites' archaeological sensitivity and to determine if additional archaeological analyses (e.g., a Phase 1B archaeological investigation) would be necessary. This Phase 1A Archaeological Documentary Study was prepared to satisfy LPC's comments regarding the project sites' potential archaeological sensitivity.

B. BACKGROUND

The former TBURA, which expired in June 2007, was designated as an urban renewal area on January 15, 1961. This area covered 14 acres along the East River in Lower Manhattan bounded by Market Street to the west, South Street to the south, Montgomery Street to the east, and Cherry Street to the north. Development in the former TBURA was governed by the Two Bridges Urban Renewal Plan (TBURP), the goals of which included eliminating blight and restoring the residential character of the area; providing well-designed low, moderate, and middle income housing; providing convenient recreational, commercial, and community facility uses; achieving high quality urban design, architecture, street and open space elements; and strengthening the City's tax base by encouraging development and employment opportunities in the area. The TBURP was originally approved by CPC and the Board of Estimate (BOE) in 1967. Over the years, the TBURP was amended and the TBURA was developed.

[1] The numbering of the sites in this document corresponds with that used in the Two Bridges LSRD.

The Two Bridges LSRD Special Permit was originally approved by CPC on May 17, 1972 (CP-21885) and was last amended on August 23, 2013 (M120183 ZSM). The 2013 amendment was to allow for the development of a new mixed-use building on Site 5, as well as the enlargement of existing retail use and the relocation of 103 existing accessory surface parking spaces on that site. That proposed development did not occur. The Two Bridges LSRD includes six of the former TBURA parcels, which were initially developed in seven stages pursuant to the Two Bridges LSRD Special Permit. The LSRD Special Permit, as amended, remains in effect.

The Two Bridges LSRD regulates the maximum developable floor area, lot coverage, and other features of development permitted on the LSRD sites. To facilitate the proposed projects on Sites 4 (4A/4B), 5, and 6A, minor modifications to the Two Bridges LSRD Special Permit are being requested from CPC, as described below. The new mixed-use developments on each of the three project sites would be developed as-of-right under the current Zoning Resolution.

No new special permits, authorizations, or certifications, and no use or bulk waivers would be required to facilitate the proposed projects.

C. DESCRIPTION OF PROPOSED PROJECTS

The development of the proposed projects on Sites 4 (4A/4B), 5, and 6A together would result in three new buildings creating new residential space (including affordable and possible senior housing units), retail space, community facility space, and private open space (see **Figure 3**). The creation of new affordable housing units would advance a City-wide initiative to build and preserve 200,000 affordable units over 10 years in order to support New Yorkers with a range of incomes, from the very lowest to those in the middle class. The proposed actions also would result in improvements to the resiliency of each site and enhance the surrounding streetscape and pedestrian experience through the creation of new landscaping and private open space.

SITE 4 (4A/4B)

Site 4 (4A/4B) is located on the west side of Rutgers Slip, between Cherry Street to the north and South Street to the south. The site includes Block 248, Lots 15, 70, and 76. Lot 70 is currently owned by Two Bridges Senior Apartments LP and Lot 76 is owned by Two Bridges Housing Development Fund Company, Inc. Lot 76 and a portion of Lot 70 are under contract for purchase by applicant Cherry Street Owner, LLC, with Two Bridges Senior Apartments LP retaining ownership of the remainder of Lot 70. Lot 70 is currently developed with a 10-story residential building (80 Rutgers Slip) with accessory parking spaces and open space. Lot 76 is currently developed with a partially vacant one-story commercial building (235 Cherry Street).

The proposed minor modification for Site 4 (4A/4B) would: revise the LSRD parcel boundaries to combine Parcels 4A and 4B into new Parcel 4; permit the location and envelope of the new building; permit additional floor area at the development site; and permit additional lot coverage at the development site. No new parking would be provided. These modifications would facilitate the development of a new residential building with ground floor retail on a portion of Lot 70, cantilevering over existing buildings on Lots 70 and 76 and would provide open space improvements on Lots 15, 70, and 76. The existing buildings on Lots 15, 70, and 76 would be retained; however, the ground floor and westernmost portion of the existing building on Lot 70 (80 Rutgers Slip) would be reconfigured to allow for the introduction of ground floor retail and to accommodate the new development.

The proposed minor modification of the Two Bridges LSRD would facilitate the further development of Site 4 (4A/4B) with new affordable and market-rate housing. The proposed actions would allow for the Site 4 (4A/4B) development to provide substantial capital to two non-profit organizations in support of

their on-going efforts to provide, support, and maintain affordable housing for New Yorkers. The Site 4 (4A/4B) development also would enhance the streetscape and pedestrian environment by improving the open space areas located on Lots 15, 70, and 76, and would strengthen local retail opportunities by increasing the ground floor retail at this site. The proposed action would improve the resiliency of the site, with physical strategies being implemented around Lot 70 of Site 4 (4A/4B) to assist in protecting the existing building at 80 Rutgers Slip and the new building on Site 4 (4A/4B).

SITE 5

Site 5 is owned by Two Bridges Associates, LP and comprises Lots 1 and 2 of Block 247. The site is located between Cherry Street, South Street, Rutgers Slip, and the de-mapped former alignment of Jefferson Street. A portion of the site was previously developed with the "Land's End II development," which includes two 26-story rental apartment buildings at 265 and 275 Cherry Street; a paved surface parking lot with 103 parking spaces on South Street; a paved area west of the 265 Cherry Street building; and private playgrounds and landscaped seating areas between the two buildings. Site 5 also includes a private open space along the Rutgers Slip block frontage that contains playgrounds, seating areas, and a basketball court.

The proposed minor modification for Site 5 would revise the Two Bridges LSRD Special Permit and calculations in the LSRD to allow additional residential, commercial, and community facility floor area and increased lot coverage on Lots 1 and 2, and relocation of existing accessory parking spaces. These modifications would facilitate the development of a new mixed-use building with residential and community facility uses located in two towers on a shared base. The existing parking spaces from surface lots would be relocated to a new below-grade garage in the new building; however, no new parking would be created. The existing buildings would be retained, and ground floor retail space along Cherry Street would be enlarged. In addition, the courtyard would be relandscaped and the open space amenities on Rutgers Slip would be improved.

The proposed minor modification of the Two Bridges LSRD would facilitate the further development of Site 5 by replacing a surface parking lot with new affordable and market-rate housing, community facility space, and retail. In addition, the proposed Site 5 project would help address the continuing need for independent living facilities for seniors in New York City, by creating at least 100 new units of low income senior housing as part of the affordable housing to be provided on that site. With the proposed minor modification, the proposed development also would significantly improve the open space on Site 5, by providing new landscaping, seating, and play areas in the open space between 265 and 275 Cherry Street and along Rutgers Slip. The open space improvements along Rutgers Slip would enhance pedestrian access from the upland neighborhood to the East River waterfront, and local retail opportunities would be enhanced by the creation of additional ground-floor retail at 265 and 275 Cherry Street. The proposed action also would improve the site's resiliency by elevating the first floor of the new building above the flood plain elevation, and employing physical strategies around the site to assist in protecting the 265 and 275 Cherry Street buildings.

SITE 6A

Site 6A is located on the west side of Clinton Street at South Street and comprises Block 246, Lots 1 and 5. Development association with the proposed project is currently only planned on Lot 5, which is owned by LE1 Sub LLC. The development site is part of a merged zoning lot that also includes Lot 1 and as such, the two lots have been included in the study area for this Phase 1A Archaeological Documentary Study. Lot 5 is currently vacant and Lot 1 is occupied by a 19-story residential building (275 South Street) with surface parking along South Street. The proposed minor modification for Site 6A would revise the LSRD calculations to allow additional floor area at the development site; permit the locations

and envelope of the new building; and permit additional lot coverage at the development site These modifications would facilitate the development of a new building on Lot 5 with retail and residential space and the existing building at 275 South Street on Lot 1 would remain.

The proposed minor modification of the Two Bridges LSRD would facilitate the further development of Site 6A with new affordable and market-rate housing. In addition, if senior housing is viable, the proposed Site 6A project would help address the continuing need for independent living facilities for seniors in New York City, by creating low income senior housing units. With the proposed minor modification, new development would replace a vacant lot and introduce ground floor retail that would enhance the streetscape and pedestrian environment along Clinton and South Streets and strengthen local retail opportunities. The proposed action also would improve the resiliency of the site and would create new open space on site.

Chapter 2: Research Goals and Methodology

A. RESEARCH GOALS

The Phase 1A of the Two Bridges LSRD Sites 4 (4A/4B), 5, and 6A has been designed to satisfy the requirements of the LPC and follows the guidelines of the New York Archaeological Council (NYAC). The study documents the development history of the proposed project sites and their potential to yield archaeological resources, including both precontact and historic cultural resources. In addition, this report documents the current conditions of the project sites, as well as previous cultural resource investigations that have taken place in the vicinity.

This study has four major goals: (1) to determine the likelihood that the project sites were occupied during the precontact (Native American) and/or historic periods; (2) to determine the effect of subsequent development and landscape alteration on any potential archaeological resources that may have been located within the project sites; (3) to make a determination of the project sites' potential archaeological sensitivity; and (4) to make recommendations for further archaeological analysis, if necessary. The steps taken to fulfill these goals are explained in greater detail below.

The first goal of this study is to determine the likelihood that the project sites were inhabited during the precontact or historic periods, and identify any activities that may have taken place in the vicinity that would have resulted in the deposition of archaeological resources.

The second goal of this Phase 1A study is to determine the likelihood that archaeological resources could have survived intact within the project sites after development and landscape alteration (i.e., erosion, grading, filling, etc.). Potential disturbance associated with paving, utility installation, and other previous construction impacts was also considered. As described by NYAC in their Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State:

> *An estimate of the archaeological sensitivity of a given area provides the archaeologist with a tool with which to design appropriate field procedures for the investigation of that area. These sensitivity projections are generally based upon the following factors: statements of locational preferences or tendencies for particular settlement systems, characteristics of the local environment which provide essential or desirable resources (e.g., proximity to perennial water sources, well-drained soils, floral and faunal resources, raw materials, and/or trade and transportation routes), the density of known archaeological and historical resources within the general area, and the extent of known disturbances which can potentially affect the integrity of sites and the recovery of material from them* (NYAC 1994: 2).

The third goal of this study is to make a determination of the project sites' archaeological sensitivity. As stipulated by the NYAC standards, sensitivity assessments should be categorized as low, moderate, or high to reflect "the likelihood that cultural resources are present within the project area" (NYAC 1994: 10). For the purposes of this study, those terms are defined as follows:

- Low: Areas of low sensitivity are those where the original topography would suggest that Native American sites would not be present (i.e., locations at great distances from fresh and salt water

resources), locations where no historic activity occurred before the installation of municipal water and sewer networks, or those locations determined to be sufficiently disturbed so that archaeological resources are not likely to remain intact.

- Moderate: Areas with topographical features that would suggest Native American occupation, documented historic period activity, and with some disturbance, but not enough to eliminate the possibility that archaeological resources are intact on the project sites.
- High: Areas with topographical features that would suggest Native American occupation, documented historic period activity, and minimal or no documented disturbance.

As mentioned above, the fourth goal of this study is to make recommendations for additional archaeological investigations where necessary. According to NYAC standards, Phase 1B testing is generally warranted for areas determined to have moderate sensitivity or higher. Archaeological testing is designed to determine the presence or absence of archaeological resources that could be impacted by a proposed project. Should they exist on the project sites, such archaeological resources could provide new insight into the precontact and historic occupation of the East River waterfront with particular emphasis on the construction of new land around the perimeter of the island of Manhattan.

B. RESEARCH METHODOLOGY

DOCUMENTARY RESEARCH

To satisfy the four goals as outlined above, documentary research was completed to establish a chronology of the project sites' development, landscape alteration, and to identify any individuals who may have owned the land or worked and/or resided there, and to determine if buildings were present there in the past. Data was gathered from various published and unpublished primary and secondary resources, such as historic maps, topographical analyses (both modern and historic), historic and current photographs (including aerial imagery), newspaper articles, local histories, and previously conducted archaeological surveys. 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). File searches were conducted at LPC, the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP), and the New York State Museum (NYSM). Information on previously identified archaeological sites and previous cultural resources assessments on file with OPRHP and NYSM was accessed through the New York State Cultural Resource Information System (CRIS).[1] Online textual archives, such as Google Books and the Internet Archive Open Access Texts, were also accessed. Elizabeth P. Martin assisted with the research of historic water lot grants.

As described in **Chapter 3**, "Known Archaeological Concerns in the Vicinity of the Project Sites and Previous Cultural Resources Investigations," portions of the project sites have previously been included in Phase 1A and Phase 1B archaeological investigations. Due to the age of these investigations and the results of more recent Phase 1B archaeological investigations in the immediate vicinity, the full extents of the project sites were evaluated or reevaluated as part of this archaeological investigation. Modern advancements in mapping technology and geographic information systems (GIS) were used to more thoroughly analyze the development of landfilling and land construction that have altered the Manhattan waterfront. This effort involved georeferencing historic maps of the project sites that were published between the 18th and 20th centuries. The maps were aligned with the modern street grid so that analysis could be completed with respect to changes in the elevation/topography of the landscape; filling in or other modification of marshes and streams; the construction of new land through the submersion of

[1] https://cris.parks.ny.gov

landfill and landfill-retaining structures; and the extent to which the construction of both historic and modern structures (including residences, shipyards, and waterfront structures such as docks, piers, and wharves) affected the landscapes. In addition, disturbance that may have occurred since the year the previous reports were prepared were incorporated into this report as necessary. After identifying the likelihood that archaeological resources were deposited within the project sites and the likelihood that they could remain intact given subsequent development, erosion, and landscape alteration, a sensitivity determination was made for each of the project sites with respect to both precontact and historic period resources.

Chapter 3: Known Archaeological Concerns in the Vicinity of the Project Sites and Previous Cultural Resources Investigations

A. KNOWN ARCHAEOLOGICAL CONCERNS ALONG THE EAST RIVER WATERFRONT

This chapter discusses known archaeological concerns along the East River waterfront as documented by previous cultural resources assessments that have been prepared in the immediate vicinity of the Two Bridges project sites. The majority of these investigations have focused on archaeological resources associated with the creation of new land along Manhattan's waterfront, including landfill-retaining structures and landfill deposits. However, these areas, many of which were developed for residential use before the installation of municipal water and sewer networks, have also been identified as sensitive for historic infrastructure associated with water-gathering and sanitation, including both wooden water mains in modern and historic streetbeds as well as shaft features (e.g., privies, cisterns, and wells) within historic rear yards.

LANDFILL AND LANDFILL-RETAINING STRUCTURES

Across the East River waterfront, historic piers, wharves, and docks were often repurposed as landfill-retaining structures as shorelines were expanded. In addition, timber structures were often built for the specific purpose of retaining fill and supporting newly made land. While landfill and landfill-retaining structures are subject to disturbance, particularly as a result of basement excavation, intact deposits have been identified at relatively shallow depths at other archaeological sites along the East River. Work at several archaeological sites along the East River waterfront has uncovered the original wooden cribwork that was used to create artificial land within water lots. These sites include the Assay Site (Louis Berger and Associates 1990), the Barclay's Bank Site (Louis Berger and Associates 1987), the Whitehall Ferry Terminal (AKRF, et al. 2012), the Telco Block (Soil Systems, Inc. 1982), the Schermerhorn Row Block (Kardas and Larrabee 1991), and the sites located at 175 Water Street (Soil Systems, Inc. 1983) and 209 Water Street (Schuyler, et al. 1978).

At Burling Slip, along the East River to the southwest of the project sites, the top of an intact timber bulkhead was observed at a depth of 2 to 2.5 feet below ground surface (AKRF 2011). Similarly, as described below, at Rutgers Slip, situated between Site 4 (4A/4B) and Site 5, intact landfill-retaining structures thought to be representative of intact cribbing were observed at depths of approximately 6 to 8 feet during archaeological monitoring (AKRF 2012). Landfill deposits can include rocky material and clean fill that was generally obtained from grading and construction projects (e.g., basement excavation) as well as refuse including 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. 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).

Derelict vessels were also often used as landfill-retaining structures and as such, become incorporated into landfill (AKRF 2013). A critical component of Manhattan's 18th and 19th century maritime

economy involved the construction and maintenance of slips along the shoreline, providing a place where boats could dock and load and unload goods and passengers. Rutgers Slip was located within a portion of Site 5 prior to being filled and redeveloped. Therefore, ships would have been a frequent presence in the vicinity of this project site, increasing the likelihood that sunken or derelict vessels could be incorporated into the landfill in the vicinity of Site 5. Sunken vessels would be expected to extend to great depths, as the vessels would be expected to be located on what was historically the river bottom. The top of the ship found within the southern site of the World Trade Center redevelopment—which was represented by only the bottom portion of a sloop's hull with a single deck remaining—was identified at a depth of between 11.5 and 20 feet below mean sea level, or between about 20 to 30 feet below the modern street grade (AKRF 2013). However, the upper portions of the large, multi-decked vessel discovered within the landfill deposits of 175 Water Street—formerly known as "The Ronson Ship" and now identified as the 18th century vessel, *Princess Carolina*—was identified at a shallower depth of approximately 8 to 9 feet below the ground surface as the upper portions of that ship remained intact (Soil Systems 1983; Riess and Smith 2015).

HISTORIC INFRASTRUCTURE

Despite its status as one of America's largest and most industrial cities, New York did not have a reliable network of water and sewer lines until the mid-19th century. The first water pipes were installed in the early 19th century by the Manhattan Company, the precursor to what would later become the Chase Manhattan Bank (Koeppel 2000). These wooden pipes carried water from local sources to other areas of Lower Manhattan. 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). Previous research into the historic occupation and development of the East River waterfront has resulted in the documentation of early-19th century wooden water pipes representing some of the earliest infrastructure in Manhattan's streetbeds (Chrysalis Archaeological Consultants 2007).

The initial water supply system could not be sustained for very long because local water sources became too polluted for continued use. 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 most of Lower Manhattan. Although water lines were present by 1842, sewers were not installed throughout the majority of the city until after the 1850s and many buildings were not immediately connected to the sewers after their initial installation (Goldman 1997). Therefore, historic properties that were developed before water and sewer networks were accessible in the mid-19th century relied on backyard shaft features (e.g., privies, cisterns, and wells) for the purposes of water gathering and sanitation. Privies—the shaft features constructed beneath outhouses—are typically expected to be located at the rear of the historic property while wells and cisterns are typically located closer to a dwelling. These features would have remained in use until municipal water and sewer networks became available in the mid- to late-19th century, and possibly for decades after and were typically filled with refuse either during or following their periods of active use. Poorly maintained buildings in the vicinity of the project sites that were not connected to municipal sewer lines are known to have continued to use privies and rear-yard shaft features through the mid-1860s at least (Smith 1864). Similarly, the sewer infrastructure installed in the previous decades was reported to have been failing by 1864 (ibid).

B. PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS WITHIN AND IN THE VICINITY OF THE PROJECT SITES

TWO BRIDGES URBAN RENEWAL AREA (BLOCK 248, LOTS 15 AND 76) (1995)

In 1995, Historical Perspectives, Inc. (HPI) prepared a Phase 1A study that analyzed the development history and archaeological sensitivity of the portion of Site 4 (4A/4B) that includes Block 248, Lots 15 and 76. The Phase 1A was prepared in connection with the development of the buildings that currently occupy those lots, though the study area was vacant at the time of the study's preparation. The study identified two locations where historic lots had not been disturbed by 20th century building activities including excavation for the construction of basements and the installation of fuel tanks or other utilities: Area 1, comprising historic lots 20 through 23, and Area 2, comprising historic lots 64, 65, 78, and 79. The Phase 1A determined that both areas were under the water of the East River before 1803. The report determined that at least 10 feet of fill material are present across the 1995 study area and that wood was identified in a single soil boring at a depth of 15 to 17 feet below ground surface.

