



Phase 1A Archaeological Documentary Study

Catherine Slip

**Between Madison and South Streets
New York, New York**

Prepared for:

Lower Manhattan Development Corporation
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Management Summary

SHPO Project Review Number: 06PR06649

LPC Project Review Number: HUD/106-M

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

Phase of Survey: Phase 1A Archaeological Documentary Study

Project Location: Catherine Street between Madison and South Streets

Minor Civil Division: 06101: Manhattan

County: New York County

Location Information:

Survey Area Length: Approximately 1050 feet (320 meters)

Survey Area Width: Between Approximately 50 and 145 feet (15.24 and 44.2 meters)

Number of Acres Surveyed: Approximately 2.1

USGS 7.5 Minute Quadrangle Map: Brooklyn

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A. PROJECT OVERVIEW

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

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

The following Phase 1A Archaeological Documentary Study focuses on Catherine Slip¹ (see Figure 1). The archaeological Area of Potential Effect (APE) for this proposed project includes the streetbed of Catherine Slip, between Madison and South Streets, as well as the two raised center medians within the center of the slip (see Figure 2). Within Catherine Slip, the proposed project would improve access along the slip to the East River waterfront by improving the streetscape with new benches, crosswalks, parking spaces, lighting, and pavement. The existing raised median and the areas to the east would also be re-landscaped with riparian trees and vegetation. Excavation for the project area is expected to be approximately 1 to 2 feet although certain locations may require excavation of up to four feet.

B. RESEARCH GOALS AND METHODOLOGY

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

¹ Older documentary and cartographic sources indicate that the original spelling of this street name was “Catharine Slip,” however, the modern spelling; “Catherine Slip” will be used for the remainder of this report except within direct quotations.

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

C. SITE FILE RESEARCH

File searches at OPRHP and LPC indicate that many cultural resource investigations have been conducted within one mile of the project site, leading to the discovery of at least 23 precontact and historic period archaeological sites (see Table 1). Many of these sites, including the Schermerhorn Row Block, the Assay, Barclay’s Bank, Whitehall Ferry Terminal, Telco Block, 175 Water Street, and 209 Water Street sites, have yielded historic landfill and landfill retaining devices, like those presumably used to create land within the Catherine Slip project area. The wooden landfill-retaining devices at these sites were found at varying depths, with the tops of some being very close to the ground surface while others were more deeply buried below the ground surface.

The wooden structures identified at these sites were mostly in the form of wharves; however they also included barrels, boxes, pilings, and bulkheads. In addition, two sites, 175 and 209 Water Street, contained wooden ships that had been converted into landfill retaining structures. These ships were both found at relatively great depths; at 209 Water Street the top of the ship was approximately 5 feet below a building’s floor surface and extended past 13 feet, where excavations ceased (Schuyler et al. 1978). At 175 Water Street, the ship was discovered during excavation of deep test trench units (Soil Systems, Inc. 1983). Wooden landfill-retaining devices are discussed in greater detail in Chapter 5. In addition, the Catherine Slip project area is immediately south of, but not included within, the Two Bridges Historic District, which is National Register of Historic Places listed.

**Table 1
Previously Identified Historic Archaeological Sites Within 1 Mile of the Project Area**

Site Name	OPRHP Site #	NYSM #	Time Period	Site Type	References
Shell Point/ Werpoes	----	4059	Pre-Historic	Native American village and shell middens	Parker (1922) Bolton (1922)
Nechtanc	----	4060	Pre-Historic, Contact	Native American village used as a retreat during 17th century wars with the Dutch	Parker (1922) Bolton (1922)
South Ferry Terminal Project	A06101.05768 A06101.015598 A06101.016196	----	18th-early 20th century	Battery Wall built during the French and Indian War, Whitehall Slip, and landfill deposits and landfill retaining structures	AKRF (2009)
Schermerhorn Row Block	A06101.006763	Survey #20	18th-19th century	Historic landfill with wooden fill-retaining structures; structural remnants	Historic Sites Research (1991)
Tweed Courthouse Area	A06101.013335	----	19th century	Human Burials, Structures, and other deposits	Hartgen Archaeological Associates, Inc (2003)
The Assay Site (Block 35)	A06101.001284	----	18th-19th century	Historic landfill, landfill retaining structures (cobb wharves), wharf, bulkheads, and containing Revolutionary War-era Cannon	Louis Berger and Associates (1990)

Table 1 (continued)
Previously Identified Historic Archaeological Sites Within 1 Mile of the Project Area

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

Table 1 (continued)

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

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

A. GEOLOGY AND TOPOGRAPHY

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

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

Manhattan had a much narrower and more irregular shape in the days before systematic landfilling created the regimented shoreline of piers and promenades that we see today. The southern tip of Manhattan, known as *Kapsee*, was a rocky point jutting out into the harbor forming a small cove that was possibly used as a canoe landing by Native Americans.

Throughout the historic period, the landscape was permanently altered not only by the creation of land, but also by filling in streams and leveling hills. Several historic maps include data regarding elevations at street corners. This data is presented in Table 2, below, which shows that minimal changes have occurred to the elevation of the project area streetbeds since the late 19th century.

Table 2
Street Elevation Changes

Year/ Source	Elevation of Catherine Street/Slip at its intersection with:			
	Cherry Street	Water Street	South Street	Madison Street
1864 Pulling Map	9	7	5.5	19
1865 Viele Map	5	4	n/a	19
1885 Robinson Atlas	8.5	4	4	19
1891, 1899, 1915, 1924, and 1930 Bromley Atlases	6.7	4.5	4.5	19.3
1923 Sanborn Map	6	4 on west side 5 on east side	3	19.3
1924 and 1930 Bromley Atlases	6.7	4.5	4.5	19.3
1951 Sanborn Map	6	4 on west side 5 on east side	3	19
2007 Sanborn Map	6	4 on west side 5 on east side	3	9.3 (this appears to be a typo and it should be 19.3)

NOTES: Some of the maps included above do not indicate the datum from which the elevation was measured while others present elevations "above high tide." Therefore, it is assumed that all measurements are with respect to sea level.

B. HYDROLOGY

Although the entire APE is currently composed of dry land, before European contact, a large portion was inundated by swampland or the East River. In the vicinity of Catherine Slip, the original shoreline's high water mark (where the water line reached its highest point) was located near modern Cherry Street, and the low water mark (where the water line was situated at low tide) was in the vicinity of modern Water Street (see Figure 3).¹

As glacial runoff ceased, the small water courses that had been formed in the wake of retreating glaciers were transformed into swamps and marshlands. To the north of the project area was the Collect Pond, which was drained by two marsh-bordered streams. The westernmost of these streams flowed along the line of present-day Canal Street through Lispenard's Meadows, a large stretch of marshland in today's Greenwich Village. The other branch extended from the Collect Pond to the southwest and emptied out into the East River in the area near modern-day James and Catherine Slips (different historic maps depict the stream in different locations and it is possible that its path was altered during the historic period). Swampy marshland bordered this stream on either side (Figure 4). Stokes' map of Original Dutch Grants shows the stream entering the streetbed of Catherine Street to the north of Cherry Street, while the remainder of the Catherine Street roadbed was covered with marsh. The 1776 Ratzler map depicting the city in 1766 suggests that after the nearby marshes were filled in, a channel was located through the streetbed of Catherine Street to drain the remaining wetland. This is reflected on other historic maps.

C. SOILS

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

D. PALEOENVIRONMENT

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

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

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

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

¹ The Viele map of 1865 indicates that the entire project area was originally fast land and was therefore not largely composed of landfill. However, this is inconsistent with other sources.

E. CURRENT CONDITIONS

Both natural forces and the actions of people have permanently changed the geographic setting of Lower Manhattan. A good portion of the Catherine Slip project area was once located under the East River. It was human intervention, through landfilling, slip, dock, pier, and wharf building and bulkheading, which transformed the waterfront.

Catherine Slip currently functions as a city street with two raised medians in its center. The raised medians, which formerly featured benches, are planted with trees and other vegetation. The slip was filled in gradually over time, leaving a wide corridor between city blocks. To the north of Cherry Street, the road narrows and becomes Catherine Street (Photographs 1 through 9). Catherine Street continues as far north as Division Street, where it terminates.

A. PREHISTORIC CONTEXT

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

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

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

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

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

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

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

B. PREVIOUSLY IDENTIFIED NATIVE AMERICAN ARCHAEOLOGICAL SITES

A review of the files at the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP), the New York State Museum (NYSM), the New York City Landmarks Preservation Commission (LPC), and cultural resource surveys of projects in the immediate vicinity indicated that there were at least two Native American archaeological sites, both villages, near the project area (see Table 3 and Figure 1). Both sites are located less than one mile from the project area.

Table 3
Previously Identified Native American Archaeological Sites

Site Name	Site #	Approximate Distance from APE	Time Period	Site Type	References
Shell Point/ Werpoes	NYSM: 4059	.42 miles (2,200 feet)	Pre-Historic	Native American village and shell middens	Parker (1922) Bolton (1922)
Nechtanc	NYSM: 4060	.45 miles (2,400 feet)	Pre-Historic, Contact	Native American village used as a retreat during 17th century wars with the Dutch	Parker (1922) Bolton (1922)

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

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

Other Native American place names in the area included *Kapsee*, a rocky ledge at the southern end of the island between Whitehall Street and Battery Place (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 thruway—known as *Wickquasgeck*—ran along the southern line of modern Broadway before splitting into two roads; one angling to the northeast and continuing northward along the approximate path of today’s Bowery Road, and the other continuing east towards *Nechtanc*. West of the fork in the trail, two offshoots extended from the main road; one traveling northward towards *Warpoes* and the other heading south towards the East River shore in the vicinity of the Brooklyn Bridge (Grumet 1981, Bolton 1934, Homberger 1994). The latter appears on Bolton’s 1922 map of Native American trails to follow the path of the southern outlet of the Collect Pond and may therefore have been located very close to the project area. Therefore, it is likely that Native Americans used that trail to access the varied resources provided by the wetlands near modern Catherine Slip.

A. INTRODUCTION – THE EAST RIVER WATERFRONT

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

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

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

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

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

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

Table 4
Water Lot Grants within the APE and Vicinity

Modern Block #	Date	Grantee	Liber/Page
251 North	7/24/1766	Stephen Crossfield and Joseph Totten	C/484
251 North	7/24/1766	Leonard Lispenard	C/411
251 North	7/24/1766	Richard Bancker	C/341
251 North	7/24/1766	Thomas W. Moore and John Gifferd	C/490
251 South	7/24/1766	Stephen Crossfield and Joseph Totten	C/477
251 South	7/24/1766	Leonard Lispenard	C/415
251 South	7/24/1766	Richard Bancker	C/345
251 South	7/24/1766	Thomas W. Moore and John Gifferd	C/496
250 North	9/9/1772	William Bedlow, and Others	D/234
251 South	11/13/1772	Elizabeth, Anthony, Mary, Leroy, and Jacob Rutgers	D/292
250 North	9/9/1772	Johannes Panet	D/246
250 North	8/13/1772	Stephen Crossfield and Joseph Totten	D/177
250 North	8/13/1772	G.W., William, Abraham, and Joseph Beckman	D/169
250 North	9/9/1772	Eve Provoost	D/209
250 North	9/9/1772	Hendrick Rutgers	D/256
250 South	9/9/1772	William Bedlow and Others	D/240
250 South	11/13/1772	Elizabeth, Anthony, Mary, Leroy, and Jacob Rutgers	D/297
250 South	9/9/1772	Johannes Panet	D/251
250 South	8/13/1772	Stephen Crossfield and Joseph Totten	D/180
250 South	8/13/1772	G.W., William, Abraham, and Joseph Beckman	D/173
250 South	9/9/1772	Eve Provoost	D/213
250 South	9/9/1772	Hendrick Rutgers	D/262

Sources: Water Lot Grant Index on file at the Manhattan Topographic Bureau.

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

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

B. 17TH CENTURY SITE HISTORY

After New Amsterdam was established in the early 17th century, the WIC created several large farms known as *bouweries* that they intended to grant to individual settlers. One of these, known as Bouwery Number 6, was located immediately north of the project site. The farm extended as far south as modern Madison Street and as far west as the “Old Kill,” the outlet of the Collect Pond which some sources suggest was formerly located near modern Catherine Street (Stokes 1967) while others indicate that it was near James Street, one block to the west. It appears that the WIC reserved the land to the south of Bouwery Number 6 for the common good rather than granting it to a specific individual. This reserved parcel, which extended south from Madison Street to the shoreline of the East River (and would therefore have included the entire Catherine Slip APE) was 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).

The WIC first granted Bouwery Number 6, in 1630 to Wolphert Gerritsen van Couwenhoven (Figure 4). 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.

To the northwest of the project area and west of the former Collect Pond outlet, was the farm of Govert Lookerman. This approximately 35 acre plantation had been established by Elias de Raet and Coenraet van Ceulen “at a very early date” (Stokes 1967 VI: 116). Part of the farm was later operated by David Provoost, as seen on the Manatus Map (Kouwenhoven 1972). It is believed that Provoost himself planted a grove of cherry trees in the area, after which Cherry Street received its name (Innes 1902). Lookermans granted the portion of his farm that was immediately west of the project area to George Cleer in 1641 and then to Thomas Stevenson in 1653 (ibid). Stevenson built two structures on the property and then transferred it to Willem Pietersen de Groot. Degroot leased the land to Dirck Claessen, at whose home the colonial road running along the East River shore terminated (ibid).

The project area was almost completely inundated by the East River or the marshes surrounding the Old Kill throughout the 17th century, and waterfront development in the area was not nearly as rapid as it was in the 18th and 19th centuries. In 1648, Abraham Pietersen, a local tavern owner who was also an advisor to Director-General Kieft, was appointed New Amsterdam’s public miller (Stokes 1967). In 1658, he constructed a dam and tide mill at the Old Kill in the vicinity of the former intersection of James and Cherry Streets (Innes 1902). The Duke’s Plan of 1664 depicts the mill near this location to the west of the Old Kill. Despite local residents’ claims that the dam and mill caused salt water to pollute the fresh water Collect Pond (ibid), Pietersen’s mill remained in place and it appears on maps until 1692 (Stokes 1967).

It is unclear if structures such as docks, piers, or wharves associated with Pietersen’s mill were ever located within the project area. It is unlikely that any mid-17th century structures not associated with the mill would have been situated within the project area, as the aforementioned home of Dirck Claesson was “in 1655...the *Ultima Thule*,” or furthest point, of the developing colony (Innes 1902: 346).

C. 18TH CENTURY SITE HISTORY

EARLY DEVELOPMENT OF THE WATERFRONT

At the beginning of the 18th century, New York’s expansion continued and soon the project area became part of the city proper. Early in the century, many hills in lower Manhattan were cut down, generating a great deal of landfilling material which was then used to create land along the East River waterfront. The man-made land was at first located near the southern tip of Manhattan, but early in the 18th century it began to extend closer to Catherine Slip (Buttenweiser 1987). Although houses and other structures were constructed along the new waterfront in areas south of the APE, shipyards were established in the vicinity of the project area in the early part of the century.

In 1710, a man named Robert Puddington petitioned the city’s Common Council to have an area of meadow and “a slip of upland” surveyed and laid out “saving the right of the city to any land there” (MCC 1675-1776 II: 407). The area was bounded by the property of Henry Brasier (also spelled Brazier), the Old Kill, the East River, and a preexisting colonial highway. The boundaries as described above suggest that Puddington was referring to the plot of land that had been granted to Willem Pietersen de Groot in 1654 and the adjacent marshland (see Figure 4). Puddington’s request may have been an attempt to encourage development and landfilling in the vicinity of the project area, which was still relatively undeveloped at the time.

The East River waterfront is clearly depicted in Burgis’ view depicting the coastline as it would have appeared circa 1716-1718. The length of the waterfront is shown as a being almost continuously occupied by shipyards, slips, wharves and bulkheads, and structures resting atop wooden pilings driven deep into the river bottom. The Burgis view shows that many areas near the tip of Manhattan had already been extended with landfill. However, in the vicinity of the project site, the shoreline is depicted as sloping down toward the sandy beaches below and it does not appear that major landfilling episodes had yet occurred. Although Catherine Slip itself is not shown, two houses located to the west of the slip are visible.

Throughout the first few decades of the 18th century, the farmland adjacent to the area of modern Catherine Slip (formerly known as Bouwery Number 6) was owned by the descendents of Cornelis Jacobsen Stille, who, as discussed above, had owned the land since the late 17th century. In 1728, the heirs sold the property to Harmanus Rutgers, Jr. (Stokes 1967). The farm included a large part of what would later be known as New York City's Seventh Ward as well as part of the Fourth Ward (Crosby 1886). Catherine Slip served as the dividing line between the two City wards, and therefore the western half of the APE was located in the Fourth Ward while the Eastern Half was part of the Seventh Ward.

Harmanus Rutgers, Jr. was a brewer, like his father and grew barley on the property for that purpose (Crosby 1886). He added to his real estate holdings in 1732 when he purchased land to the west of his property from Anthony Rutgers.¹ That land had previously been owned by Captain Thomas Delavall and Abraham and John Wendell (Stokes 1967). Rutgers' farmhouse was located to the north of the project area near the intersection of modern Oliver Street and East Broadway, well outside the APE, while a barn was situated along Catherine Street near its intersection with Division Street, north of the project site (Crosby 1886).

