Phase 1A Archaeological Documentary Study

Pike and Allen Streets:
Center Median Reconstruction

Between Delancey and South Streets
New York, New York

Prepared for:
Lower Manhattan Development Corporation
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Management Summary

SHPO Project Review Number:	06PR05917
LPC Project Review Number:	n/a
Involved Agencies:	Lower Manhattan Development Corporation New York City Department of Parks and Recreation
Phase of Survey:	Phase 1A Archaeological Documentary Study
Project Location:	Pike and Allen Streets between Delancey and South Streets
Minor Civil Division:	06101: Manhattan
County:	New York County
Location Information:	
Survey Area Length:	Approximately 3,500 feet (1,066 meters)
Survey Area Width:	Approximately 100 feet (30.48 meters)
Number of Acres Surveyed:	Approximately 3.2
USGS 7.5 Minute Quadrangle Map:	Brooklyn
Report Author:	Elizabeth D. Meade, RPA
Date of Report:	January 2010

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Chapter 1: Introduction

A. PROJECT OVERVIEW

The New York City Department of Parks and Recreation (DPR) has requested funds from the Lower Manhattan Development Corporation (LMDC) for improvements involving reconstruction of seven existing sections of the median malls on Allen Street between Delancey and Hester Streets and on Pike Street between Henry and South Streets (see Figure 1). These median sections are currently narrow and paved with some trees and benches. This Phase 1A Archaeological Documentary Study is being prepared as part of an Environmental Assessment (EA) of the proposed project site.

It is expected that DPR will design and reconstruct the remaining median sections on Allen and Pike Streets between Hester and Henry Streets in the future as a second phase of the project; however, DPR has not yet requested funding for those sections due to the continuing study of the complex double mall condition between Division Street and East Broadway. These areas have been included within this Phase 1A Archaeological Documentary Study in anticipation of the acquisition of that funding. The archaeological resources Area of Potential Effect (APE) analyzed in this document is comprised of the locations of the proposed expanded medians. The boundaries of the LMDC-funded expanded center medians as proposed by DPR as well as estimated boundaries of those expanded medians for which the funding is yet to be determined are depicted on Figure 2.

The proposed project would create a unique pedestrian park promenade and serve as a linear community park linking the adjacent Lower East Side, Two Bridges and Chinatown neighborhoods to the East River. The implementation of the project would involve the elimination of one northbound and one southbound lane of traffic adjacent to the existing center medians along the street corridor so that the medians can be expanded to double their current width. The park and connecting plazas will form a greenway corridor with a central pedestrian path linked at three intersections by New York City Department of Transportation (NYCDOT) designated plaza connectors at Stanton, Broome, Hester, and Monroe Streets. The connectors will be constructed with color seal paint, temporary planters, benches, and moveable tables and chairs. A park bikeway with planted buffers is included within the design and the existing bike lanes adjacent to the existing center medians will be relocated to areas adjacent to the expanded medians. New trees, landscaping, and paving will be incorporated into the design. Finally, new traffic light phases, traffic signals, pedestrian crosswalks, and protected left turn lanes will also be implemented to improve pedestrian and bicycle safety. Excavation for the proposed project is expected to be 2 to 3 feet for the majority of the project site (for repaving and tree pits) but could extend to 4 to 5 feet in depth in the locations of proposed new catch basins, water lines, and other similar utility installations.

B. RESEARCH GOALS AND METHODOLOGY

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

As part of the background research for this Archaeological Documentary Study, various primary and secondary resources were analyzed including historic maps and atlases, historic photographs, 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, and the Municipal Archives and file searches were conducted at LPC, OPRHP, and the New York State Museum (NYSM). Other source material was reviewed at the Manhattan Topographic Bureau. On-line textual archives such as Google Books and the Internet Archive Open Access Texts were also accessed.

C. PREVIOUS ARCHAEOLOGICAL WORK IN THE AREA

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

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

An archaeological investigation was carried out in the rear yard of the Lower East Side Tenement Museum, located at 97 Orchard Street, adjacent to the project site between Broome and Delancey Streets. The archaeological investigation in the rear yard of that lot, occupied by a 19th century tenement building similar to the structures that formerly lined most of Pike and Allen Streets, uncovered historic privies as well as numerous artifacts (Howe 2000). The Tenement Museum is included within the Lower East Side Historic District, the western boundary of which is Allen Street, which is listed on the State and National Registers of Historic Places. Undisturbed rear yards associated with similar tenement structures in the area were identified as potential archaeological resources in the Lower East Side Historic District designation report (ibid).

In addition, the archaeological sensitivity of many historic lots in the neighborhood surrounding the project site north of Grand Street was examined as part of the Lower East Side Rezoning project in 2008. As part of that project, almost 300 historic lots were examined, although no streetbeds were included in the project area (Bergoffen 2008). As such, the historic lots now incorporated into the streetbeds of Pike and Allen Streets were not investigated as part of this study.