The 1995 Phase 1A determined that Areas 1 and 2 possessed low sensitivity for precontact archaeological resources as a result of inundation, tidal action, dredging, and the construction and demolition of buildings. The Phase 1A also concluded that early waterfront structures within the two areas were likely disturbed by later episodes of building construction and utility installation. The report concluded that it was unlikely that historic shipwrecks would be present within the study area. The study recommended archaeological monitoring in the northern portion of Lot 15—where a 1-story building currently rests on a pile foundation—during excavation associated with the placement of pile caps to confirm the presence or absence of landfill-retaining structures and remnants from a 19th century iron foundry that was formerly located on the project site. There is no indication that this monitoring occurred.

ARCHAEOLOGICAL INVESTIGATIONS AT RUTGERS SLIP (2009-2012)

In 2009, AKRF, Inc. prepared a Phase 1A study of the streetbed of Rutgers Slip between Cherry and South Streets. The study documented the extensive history of Rutgers Slip and its transformation from an active 19th century slip to a modern urban streetbed. The historic boundaries of Rutgers Slip include both the modern streetbed and the western portion of Block 247/Site 5. As described in the Phase 1A, Rutgers Slip was gradually filled between the 1760s and 1850s as waterfront land along the East River was expanded through the addition of landfill and landfill-retaining structures. The landfilling process resulted in the incorporation of waterfront structures (e.g., wharves, docks, and piers) into what is now developed land. As a result the Phase 1A determined that Rutgers Slip was sensitive for archaeological resources associated with landfilling activities, including both fill deposits and landfill-retaining structures. The potentially archaeologically sensitive soils were determined to be located at depths greater than 2 feet below the ground surface except in the locations of utility lines.

During the construction of the Rutgers Slip project in 2011, landfill-retaining structures were observed within the streetbed of Rutgers Slip (AKRF 2012). The feature was encountered at a depth of 6 feet below the ground surface. The feature was determined to be a wooden (pitch pine and white pine) crib structure filled with soil, cobbles, and a low concentration of historic artifacts possibly dating to the 1830s. Though attempts were made to determine the age of the feature through dendrochronological analysis, the wooden timbers could not be accurately dated. Given the inability to date the feature and the low numbers of artifacts recovered from the vicinity, it was determined that the feature was not significant or eligible for listing on the State and National Registers of Historic Places and no additional archaeological analysis was recommended for the feature, although monitoring was recommended for other areas within Rutgers Slip (ibid).

RECONSTRUCTION OF THE EAST RIVER ESPLANADE AND PIER 42 (2007-2015)

The City of New York is currently redeveloping Pier 42 in association with the modification of an earlier plan for the pier that was proposed as part of the East River Esplanade and Piers Project (Esplanade Project). Designed by the City of New York, the Esplanade Project was to improve a two-mile-long, City-owned public open space connecting the Whitehall Ferry Terminal and Peter Minuit Plaza on the south to East River Park to the north. In May 2007, the Lower Manhattan Development Corporation (LMDC) issued a final environmental impact statement (FEIS) for the Esplanade Project. As part of that FEIS, in 2007, HPI completed Phase 1A Archaeological Documentary Studies of that project site. The area analyzed by HPI included the location of the FDR Drive, including the areas immediately to the south of the Two Bridges project sites (HPI 2007a), and many of the adjacent piers and wharves that line the East River Waterfront (HPI 2007b). In the vicinity of the Two Bridges project sites, HPI determined that the location of the FDR Drive west of Rutgers Slip was archaeologically sensitive for precontact archaeological resources. The northern portion of the FDR Drive west of Rutgers Slip was also determined to be sensitive for river bottom remains. Finally, the northern half of the FDR Drive between Pike Slip and Clinton Street was identified as sensitive for archaeological resources associated with landfilling and landfill-retaining structures.

Pier 42 is located one block east of Site 6A. A disturbance memorandum and preliminary archaeological assessment of the pier and the adjacent section of East River Park to the north was completed by AKRF, Inc. in 2015. The memorandum concluded that portions of the Pier 42 site were sensitive for historic period archaeological resources associated with 18th and 19th century infrastructure and sanitation, including wooden water mains and shaft features such as privies, cisterns, and wells. The site was also determined to be highly sensitive for landfill deposits and landfill-retaining structures associated with the expansion of the waterfront in the vicinity of the Pier 42 site.

EAST RIVER WATERFRONT ACCESS PROJECT: RECONSTRUCTION OF MONTGOMERY STREET (2009)

In 2009, AKRF completed a Phase 1A study of the streetbed of Montgomery Street between Madison and South Streets as part of LMDC's East River Waterfront Access project. The Phase 1A determined that the streetbed of Montgomery Street was sensitive for historic period archaeological resources including landfill-retaining structures within Montgomery Street between Water and Front Streets and in the locations of historic rear yards the were present within the study area before Montgomery Street was constructed and expanded. The archaeologically sensitive depths were determined to be situated at depths greater than 2 feet below the ground surface (AKRF 2009b).

PIKE AND ALLEN STREET CENTER MEDIAN RECONSTRUCTION (2010)

In association with the reconstruction of center medians, an extensive Phase 1A study of the streetbed of Pike and Allen Streets between Delancey Street and South Street was completed by AKRF in 2010. The portion of that study area situated between Cherry and South Streets shared a development history similar to that of the Two Bridges project Sites 4 (4A/4B), 5, and 6A. That area had historically been inundated by the East River or marshland and was subsequently developed with waterfront structures including wharves, docks, and piers as well as Pike Slip. The waterfront locations were gradually converted into developable land through the deposition of landfill and the construction of landfill-retaining structures. Those locations within Pike Slip between Cherry and South Streets that were not disturbed by the installation of modern utilities and that were at depths greater than 2 feet beneath the ground surface were determined to be archaeologically sensitive (AKRF 2010).

EAST SIDE COASTAL RESILIENCY (2016)

In 2016, HPI prepared a Phase 1A archaeological documentary study of an extensive area along the East River waterfront between Montgomery Street and 13th Street as part of Phase One of the East Side Coastal Resiliency (ESCR) project, which is designed to increase Manhattan's resiliency against future storm and flooding events. The study area for this Phase 1A study included all or portions of the previously mentioned Montgomery Street and Pier 42 project sites. With the exception of previously disturbed areas (e.g., those locations where buildings with basements had been located), the entire study area was determined to be sensitive for archaeological resources associated with landfill and landfill-retaining structures at depths greater than 2 feet below the ground surface. Additional areas were also identified as sensitive for historic infrastructure associated with former rear yards.

A. CURRENT CONDITIONS

SITE 4 (4A/4B)

Site 4 (4A/4B) is located on the west side of Rutgers Slip, between Cherry Street to the north and South Street to the south (see **Photographs 1**, **2**, **and 3**). The site is currently developd with three buildings. Lot 70, located to the northeast corner of the site, is the location of 80 Rutgers Slip, a 10-story residential building constructed in 1987. The lot includes accessory parking spaces and private open space to the south. Lot 76, to the west of Lot 70, is currently developed with a partially vacant one-story commercial building at 235 Cherry Street, constructed in 1996. Lot 15 is situated at the southern and western sides of Site 4 (4A/4B) and is currently developed with a 21-story residential building at 82 Rutgers Slip that was constructed in 1995 and is accessed by a narrow alley along the western side of the site. A paved playground is located along the southern side of Lot 15, adjacent to South Street. Available maps and building records do not indicate that any of the buildings on Site 4 (4A/4B) were constructed with basements or cellars.[1]

SITE 5

Site 5 comprises Lots 1 and 2 of Block 247 and is located between Cherry Street, South Street, Rutgers Slip, and the de-mapped former alignment of Jefferson Street (see **Photographs 4 and 5**). A portion of the site was previously developed with the "Lands End II development," which includes two 26-story rental apartment buildings at 265 and 275 Cherry Street[2] constructed in 1979; a paved surface parking lot with parking spaces on South Street; a paved area west of the 265 Cherry Street building; and private playgrounds and landscaped seating areas between the two buildings. Site 5 also includes a private open space along the Rutgers Slip block frontage that contains playgrounds, seating areas, and a basketball court. A subway tunnel carrying the F train runs underneath the western portion of Site 5. Ventilation shafts associated with the subway are visible on the ground surface in the vicinity of Rutgers Park along the western side of Site 5. The two structures located on Site 5 do not appear to have been constructed with basements.

SITE 6A

Site 6A is located on the west side of Clinton Street at South Street and comprises Block 246, Lots 1 and 5 (see **Photographs 6 and 7**). Lot 5, which is an irregular-shaped property at the eastern side of Site 6A, is currently vacant and is occupied by paved areas divided with chain link fences. Lot 1, situated on the western side of Site 6A, is occupied by a 19-story residential building (275 South Street) that was

[1] As defined by the New York City Department of Buildings, a basement is defined as a subterranean floor that is 50 percent or more above grade while a cellar is 50 percent or more below grade.

[2] These addresses are those used on current Sanborn maps; data issued by the City of New York in MaPLUTO identifies the address of the two buildings on Block 247, Lot 1 as 251 Cherry Street.

constructed in 1976 as part of the Lands End housing development. There is no indication that this building was constructed with a basement.

All three sites are north of the FDR Drive and the East River bulkhead that lines the East River waterfront in this portion of Manhattan (see **Photograph 8**).

B. 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 (Isachsen, et al. 2000). The vicinity of the project area is composed mostly of metamorphic rock known as Manhattan Schist (Reeds 1925). However, the project site is almost entirely located in an area of artificially created land. 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. Historic maps indicate that the original shoreline's high water mark—the maximum extent of the water at high tide—was located in the vicinity of what is now Cherry Street and the low water mark—the level of the water when the tide was out—was situated in the location of the former line of Water Street, which has been demapped in the location of the project sites (Department of Docks 1873). Therefore, nearly the entire project site is located within an area of landfill reclaimed from the East River (see **Figure 4**).

Recent topographical surveys indicate that the elevation of the project sites is generally level, with a slight downward slope to the south and southeast. Several historic maps include data regarding the elevation of street corner intersections, as presented below in **Table 1**. This suggests that the general grade of the streets surrounding the project sites has remained more or less consistent since the late-19th century with minor differences likely being a result of differences in the datum points from which the elevations were measured.

Table 1
Street Corner Elevations as Identified on Historic Maps

	Elevation at the Intersection of:							
Historic Map	Cherry Street and Rutgers Slip	Water Street and Rutgers Slip	South Street and Rutgers Slip	Cherry Street and Jefferson Street	Water Street and Jefferson Street	South Street and Jefferson Street	Water Street and Clinton Street	South Street and Clinton Street
1885 Robinson	8	n/a	5	8	5	3	12	6
1891 Bromley	8.10	5.3	5	8	5	3.2	12.3	6.3
1922 Sanborn	9	7	4 (west side); 11 (east side)	9	6	4	12	6
1951 Sanborn	9	7	4	9	6	4	12	6
2016 Sanborn	4	n/a	4	9	n/a	4	12	6

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 as it was measured at the time the map was produced.

C. SOILS

The "Web Soil Survey" maintained by the Natural Resources Conservation Service (NRCS) of the United States Department of Agriculture (USDA) indicates that two soil complexes are located in the vicinity of the project site.[1] The first, located across the majority of the portion of the project sites situated north of

[1] https://websoilsurvey.sc.egov.usda.gov

the historic line of Water Street, is referred to as "Urban land, tidal marsh substratum." The typical soil profile for this complex includes up to 20 inches of cement or pavement underlain by very gravelly sand. The southern portion of the project sites, south of the pre-landfill water line, is characterized as "Urban land, reclaimed substratum." The typical profile of this soil type includes 15 inches of cement or pavement over gravelly, sandy loam. Both soil types are typically found in areas with slopes ranging from 0 to 3 percent.

Chapter 5: Precontact Period

In general, Native American habitation sites are most often located in coastal areas with access to marine resources, near fresh water sources and areas of high elevation and level slopes less than 10 to 12 percent (NYAC 1994). Further indication of the potential presence of Native American activity near a project site is indicated by the number of precontact archaeological sites that have been previously identified in the vicinity. While the project sites are almost entirely situated in an area of historic landfill (see **Figures 4**, **5**, **and 6**), documented Native American activity occurred along the coastline in the immediate vicinity of the project sites.

Information regarding such previously identified archaeological sites was obtained from various locations including the site files of OPRHP and NYSM, accessed via the New York State Cultural Resources Information System (CRIS)[1] and published accounts such as R.P. Bolton's 1922 work, *Indian Paths in the Great Metropolis*. These sites are summarized in **Table 2**, below. Because many of these sites were discovered and reported by avocational archaeologists (e.g., Parker 1920, Bolton 1922) in the early 20th century, there is limited descriptive information available.

Table 2
Precontact Archaeological Sites in the Vicinity of the Project Sites

Site Name/ Number	Time Period	Approximate Distance from Project Site	Site Type
Shell Point/Werpoes **NYSM**: 4059	Precontact	0.6 miles	Native American village and shell middens
Nechtanc **NYSM**: 4060	Precontact; Contact	0.3 miles	Native American village used as a retreat during 17th century wars with the Dutch
Sources: The New York State Cultural Resources Information System (CRIS); Parker 1922, and Bolton 1922.			

As described in **Table 2**, two Native American village sites have been identified within one mile of the project sites. The first site, known as "Shell Point" or "Werpoes" (NYSM site #4059) was located north of City Hall Park to the northwest of the project sites. The village was located on a hill known *Kalch Hoeck* adjacent to the Collect Pond, or *Kolch* (Bolton 1922; Bolton 1975). The name *Werpoes* is possibly derived from the word *Wapu*, meaning "a hare" and "Shell Point," likely refers to the many shell middens that covered the site (ibid).

The other village site, most commonly referred to as *Nechtanc*, meaning "sandy place" (Grumet 1981), is also known as *Rechtauck* or *Naghtogack* (Bolton 1922; Bolton 1975). According to Bolton's 1922 map of Native American trails, the village was located atop a large hill, later known as Jones' Hill, in the vicinity of the intersection of Jefferson, Henry, Clinton, and Madison Streets (Bolton 1922). As shown on that map, the village was accessed by a Native American trail that ran approximately along the line of modern East Broadway before making a ninety degree turn and continuing to the south in the approximate location of modern Clinton Street.

[1] Accessible at: https://cris.parks.ny.gov

Nechtanc's high elevation and close proximity to the river's varied resources would have made it an ideal location for a precontact village. Later in the Contact Period, its natural topography also made it an important refuge for the Lower Hudson River Delaware Indians from all over the New York City area. Brutal wars with the Dutch took place in the early 1640s, and forced many Native Americans to flee their homelands. Ultimately, *Nechtanc* was not a safe haven for them, and in 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 *Kapsee*, rocky ledge at the southern end of the island (Grumet 1981, Bolton 1975); *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 roadway—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 offshoots extended from the main road; one traveling northward towards *Werpoes* and the other heading south towards the East River shore in the vicinity of the Brooklyn Bridge (Grumet 1981, Bolton 1922; Bolton 1934).

Chapter 6: The Historic Period

A. INTRODUCTION

This chapter outlines the historical context associated with the development of the East River waterfront as well as the specific development of the project sites, the majority of which are constructed on landfill. The historic period development of the project sites is summarized briefly below and explained in greater detail in the remainder of the chapter:

- Site 4 (4A/4B) is almost entirely situated on landfill. A late-18th century wharf extended into the extreme northwest corner of the site and by 1797, a large wharf owned by Thomas Buchanan had been constructed in the northern half of the site. By 1836, the entire site was filled but was only partially developed. By the mid-19th century, the site was almost entirely developed with industrial buildings and industry/commerce uses remained present on the site through the 20th century.
- Site 5 was adjacent to the property of Henry Rutgers, whose family owned a large farm in the vicinity. Rutgers was granted the water lots on which the project site was situated and was responsible for filling them. Much of the northern portion of this site was filled between 1766 and 1797, although it does not appear to have been developed at that time. The southern half was filled by the 1820s and 1830s. The western portion of the site was an active waterway known as Rutgers Slip that remained open while the adjacent water lots were gradually filled. Like Site (4A/4B), the lots were developed for industrial purposes by the mid-19th century and industry/commerce uses remained present on the site through the 20th century.
- The northwest portion of Site 6A may have been located on the dry land making up the waterfront prior to landfilling activities in the 18th and 19th centuries. Like Site 5, Site 6A was included in an area of water lots that were granted to and filled by Henry Rutgers and his descendants. Landfilling activities in this site did not begin until after 1797 and the lot was completely filled and developed by 1836. As with Sites 4 (4A/4B) and 5, Site 6A was developed with industrial buildings and warehouses through the 20th century.

B. HISTORICAL CONTEXT FOR THE EAST RIVER WATERFRONT

The project sites remained almost entirely under water through the mid-18th century, though the historic period in New York began much earlier than that. Following the period of initial European contact beginning with the arrival of Henry Hudson's voyage in 1609, New York became a Dutch colony (Burrows and Wallace 1999). In 1621, the States-General in the Netherlands chartered the Dutch West India Company (WIC) to consolidate Dutch commercial activities in the Americas. After the English conquest of New Amsterdam in 1664, the colony was renamed "New York" and commerce and trade in the colony increased dramatically under British rule, resulting in the rapid development and expansion of Manhattan's waterfront. 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 **Figures 4 and 5** and **Table 3**), "or the right to build wharves and 'make land' out into the rivers between the low and high water marks, a distance of 200 feet" (Cantwell and Wall 2001: 225). 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 (ibid).

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 as the port of New York rose to prominence in the commercial and industrial networks of the Americas (Albion 1967).

After the Revolutionary War, the American economy expanded as the new country entered new foreign and domestic networks of trade and commerce. New York's shipping and maritime industries were located along the East River waterfront in the 18th and 19th centuries, which was rapidly developed (Albion 1967). 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 augmented. 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 (Burrows and Wallace 1999). In the mid-19th century, the years preceding the American Civil War, "New York City handled two-thirds of America's imports, and dominated exports and passenger trade" (Novek 1992:24). By the early 19th century, landfill had expanded to the location of modern South Street, which was "most intimately connected with things maritime...[with] counting-houses on the north side of the street and opposite them were the East River piers, whence the bowsprits and jibbooms of the ships stretched well across the cobbled street" (Albion 1967:266).

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 (Albion 1967; Burrows and Wallace 1999). The East River waterfront then became the home to other industrial enterprises as the 19th century concluded and the 20th century began. By the mid-20th century, the construction of major municipal infrastructure projects, such as the construction of the FDR Drive and the adjacent piers, and the redevelopment of many blocks with housing complexes dramatically changed the landscape of the East River waterfront.

C. THE DEVELOPMENT OF THE PROJECT SITES IN THE 17TH CENTURY

As the original high water mark was located at modern Cherry Street, the project sites were almost completely inundated by the East River throughout the 17th and 18th centuries (see **Figure 4**). 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 the project sites at that time. Vinckeboons' 1639 map of the New York City area depicts two X-shaped symbols within the East River near the shore in the vicinity of the project sites. Similar symbols are present near the southern tip of Manhattan, where the rocky shoal known as "kapsee" was located, and therefore the symbol may represent rocky areas within the river, although Stokes' (1967) extensive description of the Manatus Map does not identify these symbols.

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, including the area immediately north of the project sites. One of these, known as Bouwery Number 6, was located immediately north of the project sites (Stokes 1967). 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, 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 (ibid).

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 Cornellis 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 VI: 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 sites, was transferred by Stille to Augustine Herman[1] 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 1984).

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 project sites, 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 Payne[2] in 1672 (Stokes 1967). It is possible that Herman sold additional property to the south of the project sites 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 sites, 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.

[1] Also spelled, Augustyne Heermans or Harmans.

[2] Also spelled, Paine.

D. 18TH CENTURY SITE HISTORY

The East River waterfront is clearly depicted in the "Burgis view" depicting conditions circa 1716-1718 (Stokes 1967). 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 sites 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 sites, 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. Harmanus Rutgers, Jr. was a brewer (as was his father) and he grew barley on the property for that purpose (Crosby 1886). At the time of this purchase, the property contained a farm house, barns, and outbuildings. While the locations of these buildings are not known, it is not likely that they would have been located in or near the project sites. The Rutgers farmhouse in later years 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 project sites (ibid). The remainder of the adjacent land, the former upland parcel (including the project sites), was sold to Rutgers by Thomas Fayerweather, the grandson of John Payne, in 1732 (Stokes 1967). With that purchase, Rutgers accumulated a vast estate that would be known as "Rutgers Farm" for decades and that covered the area east of Catherine Street (in addition to several small blocks to the west), south of Division Street, east of Montgomery Street, and included all areas of dry land north of Cherry, Water, and South Streets prior to landfilling activities in that area (see **Figure 5**). 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 later defined as the city's Fourth Ward (Crosby 1886).