At the time of Harmanus Rutgers, Jr.'s land acquisition, docks and shipyards lined the East River waterfront, as seen on the Lyne map of 1731. However, that map shows that the large swampy area surrounding the Old Kill had not yet been filled in and therefore, the APE was most likely still inundated at that time. It is suggested by Burrows and Wallace (1999) that "Walton's Shipyard" was located near the foot of Catherine Street. However, Lyne's map depicts the shipyard further to the west, in the vicinity of modern Peck Slip. Neither the Lyne map nor the 1740 Carwitham map depicting the city as it appeared in 1730 indicate that any structures were located in the vicinity of the project area.

The area surrounding Catherine Slip was still relatively undeveloped in the early 1740s, at which time it was the site of a gruesome hanging. John Hughson, a white tavern owner and renowned dealer of stolen goods, his wife Sarah, and an acquaintance, Margaret Kerry, were implicated in the so-called "Great Negro Plot" of 1741. The three individuals were accused of arson after Fort George, the British stronghold at the southern tip of Manhattan, and the private residences of several wealthy citizens nearby were damaged by a fire (Burrows and Wallace 1999). The Hughsons, Kerry, and several slaves of African descent were tried, convicted, and sentenced to death as a result. John Hughson was hanged from gallows erected in the vicinity of modern Catherine Slip (DeVoe 1862). The scene is depicted on the map of New York circa 1742 drawn by David Grim in 1813 (Figure 5), which shows a man hanging from a gallows near the Old Kill. The map labels the site as the place where "Hughson [was] gibbeted." Grim's map does not indicate that any other buildings were located in the area at the time nor does it depict the presence of any roads or other development in the area. However, the map was drawn from memory in the early 19th century and may not be entirely accurate.

After the hanging, the small piece of land that formerly jutted out into the East River near the northeast corner of Cherry Street and what is now Catherine Slip was known as "Hughson's Point" (Stokes 1967). Stokes also suggests that this small peninsula was known as "Schipper Loew's Point," likely named after Skipper Laurens Cornelissen Van der Wel (Armbruster 1919). Laurens Cornelissen Van der Wel, also known as "Skipper under God of the ship the 'Angel Gabriel' of about one hundred lasts burden," owned an acre of ground near Maiden Lane and Pearl Street in the mid-17th century (Innes 1902: 298). He was described by New Amsterdam Director General William Kieft as "a man of profligate character" because Vanderwel had publicly spoken against him (ibid: 299). His exact connection to the projection of land referred to by Stokes as "Schipper Loew's Point" is unclear.

In 1743, two years after Hughson's hanging, Anthony Rutgers, John and Jacobus Roosevelt, and Christopher Bancker asked the Common Council for "a grant of land and soil under the water from high water to low water mark and from thence 200 foot into the river between DesBrosses and the land of Harmanus Rutgers in Montgomerie Ward" (MCC 1674-1776 V: 113). These water lots were located to the west of modern Catherine Slip, between Cherry and Water Streets, and each water lot grant served to extend property already owned by those four men to the north of Cherry Street (see Table 4). According to the "Roosevelt Farm map," in 1797 the former Anthony Rutgers property to the west of the Old Kill was divided by his heirs into 140 lots. The map depicts most of the property adjacent to the APE. The map only appears to depict the areas that were formerly marsh or meadow, located to the

¹ This was most likely his brother, although Harmanus Rutgers, Jr. also had two nephews named Anthony

west of the Old Kill, the path of which appears to be reflected in the property lines depicted on the map. Because of the irregular property lines which appear to have been created around the area's original topography, the map does not depict the northern or southeastern portions of the APE. In addition to being the first map to depict the slip at the foot of Catherine Street and it is also the first to depict Cherry and Oak Streets, although it is not clear if they had been constructed or simply laid out.

Rutgers' heirs, including his daughters Cornelia and Elsie, Elsie's husband Leonard Lispenard, Dirk and Aletta Lefferts, and Mary Rutgers, and John and Jacobus Roosevelt retained a single lot which was located on the western side of Catherine Slip between Cherry and Water Streets. A pier was adjacent to this lot, extending into Catherine Slip, which had been established by that time, and a wharf stood to the south, in the approximate location of modern Water Street. Because of 20th Century Street widening, the pier and the lot owned by the Rutgers heirs were both situated in the APE. The map shows that the lots lining the western side of Catherine Street between Cherry Street and the northern boundary of the Rutgers property (between 50 and 100 feet south of modern Madison Street) were owned by Anthony Rutgers, John Roosevelt, Jacobus Roosevelt, and Christopher Bancker. Again, because of street widening, portions of these lots are within the APE.

In 1748, Cornelia Rutgers, Leonard Lispenard, John and Jacobus Roosevelt, and Christopher Bancker again requested the water lots, presumably for the area between South and Water Streets, south of the property they had already acquired. However, the Minutes of the Common Council do not indicate that such grants were actually made until 1764, when Leonard Lispenard, Cornelia Rutgers, and others were given water lots adjacent to their properties (MCC VI: 368).

Water lot grant information on file at the Manhattan Topographical Bureau indicates that water lots were not granted in the area south of Cherry Street until 1766, and south of Water Street until 1772 (Appendix A). However, these dates represent when the grants were formally recorded, not necessarily when they were issued. The 1754 Maerschlack map, which depicts both proposed and existing development along the waterfront, indicates that some water lots and/or wharves in the vicinity of Catherine Slip had been granted as far south as South Street. While it depicts other such slips, this map does not indicate the presence of a slip at the foot of Catherine Street, although, because it presents projected street development, it is not entirely accurate as to what actually existed at the time. Property lines drawn on the map mirror those seen on the Roosevelt Farm map in the vicinity of Catherine Slip, and therefore Catherine Street is not depicted as continuing as far north as modern Madison Street, then known as Bancker's Street.

On the eastern side of Catherine Street, in the area not depicted on either the 1747 Roosevelt Farm or 1754 Maerschlack maps, all of the water lots on the eastern side of Catherine Slip between Cherry and South Streets were granted to Hendrick Rutgers in the mid-18th century. Hendrick was the son of Harmanus Rutgers, Jr., who had died in 1753 "a very eminent brewer of this city and a worthy, honest man" (Crosby 1886: 87). Hendrick, who was born in 1712, had already been living on the property at the time of his father's passing along with his wife, Catharine. Although Hendrick Rutgers' mother, paternal grandmother, daughter, and several other female relations were also named Catharine or Catharina, it appears that the Street and Slip were in fact named for his wife, Catharine DePeyster, daughter of the former mayor of New York City (ibid).

In 1755, Hendrick Rutgers petitioned the Common Council for a water lot grant fronting his lot between the high water mark and a point 100 feet past the low water mark along the East River beginning at a point east of the property held by the Roosevelts and the heirs of Anthony Rutgers (MCC 1675-1776 VI: 14). The water lot was granted with the stipulation that the city could direct "where and in what manner Cherry Street [would] range" (ibid). Again, water lot grant records do not indicate that Rutgers actually received the lot east of Catherine Slip between Cherry and South Streets until 1772. In addition, on the same day that Rutgers was granted his water lot, the Common Council ordered that all roads in the former Montgomery Ward, in which the project area was situated, should be laid out and paved (MCC 1675-1776 VI:14). In 1769, Rutgers purchased land owned by the Roosevelts and the heirs of Anthony Rutgers "to straighten the property lines," this appears to have been the partial lots immediately east of Catherine Street as seen on the Roosevelt farm Map (Stokes 1967 VI: 135).

The 1766 Montresor map depicts landfilling along the shore of the East River in the vicinity of Catherine Street, although the map suggests that the shoreline did not yet extend far past Cherry Street. The map does indicate that the Old Kill and much of the swampland that had formerly surrounded it had been filled in by that time and many streets were constructed through the area. However, the map does not indicate that Catherine Slip or Catherine Street had

yet been constructed. The area bounded by modern Cherry and James Streets, East Broadway, and Market Slip was the last remaining marshy area and the map says of it, “this overflow is constantly filling up in order to build on.” The map depicts several structures lining the northern side of Cherry Street, which seems slightly wider than on previous maps, indicating that some landfilling had taken place, extending the shore towards modern Water Street.

The Rutzer map, also depicting the city in 1766, is similar to Montresor’s although it is more precise. It, too, indicates the marshy “overflow” seen in the previous map, but it also depicts Catherine Street between Cherry Street and an area just south of Madison Street.¹ It also illustrates several buildings in the areas adjacent to the project area. The map depicts a structure on the western side of Catherine Street approximately 150 feet north of Cherry Street, immediately south of the marshy overflow (see Figure 6). A portion of this structure would have been located within the APE. This structure is not depicted on a similar version of the map often referred to as the “Ratzen Plan.” Both versions of the map depict a small stream draining the overflow out into the east River along the route of Catherine Street. A small slip is also shown at the foot of Catherine Street, the beginning of what would become Catherine Slip, and also documents numerous shipyards along the coastline to the east and west.

THE PROJECT SITE DURING THE REVOLUTIONARY WAR

Rutzer’s map is one of the last to depict New York as a British colony before the American Revolution began in 1776. Hendrick Rutgers sided with the Americans during the war, and after the British captured New York in 1776, he fled to Albany, where he died three years later (Crosby 1886). In his absence, his property was occupied by the British army. The Rutgers home, north of the project area near modern Bowery Lane, was used as a hospital and the “marks of confiscation were visible” throughout the early 19th century (ibid: 90).

During the course of the Revolutionary War, a 7-gun fortification known as *Waterbury’s Battery* was located on a wharf near the southeast corner of Catherine and Cherry Streets. In 1776 George Washington described the fascine battery² as being “below [a] hill, on a Wharf” south of *Badlam’s Redoubt*³ and southeast of *Spencer’s Redoubt* (Abbot and Twohig 1985: 368). The battery was built by troops from Connecticut led by Colonel David Waterbury, after whom the battery was named (Lossing 1850).

Waterbury’s Battery is shown on both the Hills map and the B.F. Stevens facsimile of the British Headquarters map (Figure 7), which both depict the city circa 1782. Both maps show it to have been located directly east of the project area and extending almost as far south as modern Water Street, which had not yet been laid out in this area. Because of the inaccuracy of these maps, it is unclear if the battery or any of the buildings constructed nearby were situated within the bounds of the project area. The latter map also indicates that the *King’s Naval Yard* was located a few blocks to the east (neither the battery nor the navy yard is depicted on the original version of the British Headquarters Map).

Documentary evidence shows that British soldiers used the area surrounding *Waterbury’s* and *Badlam’s Batteries* as a burial ground. The *Minutes of the Common Council* (MCC) for the years 1784 through 1831 include two references of the removal of human remains from the streetbed of Catherine Street. The first, dated November 24, 1785, noted that a man named John Barney was paid more than £21 “for removing dead bodies buried in Catharine Street by the British Army” (MCC I: 187). Several years later, on March 12, 1788, a man named John Crowshorn was paid “for removing and interring a number of dead bodies (interred by the British during the Late War in Catherine Street)” (ibid: 356). Crowshorn was paid a sum of £4.1, indicating that he did substantially less work than Barney and, presumably, disinterred fewer human remains. At the end of 1784, the Common Council had noted that Catherine Street was “in [a] dangerous situation for want of filling” (MCC I: 106) and they ordered that the street be regulated and paved in April 1785 (ibid: 133). Therefore, it is possible that in the 1780s, the marshy areas formerly south of Rutgers hill were filled in and Catherine Street was continued to the north of modern Madison Street. It is

¹ A version of the Montresor map published in 1775 and a plan of the city by an unknown cartographer dating to 1776 both suggest that Catherine Street had not yet been established. However, both maps feature other inaccuracies, and the extent of development in the area at this time is unclear.

² A fascine battery was commonly constructed by piling bundles of wood that were held in place with vines and wood stakes (Stotz 1974).

³ Located to the northeast of the APE on Rutgers Hill, near the intersection of Madison Street and Pike Slip.

therefore possible that the human remains interred by the British were accidentally encountered during roadwork and therefore John Barney was hired to clear the area of remains before work continued. Then, in preparation for additional regulation and grading that occurred in the late 1780s, John Crowshorn was hired to remove any remaining graves.

It is unclear exactly where and/or when the human remains were interred in the area. In a quit claim dating to circa 1779, Henry Rutgers, the son and heir of Hendrick Rutgers, described the opening of “a street of forty feet wide...intended to be run and cut through” his property as far north as modern East Broadway (Stokes 1967 VI: 136). Because Catherine Street is depicted as constructed as far north as modern Madison Street (at the base of Rutgers Hill) before this time, it is likely that Rutgers was describing the opening of Catherine Street between Madison Street and East Broadway, a distance of approximately two blocks. The extension of Catherine Street to East Broadway is not depicted on the circa 1782 British Headquarters map. The proposed line of the road may be seen on the 1782 Hills map, but it is not fully depicted until the 1797 Taylor-Roberts Plan.

A narrow portion of the former Rutgers property that stretched between the Bedlam Redoubt and the Jews’ Burial Ground—formerly located north of Madison Street near Oliver Street—is shaded in with small hatchmarks on B.F. Stevens’ 1900 facsimile of the circa 1782 British Headquarters Map (but not on the original version of the map). The map depicts similar hatching on burial grounds in other portions of the city, including the African Burial Ground north of today’s City Hall Park and the Trinity Church Cemetery. If that map is accurate, then all of the burials in the vicinity of Catherine Street were located on upland areas north of the APE. The burials were likely placed there between 1776, when Hendrick Rutgers fled the city, and 1782, when the British evacuated the city.

The 1782 British Headquarters map and the subsequent facsimile both indicate that buildings may have entered the APE near Madison Street, although the maps’ inaccuracy make this difficult to determine.

POST-REVOLUTIONARY DEVELOPMENT

After the American victory in the Revolutionary War and the subsequent British evacuation in 1782, Henry Rutgers, the son of Hendrick, inherited most of his father’s property including most of the project site. Henry’s siblings, Mary McCrea, Catharine Bedlow, and Anne Bancker also received property in the area (Crosby 1886). Henry Rutgers never married and lived in a house to the east of the APE. He gradually sold off portions of his estate until his death in 1830 (*ibid*).

With the war over, the development of the waterfront and the expansion of the city intensified. In 1784, a bulkhead was built across Catherine Slip, presumably just south of Cherry Street, which at that time was at the foot of Catherine Street (MCC I: 70).

In 1785, the city paid Nicholas Bayard to fill in Catherine Slip. It is likely that the slip was filled at least as far as Water Street at that time because in the following year, a public market was established within Catherine Slip between Cherry and Water Streets (for a discussion of the market, see below). A map allegedly depicting the area in 1784 was drawn by J.B. Holmes in 1874. It inaccurately depicts two market buildings on the site while documentary evidence suggests that the second building was not constructed until much later. The map also indicates that Hendrick Rutgers’ original water lot grant along the east side of the slip between Cherry and Water Streets had been subdivided in 1786 and purchased or inherited by Hendrick Rutgers’ heirs. The new owners were, from north to south, Margaret McCrea, Gerard DePeyster, Henry Rutgers, Ann Bancker, and William Beadle (possibly Bedlow). An additional six water lots, some filled and some unfilled, are depicted south of Water Street to the east of Catherine Slip, although no names are associated with these lots. The areas north of the slip were also lotted out, although those, too, were not associated with individual owners. Despite the street widening, none of the historic lots to the east of Catherine Street or Catherine Slip are within the APE with the exception of the small portion of the project area that extends past the eastern curb line of Catherine Slip south of Cherry Street. Only portions of the lots purchased by McCrea and DePeyster in 1786 are situated within the APE.

All of the water lots that had been granted along the entire length of the East River waterfront between Catherine and Rutgers Slips were ordered to be filled in order to continue Cherry Street through the area in 1790 (MCC I: 551). The following year, Catherine and Cherry Streets were both regulated and as a result, the Catherine Slip market was at a lower elevation than the adjacent roads. Therefore, both the market house and the surrounding streets were ordered to be “raised considerably” (MCC I: 649, 651, 660). In 1793, Catherine Street was ordered to be “dug out” and regulated and the lots to the west of it filled in (MCC I: 773, II: 4). Shortly afterward, a request to sink

wells at the corner of Catherine and Cherry Streets was submitted to the Common Council (MCC II: 16). In 1795, the Common Council ordered that Catherine Slip be paved between Cherry Street and the bulkhead to the south, covering the area where the market stood (MCC II: 135).

By the time of the publication of the Taylor-Roberts map in 1797, the areas on either side of the slip had been completely filled to Water Street and a large, abnormally shaped pier stretched along the west side reaching the location of modern South Street. The pier was constructed in association with the “New Ferry to Brooklyn,” which, along with the “Old Ferry to Brooklyn” at Maiden Lane (formerly Fly Market Slip), were the only two ferries running between Manhattan and Brooklyn at that time (Armbruster 1919). With the addition of the ferry and the market, Catherine Slip was considered to be “one of the principal wharves of the city” during the late 18th century (Stokes 1967 VI: 669).