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

Site Name	OPRHP Site #	NYSM #	Time Period	Site Type	References
Shell Point/ Werpoes	-----	NYSM: 4059	Precontact	Native American village and shell middens	Parker (1922) Bolton (1922)
Nechtanc	-----	NYSM: 4060	Precontact/ Contact	Native American village used as a retreat during 17th century wars with the Dutch	Parker (1922) Bolton (1922)
Lower East Side Tenement Museum	-----	-----	19th Century	Domestic Shaft Features and historic artifacts	Howe (2000)
South Ferry Terminal Project	A06101.015768 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)

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

Site Name	OPRHP Site #	NYSM #	Time Period	Site Type	References
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)
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	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)
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 (2004)
Whitehall Ferry Terminal	-----	-----	-----	Cobb wharf	Louis Berger and Associates (2000)
Broad Financial Center Site; Broad and Pearl Sts.	-----	-----	17th-19th Century	Original Dutch ground surface features, 18th-19th century deposits, features	Greenhouse Consultants, Inc (Grossman, et al) (1985)
Stone Street Historic District	-----	Survey #33 (1), #33 (2)	-----	Historic Structures	Tracker Archaeology Services (Stehling) (2000) Sutphin (1997)

A. GEOLOGY AND TOPOGRAPHY

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

There are a number of deposits which overlay the bedrock region, but nearly all of Manhattan is covered by anywhere from 3 to 164 feet of glacial till. There are also some lacustrine sediments covering a 1.5 square-mile area between the Manhattan and Williamsburg Bridges (NYSOFT 2004). These deposits were left behind by massive glaciers of up to 1,000 feet thick that retreated from the area towards the end of the Pleistocene. There were four major glaciations that affected Manhattan until roughly 12,000 years ago when the Wisconsin period—the last glacial period—came to an end. The glacial movements also brought about the creation of hundreds of sand hills, or kames, some of which were nearly one hundred feet tall. These hills were contrasted by many small streams, rivers, and lakes that were fed by the glacial runoff. The 1865 Viele map (Figure 3) does not indicate that any large hills interrupted the streetbed of Pike/Allen Streets in the vicinity of the project site although large hills were located to the east. The map does depict a line of bluffs along the river shoreline near the southern end of the corridor, between Monroe and Cherry Streets. To the south of these bluffs, a thin tract of marshland extended as far south as Water Street, where the historic shoreline was located.

Manhattan had a much narrower and more irregular shape in the days before systematic landfilling created the regimented shoreline of piers and promenades that we see today. The southern tip of Manhattan, known as *Kapsee*, was a rocky point jutting out into the harbor forming a small cove that was possibly used as a canoe landing by Native Americans. Throughout the historic period, the landscape was permanently altered not only by the creation of land, but also by filling in streams and leveling hills. Several historic maps include data regarding elevations at street corners. This data is presented in Table 2, below, which shows that minimal changes have occurred to the elevation of the project site streetbeds since the late 19th century. In addition, topographic information contained on maps of the existing conditions of the site as well as topographic maps of the portion of the project site located on Allen Street between East Broadway and Delancey Streets produced by the Parks Department in 1938 show that the elevations have remained mostly consistent since the construction of the center medians in the early 20th century.

Table 2
Street Elevation Changes

Year/ Map	Elevation of Pike (P) and/or Allen (A) Streets at intersection with:												
	South Street	Water Street	Cherry Street	Monroe Street	Madison Street	Henry Street	East Broadway	Division Street*	Canal Street	Hester Street	Grand Street	Broome Street	Delancey Street
1865 Viele	-----	-----	10	25	27	31	35	37	40.9	38.5	40	48	37
1885 Robinson	3	-----	9.8	26	25.5	31	35	36.9 (P) 40 (A)	40	38	40	40	37
1891 Bromley	3	5	9.10	26.2	26.8	31.10	35	37.6 (P) 40.5 (A)	40.9	38.5	40	40	37.2
1923 Sanborn	-----	-----	11	21	28	33	36	39 (P) 40 (A)	39	37	39	39	38
1951 Sanborn	3	5	11	21	28	33	36	39 (P) 40 (A)	39	37	39	39	38

Table 2 (continued)
Street Elevation Changes

Year/ Map	Elevation of Pike (P) and/or Allen (A) Streets at intersection with:												
	South Street	Water Street	Cherry Street	Monroe Street	Madison Street	Henry Street	East Broadway	Division Street*	Canal Street	Hester Street	Grand Street	Broome Street	Delancey Street
2007 Sanborn	3	6	11	21	28	33	36	40 (P) 41 (A)**	39	37	39	39**	38

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, however, consistent differences of several feet between elevation data on different maps (i.e. between the late 19th century maps and the early 20th century Sanborns) may reflect differences in datum rather than in elevation.

*Although street widening has connected Pike and Allen Streets, historically each street intersected with Division Street approximately 75 feet apart. Therefore, some maps provide different elevations for each street at its intersection with Division, identified in this table as (P) for Pike Street and (A) for Allen Street.