Around the time of Harmanus Rutgers, Jr.'s land acquisition, docks and shipyards lined the East River waterfront to the southwest, as seen on the Lyne map of 1731, which does not depict the East River waterfront as far east as the location of the project sites. The absence of the project sites' location on early 18th century maps suggests that there was a lack of significant waterfront development near the project site until the end of the century. A ca. 1735 map known as "Mrs. Buchnerd's Plan" references only a "fishing place" near the project sites and does not depict roads or other development (Augustyn and Cohen 1997). 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 in the vicinity of the project sites, though it does depict a small road that appears to be a precursor to Cherry Street running along the southern edge of the Rutgers farm (ibid). The lack of development in this area may have been the result of the physical separation of the area by the Collect Pond and its associated marshlands and drainage stream, which discharged into the East River in the vicinity of what is now Catherine Street. The Grim map indicates that a second marshy stream formerly ran in the vicinity of the Rutgers Farm. Viele's 1865 map depicting Manhattan's pre-contact landscape also depicts a large tract of marshland in the vicinity of modern Clinton Street and also depicts the land between the high and low water marks as low-lying wetland areas.

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, to the north of Site 6A. Hendrick Rutgers' home and the surrounding area is depicted multiple 18th century lithographs that show undeveloped countryside surrounding the project sites. The newer Rutgers house is also depicted on the Montresor and Ratzer maps published in 1776 but depicting conditions circa 1766 (see **Figure 6**). As seen on the Ratzer map, the Rutgers home was surrounded by landscaped gardens and wooded areas. The beginnings of New York City's maritime industry are also

depicted on the map and the waterfront in the vicinity of the project sites is identified as the site of "ship yards." A small dock is depicted on the map to the northwest of what is now Site 4 (4A/4B). The dock may have partially extended into the project sites in that location, as indicated in HPI's previous Phase 1A study of that site.

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. These water lots were granted to them by the city with the condition that the new owners had to fill in the land and then construct city streets across the landfill (Cantwell and Wall 2001). Henry Rutgers was granted the rights to create land to the south of his family's property, including all of Sites 5 and 6A, in water lot grants that were recorded in 1817 but were likely issued earlier (see **Figure 4** and **Table 3**). The area to the east of Rutgers Slip was also divided into water lots of varying size. Within what is now Site 4 (4A/4B), water lots along the western side of this project site were granted to Thomas Cheeseman in 1772 and the water lots in the central portion of this site were granted to Eve Provost (see **Figure 5**). Holmes's 1874 map of the Rutgers Farm suggests that the water lots immediately adjacent to the western side of Rutgers Slip, originally granted to Hendrick Rutgers and the heirs of Thomas B. Buchanan, had been subdivided into ten smaller parcels that were inherited by Henry Rutgers' four children (see **Figure 5**).

Table 3
Water Lot Grants

Modern Block #	Date	Grantee	Liber/Page	Notes
248	9/9/1772	Hendrick Rutgers	D/256	
248	11/13/1772	Elizabeth, Anthony, and Mary Rutgers and Jacob LeRoy	D/292	see also D/297
248	9/9/1772	Ann Burke	D/217	see also D/220
248	8/19/1772	Thomas Dodge	D/197	see also D/201
248	9/9/1772	Gilbert Pell	D/226	see also D/230
248	8/13/1772	Thomas Cheeseman	D/184	see also D/187
248	9/9/1772	Eve Provoost	D/209	see also D/213
248	2/3/1773	Hendrick Rutgers	D/358	see also D/354
248	8/4/1817	Heirs of Tomas B. Buchanan	F/544	see also F/594
246 and 247	11/28/1806	Hendrick Rutgers	E/296	
246 and 247	5/1/1817	Hendrick Rutgers	F/539	

Note: Historic water lots do not always correspond to modern lot locations and boundaries.
Source: Water lot grantee indices on file at the New York Topographical Bureau.

FORTIFICATION OF THE AREA DURING THE REVOLUTIONARY WAR

During the Revolutionary War (1776 to 1783), Hendrick Rutgers, who allied himself with the American cause before his death in 1779, spent his final years in exile in Albany following the British capture of New York City in 1776 (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). The British constructed multiple fortifications in the vicinity of the project sites and along the East River waterfront.

Samuel Holland's 1776 map of New York City is similar to Ratzer's, though it suggests the presence of two docks to the northwest of Site 4 (4A/4B). The Holland map also depicts fortifications built to the northeast of the project sites atop a tall hill making up much of what is today the Lower East Side. The 1782 British Headquarters Map, drawn towards the end of the Revolutionary War, depicts increased fortifications in this area, which was at the time known as "Jones's Hill" and it also depicts two docks northeast of Site 4 (4A/4B). That map does not depict significant development in the vicinity of the project sites, although additional fortification walls are shown along the waterfront immediately north of

Site 6A. A copy of the British Headquarters map drawn by B.F. Stevens in 1900 depicts a dock prominently projecting from the southern end of the Rutgers property, however, this is not clearly depicted in the original copy of the map. A map published by John Hills the same year reflects the construction of additional battery walls on the tops of the low hills leading down to the water immediately north of the project site south of the former Rutgers property.

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. His siblings, Mary McRea, Catharine Bedlow, and Anne Bancker also received property in the area. Henry Rutgers never married and lived in the house to the northeast of the project sites until his death in 1830, although he gradually sold off small portions of his father's estate before his death (Crosby 1886).

EXPANSION OF THE WATERFRONT AND POST-REVOLUTIONARY GROWTH

With the war over, the development of the waterfront and the expansion of the city intensified and landfilling activities commenced near the project sites. 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 Rutgers Slip was first 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). In 1787, the Common Council noted in their minutes that Thomas Buchanan was constructing a pier along the western side of Rutgers Slip (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."

The 1874 Holmes map depicting conditions on the Rutgers farm circa 1784 and the 1789 McComb map reflect the beginnings of landfill in the vicinity of the project sites. While the Holmes map depicts Cherry Street as continuous, the McComb map indicates that it ran only to the east and west of, but not through, the Rutgers property situated between Rutgers and Clinton Streets. Both maps depict some landfilling south of Cherry Street, though neither suggests that it extended as far as the line of Water Street in all locations. The Holmes map depicts a network of piers to the south of Cherry Street west of Rutgers Slip, where a greater number of water lot grantees were responsible for making land, although the McComb map depicts only one block of landfill or a large wharf west of Rutgers Slip. The Holmes map depicts only two piers to the east of Rutgers Slip in the vicinity of Rutgers' water lots. One pier, situated within the western portion of Site 5, lined the eastern side of the slip and the other lined the western side of the foot of Jefferson Street in the eastern portion of Site 5. Additional filling and dock construction also occurred in the vicinity of Site 6A, west of Clinton Street and south of Cherry and Water Streets.

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 18TH CENTURY

The southward expansion of the East River waterfront continued as the century drew to a close. In 1791, a new bulkhead was proposed in the vicinity of the project sites 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 (see **Figure 7**) depicts a far more orderly waterfront than was seen on previous maps, although it continues to depict only a small amount of landfilling within the project sites, even less than seen on the 1874 Holmes map depicting 1784. Within Site 4 (4A/4B), the 1797 Taylor Roberts plan depicts a block of landfill and Buchanan's former pier to the west of Rutgers Slip and east of "Ackerley's wharf." To the east of the slip, Rutgers' water lots are depicted as filled in to the line of Water Street although the map indicates that the project sites were not developed with structures at that time. As the city's population grew following the end of the Revolutionary War, the East River shipyards were pushed further to the north and east towards Corlear's Hook (Morrison 1909). Samuel Ackerly and Thomas Cheeseman (and his son, Forman), and Thomas Vail were among the first shipbuilders in the post-war city and their ship yards were in the vicinity of what is now Site 4 (4A/4B) (ibid). Ship builder Charles Brownne, would later establish a shipyard near Cherry and Clinton Streets (near Site 6A) where he worked with Forman Cheeseman (ibid). 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 Rutgers 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). No other slips were located in the vicinity of the project sites.

E. THE COMPLETION OF LANDFILLING IN THE 19TH CENTURY

The population surges and post-Revolutionary development that swept through New York in the early 19th century resulted in the division of large farms, including Rutgers', resulting in the rapid urbanization of the Lower East Side. Following the city's expansion in the 19th century, Manhattan was divided into a series of municipal "wards," and the project sites were included in the Seventh Ward. 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. The wharf along the western side of Rutgers Slip appears to have been completed by 1806 (MCC 1784-1831 IV: 249). Maps published early in the 19th century, though not very accurate, depict the increased expansion of the waterfront. An 1804 map published by Bonar appears to suggest that Water Street had been completed in the vicinity of the project sites by that time and that docks and waterfront structures have been built to the south. However the map does not accurately reflect the width of the blocks within the project site. A similar map published by Longworth in 1808 appears somewhat more accurate, but continues to indicate that the blocks between Cherry and Water Street were narrower than they would be in later years. Both maps suggest that some development had occurred south of Water Street by that the newly filled blocks south of Water Street had not yet been developed with structures and may have been 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, which is nearly identical to the 1874 Holmes map purporting to depict 1784 (see **Figure 5**), indicates that the lots on either side of Rutgers Slip barely reached the line of future Water Street. Several piers projected out into the water in the vicinity of Site 4 (4A/4B). A far more substantial pier was situated on the eastern side of Rutgers Slip within Site 5 and a smaller pier was situated to the east at the eastern end of Site 5. At the time, Site 6A was only partially filled along its northern and eastern edges. The 1811 Bridges plan depicting what was then the newly designed city street grid depicts proposed filling in the vicinity of the project sites, which included the filling of Site 4 (4A/4B) as far south as Front Street (which ran in the location of what is now South Street) as well as the filling of Sites 5 and 6A in their entirety with the exception of Rutgers Slip, which was to be left open for continued commercial use.

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). 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). While it is not clear exactly when the city approved the extension of the waterfront in the vicinity of the project sites out to South Street (also referred to as Front Street in this portion 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," likely in or near Site 4 (4A/4B), although it may not be the same store previously belonging to Rutgers (MCC 1784-183 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 and

reprinted in 1881 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 Rutgers 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 was 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 (Site 4 (4A/4B)) and on the east side south of Cherry Street (Sites 5 and 6A). 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). 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 vicinity of the project sites (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 (see **Figure 8**) shows that Sites 4A/4B, 5, and 6A had been filled as far south as Water Street, with many piers and docks stretching out into the river to the south. The map uses shading to designate those blocks that were developed, although it does not indicate the size of structures or the extent to which buildings covered the area. All of the blocks between Cherry and Water Streets are depicted as developed, as is a small area possibly representing a waterfront building within the pier lining Water Street just west of Rutgers 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. Additional shading is depicted in a triangular area near the eastern end of Site 6A southwest of the intersection of Clinton and Water Streets, although limited filling had occurred in that location. Additional development in the immediately vicinity likely occurred after 1825, when 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 waterfront is depicted in a similar manner on the 1828 Morin and 1829 Hooker maps.

By the early 1830s, dramatic landfilling had further extended the waterfront as seen on maps published by Burr in 1832 and 1834, however, these maps may depict a greater amount of proposed development than had actually occurred by that time. The 1836 Colton Map (see **Figure 9**) depicts nearly all of Sites 4 (4A/4B), 5, and 6A as entirely filled between Cherry Street and South Street, which was still known as Front Street. Only Rutgers Slip at the western end of Site 5 remained an active waterway at the time. Like previous maps, the 1836 Colton map uses shading to designate those blocks that were developed with structures and while all of Site 6A was identified as developed, only the extreme northwest corner of Site 4 (4A/4B) and the northern and eastern portions of Site 5 were developed. This lack of development likely reflects the newly filled land, which may not have been stable enough for development at the time.

F. LATE-19TH CENTURY INDUSTRIAL DEVELOPMENT OF THE PROJECT SITES

By the mid-19th century, the newly created land had been intensively developed, largely with commercial and industrial buildings but also with a number of residences. The Dripps map of Manhattan published in 1852 and Perris' atlas published the same year reflect the development of the project sites in the early 1850s. The streets in the vicinity of the project sites were outfitted with water lines as circa 1842, as seen

on Endicott's map of the city's earliest water infrastructure. It is likely that municipal water networks were expanded in the decades that followed and that sewers were added shortly after (Goldman 1997; Koeppel 2000). The 1865 Viele map depicts sewer lines in the streetbeds of pike Slip, Rutgers Slip, and Jefferson Street, all of which appear to have emptied out into the East River. Additional information on historic utilities is presented in **Chapter 3,** "Known Archaeological Concerns in the Vicinity of the Project Sites and Previous Cultural Resources Investigations."

Over the second half of the 19th century and well into the 20th, the lots were developed and redeveloped, often multiple times. The development of the project sites during this time is described in specific detail below. The increased development of the project sites during the second half of the 19th century represented the changing nature of industry along the East River waterfront as the Hudson River grew more prominent in the shipping industry. The neighborhood's transformation was not limited to changes in commerce, however, and a new class of people moved into the area. In the second half of the century, the Seventh Ward, in which the project sites were situated, was notoriously occupied by working class individuals and families, including many 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 within the project sites were occupied by a number of industrial buildings and storage yards for lumber and coal interspersed with structures used for commercial and/or residential purposes. 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" (*New York Times* 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 (*New York Times* 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).

DEVELOPMENT OF SITE 4 (4A/4B) IN THE SECOND HALF OF THE 19TH CENTURY

The development and occupation history of this site is described in HPI's 1995 Phase 1A documentary study of the site, and as such, only a review of map-documented structures will be presented here. Because Water Street originally bisected Site 4 (4A/4B), the site comprised two separate blocks. The northern block, located between Cherry and Water Streets, was developed with a number of what the Perris atlas identified as first, second, and third class brick buildings used for "specially hazardous" purposes.[1] The central portion of the northern half of Site 4 (4A/4B) was developed with an iron foundry

[1] As defined by Perris, first class stores (marked on the map with one solid dot) included any of the following: bakers, boat builders, brewers, brush manufactories, comb makers, copper smiths with forges, dyers, floor cloth manufactories, hat manufactories, malt houses, oil manufactories, oil cloth manufactories, private stables, tobacco manufactories, type and stereotype founders, and wheelwrights. Second class structures (marked with two solid dots) housed book binders, brass founders, coach makers, cotton presses and mills, iron founders, livery stables, paper mills, and book and job printers. Third class buildings (marked with three solid dots) included blind and sash makers, bleaching works, cabinet makers' workshops, carpenter's shops, candle makers, chair maker's workshops, distillers, gas manufactories, flour mills, ink makers (printer's ink),

that is identified on the 1852 Dripps map as the Mayher & Co. Iron Foundry" and on the 1852 Perris atlas as the "Clinton Foundry." An undeveloped lumber yard was also located on this portion of Site 4 (4A/4B) at the southwest corner of Cherry Street and Rutgers Slip. Four of the buildings situated along Water Street in this portion of Site 4 (4A/4B) were also identified as either brick or wood frame dwellings with stores on the ground floor. Fewer buildings were present on the southern half of this site, between Water and South Streets, where several large lumber yards and a spar yard were located. Several first and third class industrial buildings were present on that part of Site 4 (4A/4B) in addition to mixed-use residential buildings with stores on the ground floor.

An updated version of the Perris atlas published in 1857[1] reflects additional industrial and commercial development on Site 4 (4A/4B), as many of the former open yards used for the storage of lumber were partially or entirely developed with new buildings. The 1867 Dripps map reflects a similar level of development. Lloyd's 1867 map of commercial enterprises in Manhattan identified two businesses within Site 4 (4A/4B), including a cooperage at the southwest corner of Rutgers Slip and Cherry Street and an illegible business name along South Street in the vicinity of a lumber yard identified on the 1857 Perris map. The 1879 Bromley atlas does not depict specific building footprints for all lots, but it does suggest that by that time, Site 4 (4A/4B) was almost entirely developed. The map identifies a cooper shop and iron foundry on the northern half of this site. The 1885 Robinson atlas identifies the cooper shop as the property of S.F. Briggs and also identifies a coal yard on the southern half of Site 4 (4A/4B). The 1891 Bromley atlas depicts few changes to this site. By the publication of the 1894 Sanborn map (see **Figure 11A**), all of Site 4 (4A/4B) was developed with a mix of industrial buildings and residential and/or commercial buildings. Subsequent Bromley atlases published in 1897 and 1899 depict few changes to this site.

DEVELOPMENT OF SITE 5 IN THE SECOND HALF OF THE 19TH CENTURY

Like Site 4 (4A/4B), Site 5 was also originally bisected by the former path of Water Street. The 1852 Perris atlas depicts industrial development across the northern half of Site 5. The eastern side of the block between Cherry and Water Streets was undeveloped and occupied by the "Walton, Little & Co. Lumber Yard" and a "Mahogany & Lumber Yard." A rope and cordage manufactory and a stave yard were also identified on the western half of the block, in addition to other industrial structures. The 1852 Dripps map published the same year depicts the block somewhat differently. On that map, the northwestern corner of the block was a largely undeveloped coal yard and the A.H. Wright Iron Foundry was located in the center of the block. The southern block within Site 5 was similarly developed with industrial buildings, including structures identified on the 1852 Perris atlas as an oil and candle manufactory, a sperm oil and candle manufactory, a storage structure possibly associated with the candle manufacturer, and the "New-York Rice Mills." The 1852 Dripps map identifies the oil and candle manufacturing buildings as the property of "Macy & Sons."

The updated 1857 Perris atlas reflects minimal additional industrial development across Site 5. Within the northern half of this site, the former Mahogany and Lumber Yard seen on the 1852 Perris atlas had been redeveloped with a number of industrial or mixed-use commercial and residential structures. The southern

India rubber or gutta percha manufacturers, lamp black and ivory black manufacturers, looking glass and picture frame makers, musical instrument makers, omnibus stables, organ workers, piano forte makers, rectifiers of liquors by fire heat, soap makers, tallow melters or chandlers, or wool mills.

[1] Two copies of this atlas are included in the collection of the New York Public Library's Lionel Pincus and Princess Firyal Map Division, both of which include paste-overs used to update older maps to reflect new development. Therefore, while the publication date of the atlas is identified as 1857, it appears that the paste-overs on at least one version were added at a later date as part of an update to the map.

half of Site 5 continued to be developed with candle manufactories and a rice mill. The 1867 Dripps map identifies the Hacker and Bro. Flour Mill on the northern portion of Site 5 in addition to a coal yard. Lloyd's 1867 map identifies a lumber yard on the eastern end of the northern block within Site 5 and identifies the proprietor of the flour mill property as R. Murray, Jr. The 1879 Bromley map continues to depict the "G.W. Hecker Metropolitan Flour Mills" as well as a machine shop on the northern half of Site 5. Robinson's 1885 atlas depicts an expanded Metropolitan Flour Mill operated by Hecker and identifies a lumber yard, cooperage, and machine shop to the east on the northern half of Site 5. The southern half is depicted on the 1885 map as developed with a number of store houses and other unidentified buildings.

The 1891 Bromley atlas depicts few changes to the northern half of Site 5, although it appears to depict the Metropolitan Flour Mill as a smaller enterprise, with an Argyle Press installed in a building to the west and a marble works constructed in the location of the former machine shop. In the southern half of Site 5, the 1891 map indicates that several buildings along Water Street had been demolished, although the majority of this site continued to be occupied by a warehouse and a number of unidentified brick structures. While the western portion of Site 5 had previously been occupied by an active streetbed, this area is first identified as "Rutgers Park"[1] on the 1893 Bromley atlas. The park is also identified on the 1894 Sanborn map (see **Figure 11B**), all of Site 4 (4A/4B) was developed with a mix of industrial buildings and residential and/or commercial buildings. The remainder of Site 5 is depicted in the same manner as earlier maps, developed with a variety of industrial buildings and possible residential and/or commercial buildings. Subsequent Bromley atlases published in 1897 and 1899 depict few changes to this site.