The Taylor-Roberts map clearly indicates that landfilling had extended the shoreline to Water Street on both sides of the slip by that time. However, two maps depicting the Rutgers farm—one drawn by Thomas Goerck between circa 1785 and 1798 and another, the “Upland and Water Lots” map, by an unknown cartographer, dating between circa 1797 and 1809—suggest that the area to the east of the slip was filled out to South Street around the turn of the century. This is inconsistent with other early 19th century maps and it is possible that these maps depict proposed landfill locations rather than actual development.

In 1797, the Common Council decreed that all owners of water lots between Catherine and Coenties Slips would be responsible for creating and finishing sections of South Street, which was to be 70 feet wide and constructed of “wholesome earth” (MCC II: 339). A new bulkhead was constructed across the slip along the line of Water Street and what remained of the slip to the north was filled in (MCC II: 402). The original estimates for the new bulkhead’s measurements stated that it would be 80 feet long—the width of the slip at the time—15 feet wide on the bottom and 10 feet wide on the top (MCC 1784-1831 II: 444). Therefore, it is likely that the 1797 Taylor-Roberts plan accurately depicts the construction of the new bulkhead at Water Street and the other two maps, dating 1785-1798 and 1797-1809, portray the Common Council’s orders to fill in the land out to South Street.

The area’s growth intensified through the end of the 18th century, and in 1795 a new ferry to Long Island was established at Catherine Slip (Stokes 1967). That year, William Furman and Theodore Hunt petitioned the common council to operate the ferry, and they were granted a 5 year lease to do so with 2 large and 2 small boats (MCC II: 132, 150). Continuing street regulations required the street surrounding the market to be raised again in 1799 (MCC II: 534). That same year, the Common Council was petitioned to tear down the old market building and replace it with a new, larger structure to accommodate the growing population in the neighborhood (MCC II: 566).

Diseases spread quickly through the growing population, and 18th century misunderstandings of health and sanitation led people to believe that unfinished water lots and refuse-filled landfill created “miasmas” which were partially to blame. As a result of these fears, in 1799, the Common Council ordered all unfinished water lots throughout the city to be filled in with “wholesome earth...so as to case the water collecting thereon over the surface into the streets or river” (MCC II: 495). Additional stipulations prevented these lots from being dug up during the summer to prevent what was thought to be the release of toxic fumes (ibid).

D. 19TH CENTURY SITE HISTORY

At the beginning of the 19th century, the market and ferry on Catherine Slip continued to thrive, however, they also generated a significant amount of dirt and refuse. Like many of the city’s streets at the time, Catherine Street was a “foul, muddy [lane] blocked by refuse...choked with pools of slime and silt” (Burrows and Wallace 1999: 391). In 1801, the ferry was enlarged to include more boats which increased both the number of individuals crowding into Catherine Slip at any given time and the amount of debris discarded on the street and in the water (MCC II: 1706). The debris that collected at the bottom of the slip was not limited to discarded trash, and in 1803 a sunken vessel that was stuck at the bottom of the slip near the ferry stairs was ordered to be removed (MCC III: 213).

The increasing population density forced the pace of landfilling to increase. The continuation of Front Street as far east as Catherine Slip was first suggested in 1805, however, there were concerns that if additional piers were not constructed beforehand, the shipping industry would be adversely affected and the construction of the street was delayed (MCC IV: 68). The 1808 Longworth map does not suggest that Front Street was continued at this time, although Water Street may have been completed as far east as Catherine Slip, but that it may have been incomplete or projected (the map indicates the street with a dashed line). The map also shows a long pier extending out into the

East River on either side of the slip. The eastern pier may be “Pearsall’s Dock,” which is briefly mentioned by Stokes (1967) and was located on the eastern side of the slip in the early 19th century (Tauber 2005). The dock was built within a water lot purchased by Elijah Pell and Thomas Pearsall, both merchants (New York City Wills, Liber 42 p. 473). Pell also owned a house on “the north side of Cherry Street, fronting Catherine Slip,” although it is not clear if this house would have been located within the APE (ibid).

The Longworth map also depicts several larger wharves to the south of Water Street. These piers and wharves were most likely associated with the “New Long Island Ferry” to Brooklyn that had been established at Catherine Slip in 1795. With the exception of ferryboats, all watercraft were banned from Catherine Slip in 1808 (MCC V: 137).

Despite the landfilling that had transformed the area, its history as a marshland caused some difficulties for the individuals working in and living around the market. Towards the end of the 18th century, flooding had been a problem for the slip’s inhabitants, and it became a dilemma again in the first few years of the 19th century (Stokes 1967). In 1808, it was decided that the market area should be paved so that water would flow out into the East River and later that year the walks surrounding the market were paved with flagstones (MCC III: 246, 304).

The extent of landfill during the first 15 years of the 19th century is difficult to determine because of inconsistencies in the cartographic record. Two maps dating to 1811, one drawn by Adolphus Loss (Figure 8) and another by William Bridges, both appear to depict *proposed* landfill in the vicinity of the APE rather than *actual* development. These maps depict the land to the east of the project area as completely filled out to modern South Street (which was known as Front Street at the time). However, a map drawn by Bridges and Poppleton in 1813 (Figure 9) suggests that neither 1811 map is accurate. The 1813 map shows that Catherine Slip itself had been filled out past Water Street by that time, and that the land to the East had been filled out towards Front Street, which was not yet continued through the area. It also depicts a structure located at the end of the pier lining the eastern side of the slip, which was presumably the ferry house at the time. This, along with the two market buildings located there at the time, would have been situated within the APE. It is unclear if any other buildings were adjacent to or within the project site. The 1813 map also indicates that the two lots within the APE on the eastern side of Catherine Slip had been sold, but the map does not provide the names of the new owners.

In 1813, the city hired E. Gennings for the “digging and stoning” of Catherine Street (MCC VII: 557). By 1815, a 150-foot pier, sometimes referred to as the Catherine Street Pier, was constructed on the western side of the slip, extending as far south as modern South Street (MCC VIII: 15). Around the same time, it was ordered that the entire area should be filled out to Front Street (Stokes 1967). In 1816, a new bulkhead was ordered to be constructed near the Ferry landing. That same year, the city paid Higgins and Parks for 104 loads of sand (MCC VIII: 589, 622), although it is unclear if that was for the landfill or to raise the ground around the market so that gutters could be installed to provide better drainage for the market (DeVoe 1862). By 1818, a 40 to 50 foot extension of the ferry pier was ordered to be constructed in order to increase safety and to repair damage to the pier and ferry bridges caused by ice and tidal action (MCC IX: 278). However, the addition may not have been completed until 1821, when the piers on both sides were reported to be heavily deteriorated (MCC XII: 14, 42).

By 1824, both the neighborhood around Catherine Slip and the slip itself had been filled out to South Street. A version of Hooker’s *Pocket Plan of New York City* published in 1824 is the first to depict the project area as completely filled. That same year, William F. Baker and other individuals who owned water lots between Catherine Slip and Market Slip to the east had petitioned the Common Council to order all other water lot owners between the two slips to fill them in, although they were reluctant to do so (MCC XIII: 721). Also that year, Rodman and Samuel Bowne, the lessees of the Catherine Slip ferry, asked that the pier on the south side of the slip be extended, possibly in response to the extension of the shoreline (MCC XIV: 4). The two men repeated their request the following year, and a few months later the Common Council resolved to build an additional block and a bridge at the southwestern portion of the slip (ibid: 339, 429).

With the land filled out to South Street, Catherine Market had significant room to expand, and commercial enterprises sprung up around it. By the 1820s, the first Lord and Taylor store (which at that time sold dry goods) was opened near the intersection of Catherine and Madison Streets, as had the original Brooks Brothers Store at the northeast corner of Catherine Slip and Cherry Street (Burrows and Wallace 1999). During the 1820s, additional improvements were made to the slip south of the APE. By that time, steamboats had become standard in the shipping industry and the ferry landing at Catherine Slip, now south of the APE, had been renovated to accommodate the larger boats (MCC XIV: 736).

No significant changes to the project area are visible on maps until the mid-19th century. However, documentary research confirms that water lines associated with the Croton Water works were installed within the APE during the 1820s, 1830s, and 1840s (subsurface utilities are described in greater detail in Chapter 5). In 1829, a “huge iron pipe” was installed along the Bowery between a large reservoir near the intersection of Broadway and 13th Street and Catherine Street (Burrows and Wallace 1999: 589). Additional pipes and stop-cocks were installed surrounding the Catherine Market before 1842, when the Endicott map was published. Despite the presence of water and sewer networks in the area, in 1864 fewer than half of the tenant houses in the Fourth Ward, which included the structures lining the western side of Catherine Slip, were connected to sewer lines. Instead, “liquid waste [was] emptied on the sidewalk or into the street, or in some instances into sinks in the domiciles communicating with a common pipe which discharges its contents into the open gutter...uniting its fetid streams with numerous others from similar sources before reaching its subterranean destination” (Pulling 1864: 44). Privies were in use in the neighborhood through the mid 19th century. The Pulling map of 1864 (Figure 10) indicates that privies, many of which were “in an extremely offensive condition,” were located in many historic lots which were adjacent to or partially within the APE. None of the privies depicted on the map were located within the APE, however.

The 1852 Dripps map is the first to clearly depict the footprints of the structures that lined Catherine Slip and Catherine Street to the north. The map shows that buildings completely lined the streets surrounding the APE. Because of the street widening that occurred in the 20th century, portions of the lots lining the western side of Catherine Slip between Cherry and Madison Streets as seen on the 1852 Dripps map were situated within the APE. As Cherry Street was narrower to the west of Catherine Slip than it was to the east, the buildings formerly located on the north side of Cherry Street immediately west of the slip were also located within the APE. Catherine Slip (between South and Cherry Streets) was widened by approximately 20 to 24 feet while Catherine Street was widened by approximately 37 feet to the west (see Table 5, below).

Table 5
Changes in Street Widths Over Time

Map/Year	Street Width as Presented on Map (in feet)			
	Catherine Slip	Catherine Street	Cherry Street	Madison Street
Goerck ca. 1785	<i>Map does not depict entire area</i>	40	60	<i>Not Given</i>
Loss 1811	Approximately 124	<i>Not Given</i>	60	<i>Not Given</i>
Bromley 1879	Approximately 120	40	60	61
Sanborn 1894	Approximately 120	At Cherry Street: 42.5 At Madison Street: 43	East of Catherine Slip = 59 (-1) West of Slip = 39.5 (-20.5)	East of Catherine Street: 55.5 (-5.5) West of Catherine Street: 60.5
Sanborn 1923	121 to 122	At Cherry Street: 42.5 At Madison Street: 43	East of Catherine Slip = 59 West of Slip = 39	East of Catherine Street: 55.5 West of Catherine Street: 60.5
Sanborn 1951	145 (+23 to 24)	80 (+36.5 to 37)	East of Catherine Slip = 59 West of Slip = de-mapped	East of Catherine Street: 80 (+24.5) West of Catherine Street: 60.5
Sanborn 2007	145	80	East of Catherine Slip = 59	East of Catherine Street: 80 West of Catherine Street: 60.5

Notes: Significant changes in street width are identified in bold.

The Perris atlases of 1852 and 1857 (Figure 11) provide more detail about the buildings that were formerly located within the APE. The maps are virtually identical and only minor differences to some of the buildings are visible on the latter map. Both maps show that the majority of the buildings adjacent to Catherine Slip (not including the market buildings) were what Perris defined as, “first-class” brick dwellings with stores underneath, although all the buildings on the eastern side of the Slip between Cherry and Water Streets were first class wood frame dwellings. To the north of the slip, along Catherine Street between Cherry and Madison Streets, most of the structures that lined the street were also brick dwellings with stores underneath, although on the western side of Catherine Street between Cherry and Oak Streets, many of the buildings were constructed of wood.

The Pulling map of 1864, which only depicts the western side of the APE, suggests that the general nature of the neighborhood had not changed significantly since the time the Perris atlases were published. That map shows that

the entire western side of the project area (including the buildings on the northern side of Cherry Street) was occupied by two- to five-story commercial structures, only a handful of which were identified as residential. Almost all of the buildings, including the former Mariner's Church at the southwest corner of Catherine and Madison Streets, were identified as being occupied by stores, including many that sold liquor. The map also shows that a street sewer ran along the western side of Catherine Slip, although it is not clear if this is a subsurface sewer or one of the street gutters that had been installed earlier in the century. It is likely that it was a street gutter, as the rear yards of many of the buildings lining the APE between Cherry and Madison Streets contained privies, many of which the map defines as being in "an extremely offensive condition." None of the rear yards that contained privies at this time were situated within the APE and in those locations the project site is contained entirely within building footprints.

The area remained a hub of commercial activity throughout the mid-19th century, although the economic impacts of the Civil War were detrimental to the area. Although the city's economy recovered after the Civil War, the conditions of the market and Catherine Slip, which began to deteriorate in the mid-19th century, did not. Sanitary inspection reports of the Fourth and Seventh Wards—which were divided by Catherine Slip—describe the squalid conditions of the neighborhood in 1864. In the Fourth Ward, to the west of Catherine Slip, the filthy cobblestone streets were rarely cleaned and contained overflowing street gutters, which rag-pickers sorted through, removing junk to sell or discarded food and animal carcasses which were occasionally turned into "the familiar sausage" and bread puddings (Pulling 1864: 60). The tenements were overcrowded, diseases including Typhus and small pox ran rampant, and infant mortality rates were higher than 44 percent (ibid, Smith 1864). As "rum and poverty [went] hand in hand," (Smith 1864: 106) there was one liquor store for every 8 families living in the neighborhood, while there was one "grocery" store which usually sold bad quality food for every 27 families (Pulling 1864). The Seventh Ward was notoriously occupied by the working class, including mechanics, longshoremen, and sailors (Smith 1864).

The area had quickly become a slum, and despite the presence of water and sewer lines, privies and cisterns continued to be used for water gathering and sanitation purposes. In both wards, privies, commonly the "well-hole kind" (Smith 1864: 101), were often located in rear courtyards, used by tenants in both front and rear buildings and "their presence [was] quite as perceptible to the smell as to the sight," while other privies were located in the basements of buildings (Pulling 1864: 48). Some were connected to the Croton water system, however less than 30 percent of the water closets in the Fourth Ward were connected to sewers (ibid). These sewers, which were extremely unreliable, often emptied out into slips near the high water mark (Smith 1864). Although many buildings had hydrants and sinks in their courtyards for the use of surrounding tenants, these often malfunctioned and old cisterns were used as well (ibid).

In 1872, the *New York Times* reported that "a very offensive smell came from Catharine market" and that "Water Street from Rutgers to Catharine was littered with ashes and garbage" (*NYT* 6/15/1872: 4). Later that year, the paper reported that the overflowing street gutters, which were covered with small foot bridges, were in some places obstructed by sheds haphazardly erected by hucksters selling items such as coal, oysters, poultry, produce, and tripe, resulting in conditions that were "detrimental to health" (*NYT* 8/31/1872: 2). It was recommended at that time that the huckster stands should be removed so that the market could receive proper light and ventilation.

Despite its seemingly unsanitary conditions, the market remained open. The 1879 Bromley and 1885 Robinson atlases do not depict any significant changes to the market or the buildings surrounding it, with one exception: at the northeast corner of Catherine Slip and South Street, several buildings had been replaced with a large hotel. The hotel first appears on the 1867 Lloyd map, where it is labeled, "M.M. Van Dyke Hotel & [Drinking] Saloon." To the south, at the corner of Catherine Slip and South Street, was another establishment shown on the Lloyd map as a "bar and lodge."

The project area and its surroundings remained relatively unchanged through the end of the century. A Bromley atlas published in 1891 (Figure 12) indicates that all of the buildings surrounding the project area were brick structures, with the exception of one wood frame dwelling at the southwest corner of Catherine Slip and Cherry Streets and the structures on the east side of Catherine Slip between Cherry and Water Streets. An 1894 Sanborn Insurance map does not indicate any further changes. The unsavory inhabitants and slum-like settings were present in the area through the end of the 19th century. One bar in particular, the "Glass House" at 18 Catherine Slip was just one of the "famous resorts for the thieves and cutthroats of the Fourth Ward," including the bartender, who murdered his wife there (Moss 1897: 102).

E. 20TH CENTURY SITE HISTORY

Catherine Market was removed in the first decade of the 20th century and the property subsequently became a functioning city street. The 1923 Sanborn map does not depict any significant changes to the neighborhood with the exception of the removal of the market. While some of the lots adjacent to the street were redeveloped with more modern buildings, the area's reputation as one of the city's worst slums persisted. Throughout the first few decades of the 20th century, the block bounded by Catharine and Market Slips and Cherry and Hamilton Streets (adjacent to the APE) became known as the "Lung Block" (*NYT* 4/1/1933). It was thought to be one of the worst places to live in the city "from a sanitary point of view [and] from a criminal point of view" (*ibid*: 14). Around 1933, all of the buildings on the block were demolished for the construction of the Knickerbocker Village, one of the first large housing projects in the neighborhood. Knickerbocker Village was constructed in an attempt to revitalize the neighborhood and provide a healthier and more pleasant atmosphere for both the residents of the buildings and of the surrounding area. However, the "squalor [was] merely shifted," and only 3 of the 386 families who formerly lived on the Lung Block could afford to remain there (*NYT* 12/22/1933: 23). At the same time, the population of the Lower East Side was quickly decreasing, due to lower immigration rates and the working class' "exodus to Bronx, Brooklyn, and Queens" (*NYT* 4/1/1933: 14).