DEVELOPMENT OF SITE 6A IN THE SECOND HALF OF THE 19TH CENTURY

Of the project sites, Site 6A was the least developed in the mid-19th century. The block bounded by Water, South, Rutgers, and Clinton Streets was developed with a small number of small buildings. The eastern two-thirds of the block were occupied by William Dennistoun's lumber or stave yard which contained three small brick buildings. The western third of the block was developed with a number of buildings but was largely occupied by the Waldon and Young lumber yard. By the publication of the 1857 Perris atlas, nearly the entire block on which Site 6A is situated was redeveloped with a series of large warehouses identified as "Driggs' Stores." A small area at the southeastern portion of the block was developed with a number of small buildings associated with a spar yard and a coal yard. The 1867 Lloyd map continues to identify "M.L. Driggs & Co. Bonded Warehouses" across much of Site 6A. To the west of the Driggs warehouses were the "Miller and Conger Bonded Warehouse" and in the less developed southeastern corner were a cooperage and other small businesses. These warehouses are simply labeled "Store Houses" on the 1879 Bromley map. The 1885 Robinson atlas identifies the warehouses at the western end of this site as "E.F. Driggs & Co. Bonded Warehouses," which were adjacent to warehouses owned by "M.S. Driggs & Co. Bonded & Free Storage." The southeastern corner remained developed with a coal yard and a number of small wood frame buildings. The 1891 Bromley atlas depicts few changes to Site 6A. The 1894 Sanborn map (see **Figure 11B**) similarly depicts few changes, although it does reflect the redevelopment of the southeastern corner of the block with large wood frame structure that were likely built to protect the coal yard and to provide storage for a lime and cement company. Subsequent Bromley atlases published in 1897 and 1899 depict few changes to this project site.

[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," (*New York Times* 1894).

SUMMARY OF KNOWN RESIDENTS IN THE VICINITY OF THE PROJECT SITES IN THE FIRST HALF OF THE 19TH CENTURY

HPI's 1995 Phase 1A study of portions of Site 4 (4A/4B) concluded that the majority of the buildings located within that site were occupied by commercial and industrial tenants and were not used as residences. While some residences were present on the project sites, many along Rutgers Slip, an overwhelming number of the buildings within the project sites were not the site of dwellings or residences. A search of historic directories was completed for two areas within the central portion of Site 5 in an attempt to identify potential tenants prior to 1860. The two areas that were examined were not redeveloped with buildings with basements according to map research and building records. The first area was located on the northern block within Site 5 and included the properties at 269 to 275 Cherry Street and 524 to 530 Water Street, which are depicted on the 1852 Perris atlas as an industrial building and a lumber yard. The second area was located along the southern side of Water Street and included the properties between 523 and 529 Water Street,[1] which are depicted on the 1852 Perris map as an oil and candle factory. Historic directories indicate that these street numbers were consistently used dating back to at least 1830. As shown in **Appendix A**, all of the tenants identified in early directories were associated with the commercial or industrial use of these properties with several dating back to the 1820s and 1830s. The majority of the individuals who worked on these lots lived elsewhere and there is therefore little documentation of the residential occupation of portions of Site 6A that were not subject to later disturbance as a result of the construction of buildings with basements.

G. EARLY- TO MID-20TH CENTURY SITE HISTORIES

CONTINUED INDUSTRIAL REDEVELOPMENT BEFORE THE 1950S

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" (*New York Times* 1901: SM10). 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). Sanborn maps published in 1903 depict Sites 5 and 6A in nearly the same manner as the 1894 Sanborn maps, with the exception of minor changes to some buildings. Site 4 (4A/4B) experienced greater changes, with many smaller buildings demolished and replaced with larger structures covering multiple lots. Similar changes appear on atlases published by Bromley in 1911, 1916, and 1921, which indicate that many of the 19th century industrial facilities on the project sites were torn down and replaced with large garages and factories or more modern tenement buildings. The 1922 Sanborn map (see **Figure 12**) reflects the diversity of the neighborhood in the first decades of the 20th century. By then, many of the buildings located on the project sites had been constructed with basements, likely resulting in the disturbance of any ground surfaces associated with earlier period of occupation and the upper levels of any landfill-retaining structures. Furthermore, many of the buildings that did not have basements are identified on the Sanborns as having multiple buried gas tanks. Additional gas tanks have been identified on the project sites, including six buried 550-gallon underground storage tanks on Site 4 (4A/4B), Lot 76, which are believed to have been removed in 1995 (AKRF 2016); a number of underground storage tanks on Site 5 that were likely removed in the 1970s (Northgate Environmental 2013); and a 20,000-gallon fuel tank still present on Site 6A (AKRF 2017). Few changes to the project sites are depicted on Bromley atlases published in

[1] Later Sanborn maps also identify this area as 517 and/or 519 Water Street, although earlier maps and historic records suggest that those numbers were assigned to the properties to the west.

1925, 1927, and 1930. The 1951 Sanborn map indicates that the project sites had been further subject to industrial redevelopment, with a greater number of older buildings demolished and replaced with larger garages or warehouses.

THE CONSTRUCTION OF THE EXISTING SUBWAY TUNNEL BENEATH RUTGERS SLIP

Within Rutgers Park, the former Rutgers Slip, at the western end of Site 5, some notable developments occurred in the 1930s. A 1934 Bromley atlas depicts increased development within Rutgers Park, including the construction of two buildings within the park and a subway tunnel beneath both 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 (*New York Times* 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 (*The New York Times* 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). This method involved the construction of a tunnel at a great depth between two vertical shafts that are used for the entry and exit of the tunnel boring machine (the exact location of the entry and exit shafts used for the construction of this tunnel are unknown). 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 construction of the subway tunnel did not have any apparent impact on the surface of Rutgers Street or Rutgers Park, however, a large subsurface fan plant is situated beneath the surface of the southern end of the park. Ventilation shafts associated with the fan plant are visible at the southern end of the park. No changes are visible on a Sanborn map dating to 1951 or a Bromley atlas published in 1955.

H. LARGE-SCALE HOUSING DEVELOPMENTS AND INFRASTRUCTURE IMPROVEMENTS IN THE SECOND HALF OF THE 20TH CENTURY

The second half of the 20th century brought about dramatic changes to the project sites and the surrounding area. Large-scale city initiatives were implemented that removed outdated industrial and tenement buildings across the Lower East Side and replaced them with massive housing projects. The FDR Drive was constructed along an elevated viaduct to the south of the project sites in the mid-1950s and is depicted on the 1955 Bromley atlas as an "elevated public highway." The LaGuardia Houses development was constructed to the north of the project sites in the 1950s and 1960s. The development of the individual project sites during the second half of the 20th century is summarized below.

DEVELOPMENT OF SITE 4 (4A/4B) IN THE SECOND HALF OF THE 20TH CENTURY

The 1968 Sanborn map continues to depict the previously described industrial buildings on Site 4 (4A/4B) although the map does indicate that the buildings at the southwest corner of this site were demolished by that time. By the publication of the 1976 Sanborn map, all of the buildings across the southern half of this site had been razed. Between the publication of Sanborn maps in 1980 and 1983, the parcels to the west of Site 4 (4A/4B) were combined and redeveloped with a large supermarket. As a result of this development, Water Street was demapped west of this site but remained an active roadway through Site 4 (4A/4B) itself, connecting it to Rutgers Slip to the east. In 1987, when the existing 10-story building was constructed, the buildings in the northern half of this site were demolished and the existing building was constructed on Lot 70. At that time, Water Street was de-mapped through this site and redeveloped. Sanborn maps published in the late 1980s and early 1990s indicate that the remainder of Site 4 (4A/4B) was used for the storage of equipment. As described previously, the existing 21-story building was constructed on the southern portion (Lot 15) of Site 4 (4A/4B) in 1995 and the 1-story building on Lot 76 was constructed the following year.

DEVELOPMENT OF SITE 5 IN THE SECOND HALF OF THE 20TH CENTURY

The industrial buildings located on Site 5 remained on this site through at least 1968, the last year that a Sanborn map depicts this site as fully developed. By the publication of the 1976 Sanborn map, the Lands End housing complex had been constructed to the east. As part of the transformation of the area in association with the construction of new housing developments, many of the buildings on Site 5 had been demolished. The southern half of Site 5 was almost entirely vacant by that point with the exception of the buildings located along the eastern side of Rutgers Slip. Several buildings within the northern half of this site also continued to stand. However, by the publication of a 1977 Sanborn map, all of the buildings on Site 5 had been demolished. The following year, the existing 26-story structures on the site—also known as Lands End II—were built and Water Street was de-mapped through the area. The western portion of Site 5 appears to have been developed with the existing raised park at the same time. A small comfort station was formerly located near the northwestern portion of the park that is last depicted on a Sanborn map published in 1988.

DEVELOPMENT OF SITE 6A IN THE SECOND HALF OF THE 20TH CENTURY

The 1968 Sanborn map continues to depict the formerly described industrial buildings and warehouses on the block on which Site 6A is situated. All of the buildings on this site at that time were constructed with basements, with the exception of the former coal yard near the southeastern corner of Block 246, which by 1951 had been redeveloped with a gas station and automobile repair shop. By the publication of the 1976 Sanborn map, all of Site 6A and nearly all of Block 246 had been razed in association with the construction of the Lands End housing building within Site 6A. The only structure left standing on the

block was the structure associated with the Catskill Aqueduct located immediately southeast of Site 6A on Block 246. Sanborn maps published in the 1980s and 1990s identify the undeveloped areas within the remainder of Site 6A as playgrounds and parking lots.

Chapter 7: Conclusions and Recommendations

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 photographs and lithographs, newspaper articles, and local histories. The information provided by these sources was analyzed to reach the following conclusions.

ASSESSMENT OF PREVIOUS DISTURBANCE

Prior to landfilling and development, the northern portions of the project sites would have been situated between the original high and low water marks and therefore would have been exposed land during low tide, potentially resulting in the natural disturbance and modification of the shoreline as a result of tidal activity. Subsequent dredging and waterfront construction during the project sites' use as an active waterfront would have resulted in additional disturbance to the river bottom prior to the advancement of landfilling activities. The specific development-related disturbances for each project site are summarized in greater detail below.

SITE 4 (4A/4B) DISTURBANCE ASSESSMENT

As described previously, the archaeological sensitivity of the majority of Site 4 (4A/4B) was previously assessed in a Phase 1A study prepared by HPI in 1995. That study determined that all but two locations within the site were previously disturbed. Undisturbed Area 1 was defined as four historic lots (20, 21, 22, and 23) at the southeast corner of the site, and Undisturbed Area 2 was defined as four historic lots (64, 65, 77, and 78) within modern Lot 76. Monitoring was recommended in both locations, although there is no record that this monitoring actually occurred prior to the construction of the existing buildings on Lots 70 and 76. The construction of those buildings in the mid-1990s would therefore have resulted in extensive disturbance to both shallow and deeply buried archaeological resources. While the existing buildings were not constructed with basements, the foundations for the 10- and 21-story buildings were substantial and were reported to have involved the driving of piles, suggesting that disturbance within the footprint of the existing buildings was very deep (HPI 1995).

Prior to the construction of the existing buildings, Site 4 (4A/4B) was divided into northern and southern halves by the former line of Water Street, which is now de-mapped through the area. With the exception of the extreme southeast corner of this site, all of the buildings that formerly stood on Site 4 (4A/4B) were constructed with basements/cellars as indicated either on historic maps or in historic building records (see **Figure 13**). Disturbance associated with the excavation of basements and cellars is expected to extend to depths of approximately 10 feet below the ground surface. The former streetbed of Water Street would have contained (and likely still contains) a number of historic utility lines, including water, sewer, and gas mains. Depending on the depths and extent of these utility lines, portions of the streetbed could be disturbed between depths of 2 to 10 feet or more below the ground surface. Utility-related disturbance is considered to extend from the ground surface to a depth of 1 to 2 feet below the bottom of the utility line and to a horizontal distance of 1 to 2 feet on either side, beyond the outer edges of each utility line, representing the trench that was likely dug as part of the line's installation. Any location where no utilities

are present or where there is a space of 5 feet or more between the outer edges of existing utilities should be considered undisturbed. Those locations beneath the disturbed portions of existing utility trenches are also considered undisturbed. Disturbance associated with the construction and maintenance of the street paving itself is expected to extend to depths of up to 2 feet below the ground surface.

SITE 5 DISTURBANCE ASSESSMENT

Like Site 4 (4A/4B), Site 5 has experienced disturbance as a result of the construction and demolition of buildings, the excavation of basements, and the installation of utilities. Site 5 experienced less disturbance as a result of the construction of historic buildings with basements, although many of the buildings previously located on this site that did not have basements had underground fuel storage tanks (see **Figure 13**). Furthermore, the 26-story buildings on this site do not have basements, but they are expected to have substantial support foundations. As with Site 4 (4A/4B), Site 5 was formerly bisected by Water Street, which historically contained utility lines supplying buildings in the vicinity. Finally, while the subway tunnel that runs beneath Site 5 was constructed via tunneling, ventilation shafts associated with the tunnel are present within Rutgers Park and a large subsurface fan plant is located beneath the southern end of the park. The excavation and construction of those shafts and the fan plant would have resulted in additional disturbance to great depths. In addition, while the full extent of utility-related disturbance across the site is unknown, a 4 foot by 2.6 foot sewer main runs through the western side of Rutgers Park and connects to a larger 4 foot by 5 foot brick sewer that angles around the existing fan plant at the southern end of the park. The southern sewer connection is situated at a depth of approximately 8 feet below grade and connects to sewer infrastructure in South Street.

SITE 6A DISTURBANCE ASSESSMENT

Nearly all of Site 6A was previously disturbed by the construction of historic buildings with basements with the exception of a small area in the southeast corner, where a filling station with subsurface gas tanks was present. The existing building on this site does not have a basement but is expected to have a deep foundation. The northern portion of Site 6A includes the former streetbed of Water Street, which would have experienced utility-related disturbance as described for Sites 4 (4A/4B) and 5.

PRECONTACT SENSITIVITY ASSESSMENT

The majority of the project sites were within the East River until landfilling activities in the early 19th century extended the shoreline towards the project sites. As mentioned previously, the northern portions of the project sites were exposed land during low tide and it is likely that the project sites would have been dry, inhabitable land before the rise of sea levels that created Manhattan's shoreline several thousand years ago. However, any potential Native American archaeological resources in the vicinity that might have survived disturbance associated with dredging activities and the construction of docks, piers, and wharves (which would have required the driving of piles) would be very deeply buried. Therefore, because of previous disturbance, the project sites are considered to have low sensitivity for precontact archaeological resources.

HISTORIC SENSITIVITY ASSESSMENT

The landfill forming the majority of the project sites was constructed gradually beginning in the 1780s and continuing through the first half of the 19th century. By the 1850s, the project sites were developed with streets and historic blocks containing numerous structures, most of which were used for industrial/commercial purposes. As described in **Chapter 3**, "Known Archaeological Concerns in the Vicinity of the Project Sites and Previous Cultural Resources Investigations," three types of archaeological resources are known to be present in similar contexts along the East River waterfront:

landfill and landfill-retaining structures; historic utilities, including wooden water pipes; and historic shaft features associated with the occupation of the area before municipal water and sewer networks were installed in the 1840s and 1850s. The sensitivity determinations for each type of resource are summarized in **Table 4** and explained in greater detail in the following section.

Table 4
Summary of Historic Period Archaeological Sensitivity

Project Site	Sensitivity for Landfill/Landfill-Retaining Structures	Sensitivity for Wooden Water Mains and Streetbed Deposits	Sensitivity for Historic Shaft Features
Site 4 (4A/4B)	Low	Low	Low
Site 5	Moderate to high beneath areas of disturbance	Low to moderate in undisturbed portions of former streetbeds	Low
Site 6A	Moderate to high beneath areas of disturbance	Low to moderate in undisturbed portions of former streetbeds	Low

SENSITIVITY FOR LANDFILL AND LANDFILL-RETAINING STRUCTURES

All three project sites are wholly or partially situated on ground made up of landfill and landfill-retaining structures, although past disturbance has resulted in varying sensitivity at varying depths as described below:

- Site 4 (4A/4B) has experienced extensive disturbance as a result of the construction of buildings with basements in the 19th and 20th centuries, as well as the construction of the existing buildings on this site. As described above and in HPI's 1995 Phase 1A of a portion of Site 4 (4A/4B), extensive disturbance has occurred in this location. Therefore, Site 4 (4A/4B) is determined to have low sensitivity for archaeological resources associated with landfill and landfill-retaining structures.
- Site 5 experienced some disturbance as a result of the construction of both historic and modern buildings, however, deeply buried landfill and landfill-retaining structures may be present within this site outside of the footprints of the existing buildings and beneath previous disturbance associated with basement excavation and utility installation. The western portion of Site 5, the location of Rutgers Park, is the location of an 18th and 19th century slip which may not have been fully disturbed as a result of subway construction and utility installation. Therefore, Site 5 is determined to have moderate to high sensitivity for archaeological resources associated with landfill and landfill-retaining structures beneath the depths of existing disturbance.
- Site 6A may also contain deeply buried landfill and landfill-retaining structures outside of the footprints of the existing building and beneath previous disturbance associated with basement excavation and utility installation. Therefore, Site 6A is determined to have moderate to high sensitivity for archaeological resources associated with landfill and landfill-retaining structures beneath the depths of existing disturbance.

WOODEN WATER MAINS AND ARTIFACT DEPOSITS WITHIN HISTORIC STREETBEDS

Undisturbed portions of the former Water Street streetbed and portions of the historic streetbeds of both Rutgers Slip and Jefferson Street could potentially contain wooden water mains or other concentrations of historic period artifacts within 5 to 10 feet of the existing ground surface. Much of the former streetbed of Water Street on Site 4 (4A/4B) is situated within the footprints of the existing buildings and as noted above, these areas are considered to be disturbed. Therefore, Site 4 (4A/4B) is determined to have low sensitivity for archaeological resources associated with wooden water mains and streetbed artifact deposits. Those portions of the former Water Street, Rutgers Slip, and Jefferson Street streetbeds within Sites 5 and 6A that are outside the footprints of existing buildings are considered to have low to moderate

sensitivity for these types of archaeological resources in areas that have not been disturbed by modern utilities.

HISTORIC SHAFT FEATURES

The following sensitivity determinations have been made with respect to historic shaft features:

- Site 4 (4A/4B) was extensively disturbed as a result of the construction of historic and modern buildings. While the northern portion of this site may have contained residential dwellings that featured shaft features in their rear yards, the extensive disturbance on this site as a result of its industrial use and its subsequent redevelopment with large-scale housing projects would likely have disturbed shaft features within this site. Site 4 (4A/4B) is therefore determined to have low sensitivity for intact historic period shaft features.
- Portions of Site 5 were disturbed as a result of the construction of historic buildings with basements as well as the existing buildings situated on this site. Two areas within Site 5 situated between the existing 26-story buildings do not appear to have been disturbed as a result of basement construction: the properties historically at 269 to 275 Cherry Street and 524 to 530 Water Street, and the properties at 517 to 529 Water Street. By the publication of the 1852 Perris atlas, the northern area was developed with an industrial building and a lumber yard and the southern area was developed with an oil and candle factory. Historic directories do not clearly identify the presence of residential tenants on either area prior to this time and it is unknown if the lots were ever used for residential purposes. Therefore, Site 5 is also determined to have low sensitivity for historic period shaft features.
- Site 6A was also extensively disturbed as a result of the construction of historic and modern buildings. Historic maps reflect little development on this site in the 1830s through the 1850s prior to the construction of a series of large warehouses across most of this site. Site 6A is therefore determined to have low sensitivity for intact historic period shaft features.

B. RECOMMENDATIONS

Undisturbed areas within Sites 5 and 6A have been identified as having moderate to high sensitivity for archaeological resources associated with landfill and landfill-retaining structures at varying depths, while Site 4 (4A/4B) has been determined to have low sensitivity for those types of resources. In addition, undisturbed portions of the current and former streetbeds of Water Street, Rutgers Slip, and Jefferson Street within Sites 5 and 6A have been identified as having low to moderate sensitivity for wooden water pipes and streetbed artifact deposits (see **Figure 13**). The following recommendations have therefore been made for further archaeological analysis within the three project sites.