In conjunction with the construction of Knickerbocker Village, the center medians within Catherine Slip were also constructed in 1933. The medians were made of granite blocks and were lined with wood and concrete benches. Oriental Plane trees (*Platanus orientalis*) were also planted in 4 by 4 foot openings in the granite paving though the centers of the medians. Plans prepared that year by the City of New York Department of Parks suggest that the tree pits located within the medians were dug to depths of approximately 3.5 feet below street grade while the granite paving extended less than one foot into the ground surface and rested on a one-inch thick bed of topsoil.

Some ten years after the Knickerbocker Village construction began, the city began to plan additional housing projects for the East River Waterfront. In the early 1940s, a large housing project was proposed. The development was known as the Alfred E. Smith houses, in honor of the recently deceased New York State governor who had been a proponent of slum clearance and housing reform as well as a former Lower East Side resident (*NYT* 10/7/1944). The complex is located on a large parcel of land west of Catherine Street and south of Madison Street where many tenement buildings were formerly located, including portions of the ones that also entered the APE. As part of the project, the structures that formerly lined the west side of Catherine Slip and Catherine Street between South and Madison Streets were demolished. More than 1,500 families were forced out of their homes for this reason, although community groups convinced the city to construct the housing complex in stages so that they were not all evicted at once (*NYT* 5/23/1946). The city gained the land through condemnation, although through court settlements the owners of the 297 seized properties were paid approximately \$5,707,078 (*NYT* 10/11/1947).

In 1948, 2,321 apartments had been vacated and many buildings had already been razed (*NYT* 3/23/1948). The portion of the housing project adjacent to the project area may not have been completed until the early 1950s. The housing complex is shown in its completed state on a Sanborn atlas updated through 1951 (Figure 13). The map shows that a large, 17-story building with a basement had been constructed along the western side of Catherine Slip, south of the former location of Water Street, which had been de-mapped in that location. On the north side of the former line of Water Street was a large open area which later maps indicate was used as a playground.

An official city map dating to 1951 depicts the widening of Catherine Slip at that time. The streetbed of Catherine Slip was widened by 23 to 24 feet on the west side to straighten out the line of the street and make it consistent with Catherine Street to the north, which itself had been widened by approximately 37 feet to the west (see Table 5). Therefore, while the lots to the east of Catherine Slip retained their historic dimensions—many had not been altered since they were granted as water lots in the 18th and 19th centuries—the front 23 to 24 feet of the domestic lots on the western side of Catherine Slip and the front 37 feet of the lots on western side of Catherine Street between Cherry and Madison Streets were now included within the streetbed. These lots are described in greater detail in Section G, below.

F. CATHARINE MARKET

GENERAL MARKET HISTORY

Markets were generally confined to the East River waterfront during most of New York City's early development. In the mid 17th century, New Netherlands' Director-General Peter Stuyvesant implemented government regulation of the city's markets. In 1656, farmers from neighboring areas were permitted to sell their produce on the shores of the East River (Burrows and Wallace 1999). The goods were brought over in small boats and sold at the waterfront. The city, therefore, adopted the unusual habit of locating markets in places convenient to the seller, not the consumer (Rothschild 1990).

The peripheral location of marketplaces was maintained for more than one hundred years. Until the mid-18th century, all of the city's markets were located along the East River. They were constructed directly on the slips and piers that jutted out into the water. As shipping technologies improved and landfill extended the shoreline into deeper waters, the markets only increased in size and extent as greater amounts of produce and other goods were being imported. Although the number of markets decreased significantly near the turn of the 19th century—in fact, two of the city's five pre-Revolutionary War markets had been abandoned by the 1780s (Burrows and Wallace 1999)—the post-Revolutionary population boom forced markets to be established throughout Manhattan in order to accommodate the rising number of inhabitants (Rothschild 1990).

The Catherine Slip market was established shortly after the end of the Revolutionary War, in May, 1786, when residents of Catherine Street requested its construction (MCC I: 220). By the end of June that same year, the market house had been constructed and, being “ready for the reception and accommodation of butchers and country people,” was opened as a public market controlled by the city (MCC I: 225). At the time of its opening, many butchers who had maintained stalls at the Peck Slip market moved their businesses over to the newer, more successful Catherine Market.

The original market house was located “with the west end facing Cherry Street; the south side just cleared the north side of Catherine Street, and the east end was not quite down to Water Street” (*NYT* 4/28/1889: 20). It held nine butcher stands and first appears on McComb's 1789 map. On that map, it is shown to have been constructed at the very foot of Catherine Street, which at that time was located just south of Cherry Street. In 1799, the market was ordered to be enlarged in order to hold 16 butcher stands (DeVoe 1862). What is presumably the expanded market—which was still under construction in August, 1800 (Stokes 1967)—is depicted on the 1808 Longworth map on the filled-in portion of the slip immediately south of Cherry Street. The market as depicted on that map was adjacent to the open waterway, most likely to accommodate boats bringing in produce as well as the fresh fish sellers who had stalls in the market as early as 1797 (*ibid*). Perhaps the best early image of the market building appears on the Loss map depicting the area in 1811 (Figure 8). That map shows the small market building extending from the paved portion of the slip near Cherry Street into the water of Catherine Slip. It is not clear if the structure actually extended over the edge of the wharf on which it was built, and was therefore built on top of wooden pilings.

The first “coffee and chocolate” saleswoman was working at the market as early as 1801 (DeVoe 1862: 347). “Country people” selling produce and fisherman soon began to work the market as well, and in 1805 a second market building was constructed for their exclusive use. This building was later known as the “Lower Market” and it measured 30 feet along Water Street and 18 feet along Catherine Slip (*ibid*). This configuration is presumably the one depicted on the 1813 Bridges and Poppleton (Figure 9) and 1874 Holmes maps.

Eventually, Catherine Market became known as one of the best places in the city to purchase fresh fish (DeVoe 1862). The market's popularity surged in the early 19th century. In 1810, its central location made it an ideal spot for a bell to alert the neighborhood in the event of a fire, which were very frequent at the time (MCC VI: 154). Two years later, a well and a pump were installed in Catherine Street for use by the city's firemen, although exactly where is unknown (MCC VII: 302).

In 1811, six additional butcher stalls were added (DeVoe 1862). That same year, six cellars located underneath the market building were leased for periods of 7 years (MCC VI: 488); shorter leases were granted in subsequent years (MCC IX: 464). Five years later, it was ordered that the fish market at the base of the slip be turned, so that it was oriented the same way as the building to the north, and extended to a length of 80 feet (MCC VIII: 449). With the

new addition, a total of 48 butcher stalls were now present at the market and the fish market was located at the southern end of the newly enlarged structure (ibid). This new configuration is first visible on the 1824 Hooker map.

By 1821, the fish sellers and country produce merchants were again requesting additional market space, and as a result, the Fulton Street Fish Market was erected several blocks to the west (DeVoe 1862). In response to the growing population, an enlarged market was again proposed in 1824. The new market complex would include a building measuring 177 feet along Water Street, 120 feet between Catherine Slip and South Street and 123 feet 4 inches “on a street to be opened” measuring 50 feet between Cherry and Water Streets (MCC XIII: 668). Duncan S. Campbell was willing to cede a 75 foot water lot fronting on Water Street and extending to South Street for such an expansion (ibid).

In 1829, it was determined that South Street should be widened, which would result in tearing down the old fish market building and sinking a bulkhead across the slip along the line of South Street and filling in the slip behind it while adding bridges on either side (MCC XVIII: 137). While the loss of the fish market building resulted in decreased business for fish sellers at Catherine Market, its reputation as a produce market was strengthened in the resulting years, and the market’s merchants were known for having “quick sales and good prices” (ibid: 354). Not only that, but the revenue generated by the market earned more money for the city than any other in Manhattan (MCC XIV: 704).

Despite its popularity, the wooden Lower Market structure was described in 1825 as “a mere shed in a ruinous state not worth repairing” (MCC XIV: 704). The old wooden building was torn down and a new brick structure was constructed in the same location (DeVoe 1862). The *Minutes of the Common Council* note that a building located at the southeast corner of Catherine Slip and Water Street was torn down around the same time, although it is not clear if this entry is referring to the market house or to another structure (MCC XIV: 710). Also constructed was a separate building for the fish sellers who still remained there (ibid). In addition, the country produce merchants were given their own section in the southern end of the new Lower Market building, rather than setting up their own stands along Cherry Street, although many felt that this arrangement resulted in a loss of business (ibid).

The Upper Market building was replaced in 1830 because it, too, had fallen into disrepair and the cellars beneath it were “almost useless” and generated a “disagreeable smell” (DeVoe 1862: 359-360). In 1831, the Upper Market was ordered to be torn down and replaced with a new structure located 8 feet east and 3 feet south of the former building (ibid). The market’s new layout is depicted in identical market floor-plan maps created by the city’s Market Committee dating to 1832 and 1833. These maps clearly show the Upper Market, between Cherry and Water Streets, the lower Market, between Water and South (then called Front) Streets, and the Fish Market along the East River at the foot of the slip. They also depict the configuration of individual butcher stalls, scales, the country market, and the line of houses along the eastern side of the slip.

In 1844, it was decided that the fish market building needed to be relocated, as it no longer reached the end of the slip due to the increased landfilling that had occurred in the area since its construction (ibid). On the 1852 Dripps map, a large building is shown at the foot of the slip, at a distance from the Upper and Lower Market buildings. This may represent the reconstructed fish market. The market, as it appeared in 1850, was depicted in a lithograph by George Hayward in 1857 (see cover). The image depicts the bell and cupola of the upper market building, as well as the lower and fish market buildings, butcher shops, streetlights, the tall ships along the East River, and the cobblestone streets that ran throughout the site.

The newly enlarged market only added to the bustling commercial neighborhood. Retail stores lined Catherine Street and Catherine Slip, creating what an anonymous author, known only as “A Late Retailer,” described as a “vast mass of wares and goods crammed into every building, and oozing out of every window, crevice, loop-hole, and door, in postures of inducement and temptation, irresistible, one would think, to the seekers after bargains that perpetually haunt this quarter” (“A Late Retailer” 1846: 1). The same author also described the patrons of the area as “specimens of every kindred, tribe, tongue, and people, on the face of the earth – many of them remarkably pure specimens, strongly marked in their peculiarities, and as remotely different in their whims and fancies, as the nations are diverse from which they spring” (ibid: 8).

Major changes to the market took place in the 1850s. In 1853, the old fish market along South Street was demolished and the site taken over by the Union Ferry Company (*Brooklyn Daily Eagle* 5/5/1883). In 1854, the market complex was replaced yet again, with iron buildings that could house more butchers and stands than ever

before, although many of the country produce salespeople had left for other city markets (Devoe 1862). The fish sellers relocated to a row of stands along the southern side of Catherine Slip, where they were extremely successful, earning an average of \$3,000 a week selling both raw and uncooked fish and mollusks (Kurlasky 2006). Almost 30% of the market's earnings was generated by the fish sellers (ibid).

As described above, the conditions of the neighborhood around the Catherine Market grew increasingly squalid throughout the mid-19th century. In 1864, the street was described as “very narrow, and being a thronged thoroughfare from a ferry, and occupied by a large market and stores throughout its length, is in a very bad condition” (Smith 1864: 98). The ferry pier at the foot of the slip was in “complete ruins” (ibid: 105). In the second half of the 19th century, the commercial character of the neighborhood dwindled and it became increasingly slum-like. Soon, all retail locations in the area were confined to Grand, Division, Catharine, and Jackson Streets (ibid). The poor residing in the surrounding slums were the most frequent customers of the Catherine Slip Market (Kurlasky 2006). Because “the poor had a tradition of feasting one day a week and on Saturdays...the emphasis in the Catherine Market was on low prices...[especially] after midnight, when the city's poorest would quietly arrive, hoping for affordable final prices for whatever had not sold” (ibid: 196).

The market suffered a slow decline throughout the remainder of the 19th century, although it remained in better condition than other New York City markets (Kurlasky 2006). In 1873, the last of the wooden stands used by butchers and hucksters that surrounded the market were torn down (*NYT* 8/19/1873). The iron-fronted upper and lower market buildings appear on maps as late as the 1899 Bromley atlas. However, in the first few years of the 20th century, the city's public markets had “outlived their usefulness” and because of declining revenues, the city's Department of Finance recommended that the last of the markets be closed (*NYT* 10/28/1908: 16). The market did not close immediately, however, but in 1903, the state legislature officially proposed that the market should be removed and the land “improved” (*NYT* 1/22/1903). The market was removed some time thereafter, and does not appear on atlases dating to 1909 (revised 1915) and later.

AFRICAN-AMERICAN DANCING EXHIBITIONS AT CATHERINE MARKET

Catherine Market holds a unique place in history because it was one of the first places—and probably the first in New York City (DeVoe 1862)—where African-American dancing contests and exhibitions were held, which at the time were “a prominent feature of the daily amusement of the population” (*NYT* 4/28/1889: 20). The dance contests, also called “break-downs,” were often between enslaved individuals New Jersey, often wearing “plaited forelocks tied up with tea-lead” and those arriving from Long Island via the ferry or private boats, with their hair “tied up in a cue, with dried eel skin” (DeVoe 1862: 345).

The dancers arrived at the market with small items such as “roots, berries, herbs, yellow or other birds, fish clams, oysters, etc.” which they sold for “pocket money” (ibid: 344). However, their performances soon became a commodity as well, and by bringing their own “shingles,” or long wooden boards on which to dance—set to the rhythmic stepping and clapping provided by other African-Americans—they were often compensated by their white audience with money, eels, fish, and the like (Berlin and Harris 2005). Most of the time, the dancing took place on “a cleared spot on the east side of the fish market in front of Burnel Brown's Ship Chandlery” (DeVoe 1862: 344).

As African-American dancing was increasing in popularity, so was the performance of minstrel shows; white men in blackface singing songs in stereotypical “negro dialect” (Lawrence 1979: 150). Some of the earliest of these songs were composed by a man named Micah Hawkins. Hawkins was a grocer who maintained a stall at the corner of Catherine Slip and Water Street between 1802 and 1810 and then maintained a stall near the ferry landing, where he also worked at the ferry house's hotel and bar (it is unclear if he owned the property) (ibid). He became well-known for keeping a piano under the counter of his grocery store and playing for his customers (ibid). Catherine Market itself is mentioned in one such dialect song, “Dinah Crow,” on file in the Library of Congress' “America Singing: 19th Century Song-sheets” collection. The song, by an unknown composer, mentions the market in the following lyrics: *I went to Catharine Market/To buy a marrow bone/Ben, de Butcher fall in lub/An want to see me home.*

G. HISTORIC DOMESTIC LOTS INCLUDED WITHIN THE MODERN STREETBED

The widening of Catherine Slip in the mid-20th century resulted in the demolition of many domestic and commercial structures that once lined the western side of the street. As seen in Table 5, several streetbeds in the area were widened in the 1950s and as a result, portions of historic lots are located beneath the modern streetbeds of

Catherine Slip and Catherine Street. Nearly all of these historic lots were all located along the western side of the APE, between South and Madison Streets. However, because the streets were widened by between 23 and 37 feet, for the most part, only the footprints of former buildings, rather than open rear yards, were situated within the APE. In addition, the project site will extend into an area at the southeast corner of Catherine Slip and Cherry Streets that includes portions of two historic lots. Again, no rear yard areas are included within the APE in this location and the area was previously occupied by a structure with a basement. In several locations, alleys were present between structures. It is not likely that shaft features would have been located in those areas, but surface trash deposits were likely present.

Documentary evidence shows that many of the historic properties in the area, including several that partially entered the APE, continued to use privies, cisterns, and wells well into the 1860s and possibly later, even though municipal water and sewer networks were available by that time. Therefore, the former rear yards of the historic lots now located beneath the streetbed of Catherine Slip and Catherine Street likely contained shaft features at one time. In general, privies were usually located along the rear of the property at a maximum distance from the home while cisterns and wells were located closer to the building. Because it appears that no rear yard areas are located within the APE, it is not expected that the project site is sensitive for shaft features including privies, cisterns, and wells.

A. CREATING LAND

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

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

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

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

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

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

Despite its status as one of America's largest and most industrial cities, New York did not have reliable network of water and sewer lines until the mid-19th century. Utilities do not appear to have been installed in the APE until

several years after the area was filled out to South Street. Instead, water and waste management was handled by the use of privies, cisterns, and wells.

The first water pipes were installed in the early 19th century by the Manhattan Company, the precursor to the Chase Manhattan Bank. These wooden pipes carried water from local sources (i.e., the Collect Pond) to other areas of lower Manhattan. Examples of these early pipes were discovered in 1889 under Peck Slip—southwest of the Catherine Slip APE—during construction for a sewer line. Those cedar logs measured eight feet in length and twelve inches in diameter, with two-inch holes bored in the center (*New York Times* 7/16/1889). As stated earlier, 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 (ibid).

The initial water supply system could not be sustained for very long before local water resources became too polluted. It was not until 1842, however, 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 along either side of the Catharine Market as well as through Cherry, Water, and South Streets across the APE. Although water lines were present by 1842, sewers were likely installed at a later date. Therefore, the use of privies would have continued until sewer lines were constructed, beginning in the 1850s (Pickman 2006). After the mid-19th century, as clean water was pumped in and waste was carried away, the city's sanitation efforts were greatly improved.

Within the Catherine Slip project area, utilities are first depicted on the 1864 Pulling map (Figure 10) which was originally published as part of a sanitary inspection report of the Fourth Ward. That map, which only depicts the western half of the APE, shows that a "street sewer" ran along the western side of the APE. The map also depicts several "privies in an offensive condition" within the blocks lining the western side of Catherine Slip and Catherine Street. Pulling's map shows that many of the lots that are now partially located beneath the streetbed of Catherine Street contained privies, most of which were described as being in "an extremely offensive condition." Many of the homes also had "hydrants" in the rear yards, which may have been the only source of clean water available to their residents.

A single sewer line is depicted as running down Catherine Slip on the 1865 Viele map and another is shown along Cherry Street east of Catherine Slip. However, Pulling's map clearly shows that even though sewers and water lines were accessible in the 1860s, not all homes had access to them. The Bromley atlas of 1879 indicates that fire hydrants had been installed within the streetbeds of Catherine Slip and Catherine Street. This indicates that water lines had definitely been installed and in use in this area. In general, early water pipes were installed relatively close to the surface, at only two or three feet below grade, so that firemen could easily access the pipes (Geismar 2004).

The 1891 Bromley atlas was the first to clearly depict water and sewer lines throughout the APE. That map shows that 6- and 12-inch water lines ran through Catherine Street and Catherine Slip as well as through all the adjacent side streets. Sewer lines were also present in all of the project area streetbeds. As the population of the Lower East Side grew, the need for fresh water increased. Subsequent maps, including the 1923 Sanborn, reflect the installation of new, larger high-pressure water lines within the APE. As time went on, out-dated utilities were replaced with larger lines.

MODERN UTILITIES IN THE APE

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

Current maps of utilities within the APE indicate that utility lines run through the majority of the project area. Within Catherine Street between Cherry and Madison Streets, the majority of the utilities are located within the eastern half of the streetbed. This includes a water and a sewer line as well as gas, electric, and telecommunications lines. Several small Water, electric, gas, and telecommunications lines connect these mains with the school located to the west of the APE. However, the western side of Catherine Street north of Cherry Street is largely devoid of utility lines.

Within Catherine Slip, however, there has been a significant amount of disturbance caused by utility installation. The following summarizes the utilities that enter the APE within Catherine Slip between South and Cherry Streets:

SEWER LINES

- A sanitary sewer line measuring 4 feet by 2 feet 8 inches currently runs along the western side of Catherine Slip throughout the length of the slip. Based on the depths of manholes presented in current utility maps, this sewer extends to an estimated 8.85 feet below the ground surface in the vicinity of Cherry Street. Near Water and South Streets, the depth is approximately 7.95 feet below ground surface.
- A sanitary sewer line runs east-west across Water Street. The approximate depth of this sewer line is unknown.
- A 12-inch sanitary sewer runs along the eastern side of Catherine Slip, south of the midline of Water Street. The sewer appears to make a 90-degree turn and continues east down Water Street, parallel to the previously mentioned Water Street sewer, but it is unclear if it also continues northward to connect to the other Water Street sewer. Near South Street, this sewer extends to approximately 7.86 feet below ground surface.

WATER LINES

- A water line runs north-south down the western side of Catherine Slip. Three additional lines lead from this water main, one leading to the building on the west side of Catherine Slip between Water and South Streets, another continues down Water Street, and the third is just north of the northern line of Water Street.
- A water line runs down the eastern side of Catherine Slip. A small water main connects this line to a hydrant located on the eastern side of the median within the center of Catherine Slip located between Water and South Streets. An additional extension leads from the Catherine Slip line and continues down Water Street.
- An additional water line runs east-west through the northern half of Cherry Street. Both Catherine Slip lines connect with this water main.

STEAM LINES

- A steam line runs through Cherry Street in the northern part of the APE. A branch of this line also runs down the eastern side of Catherine Slip and then turns and continues east down Water Street.

GAS, ELECTRIC, AND TELEPHONE LINES

- Gas, electric, and telephone lines are located throughout the project area. While they are most densely concentrated within the streetbed of Cherry Street, they also run alongside the eastern and western sides of the APE. However, with the exception of a handful of electrical lines which cross through the area, the areas occupied by the raised center medians within Catherine Slip do not appear to have been disturbed by the installation of modern utilities.

TRANSFORMER VAULTS AND MANHOLES

- Many manholes associated with various types of utilities are present within the streetbed of Catherine Slip as well as in the two center malls.

A Phase 1 Environmental Site Assessment prepared by AKRF, Inc. in April, 2007, noted the presence of transformer vaults in the sidewalk on the eastern side of Catherine Slip south of Water Street. The depths of these vaults are unknown.

A. SENSITIVITY ASSESSMENT

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

DISTURBANCE ASSESSMENT

The documentary record includes multiple accounts of the paving and grading of the streetbed of Catherine Slip dating to as early as 1785. The street has been graded and repaved numerous times since that time. As a result, the entire APE is likely disturbed to a depth of 1 to 2 feet below grade as a result of this roadwork. The widening of Catherine Slip/Catherine Street in the 1950s would have resulted in the demolition of numerous structures lining the streetbed. Therefore, the western 25 feet of Catherine Slip and the western 39 feet of Catherine Street are likely disturbed to 1 to 2 feet as a result of building demolition and road construction. Excavation associated with the construction of the Alfred E. Smith houses on the western side of the street could also have resulted in some disturbance of the streetbed. The construction of the center medians involved the installation of Belgian block pavement, benches and bench supports, and trees. Plans drawn around the time of the medians' construction suggest that this could have disturbed between 1.25 and 3.5 feet below the ground surface.

Catherine Slip has also experienced disturbance as a result of the installation of utilities within the streetbed. Numerous electric, gas, and telecommunications lines are present within the APE, which are likely at depths of 1 to 3 feet below grade. Therefore, their installation likely disturbed between 2 and 4 feet below the ground surface. Several water lines run within the streetbed which likely would have resulted in between 5 and 6 feet of disturbance below the ground surface. The storm sewers and catch basins that would be installed as part of this project would be connected to existing sewer manholes. Utility maps show that these manholes extend to depths of 3 to 4 feet below grade, suggesting that sewers in this area are shallower than would be expected. Therefore, the installation of sewers within the APE likely disturbed 4 to 5 feet.

PRECONTACT SENSITIVITY ASSESSMENT

The precontact sensitivity of project sites in the New York City is generally evaluated by proximity to high ground (but not exceeding 30 percent slopes), fresh water courses, well-drained soils, and previously identified precontact archaeological sites. Because the project site is situated in an area that was formerly inundated by marshland or the East River, it is unlikely that Native American habitation, hunting, or camping sites would have been located within the APE. Although there were periods of time when the water levels were lower, leaving the project area dry enough for human exploitation, any archaeological resources dating to those times would be very deeply buried and could have been disturbed during the dredging of the slip during the historic period. Therefore, the project site is determined to have low sensitivity for precontact archaeological resources.

HISTORIC SENSITIVITY ASSESSMENT

The project area was almost entirely inundated by the East River or by marshland prior to the 18th and 19th century landfilling episodes which converted it into made land. The lots on either side of the slip, as well as the slip itself, were gradually filled between the late 1770s, when maps indicate the shoreline in the area did not extend past Cherry Street, and the early 1820s, when maps first depict the entire project area as fast land. Therefore, the majority of the APE likely rests atop a network of landfill and various types of landfill retaining devices. The documentary record suggests that historic wharves, piers, and docks were most likely incorporated into this landfill. These could have included those associated with the 18th century shipyards that were located in the area as well as the wharf upon which a Revolutionary War battery was constructed on the eastern side of Catherine Slip.

In addition, it is likely that collections of debris—including animal bones and commercial and domestic refuse dumped by Catharine Market’s employees and patrons and nearby residents into the water are present within the fill deposits below the surface. Some of this debris would have been intentionally used as fill material while some could have been refuse that was dumped into the slip by nearby merchants and residents when it was an open waterway. The practice of dredging in the 18th and 19th centuries could have significantly disturbed any historic period archaeological resources within the open waterway at Catherine Slip. While dredging did not always clear a slip completely, it is therefore possible that some garbage deposits could have survived within the APE. However, if such resources did remain within Catherine Slip despite the many episodes of dredging that were intended to clean the slip of debris, those deposits would be very deeply buried and are not likely to be impacted by the proposed project.

In addition to the landfill, numerous structures were formerly located within the western side of the APE. In addition to the market buildings which once lined the central portion of the slip, the western 25 feet covers an area formerly occupied by domestic and commercial structures. On Catherine Street between Cherry and Madison Streets, the western 37 feet of the streetbed was formerly lined with structures. The project site also extends partially into two historic lots located at the southeastern corner of Catherine Slip and Cherry Street. It appears that only the front portions of these historic lots are included within the project site, and therefore only the areas formerly located within the footprints of these historic buildings are included within the APE.

Although it is unlikely that archaeological resources associated with the former structures that once lined the western side of the APE still remain within the area to be impacted by the proposed project, there may be remnants of the former market buildings formerly located at the center of the slip. While roadwork and the construction of the center medians may have generated in some disturbance in the area, relatively few utilities are located within the streetbed beneath the slip’s raised center medians, which roughly occupy the footprints of the later market buildings constructed in 1854. Because this area has experienced less disturbance cause by utility installation, it is more likely that historic period archaeological resources have survived in the vicinity of the center medians than elsewhere in the APE.

Therefore, the Catherine Slip streetbed is determined to have low to moderate potential for the recovery of historic period archaeological resources. These resources could include historic landfill and landfill retaining devices, wharves, docks, piers, bulkheads, structural remnants and refuse from the 18th and 19th century Catharine Market, and early 19th century infrastructure (wooden water pipes, wells, pumps, and early brick sewers). These resources are expected at depths greater than 2 feet below the ground surface in previously undisturbed locations. However, most of excavation required for the construction of the proposed project will be to depths of 1 to 2 feet. Therefore, only historic resources in areas that will be excavated to depths of more than 2 feet are likely to be impacted by the proposed project.

B. RECOMMENDATIONS

As discussed above, archaeological resources including landfill deposits and landfill retaining structures could be impacted by the proposed project, depending upon the location, size and depth of subsurface impacts which has not yet been finalized. Negative impacts could occur if construction disturbance extends into potentially sensitive levels. Conversely, negative impacts may be avoided if disturbance is restricted to the strata above potentially sensitive areas.

Further study in the form of a Phase 1B archaeological investigation or archaeological monitoring should then be carried out in all previously undisturbed areas which would be impacted by construction and/or in all areas in which the depth of disturbance will exceed 2 feet in areas previously undisturbed by the installation of utilities. A map of the locations of proposed testing is included in this report as Figure 14.

References

- Abbot, W.W. and Dorothy Twohig, editors
1985 *The Papers of George Washington: Revolutionary War Series*. Volume IV. Charlottesville and London: University Press of Virginia.
- AKRF, Inc.
2003 *South Richmond Watershed Drainage Plans, Final Environmental Impact Statement, CEQR No. 01DEP004R*.
2007 *Catherine Slip, New York, New York: Phase 1 Environmental Site Assessment*. For: Lower Manhattan Development Corporation, New York, NY.
2009 *South Ferry Terminal Project Draft Final Report*. For MTA Capital Construction.
- Armbruster, Eugene L.
1919 *The Ferry Road on Long Island*. New York.
- Bergoffen, Celia
2002 *Historic Front Street Development, Block 97, Lots 18, 32, 37, 58, NYCDCP, Borough of Manhattan, NY, Phase 1A Archaeological Assessment Report*. Prepared for Philip Habib & Associates, New York.
- Berlin, Ira and Leslie Harris, editors
2005 *Slavery in New York*. New York: New Press, Distributed by W.W. Norton.
- Boesch, Eugene
1994 *Archaeological Evaluation and Sensitivity Assessment of Staten Island, New York*. For: The New York City Landmarks Preservation Commission.
- Bolton, Reginald Pelham
1922 "Indian Paths in the Great Metropolis." In *Indian Notes and Monographs*. Miscellaneous #22. New York: Museum of the American Indian, Heye foundation.
1934 *Indian life of long ago in the city of New York*. New York: J. Graham.
1975 *New York City in Indian Possession*. Museum of the American Indian, Heye Foundation, New York.
- Bridges, William
1811 *Map of the city of New York and island of Manhattan, as laid out by the commissioners appointed by the legislature, April 3d, 1807*. New York: unknown.
- Bridges, William and Thomas H. Poppleton
1813 *Bridges and Poppleton's map of Rutgers farm 1813*. Copied by Roswell Graves, 1831.
- Bromley, G.W. and Company
1879 *Atlas of the City of New York, Complete in One Volume*. New York: George W. Bromley and E. Robinson.
1891 *Atlas of the City of New York, Manhattan Island, From Actual Surveys and Official Plans*. Philadelphia: G.W. Bromley & Co.
1899 *Atlas of the City of New York, Manhattan Island, From Actual Surveys and Official Plans*. Philadelphia: G.W. Bromley & Co.
1915 *Atlas of the City of New York, Borough of Manhattan, From Actual Surveys and Official Plans*. Philadelphia: G.W. Bromley & Co.
1924 *Atlas of the Borough of Manhattan, City of New York: Desk and Library Edition*. Philadelphia: G.W. Bromley & Co.

- 1930 *Land Book of the Borough of Manhattan, City of New York: Desk and Library Edition.* New York: G.W. Bromley & Co.
- Brooklyn Daily Eagle*
- 5/10/1860 “The One Cent Ferry,” p. 2.
- 5/24/1883 “A Glance into the Past,” p. 1.
- 1/29/1888 “A Century of Ferries,” p. 7.
- Burgis, William
- 1718 *A South Prospect of the Flourishing City of New York in America.* Engraving by John Harris after a 1717 drawing by William Burgis, London.
- Burrows, Edwin G. and Mike Wallace
- 1999 *Gotham.* New York: Oxford University Press.
- Buttenweiser, Ann L.
- 1987 *Manhattan Water-Bound: Planning and Developing Manhattan’s Waterfront from the Seventeenth Century to the Present.* New York: New York University Press.
- Cantwell, Anne-Marie and Diana diZerega Wall
- 2001 *Unearthing Gotham: The Archaeology of New York City.* New Haven: Yale University Press.
- Carwitham, John
- 1740 “The Carwitham Plan and Chart.”
In *Manhattan in Maps* by Paul E. Cohen and Robert T. Augustyn. New York: Rizzoli (1997).
- City of New York, Office of the President Borough of Manhattan, Dept. of Borough Works
- 1951 *Map Showing a Change in the City Map by establishing grades and roadway treatment around the Gov. Alf. E. Smith Housing Site.* On file at the Manhattan Topographical Bureau.
- City of New York, Department of Parks
- 1933 “Catherine Slip, Borough of Manhattan: Development, Planting, and Construction Plan.”
- The Common Council of the City of New York
- 1905 *Minutes of the Common Council of the City of New York 1674-1776.* In Eight Volumes. New York: Dodd, Mead and Company published under the authority of the City of New York.
- 1917 *Minutes of the Common Council of the City of New York 1784-1831.* In Nineteen Volumes. New York: The City of New York.
- Crosby, Ernest H.
- 1886 “The Rutgers Family of New York.” In *The New York Geographical and Biographical Record* 17 (2): 82-93.
- Daily Advertiser*
- 1/10/1798 “Classified Ads.” Accessed through the New York Genealogical and Biographical Society’s “Early American Newspapers” collection.
- Diary*
- 6/8/1794 “Classified Ads,” p. 3. Accessed through the New York Genealogical and Biographical Society’s “Early American Newspapers” collection.
- De Voe, Thomas F.
- 1862 *The Market Book.* New York: Printed for the Author.