SITE 4 (4A/4B)

Site 4 (4A/4B) has been extensively disturbed. As seen in **Figure 3**, the proposed project would result in the construction of a new residential building between and cantilevering over the existing buildings as well as open space improvements elsewhere on this site. Given the extensive disturbance that has occurred across Site 4 (4A/4B) and in the vicinity of the proposed building in particular, no additional archaeological analysis is recommended. However, it is recommended that an Archaeological Unanticipated Discoveries Plan be prepared for this site, in the event that intact landfill-retaining structures, wooden water pipes, or other archaeological deposits are encountered during construction. The plan would outline the steps that would be taken to document any unanticipated resources as well as all necessary coordination with LPC and other involved agencies. Additional archaeological analysis would only be required in the event that intact landfill-retaining structures or landfill deposits are encountered

during construction. In the event that no such archaeological resources are encountered, no additional archaeological analysis would be recommended on Site 4 (4A/4B).

SITE 5

Site 5 has been identified as having moderate to high sensitivity for landfill and landfill-retaining structures beneath the depth of previous disturbance and low to moderate sensitivity for wooden water pipes and streetbed deposits within undisturbed portions of the former streetbeds of Water Street, Rutgers Slip, and Jefferson Street. As currently proposed, two new towers on a shared base would be constructed along the southern portion of Site 5 and landscaping and open space improvements would occur elsewhere on this site (see **Figure 3**). Given the depth of potential landfill resources—which may be more than 10 feet below the ground surface in areas disturbed by previous basement excavation—archaeological monitoring is recommended during excavation associated with the construction of the new building to document any archaeological resources encountered. In the event that disturbance greater than 2 feet below the ground surface would occur elsewhere on Site 5 in areas that have not been disturbed as a result of utility installation of basement excavation, additional monitoring would be necessary depending on the location and potential depth of disturbance of the proposed work. Prior to the start of archaeological monitoring, an Archaeological Monitoring Plan will be prepared in consultation with LPC that will outline the scope of work of the proposed monitoring.

SITE 6A

Site 6A has been identified as having moderate to high sensitivity for landfill and landfill-retaining structures beneath the depth of previous disturbance and moderate sensitivity for wooden water pipes and streetbed deposits within undisturbed portions of the former streetbed of Water Street. At present, development associated with the proposed project would occur only on Lot 5, the eastern portion of Site 6A (see **Figure 3**). Given the depth of potential landfill resources—which may be more than 10 feet below the ground surface in areas disturbed by previous basement excavation—archaeological monitoring is recommended during excavation associated with the construction of the new building to document any archaeological resources encountered. Resources associated with the former streetbed of Water Street would be expected to be encountered at shallower depths, within 10 feet of the ground surface. The extent to which that area has already been disturbed as a result of utility installation and would be disturbed as a result of the proposed project are unknown. Therefore, monitoring is recommended in that location in the event that the final project plans would result in the disturbance of that area. Prior to the start of archaeological monitoring, an Archaeological Monitoring Plan will be prepared in consultation with LPC that will outline the scope of work of the proposed monitoring.

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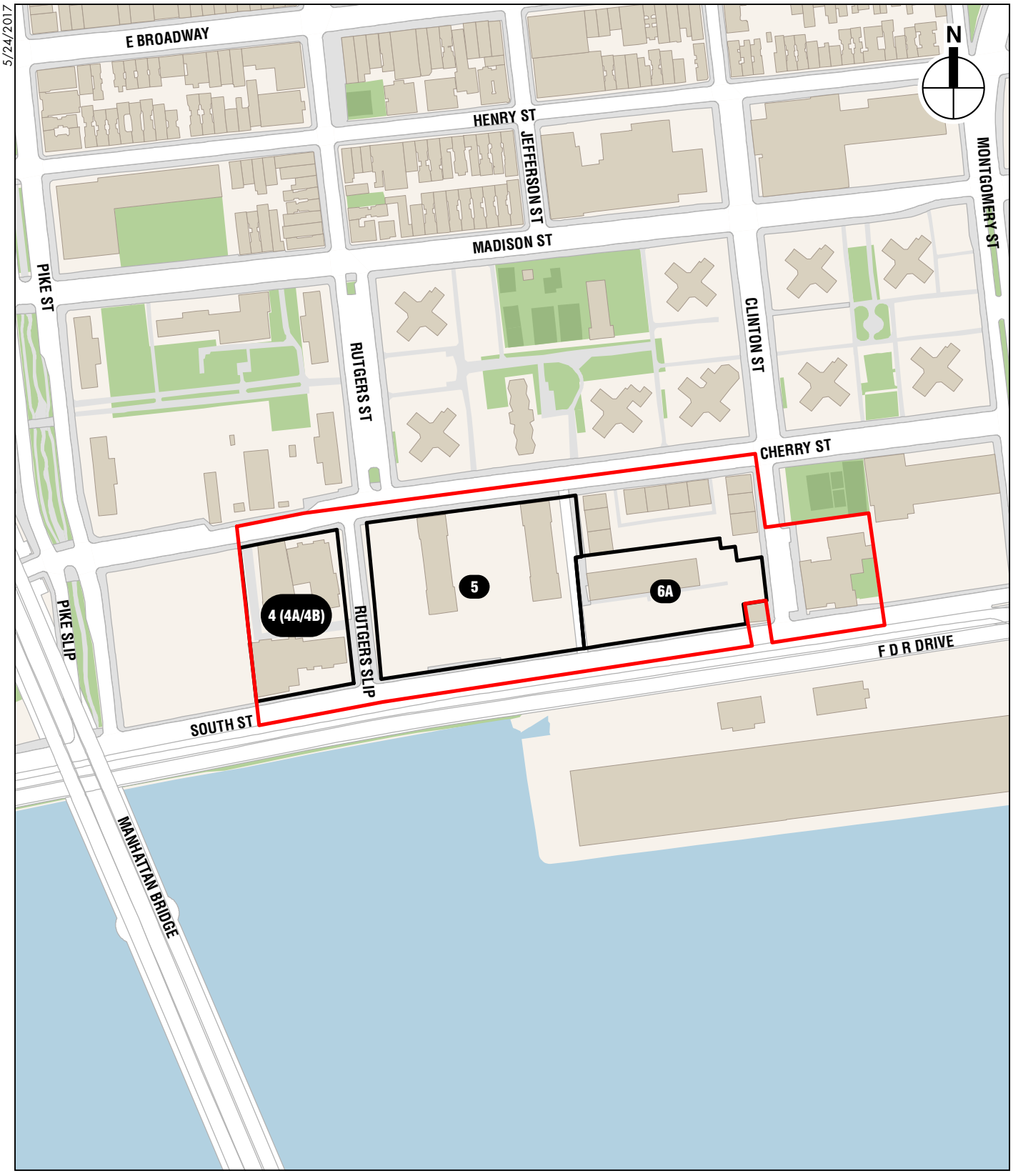
Figures

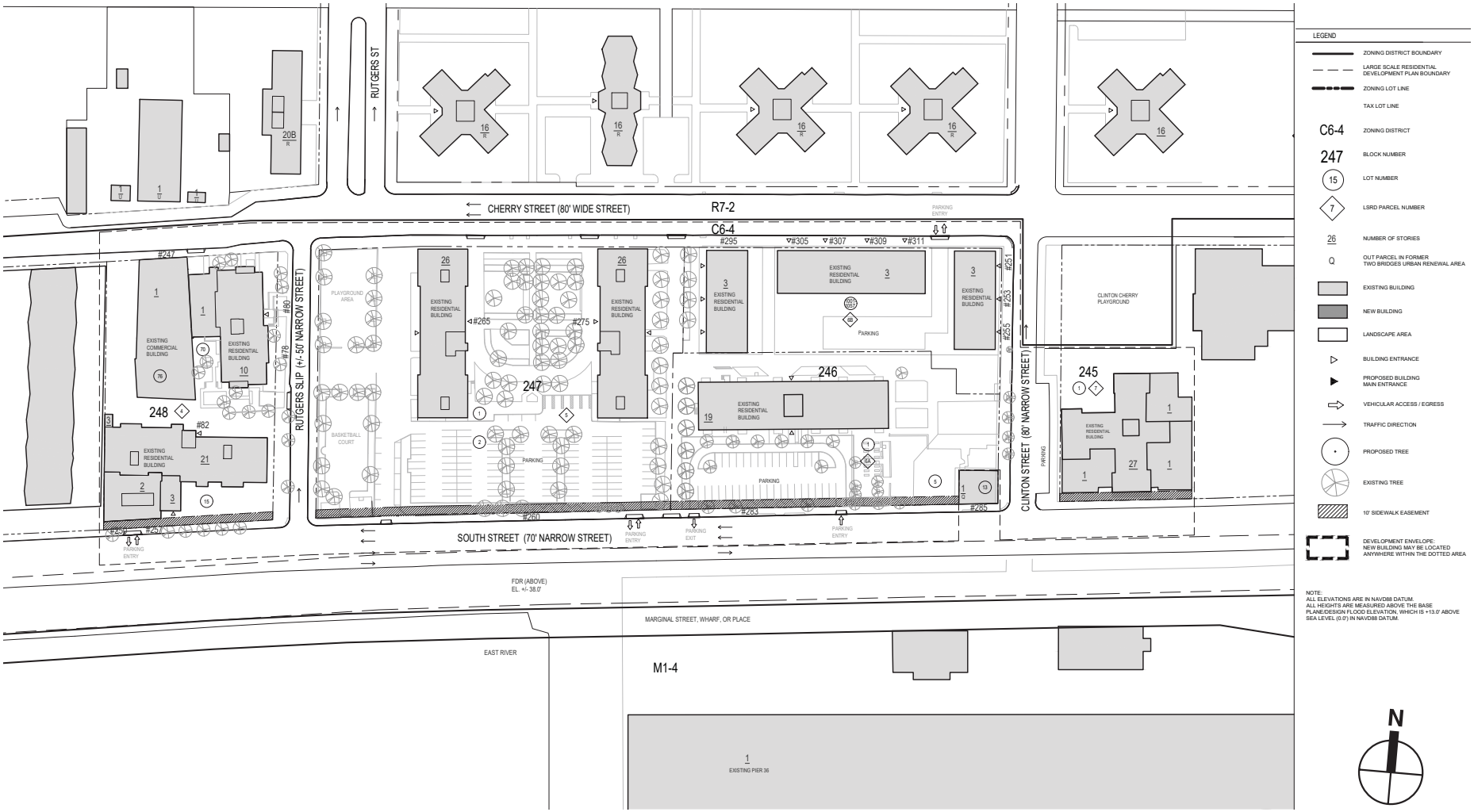
5/24/2017



TWO BRIDGES LSRD

Location of Proposed Projects

Figure 1

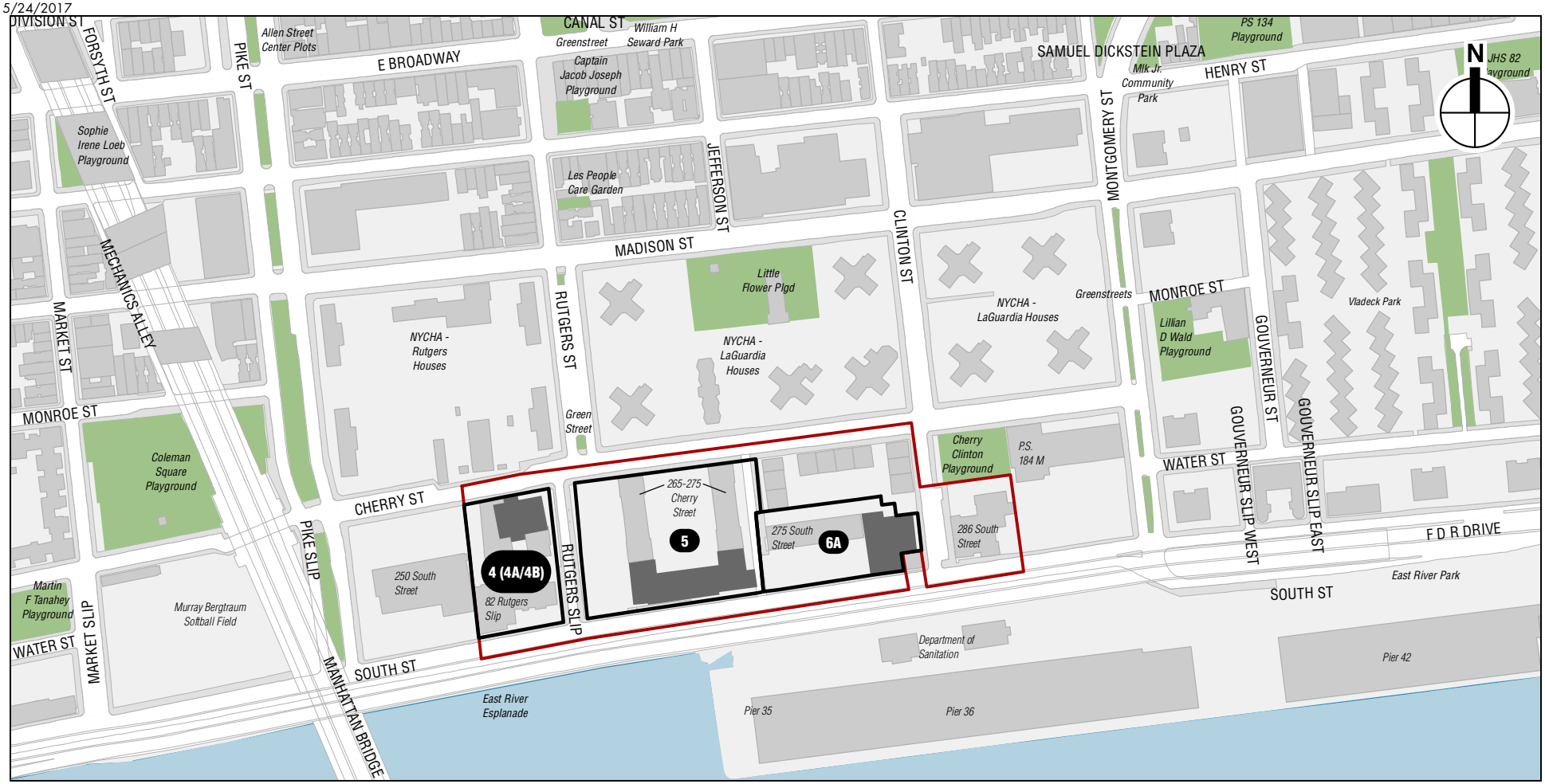


Source: *SHoP Architects PC*

Existing Conditions Site Plan - All Projects

Figure 2

5/24/2017



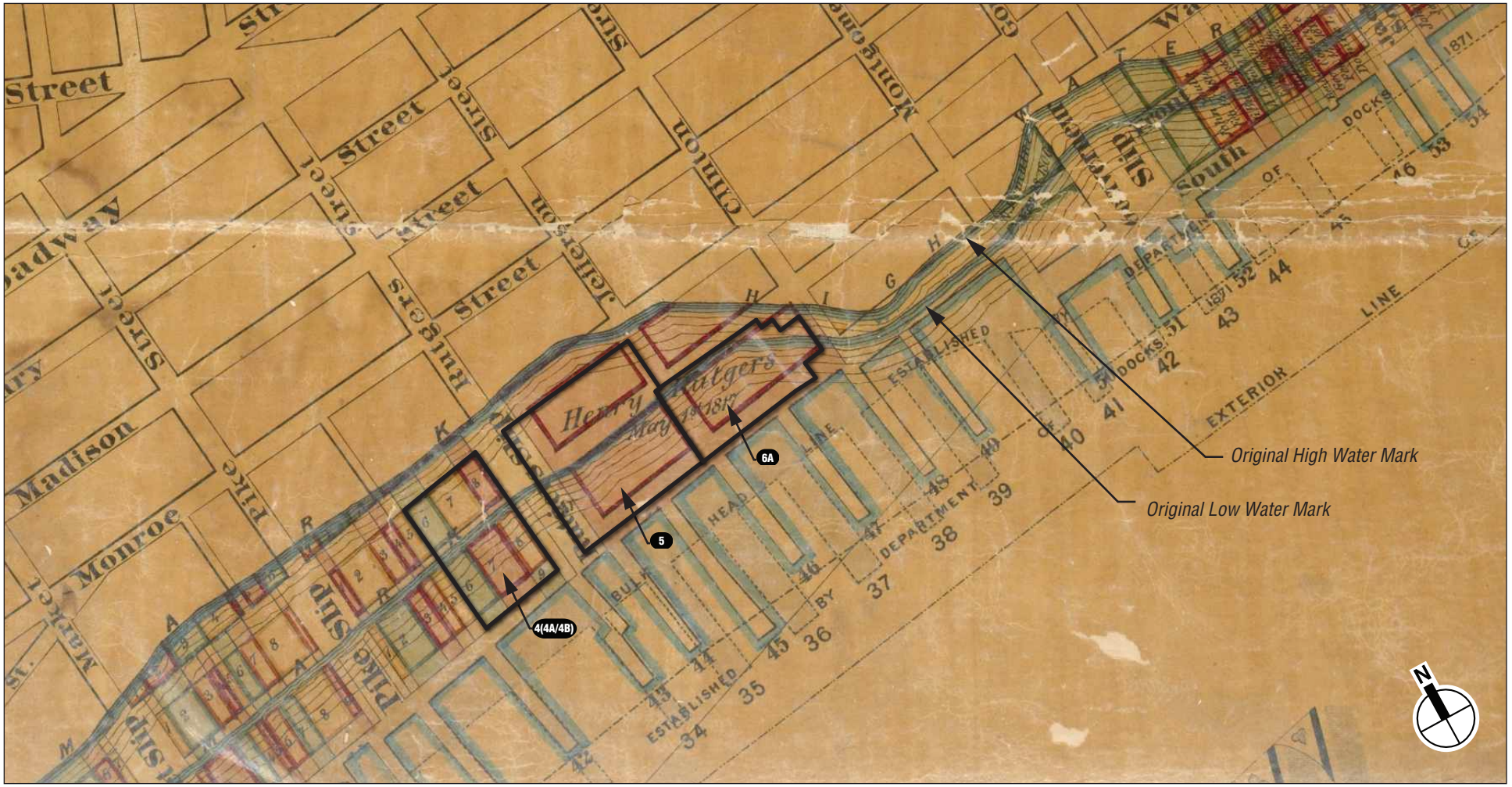
Project Sites
Boundary of Two Bridges LSRD
Proposed Buildings
Publicly Accessible Open Space