- “Dinah Crow”
n.d. Published by Leonard Deming, No. 62, Hanover Street, 2d. door from Friend Street, Boston, and at Middlebury, Vt. In the Library of Congress collection of American Song Sheets, Digital ID as103010.
- Dincauze, Dena F.
2000 “The Earliest Americans: The Northeast.” *Common Ground: Archaeology and Ethnography in Public Interest*. Washington, D.C.: National Park Service.
- Dripps, Matthew
1852 *Map of the City of New York Extending Northward to Fiftieth St Surveyed and Drawn by John F. Harrison*. New York: M. Dripps.
1867 *Plan of New York City from the Battery to Spuyten Duyvil Creek*. New York: Matthew Dripps.
- Endicott
1842 “Map of the Croton Water Pipes with the Stop Cocks.”
In *Manhattan in Maps* by Paul E. Cohen and Robert T. Augustyn. New York: Rizzoli (1997).
- Geismar, Joan G.
1983 *The Archaeological Investigation of the 175 Water Street Block, New York City*. Report on file with LPC.
2004a *Construction of Coenties Slip: Report on the Log Main Discovery and Monitoring (October 22-26)*. Prepared for New York City Parks & Recreation through Tricom Construction Corporation, Inc.
2004b *Fulton Street Transit Center Archaeological Report, CM-1252*, prepared for Ove Arup & Partners Consulting Engineers P.C. and MTA - New York City Transit, New York.
- Goerck, Casimir T.
Ca. 1785-1798 “A map of the estate belonging to the heirs of Mr. Hedrick Rutgers, Esq.” On file at the New York Historical Society.
- Greenhouse Consultants, Inc.
1983 *Historical Documentary Report: Assay Office Site, New York, New York*. On file at LPC.
1985 *The Excavation of Augustine Heerman’s Warehouse and Associated 17th century Dutch West India company Deposits: The Broad Financial Center Mitigation final Report*. Written by Joel Grossman, et al. On file at LPC.
1984a *Pre E.I.S. Cultural Resources Sensitivity Evaluation for the East River Landing Project (Joel W. Grossman, Diane Dallal, et al.)* Prepared for Energy and Environmental Analysts, Inc. New York.
1984b *Technical Supplement No. 2: Report on Archeological Sensitivity of River Bottom*. Prepared for Energy and Environmental Analysis, Inc.
2000 *Archaeological and Historical Sensitivity Evaluation 250 Water Street, Borough of Manhattan, New York, New York*. For: Milstein Properties, Inc.
- Grim, David
1813 “The Grim Plan.” New York: G. Hayward.
1855 *Reminiscences of the City of New York and Its Vicinity*. New York: Privately printed. Originally published in various editions of Valentine’s “Manual of the Corporation of the City of New York,” but compiled by the author.
- Grumet, Robert S.
1981 *Native American Place Names in New York City*. New York: Museum of the City of New York.
1995 *Historic Contact*. Norman, OK: University of Oklahoma Press.

- Hayward, George
1857 “Catharine Market, 1850.” Originally published in the *Manual of the Corporation of the City of New York*. New York: D.T. Valentine (1857).
- Hills, John
1782 “The Hills Plan.” In *Manhattan in Maps* by Paul E. Cohen and Robert T. Augustyn. New York: Rizzoli (1997).
- Historical Perspectives, Inc.
1995 *Two Bridges Urban Renewal Area Manhattan, NY, CEQR No. 94-HPD-091M*. Prepared for Ethan Eldon Associates, Inc., Westbury, NY.
2000 *Archaeological and Historical Sensitivity Evaluation: 250 Water Street, Borough of Manhattan; New York, New York*. Prepared for Milstein Properties Corp. New York, New York. On file at LPC.
2001a *Stage IA Archaeological Assessment 55 Water Street Manhattan*. Prepared for Allee King Rosen and Fleming, Inc.
2001b *Stage IA Archaeological Study for Proposed Improvements to Coenties Slip for the Office-Trading Facility at 55 Water Street, New York, NY*. For Allee King Rosen and Fleming, Inc., New York.
2003 *Second Avenue Subway Phase IA Archaeological Assessment*. For AKRF, Inc., New York, NY.
2005 *Phase IA Archaeological Assessment: Brooklyn Bridge Park Project, Draft DEIS*. Prepared for AKRF, Inc.
- Holmes, John B.
1874 *Map of the Rutgers Farm as it existed in 1784*. On file at the New York Historical Society.
- Homberger, Eric
1994 (and 2005) *The Historical Atlas of New York City: A Visual Celebration of New York City’s History*. New York: An Owl Book, Henry Holt and Company.
- Hooker, William
1824 *Hooker’s new pocket plan of the city of New York / compiled & surveyed by William Hooker, A.C.S.A., hydrographer & engraver*. New York: William Hooker.
1828 *Hooker’s new pocket plan of the city of New York / compiled & surveyed by William Hooker, A.C.S.A., hydrographer & engraver*. New York: William Hooker.
1838 *Hooker’s new pocket plan of the city of New York / compiled & surveyed by William Hooker, A.C.S.A., hydrographer & engraver*. New York: William Hooker.
- Hunter Research
1996 *A Phase 1B Archaeological Survey of the Arthur Kill Factory Outlet Center, Staten Island, Borough of Richmond, County of Richmond, New York City, New York [CEQR 95-DCP-058R]*. For Bellemead Development Corporation, Roseland, New Jersey.
- Innes, J.H.
1902 *New Amsterdam and its People*. Port Washington, Long Island: Ira J. Friedman, Inc.
- Kardas, Susan and Edward M. Larrabee (Historic Sites Research)
1991 *Summary Report of 1981-1983 Archaeological Excavation, The Schermerhorn Row Block*. For: Bureau of Historic Sites, New York State Office of Parks, Recreation, and Historic Preservation and New York City Public Development Corporation.
On file at the New York City Landmarks Preservation Commission.
- Koeppel, Gerard
2000 *Water for Gotham*. Princeton, N.J.: Princeton University Press.

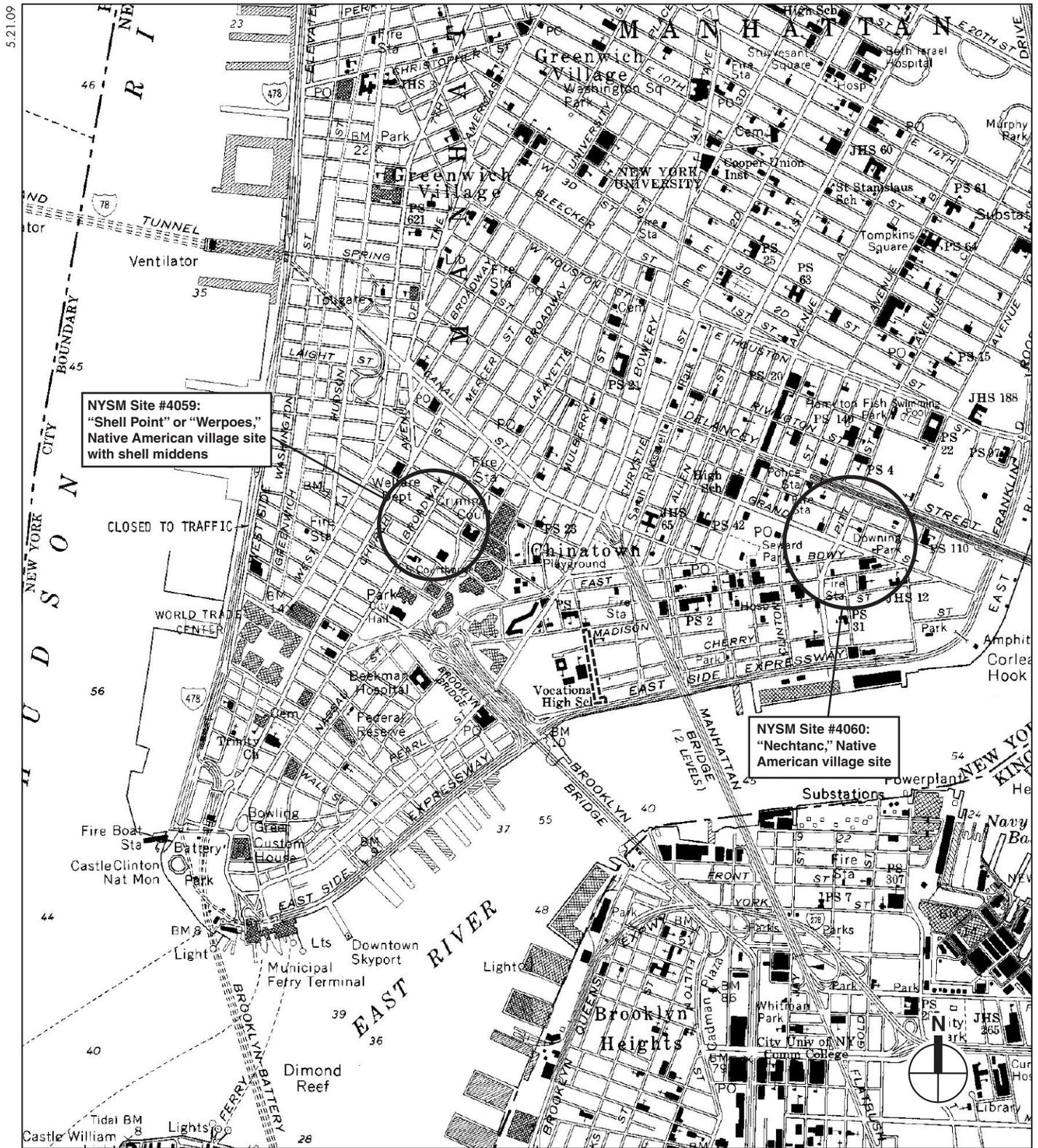
- Koroprckyj, Roman and Robert Romanchuk
2003 "Ukraine in Blackface: Performance and Representation in Gogol's 'Dikanka Tales' Book 1." *Slavic Review* 62 (3): 525-547.
- Kurlasky, Mark
2006 *The Big Oyster: History on the Half Shell*. New York: Random House Trade Paperbacks.
- Landmarks Preservation Commission (LPC)
2004 *New York City Landmarks, Third Edition*. Hoboken, New Jersey: John Wiley & Sons, Inc.
- Langan Engineering and Environmental Services
2007 "Topographic Survey: East River Connector, Catherine Slip, Borough of Manhattan."
- "A Late Retailer"
1846 *A Peep into Catharine Street, or, the Mysteries of Shopping*. New York: John Slater.
- Lawrence, Vera Brodsky
1979 "Micah Hawkins: the Pied Piper of Catherine Slip." *New York Historical Society Quarterly* 62 (2): 138-165.
- Lloyd, J.T.
1867 *Lloyd's Mammoth Map*. On file at the New York Public Library Map Division.
- Longworth, D.
Ca. 1808 (1830) *Plan of the city of New York*. In the American Philosophical Society Realms of Gold Digital Map Collection.
- Loss, Adolphus
1811 "A map of the estate called Richmond situate between Cheapside and the full Extent of the Grant in the East River Seventh Ward of the City of New York." Surveyed by Thomas Casimir Goerck 1795, copied by Adolphus Loss, 1811. New York: A. Loss.
- Lossing, Benson J.
1850 *Pictorial Fieldbook of the Revolution*. New York: Harper & Brothers.
- Louis Berger and Associates, Inc.
1984 The Barclay's Bank Site Archaeological Testing Program Interim Report and Proposed Data Retrieval Program. For: Long & Leeds Corp. CEQR 83-140M. On file at LPC.
1987 Druggists, Craftsmen, and Merchants of Pearl and Water Street, New York, Volume 1 and Appendices [Cultural Resource Investigations of the Barclay's Bank Site, 75 Wall Street, Borough of Manhattan August 1986 & September 1987]. For: London & Leeds Corp. On file at LPC.
1990 The Assay Site Historic And Archaeological Investigations of the New York City Waterfront. [Block 35] For: HRO International, Ltd. New York, New York. (Revised from December 1988) CEQR 83-229M. On file at LPC.
2000 Archeological Test Pit Excavations, Whitehall Ferry Terminal Project, NY, NY. NYC-EDC. On file at LPC.
2001 *Cultural Resource Assessment: Proposed NYCT Department of Buses Storage and Maintenance Facility: Arthur Kill Road, Staten Island, New York*. For: New York City Transit, New York, New York.
- Louis Berger Group, Inc.
2004 *Proposed Fulton Street Transit Center*. Prepared for New York City Transit, New York, NY.

- Lyne, James
1731 *Map of New York City: From an Actual Survey.* (Lyne-Bradford Plan). New York: William Bradford. Depicts New York in 1730.
- Maerschalk, Francis
1754 *A Plan of the city of New York From an Actual Survey Anno Domini-M,DCC,IV.* New York: Gerardus Duyckinck.
- Manhattan Topographical Bureau
1638-1873 “Map showing original high and low water marks.” On file at the Bureau.
- Market Committee
1832 *The Ground Plan of the Twelve Markets in the City of New York.* On file at the New York Historical Society.
1833 *The Ground Plan of the Thirteen Markets in the City of New York.* On file at the New York Historical Society.
- McComb, John
1789 *Plan of the city of New York.* Publisher unknown.
- Montrésor, John
1767 *A plan of the city of New-York & its environs (1766).* New York: Andrew Dury.
1775 *A plan of the city of New-York & its environs.* New York: Andrew Dury.
- Morin, John F.
1828 *Plan of the city of New York and of the island : as laid out by the commissioners, altered and arranged to the present time / engraved by J.F. Morin.* New York: A.T. Goodrich.
- Moss, Frank
1897 *The American Metropolis: from Knickerbocker Days to the Present Time.* New York: P.F. Collier.
- New York Historical Society
1907 “Abstracts of Wills on File in the Surrogate’s Office, City of New York: Liber 42.” In *Collections of the New York Historical Society for the Year 1906.* New York: Printed for the Society.
- New York Times*
9/23/1858 “Steamboats,” p. 7.
4/10/1871 “Classified Ads,” p. 7.
12/11/1871 “Our Ferries,” p. 2.
6/15/1872 “Our Streets: Present Condition of the Downtown Wards,” p. 4.
8/13/1873 “The City Markets,” p. 2.
8/19/1873 “The Last of the Stalls,” p.8.
3/10/1880 “Classified Ads” p. 7.
4/28/1889 “Where Slaves Danced: Catharine Market’s Rise and Decline,” p. 20.
7/16/1889 “Primitive Water Pipes,” p. 8.
2/9/1900 “Business Troubles,” p. 5.
10/28/1902 “Would Abolish Five Public Markets,” p. 16.
1/22/1903 “Bills in the Legislature,” p. 6.
4/1/1933 “End of ‘Lung Block,’” p. 14.
12/22/1933 “Few in Slums Able to Try New Homes,” p. 23.
10/7/1944 “More Tributes to Smith,” p. 26.
5/23/1946 “Delay Asked on Housing,” p. 11.
10/11/1947 “Condemned Land Costs \$34,699,994,” p. 8.
3/23/1948 “City Housing Agency to Expedite project,” p. 27.

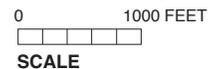
- New York State Office for Technology [NYSOFT]
2004 *Draft Generic Environmental Impact Statement (DGEIS) New York Statewide Wireless Network (SWN)*. Prepared by Deorsetz Stinziano Gilberti Heintz and Smith, P.C., Spectra Environmental Group, Inc., and CASmith, LLC., New York.
- Novak, Minda
1992 "Sea Change." In *Seaport*. Winter 1992, p.24
- Parker, Arthur C.
1922 *The Archaeological History of New York*. Albany: [The University of the State of New York]
- Perris, William
1852 *Maps of the City of New York Surveyed Under Directions of Insurance Companies of Said City*. New York: Perris and Browne.
1857 *Maps of the City of New York: Third Edition*. New York: Perris and Browne.
- Pickman, Arnold
2006 *Phase Ia Archaeological Documentary Study: Block 190, Lot 37; New York City, Borough of Manhattan NLA/NL-CEQR-M*. Prepared for LHRE Company, LLC.
- A Plan of the City of New York*.
1776 Library of Congress Geography and Map Division. LC Maps of North America, 1750-1789, Digital ID #g3804n ar110900.
- Pulling, Ezra D.
1864 "Report of the Fourth Sanitary Inspection District" in *Report of the Council of Hygiene and Public Health of the Citizens' Association of New York upon the Sanitary Condition of the City*. New York: D. Appleton & Co. (Includes Map).
- Ratzer, Bernard
1776a *Plan of the city of New York in North America: surveyed in the years 1766 & 1767 / B. Ratzer, lieutt. in His Majestys 60th or Royal American Regt. ; Thos. Kitchin, sculpt., engraver to His Late Royal Highness, the Duke of York, &c*. London: Jeffrys and Faden.
1776b *To His Excellency Sr. Henry Moore, Bart., captain general and governour in chief, in & over the Province of New York & the territories depending thereon in America, chancellor & vice admiral of the same, this plan of the city of New York, is most humbly inscribed / by His Excellency's most obedient servant, Bernd. Ratzen [sic], lieutt. in the 60th Regt. ; T. Kitchin sculpt*. London: Jeffrys and Faden.
- Ritchie, William A.
1980 *The Archaeology of New York State: Revised Edition*. Harrison, New York: Harbor Hill Books.
- Robinson, E. and R.H. Pidgeon
1885 *Atlas of the City of New York, 1883-1888*. New York: E. Robinson
- "Roosevelt Farm Map No. 32"
Ca. 1823-1839 On file at the New York Historical Society.
- Rothschild, Nan A.
1990 *New York City Neighborhoods: The 18th Century*. San Diego, California: Academic Press.
- Sanborn Map Company
1894 *Insurance Maps of the City of New York*. New York: Sanborn-Perris Map Co.
1905 *Insurance Maps of the City of New York*. New York: Sanborn-Perris Map Co.

- 1922 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
1951 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
1968 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
1976 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
1985 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
1994 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
2007 *Insurance Maps of the City of New York*. New York: Sanborn Map Co.
- Schuyler, Robert L., William Askins, Roselle Henn, and Jed Levin.
1978 *The Water Street Site: Final Report on 209 Water Street*.
On file at the New York City Landmarks Preservation Commission.
- Smith, Oscar G.
1864 “Report of the Ninth Sanitary Inspection District” in *Report of the Council of Hygiene and Public Health of the Citizens’ Association of New York upon the Sanitary Condition of the City*. New York: D. Appleton & Co.
- Soil Systems, Inc.
1982 *The Archaeological Investigation of the Telco Block, South Street Seaport Historic District*. New York, New York. Professional Service Industries, Inc. For: Jack Resnick and Sons, Inc. [Multiple authors]
1983 *Archaeological Investigation of the 175 Water Street Block, New York, New York: The (Ronson) Ship*. Volumes 1, 2, & 3. Professional Service Industries, Inc. For: HRO International. 81-506M
- Stevens, B.F.
1900 *B. F. Stevens's facsimile of the unpublished British headquarters coloured manuscript map of New York & environs (1782.)* Reproduced from the original drawing in the War Office, London.
- Stokes, I.N.P.
1967 (reprint) *The Iconography of Manhattan Island, 1498-1909* Volumes I-VI. New York: Robert Dodd.
- Stotz, Charles M.
1974 “The Reconstruction of Fort Ligonier: the Anatomy of a Frontier Fort.” *Bulletin of the Association for Preservation Technology* VI (4): 2.-103.
- Sutphin, Amanda / New York City Landmarks Preservation Commission
1997 *Draft Phase 1A Archaeological Documentary Study Stone Street Historic District (LP-1938)*.
Revised and completed by: Amanda Sutphin, S.O.P.A.
- Tauber, Gilbert
2005-2006 “A Guide to Former Street Names in Manhattan.” <http://www.oldstreets.com/>
- Taylor, B. and J. Roberts (Taylor-Roberts Plan)
1797 *A New and Accurate Plan of the City of New York*. In Stokes (1967).
- “Upland and Water Lots in the Out Ward”
Ca. 1797-1809 On file at the New York Historical Society.
- Viele, Egbert L.
1865 *Sanitary & Topographical Map of the City and Island of New York*. New York: Ferd. Mayer & Co.

Figures

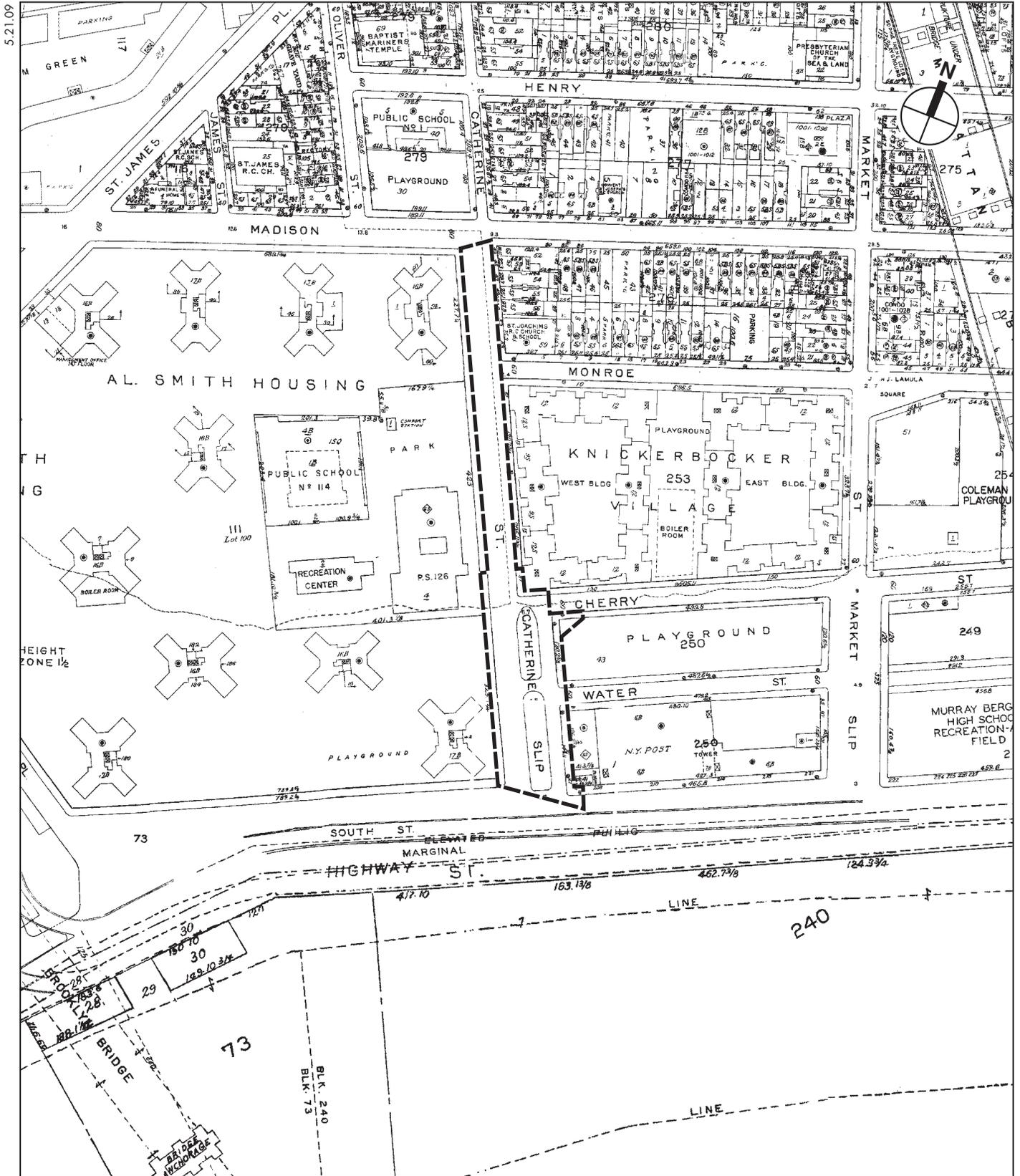


The location for both prehistoric archaeological sites has been approximated based on a map showing Native American place names (Grumet 1981: 68) as well as documentary evidence which describes the site



 Archaeological APE

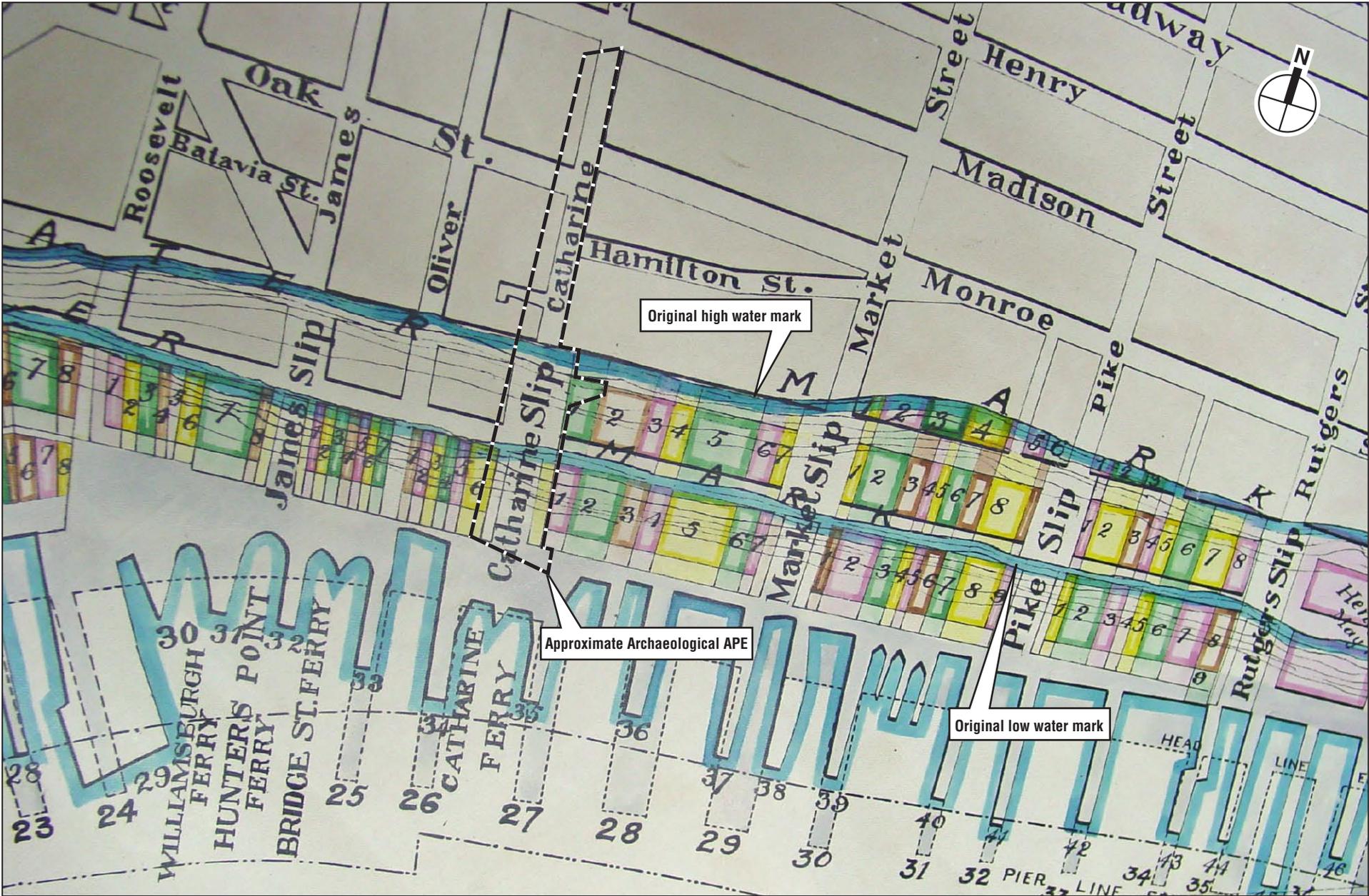
Project Location and Previously Identified Precontact Archaeological Sites USGS Map, Brooklyn and Jersey City Quadrangles



 Archaeological APE

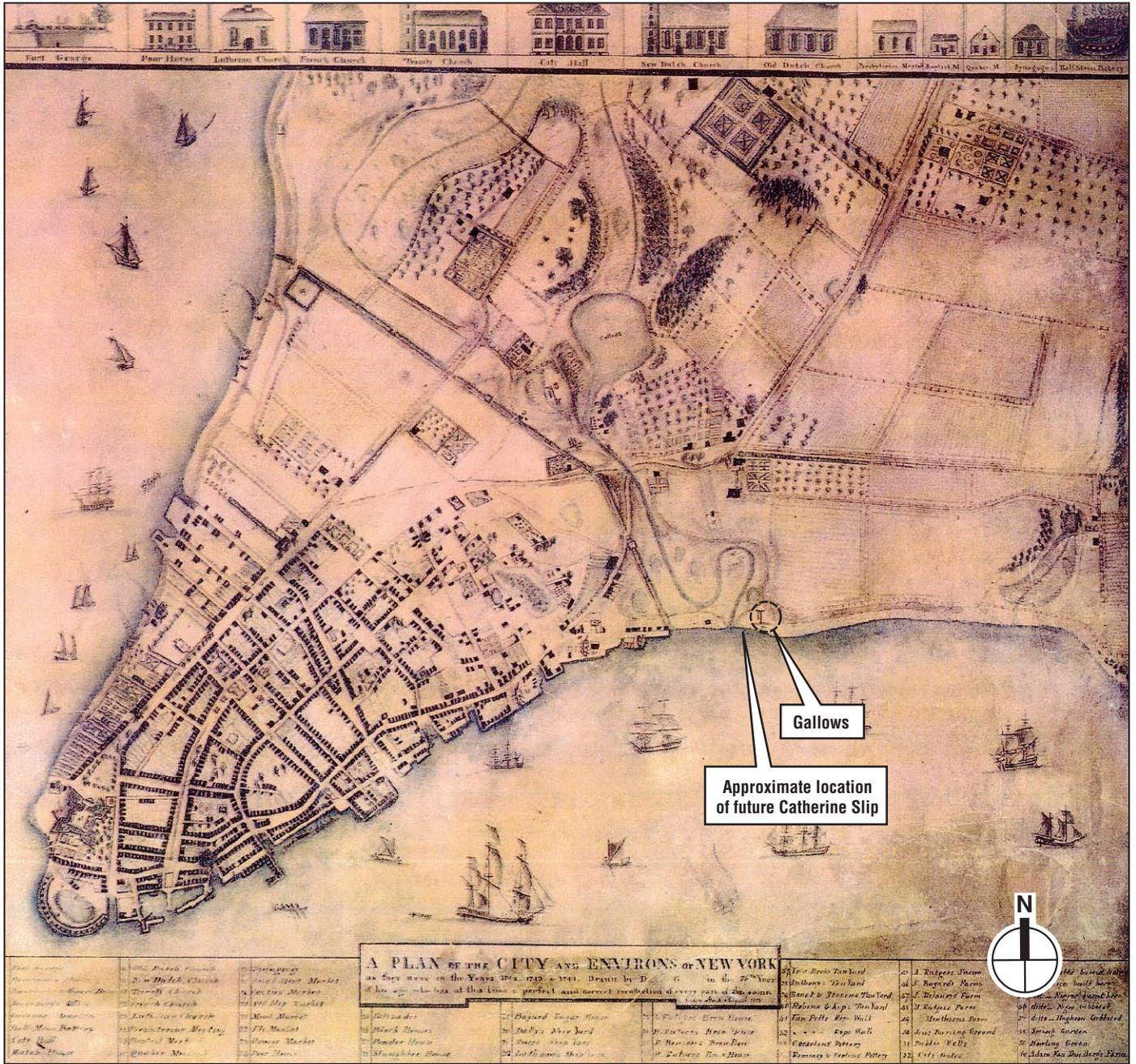
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**Area of Potential Effect
Sanborn Insurance Map, 2007**



NOT TO SCALE

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



NOT TO SCALE

“The Grim Plan,” depicting New York ca 1742-1744.
D. Grim, 1813

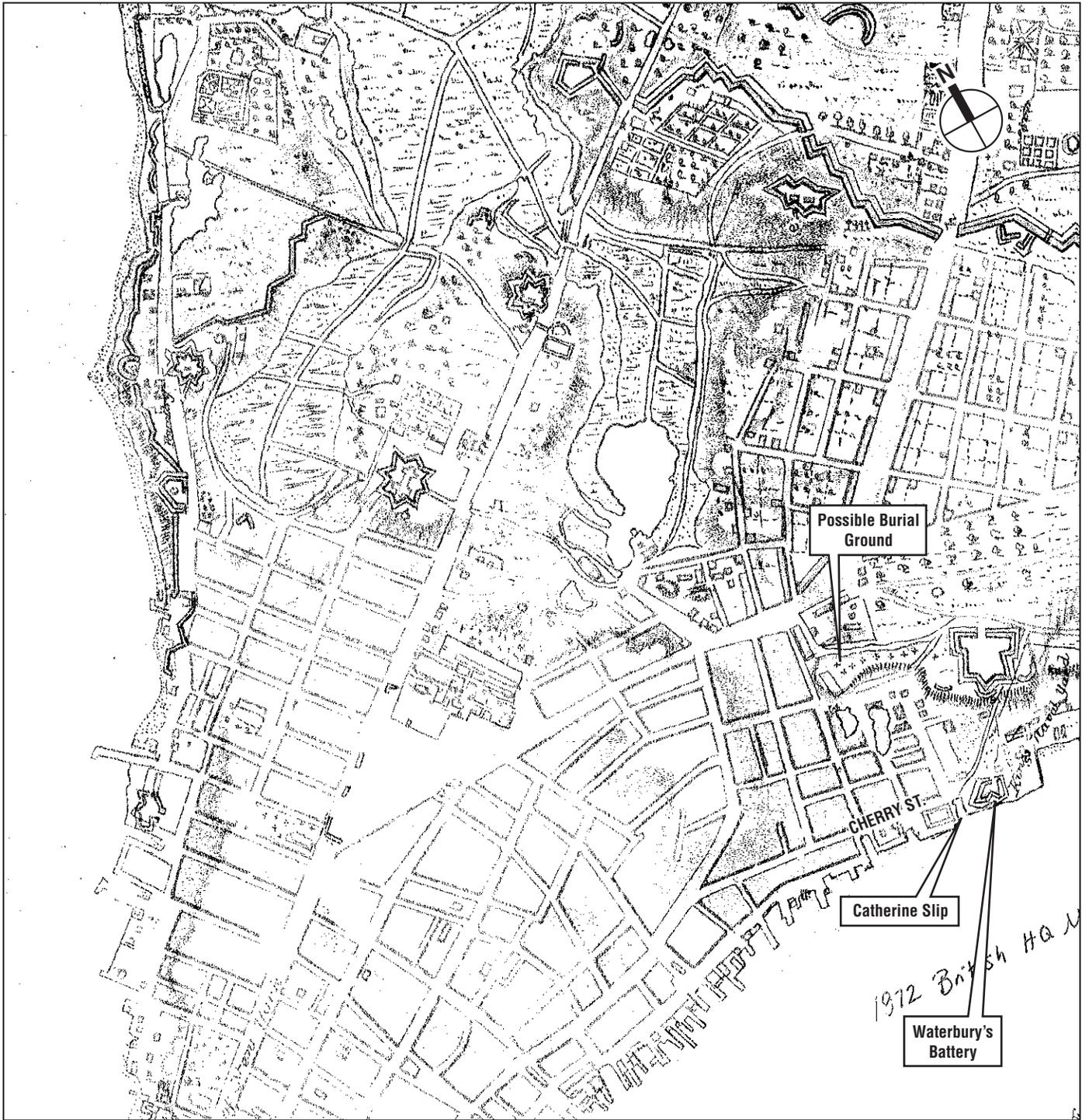


 Approximate Archaeological APE

0 400 FEET
SCALE

NOTE: The above map is a composite of several plates and because of inaccuracies in the original, the plates cannot be properly aligned.