0 400 FEET

TWO BRIDGES LSRD

Proposed Developments
Figure 3

5.9.17

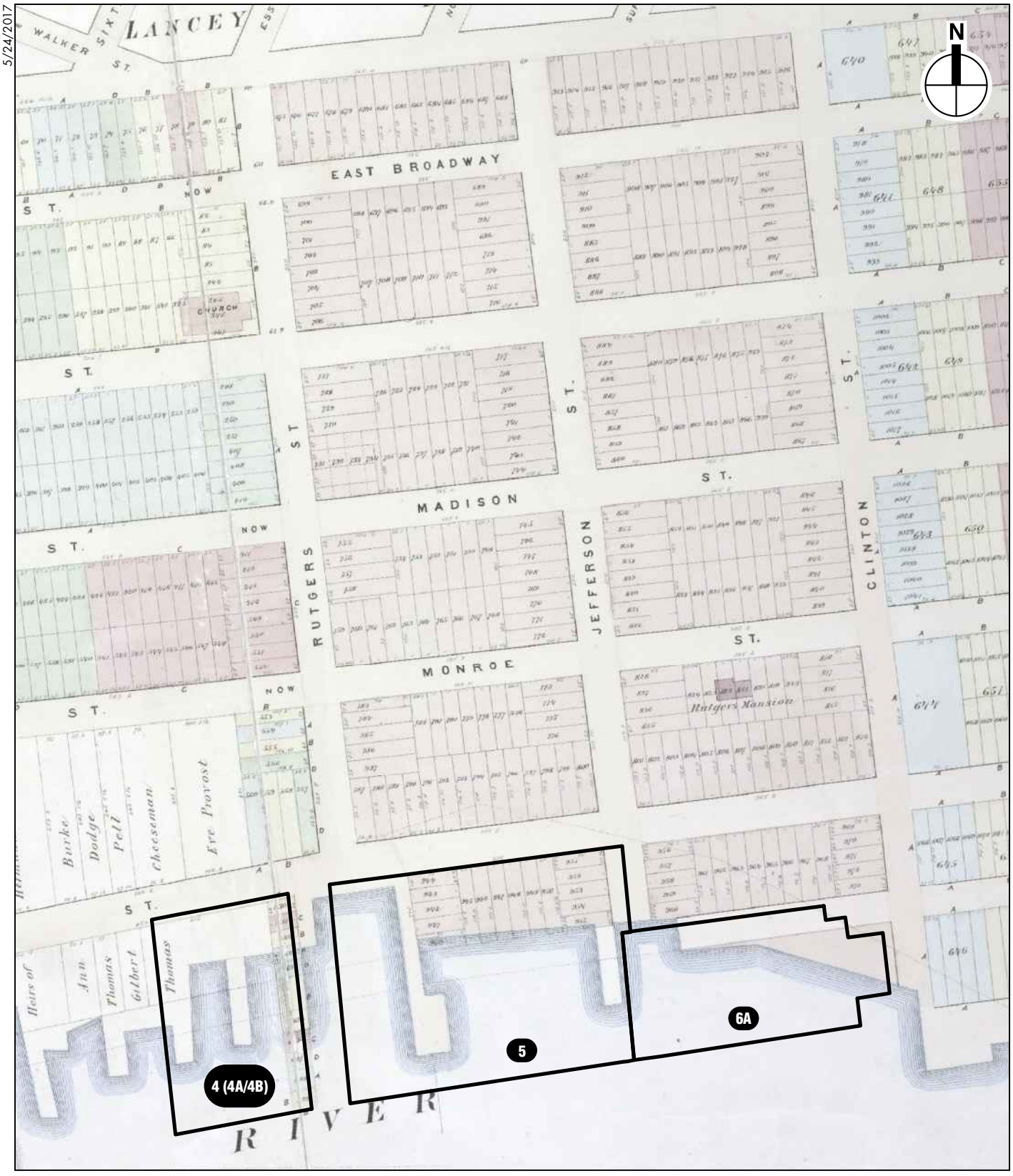


1873 Department of Docks Map of High and Low Water Marks

TWO BRIDGES LSRD

Figure 4

5/24/2017



Project Sites

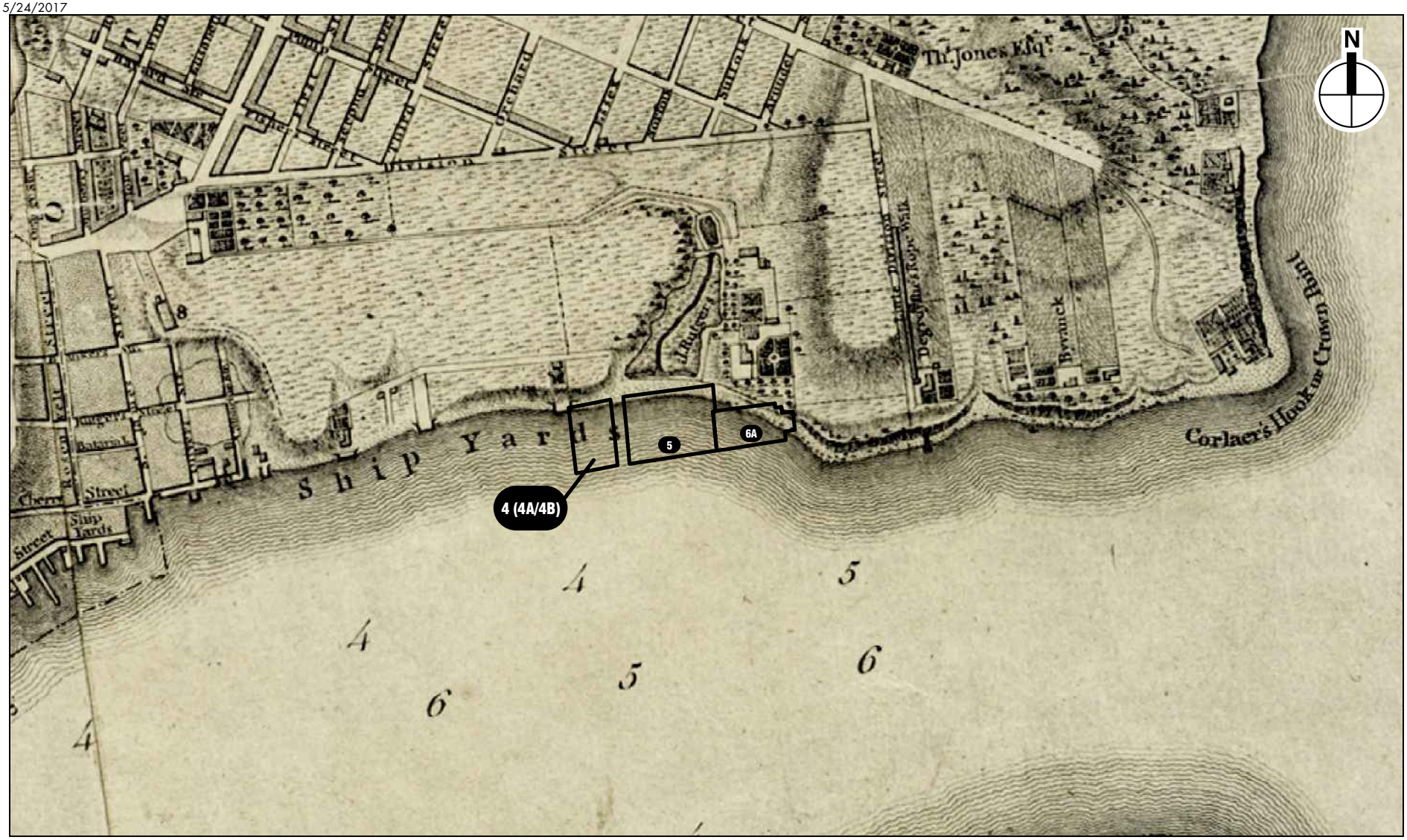
0 400 FEET

1874 Holmes Map of the Rutgers Farm

TWO BRIDGES LSRD

Figure 5

5/24/2017



Project Sites

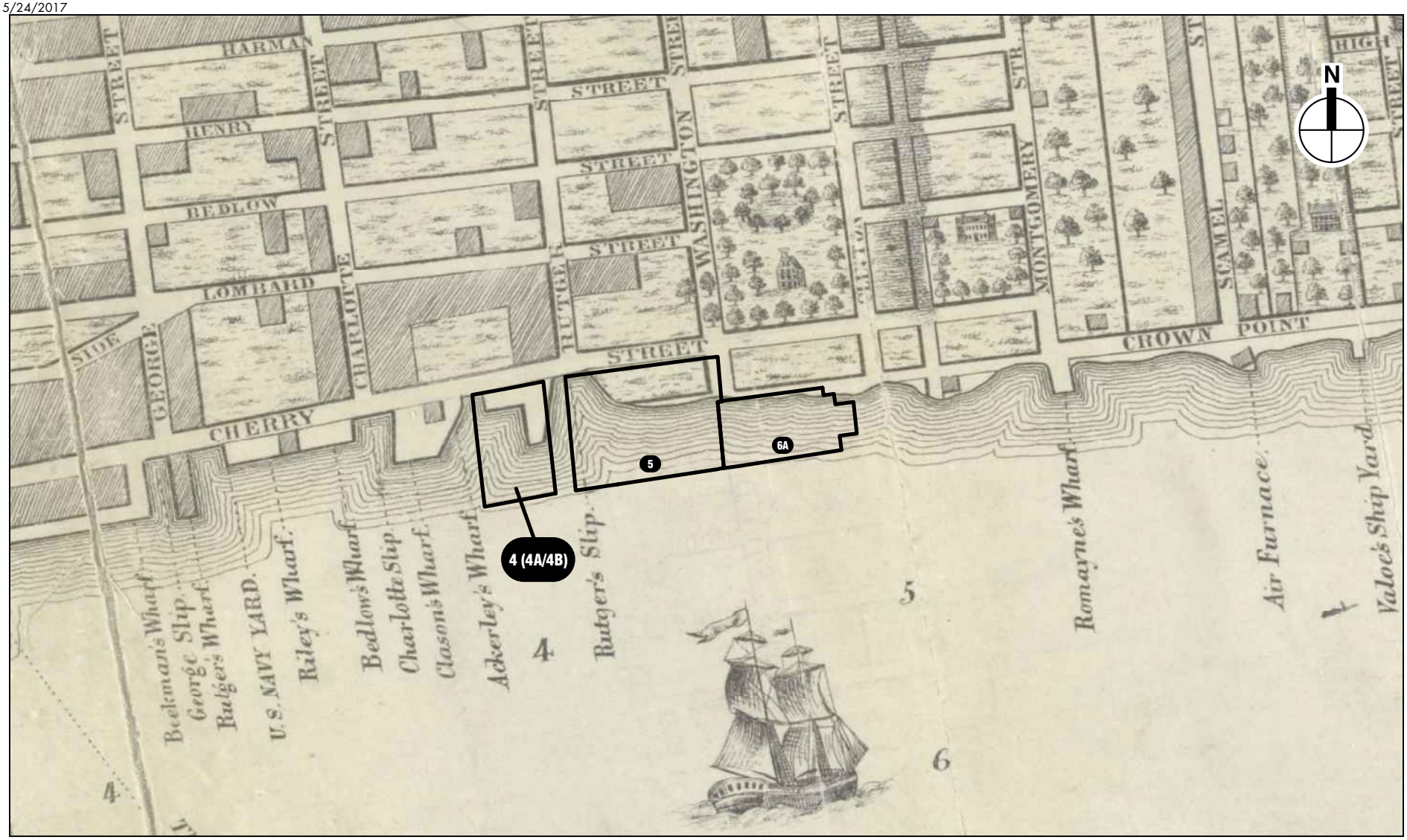
0 1,000 FEET

1776 Ratzer Map

Figure 6

TWO BRIDGES LSRD

5/24/2017



Project Sites

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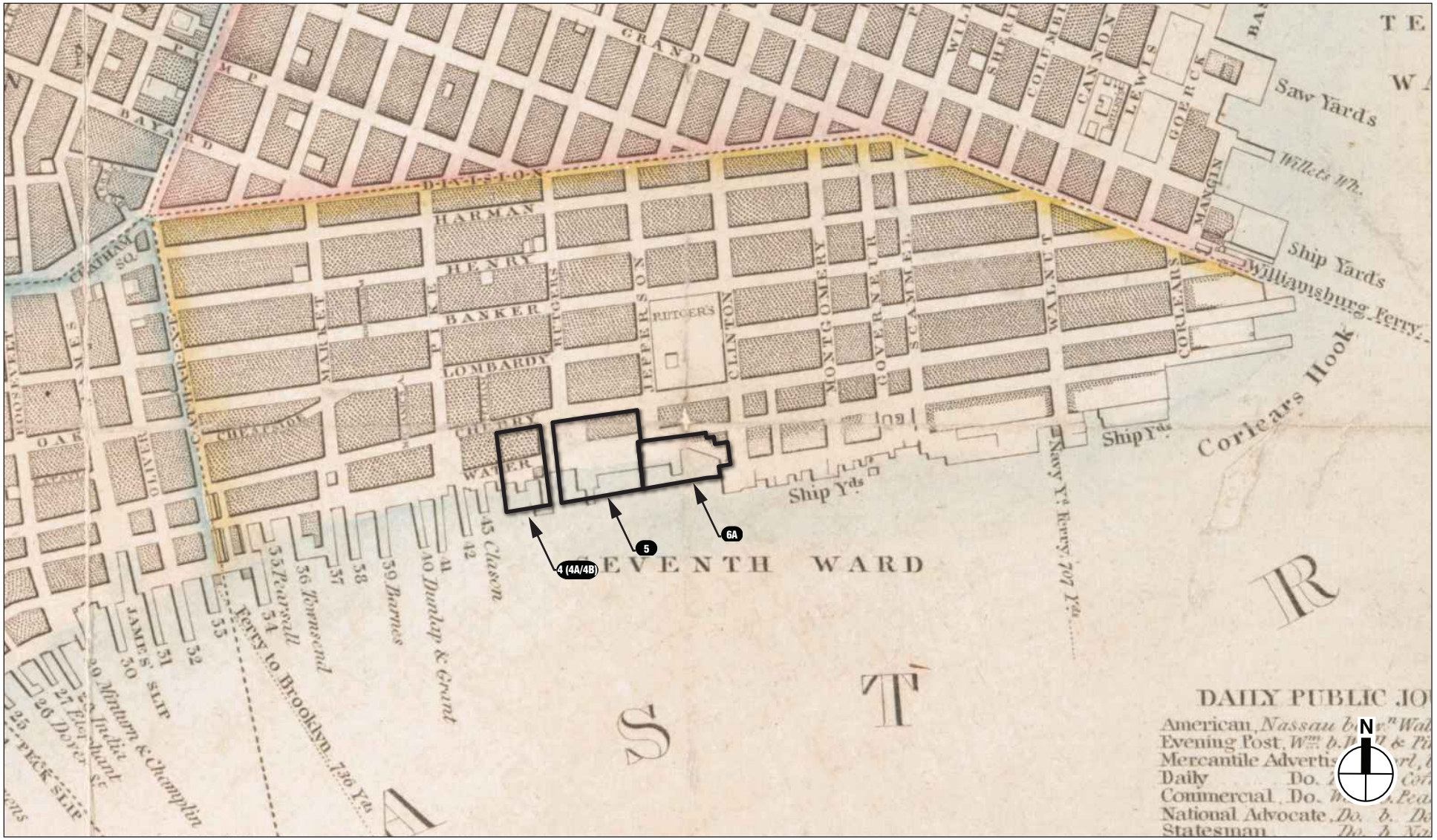
1797 Taylor Roberts Map

Figure 7

TWO BRIDGES LSRD

5.15.17



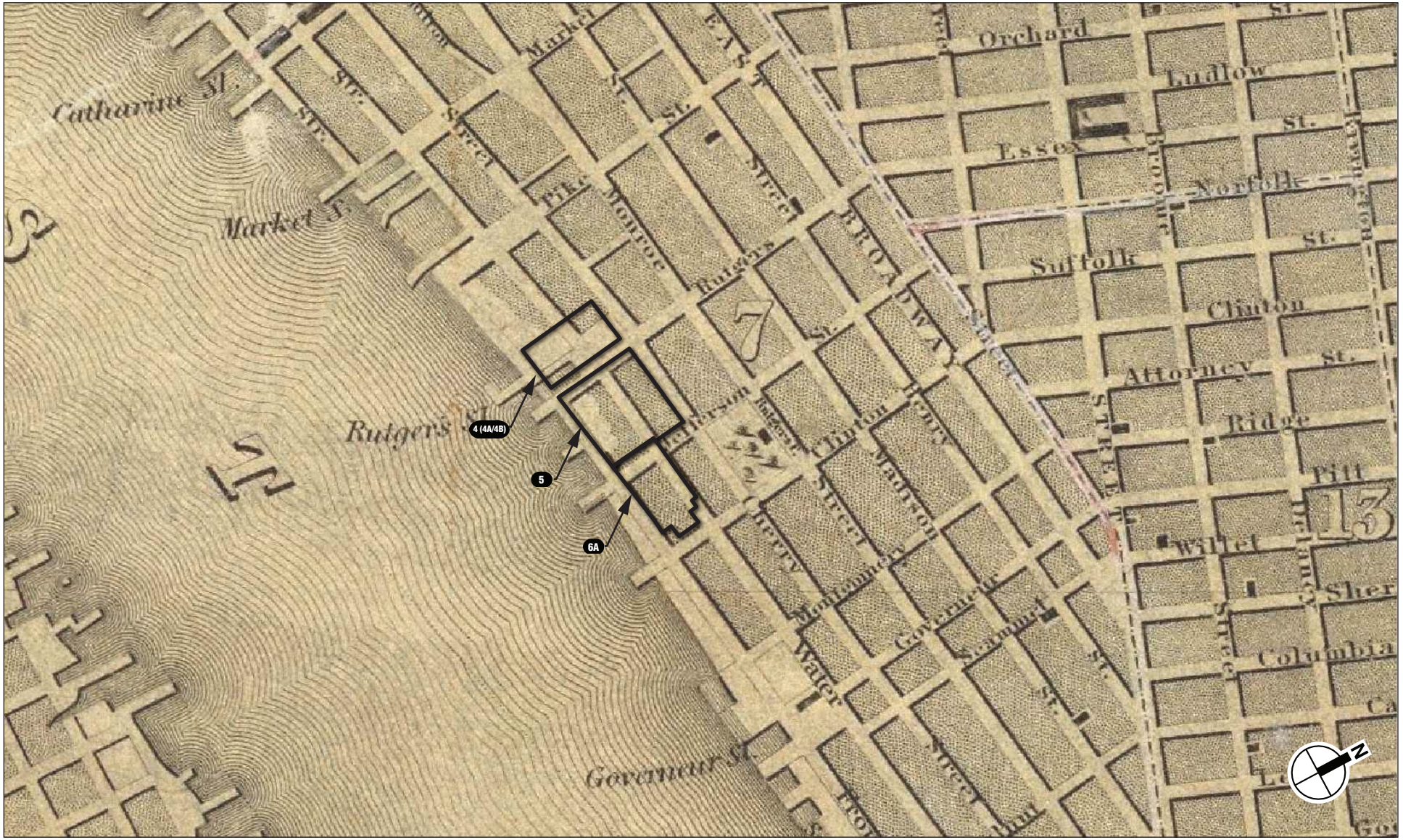
Approximate Location of Project Sites

1824 Hooker Map

Figure 8

TWO BRIDGES LSRD

5.15.17



Approximate Location of Project Sites

0 1000 MILES

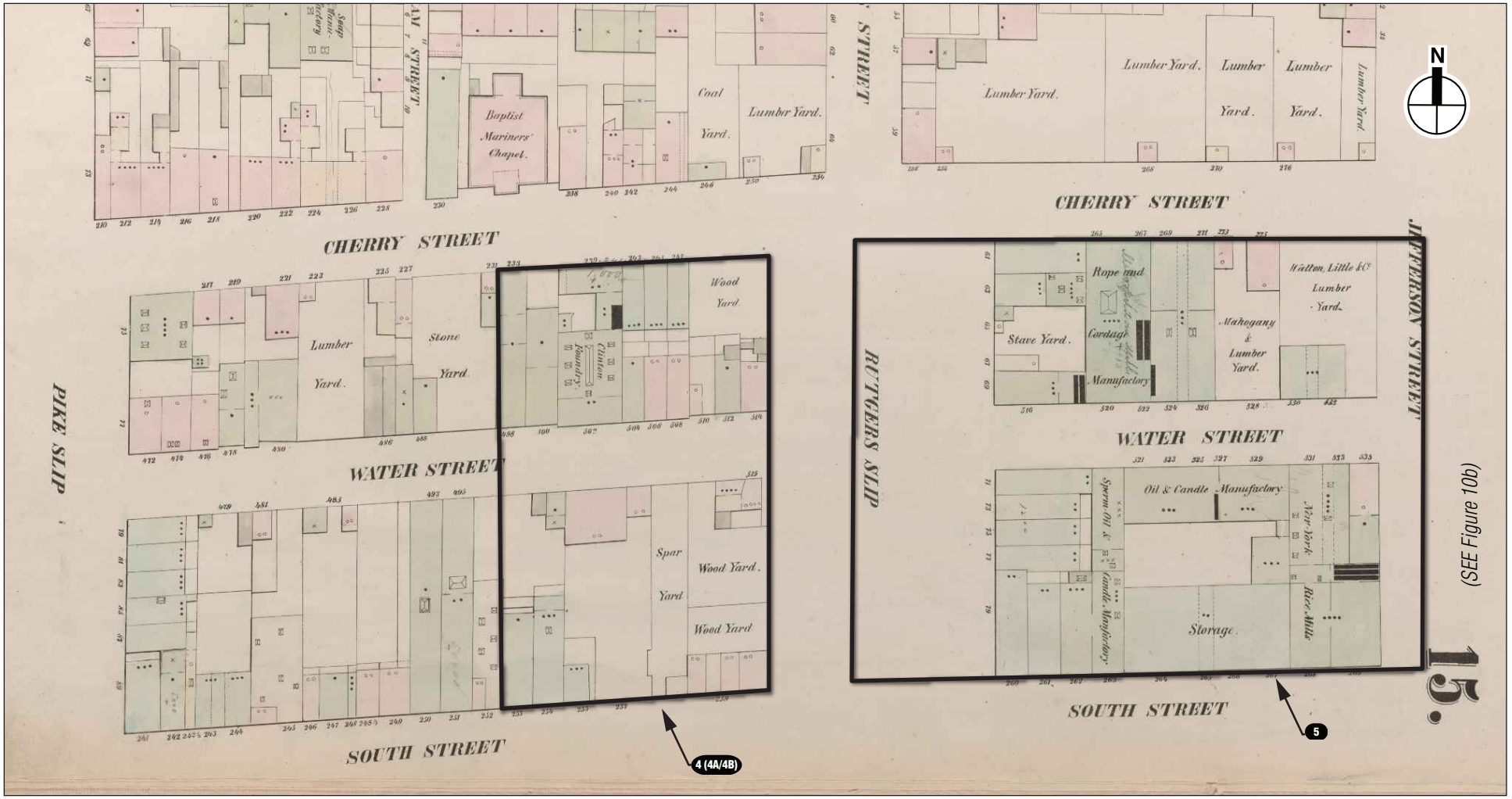
SCALE

1836 Colton Map

Figure 9

TWO BRIDGES LSRD

5.22.17



Approximate Location of Project Sites

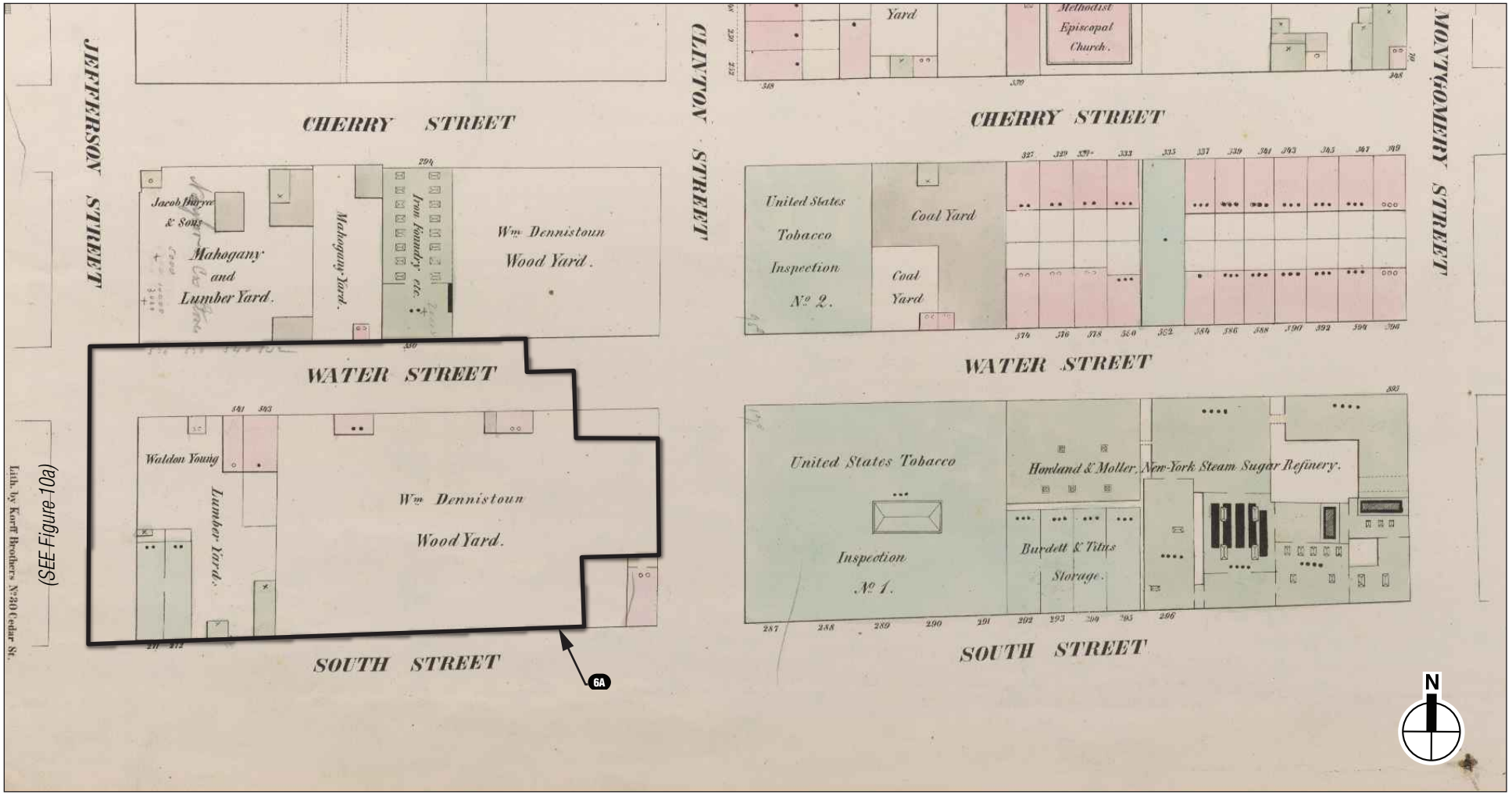
0 100 200 FEET
SCALE

1852 Perris Map, Sites 4 (4A/4B) and 5

TWO BRIDGES LSRD

Figure 10a

5.15.17



Approximate Location of Project Sites

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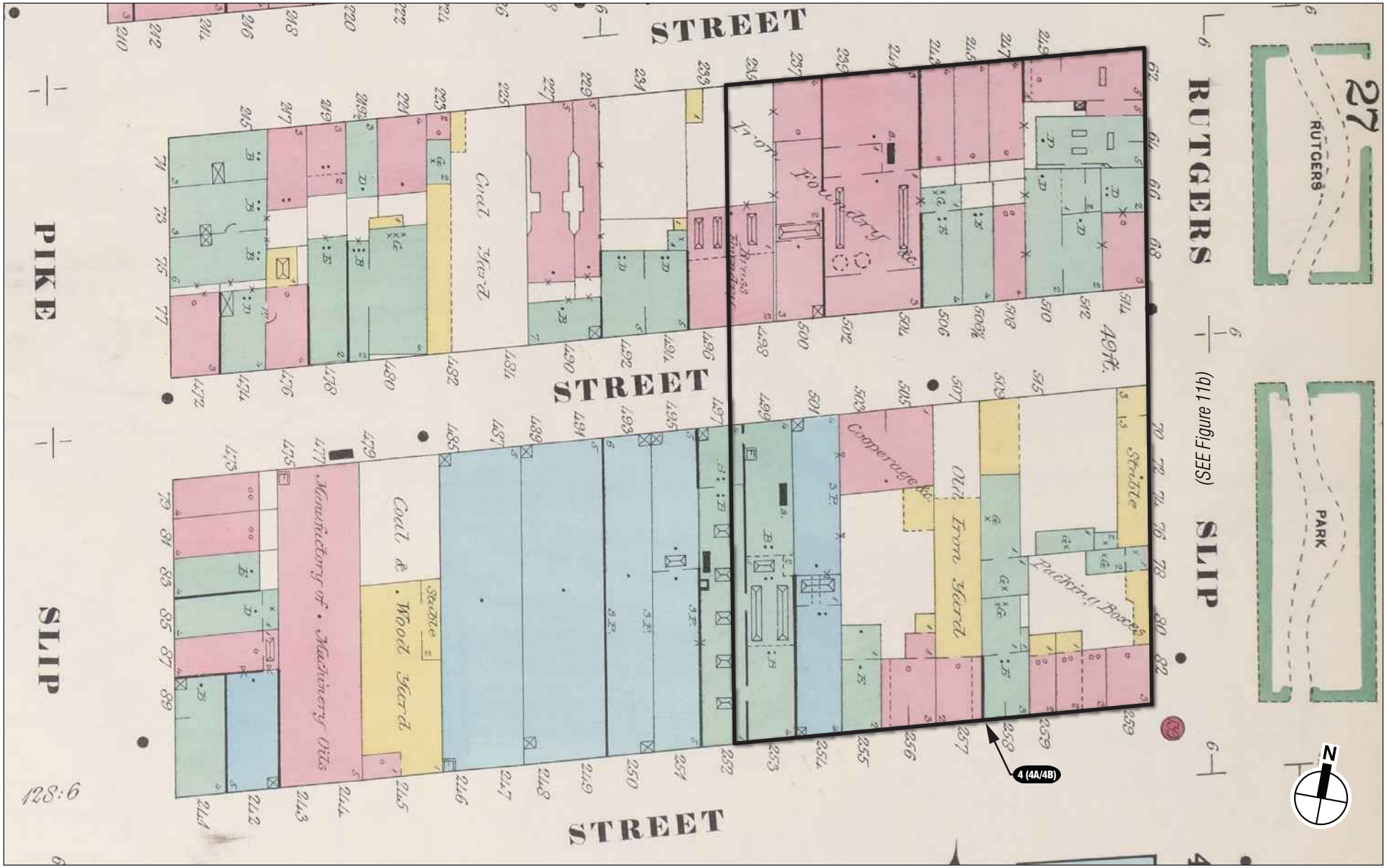
SCALE

1852 Perris Map, Site 6A

TWO BRIDGES LSRD

Figure 10b

5.22.17



Approximate Location of Project Sites

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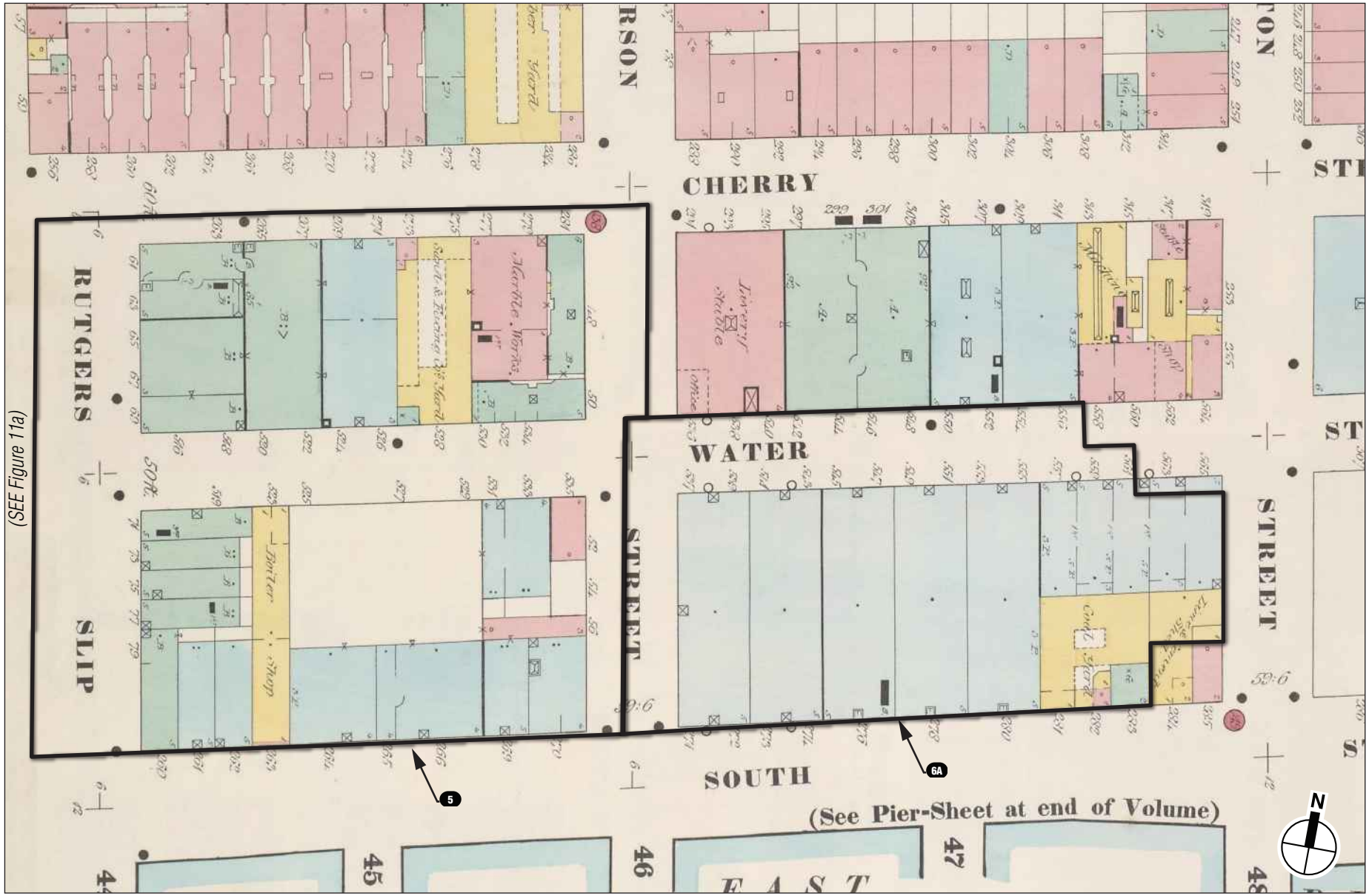
SCALE

1894 Sanborn Map, Site 4 (4A/4B)

Figure 11a

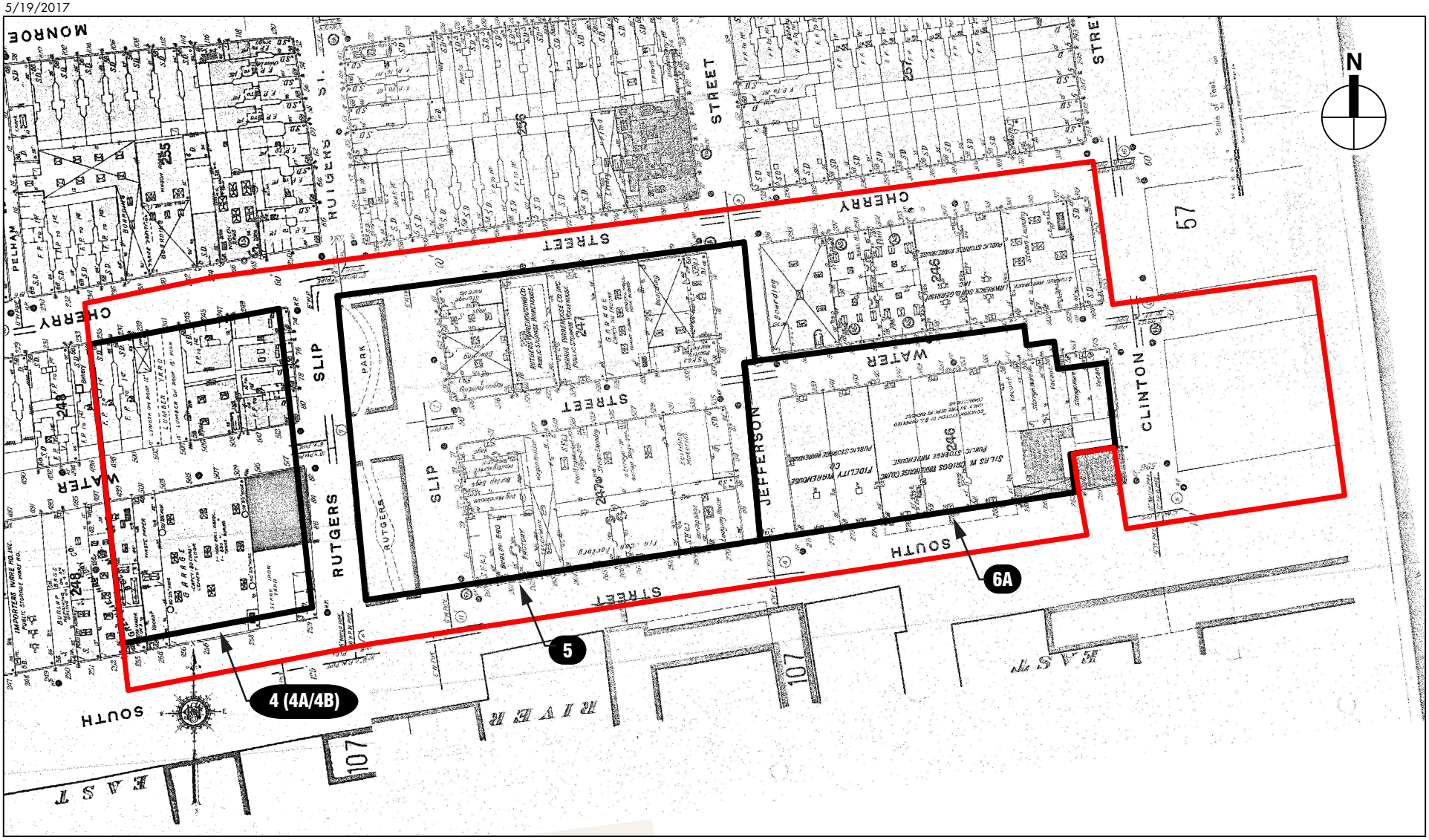
TWO BRIDGES LSRD



Approximate Location of Project Sites

1894 Sanborn Map, Sites 5 and 6A

5/19/2017



Project Sites

Boundary of Two Bridges LSRD

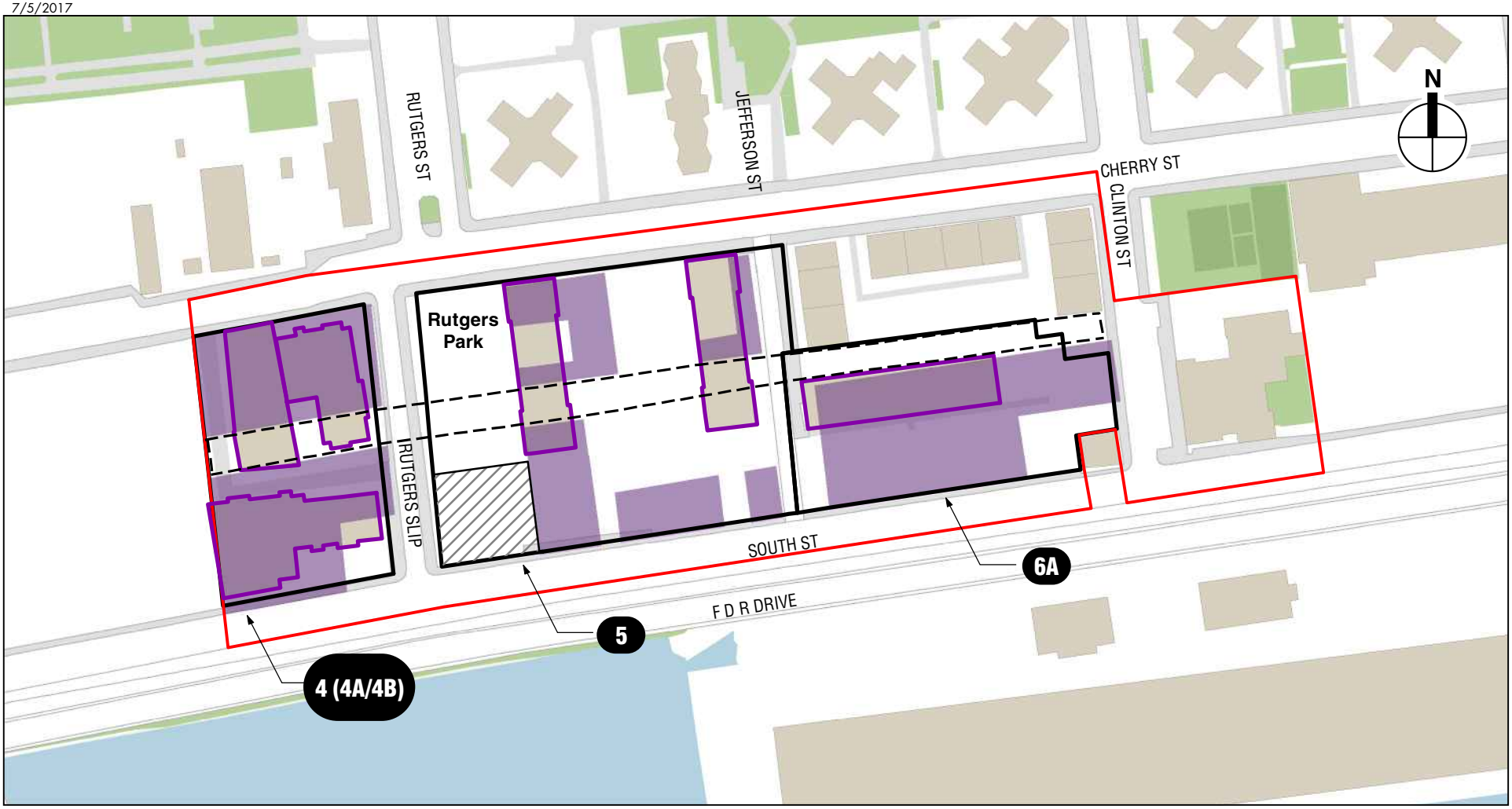
0 400 FEET

1922 Sanborn Map

Figure 12

TWO BRIDGES LSRD

7/5/2017



0 400 FEET

Project Sites

Boundary of Two Bridges LSRD

Areas of Historic Basement Disturbance (Potential Sensitivity Below 10 Feet Below Ground Surface)