**Plan of the City of New York.
B. Ratzen (sic), 1776**
Figure 6



NOT TO SCALE

1872 British Headquarters Map (facsimile).
B.F. Stevens, 1900

Figure 7



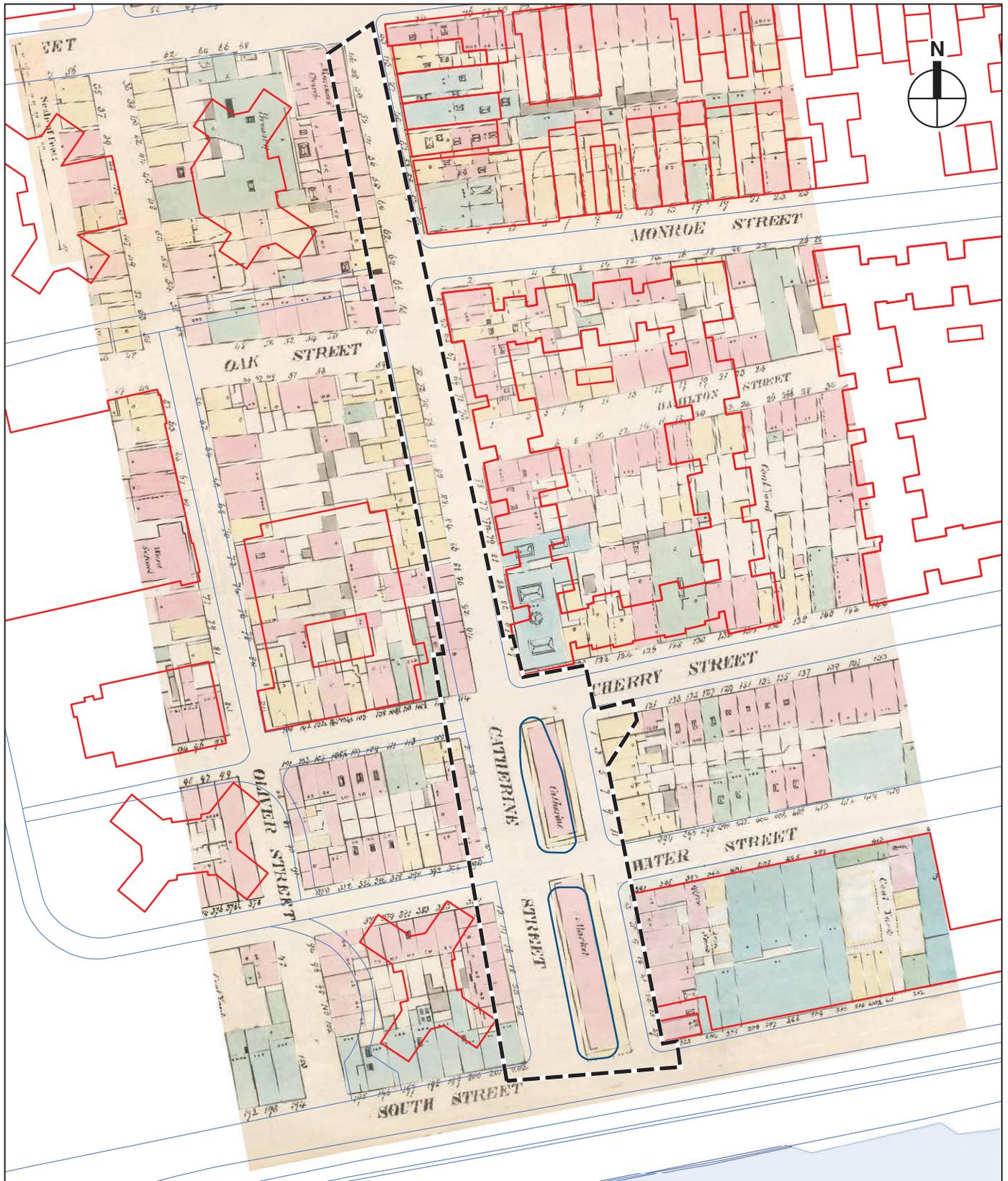
MAP DOES NOT CONTINUE

Approximate Archaeological APE

Sanitary and Social Chart of the Fourth Ward of the City of New York.

E.R. Pulling, 1864

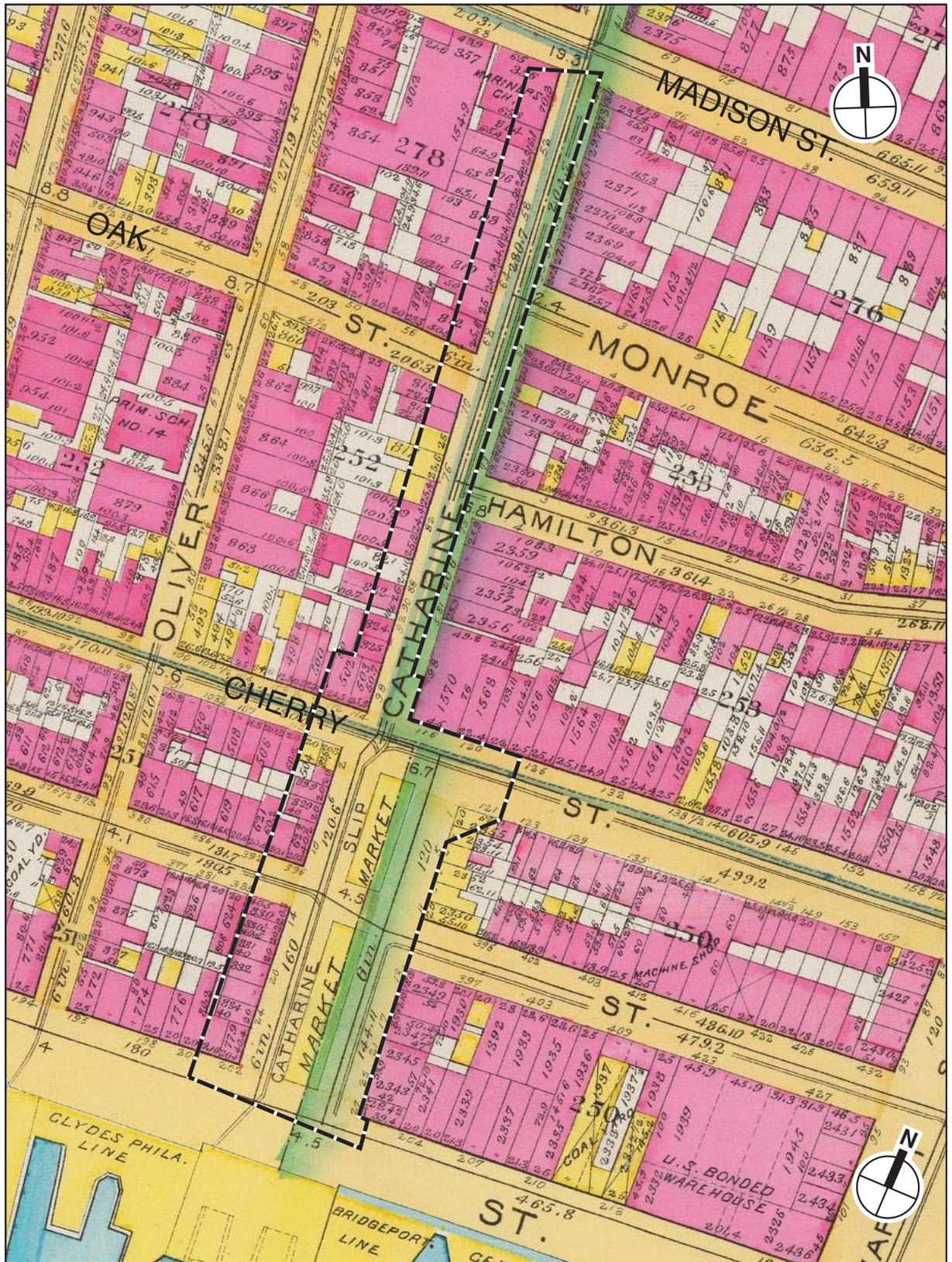
Figure 10



 Archaeological APE

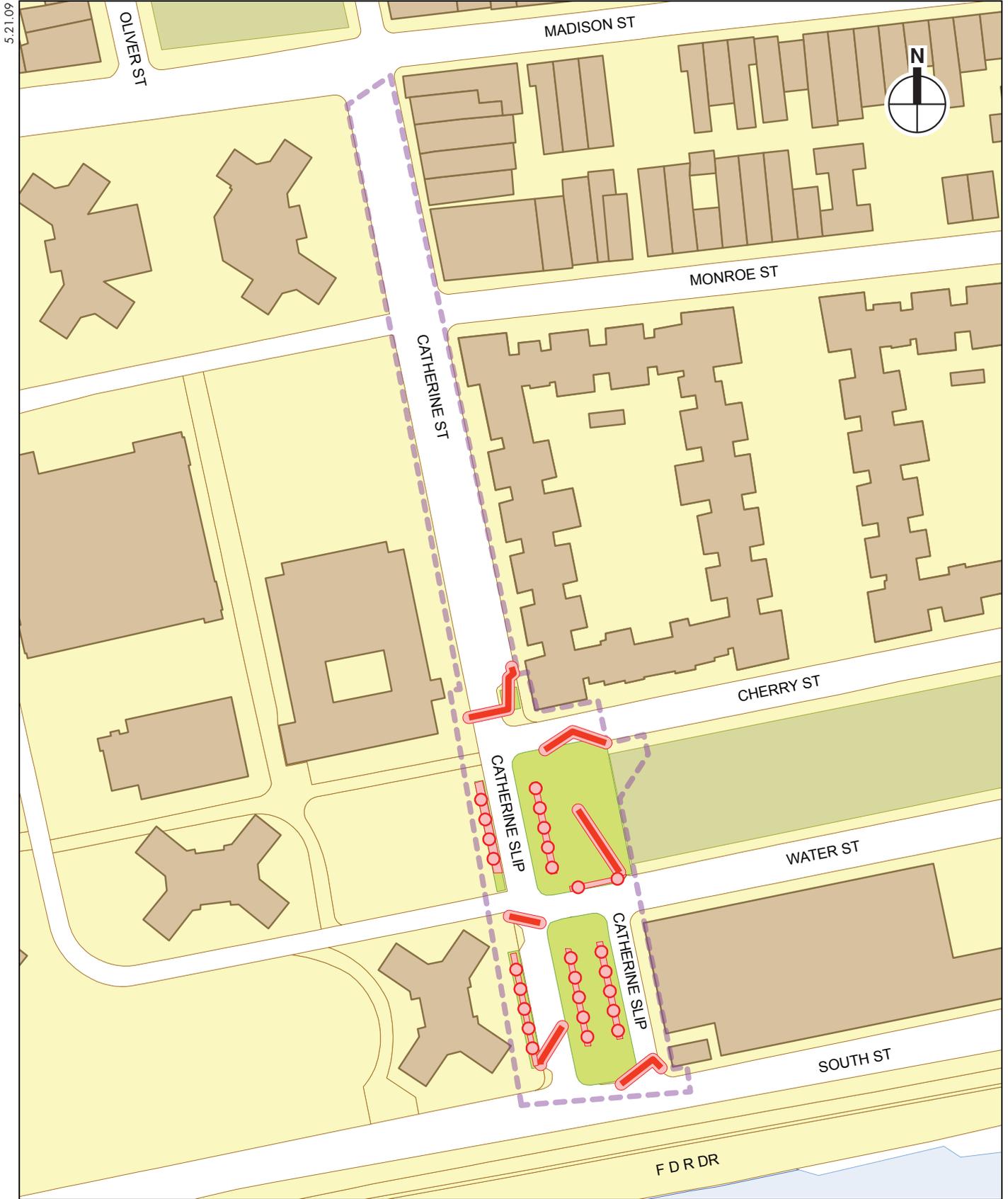
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**Map of the City of New York
W. Perris, 1857**
Figure 11



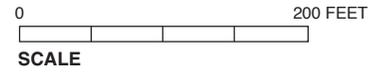
Approximate Archaeological APE

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- Area of Potential Effect
- Proposed Sewer
- Proposed Park
- Proposed Tree Pit

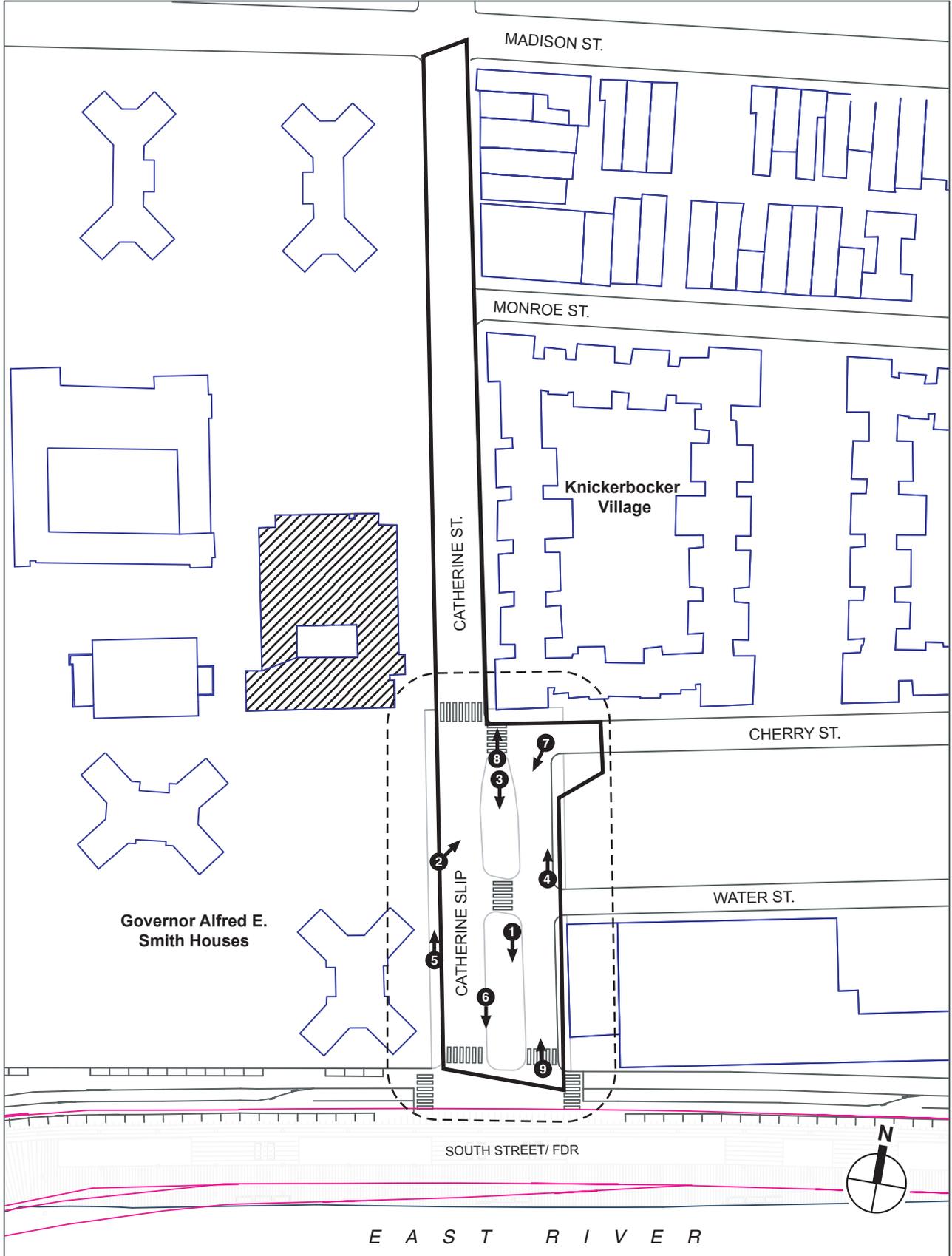
Areas where Archaeological Testing or Monitoring is recommended based on expected project impacts of 2 or more feet below ground surface



Areas of Archaeological Sensitivity Map

Figure 14

Photographs



-  Project Site Boundary
-  Photograph View Direction and Reference Number





Center median on Catherine Slip between Water and South Streets; looking southwest 1



Center median on Catherine Slip between Cherry and Water Streets; looking northeast 2



Center median on Catherine Slip between Cherry and Water Streets; looking south 3



Eastern side of Catherine Slip between Cherry and Water Streets; looking north 4



Western side of Catherine Slip between Cherry and Water Streets; looking north

5



Center median on Catherine Slip between Water and South Streets; looking southeast

6



Catherine Slip; looking southwest from Cherry Street 7



Northern end of center median at Catherine Slip and Cherry Street; looking north 8



Eastern side of Catherine Slip between South and Cherry Streets; looking north 9