Modern Buildings footprints within Project Sites (no Archaeological Sensitivity)

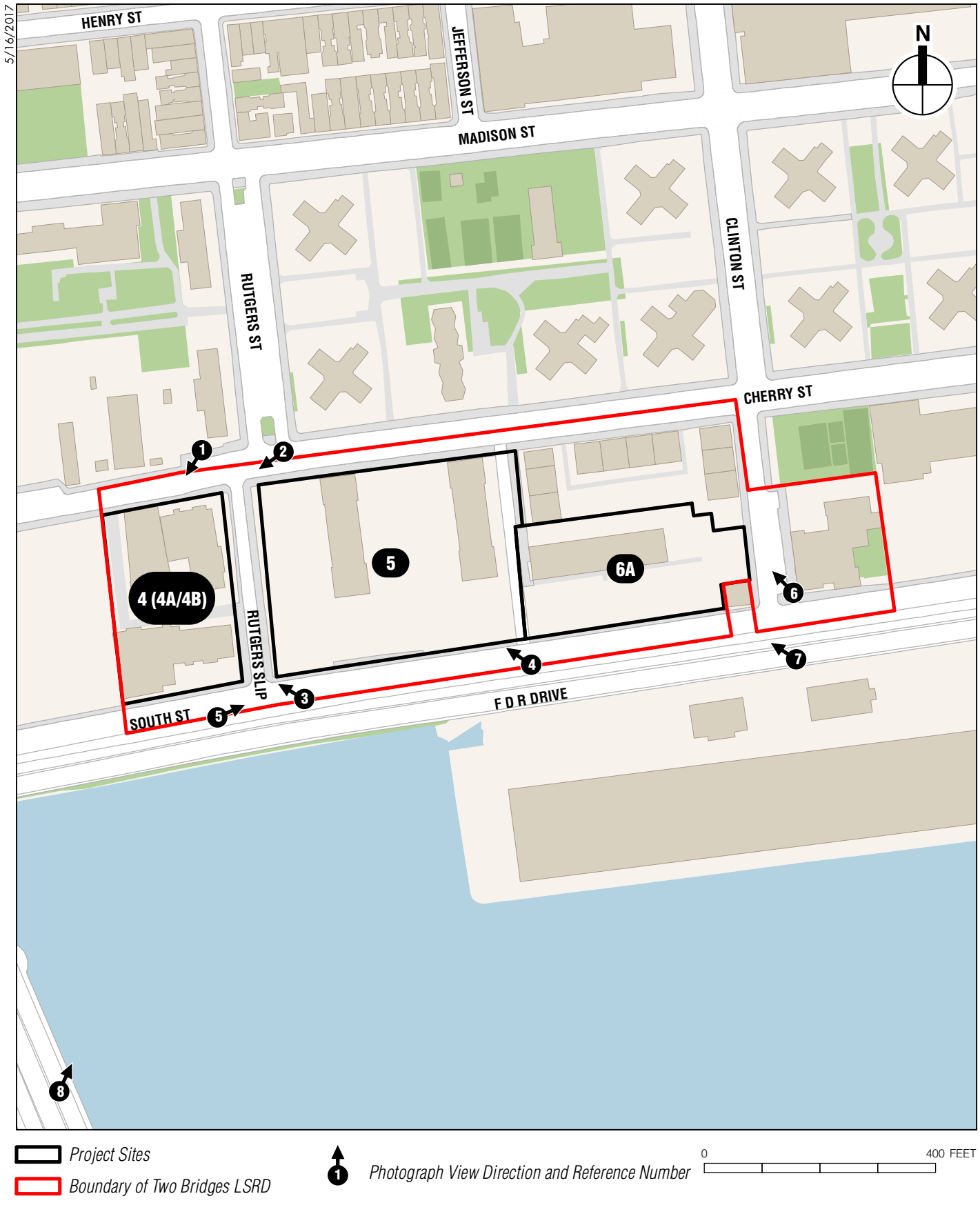
Former Streetbed of Water Street

Subway Fan Plant

Areas of Disturbance Associated with the Construction of Historic and Modern Buildings

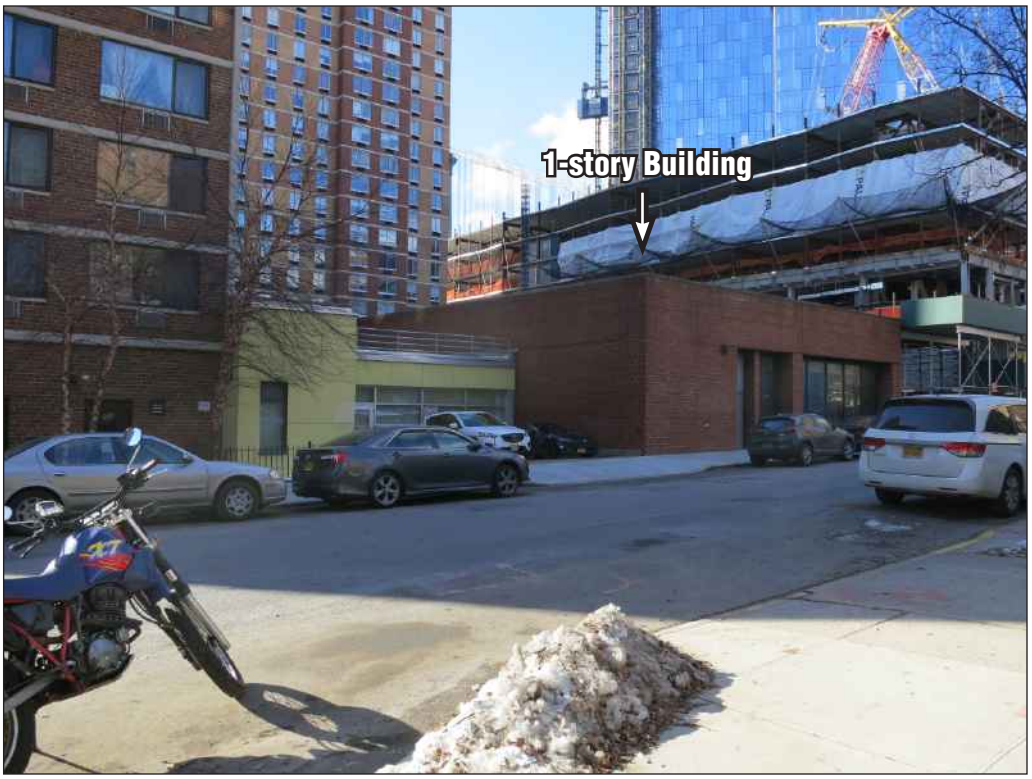
Figure 13

Photographs



TWO BRIDGES LSRD

Photograph Key



View southwest from Cherry Street to one-story building on Site 4 (4A/4B) **1**

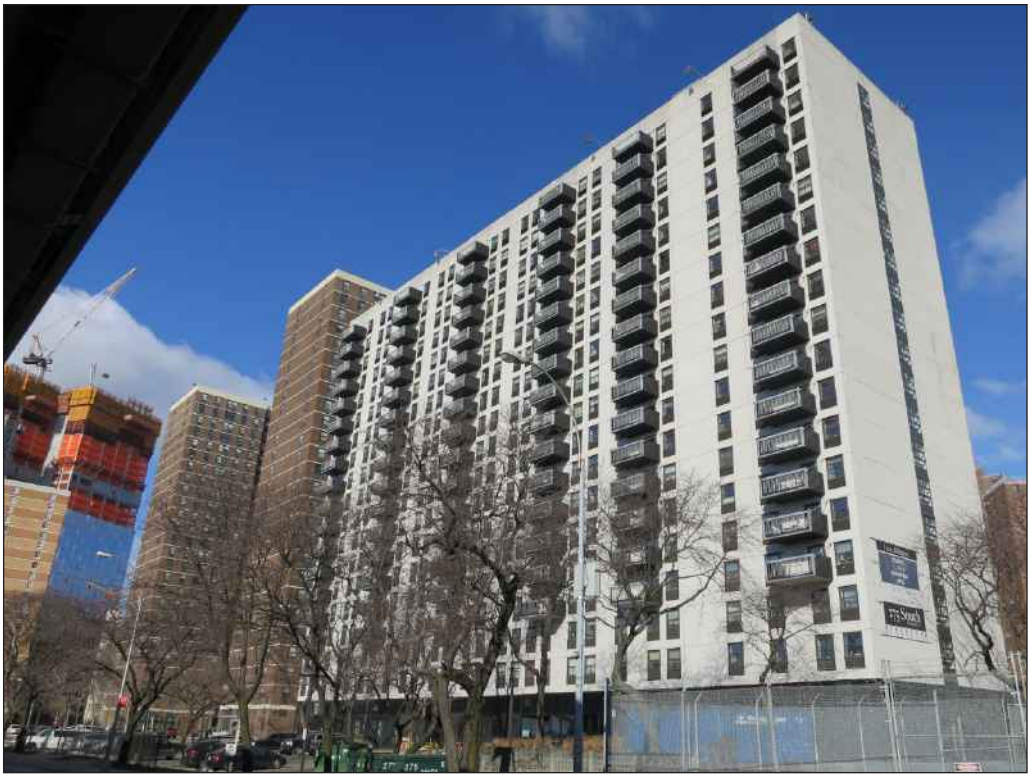
View southwest to Site 4 (4A/4B) from Cherry Street and Rutgers Slip **2**

View northwest to Site 4 (4A/4B) from South Street **3**

View northwest to Site 5 from South Street **4**

View northeast to Site 5 from Rutgers Slip and South Street **5**

View northwest to Site 6A from Clinton and South Streets **6**



View northwest to Site 6A from South Street **7**

View northeast from the Manhattan Bridge to the project sites showing the FDR Drive and East River Bulkhead **8**

Appendix A: Selected Historic Directories for Portions of Site 5

Appendix A: Selected Historic Directory Entries for 269-275 Cherry Street and 524 to 530 and 523 to 529 Water Street

Year	Last Name	First Name	Occupation	Address	Home Address
1825	Thorne	Stephen	Shipcarpenter	530 Water	390 Cherry
1826	Smith	Charles	Collector	521 Water	
1828	Anderson	John	Stonecutter	273 Cherry	165 Henry
1828	Fordham	Elijah	Hatpresser	525 Water	
1828	Fordham	George S.		525 Water	
1828	Gorham	Allen	Shipcarpenter	527 Water	
1828	Scott	William	lumber-yard	523 Water	
1829	Anderson	John	Stonecutter	273 Cherry	163 Henry
1830	Anderson	John	Stonecutter	273 Cherry	163 Henry
1833	Anderson	John	Stonecutter	273 Cherry	137 Henry
1833	Gross	Francis	Lumberyard	525 Water between Rutgers and Jefferson	181 Henry
1834	Gross	Francis	Lumberyard	525 Water	181 Henry
1835	Anderson	John	Stonecutter	273 Cherry	137 Henry
1835	Gross	Francis	Lumberyard	525 Water	181 Henry
1835	Wake	Robert	Tailor	273 Cherry	
1837	Forbes	Horace D.	oil & candles	525 Water	29 Market
1838	Harbeck	John H.	Staves	525 Water	15 Ridge
1838	Harbeck	William H.	Staves	525 Water	15 Ridge
1840	Dawson	J.H.	mahogany dealer	530 Water	
1840	Dawson	Jacob H.	Lumber	273 Cherry	208 Madison
1841	Dawson	Jacob H.	Mahogany	273 Cherry	
1841	Higgins	Walter	Mills	525 Water	
1842	Dawson	Jacob H.	Lumber	273 Cherry	208 Madison
1842	Fairborn	Henrick	Cooper	524 Water	
1842	Williams	William	insp. Bark	521 Water	
1843	Fairborn	Henrick	Cooper	524 Water	
1844	Dawson	J.H.	Mahogany Yards	273 Cherry and 526 Water	
1844	Dawson	Jacob H.	Lumber	273 Cherry	208 Madison
1844	Higgins	Walter	Barillamills	525 Water	13 Rutgers
1845	Macy	Francis H.	com. mer. & oil	189 Front & 525 Water	179 E. Broadway
1845	Macy	Josiah & Sons	com & shipping mers. And manufacutrers of sperm oil and candles, Freeman's sheathing copper & copper rollers	189 Front & 525 Water	179 E. Broadway
1845	Macy	William H.	com. mer. & oil factory	189 Front & 525 Water	25 Pike
1846	Dawson	Jacob H.	Mahogany Yards	273 Cherry	
1846	Dawson	Jacob H.	Lumber	273 Cherry	208 Madison
1846	Macy	Josiah & Sons	oil merchants	189 Front & 525 Water	
1846	Murray	Robert, Jr.	barilla mill	524 Water	
1847	Dawson	Jacob H.	Lumber	273 Cherry	208 Madison
1847	Gay	R.P. & Co.	Flour	269 Cherry	
1847	Gay	Robert P.	barilla mills and flour	271 Cherry & 522 Water, 269 Cherry	228 Henry
1847	Gerry	Thos. A.	Flour	269 & 271 Cherry	229 Madison
1848	Dawson	Jacob H.	Lumber	273 Cherry	208 Madison
1848	Green	Robert	Tailor	275 Cherry	
1849	Dawson	Jacob H.	Mahogany	273 Cherry	
1849	Dawson	Jacob H.	Lumber	273 Cherry	208 Madison
1850	Dawson	Jacob H.	Mahogany	273 Cherry	
1850	Gay	R.P. & Co.	Builder's Materials	269 Cherry	
1850	Macy	Josiah & Sons	oil manufacturers, sperm	525 Water	
1850	Murray	Robert		271 Cherry	
1851	Dawson	Jacob H.	Lumber	273 Cherry	226 Madison
1851	Walton & Little		lumber dealers	530 Water	

Year	Last Name	First Name	Occupation	Address	Home Address
1853	Macy	Josiah & Sons	Oils	266 South, 189 Front & 525 Water	179 E. Broadway
1853	Macy	John H.	Oils	189 Front, 266 South & 525 Water	207 Madison
1853	Murray	Robert	barilla mills	524 & 526 Water, 269 & 271 Cherry	37 Montgomery
1853	Murray	Robert, Jr.	Feed and Grain	269 Cherry	
1853	Murray	Robert, Jr.	barilla mills	269 Cherry	37 Montgomery
1853	Murray	Robert, Jr.	Feed	269 & 271 Cherry	
1853	Queripel	Henry	coal dealer	18 Forsyth, 189 Greene, 131 First av. & 273 Cherry	
1853	Queripel	Henry	coal dealer	18 Forsyth, 189 Greene and 275 Cherry	143 Reade
1853	Queripel	Joseph	coal dealer	18 Forsyth, 189 Greene, 275 Cherry and Ninth c. Ave 1	12 Wooster
1853	Weeks	John A.	Cooper	524 Water	
1854	Little	George W.	Lumber	530 Water, 273 Cherry, & 325 Delancey	126 Nassau, Brooklyn
1854	Murray	Robert	barilla mills	524 & 526 Water, 269 & 271 Cherry	37 Montgomery
1854	Queripel	Henry	coal dealer	189 Greene & 273 Cherry, 18 Forsyth & Av. 1 c. 19th	
1854	Walton	Elisha L.	Lumber	530 Water & 273 Cherry & 325 Delancey	168 Henry
1855	Murray	Robert, Jr.	feed & lime	269 Cherry & 526 Water	37 Montgomery
1855	Queripel	Joseph	coal dealer	530 Water, 189 Greene, 133 First av & Canal n. Forsyth	224 W 27th
1855	Sniffen & Co.	mills		275 Cherry	164 Front
1855	Tallmadge	Hanford E.	Feed and Grain	269 Cherry	130 W 28th
1855	Vantuyl	Andrew P.	Coatfacings	273 Cherry	13 S. Ninth, Brooklyn
1856	Kimball	A.F. & Co.	Founders-Facing Materials	273 Cherry	
1856	Kimball	A.F. & Co.	dealers in foundry facing	273 Cherry	
1856	Kimball	Asa F.	coffee roaster	273 Cherry	104 Monroe
1856	Kimball	Wm. F.	Coffee	273 Cherry	104 Monroe
1856	Murray	JR		269 Cherry & 526 Water	
1856	Murray	Robert, Jr.	Feed	269 Cherry & 524 Water	
1856	Stannard	George	Mills	275 Cherry & Front	
1856	Walton	Elisha L.	Lumber	530 Water & 325 Delancey	168 Henry
1856	Weller	William	Foreman		525 Water
1857	Macy's	Josiah, Sons	commission merchants and manufacturers of sperm and whale oil and candles	189 Front, 266 South & 525 Water	
1857	Murray	Robert, Jr.	Feed	269 Cherry & 526 Water	37 Montgomery
1857	Polhamus	Henry A.	Oil	262 South, 120 Front & 523 Water	131 E. 13th
1857	Polhamus	Henry A., Jr.	Oil	262 South, 120 Front & 523 Water	131 E. 13th
1857	Sniffen	John, Jr.	Mills	275 Cherry & 164 Front	216 Adams, Brooklyn
1857	Vantuyl	Andrew P.	founders facings	273 Cherry & 526 Water	13 S. Ninth, Brooklyn
1858	Elston	D.	Facings	268 & 273 Cherry	16 Jefferson
1858	Little	George W.	Lumber	530 Water, 273 Cherry, & 325 Delancey	126 Nassau, Brooklyn
1858	Macy	Francis H.	mer.	189 Front, 266 South & 525 Water	40 E. 24th
1858	Macy	John H.	mer.	189 Front, 266 South & 525 Water	38 E. 24th
1858	Macy	Sylvanus J.	mer.	189 Front, 266 South & 525 Water	62 E 17th
1858	Macy	William H.	pres. & mer.	45 William & 189 Front, 266 South & 525 Water	47 E. 21st

Year	Last Name	First Name	Occupation	Address	Home Address
1858	Macy's	Josiah, Sons	commission merchants and manufacturers of sperm and whale oil and candles	189 Front, 266 South & 525 Water	
1858	Sniffen	John, Jr.	Mills	275 Cherry & 164 Front	216 Adams, Brooklyn
1858	Vantuyl	Andrew P.	founders' facings	273 Cherry & 526 Water	13 S. Ninth, Brooklyn
1859	Knight & Newlin		Flour	27 Front & 275 Cherry	
1859	Macy's	Josiah, Sons	oils & candles	189 Front, 266 South & 525 Water	
1859	Murray	Robert	Lime	269 Cherry	37 Montgomery
1859	Murray	Robert, Jr.	Builder's Materials	269 Cherry & 527 Water	
1860	Elston	David	Foundry	526 Water & 273 Cherry	B'klyn
1860	Murray	Robert	Feed	269 Cherry & 522 Water	
1860	Polhamus	Henry A.	Oil	262 South, 120 Front & 523 Water	131 E. 13th
1860	Polhamus	Henry A., Jr.	Oil	262 South, 120 Front & 523 Water	131 E. 13th
Source:	Directories accessed through www.fold3.com.				