**In these areas, connecting plates indicated drastically different elevations for the same intersections; in these cases, the elevations that are more consistent with historical topographic data are presented which the other data are presumed to be typographical errors on the maps.

B. HYDROLOGY

As mentioned previously, although the entire APE is currently composed of dry land, before European contact, a small portion between Cherry and South Streets was inundated by swampland and the East River. In the immediate vicinity of Pike Slip, the original high water mark—indicating the location of the East River shoreline at high tide—was situated just north of modern Cherry Street while the low water mark—indicating the location of the East River shoreline at high tide— was located near modern Water Street. The Viele map of 1865 suggests that the area between high and low water was a marshy meadowland south of the aforementioned bluffs (Figure 3).

As glacial runoff ceased, the small water courses that had been formed in the wake of retreating glaciers were transformed into swamps and marshlands. The majority of the project site was originally inundated by the East River. The Collect Pond was located to the northwest of the project site although one of the two marsh-bordered streams that drained it emptied into the East River in the area near modern-day James and Catherine Slip, two to three blocks to the west of Pike Slip. The other stream ran to the northwest, along the line of present-day Canal Street. An additional marshy stream or outlet was located to the east of the project site that drained surrounding meadows and emptied out into the East River at a point just east of the intersection of Rutgers Slip and Cherry Street (Stokes 1967).

C. SOILS

The *New York City Soil Reconnaissance Survey* published by the National Resource Conservation Service (2005) indicates that two soil complexes are present within the boundaries of the project site. In the landfilled areas in the southern portion of the project site corridor, soils are identified as part of the "Pavement and Buildings-wet substratum-Laguardia-Ebbets" complex. This soil type is characterized by 0 to 8 percent slopes in areas that have been filled with a mixture of natural soil materials and construction debris and up to 80 percent of which are covered with impermeable pavement and/or buildings. To the north of this area, soils are included within the "Pavement and Buildings-outwash substratum" complex. These highly urbanized areas typically have 0 to 5 percent slopes more than 80 percent of which is covered by impervious pavement or buildings (New York City Soil Survey Staff 2005).

In preparation for the proposed center median renovations, soil borings and test pits were completed by Tectonic Engineering Consultants on behalf of the New York City Department of Design and Construction. A total of 14 borings were completed or attempted and 4 test pits were excavated, each measuring 4 feet in length, width, and depth. One to two borings were attempted in each of the center medians with the exception of the median located between South and Cherry Streets. Another was attempted within the northern end of the median located between East Broadway and Division Street, however this was impeded by a concrete slab that was located 1.5 feet below the ground surface. The remainder of the borings identified between 2 and 16 inches of asphalt and concrete throughout the project site followed by a layer of fill measuring anywhere between 8.5 and 37 feet below grade. Most of the borings were located in the locations of former basements, which may explain the great depth of fill in some areas.

The following test pits were excavated within the project site: **1)** at the northern end of the median between Grand and Broome Streets; **2)** at the southern end of the median between Hester and Grand Streets; **3)** at the northern end of the median on Pike Street between Madison and Henry Streets; and **4)** the northern end of the center median in Pike Slip between South and Cherry Streets. All four test pits identified fill to depths of 4 feet, the maximum depth to which they were excavated. The fill identified in these pits contained mostly brick, ash, gravel, sand, and silt, although Test Pit 3 also contained animal bones, glass, and plastic and Test Pit 2 contained concrete. AKRF archaeologists were on call during the excavation of these test pits in the event that potential archaeological resources were encountered.

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 (ibid).

E. CURRENT CONDITIONS

The Allen and Pike Street malls that would be affected during the first phase of the proposed project are long, narrow paved areas with trees, concrete and wooden planters, streetlamps, standard street signage, traffic lights, perimeter fencing, and benches (see Photographs 1 through 14). The malls are approximately 25 feet wide, though the two malls between Cherry and South Streets are much narrower, at approximately eight feet in width. The narrower malls have broken pavement and do not contain any seating or fencing. The segment of the Pike Street mall between Henry and Madison Streets has approximately six-foot-tall chain link fencing at its perimeter. In general, the Allen Street malls have squared ends while the Pike Street malls have rounded ends.

The malls are in varying states of repair with the exception of the Demonstration Mall, the mall between Delancey and Broome Streets. This mall was reconstructed in 2008 by DPR as part of the planning for the proposed project. This redesigned segment contains decorative pavers and curbs, fences, benches, smaller plantings and trees, enhanced street lighting, and a Chinese stone art installation (see Photograph 15). The project site also contains the 2009 DOT-implemented interim plan that includes bicycle lanes on the east and west sides of the existing Allen and Pike Street malls and the closure of three intersections creating plaza connectors with temporary planters and benches at Broome, Hester, and Monroe Streets.

The five malls that would be affected during the Proposed Project's second phase—the malls between Hester and Henry Street—are generally similar in condition and appearance to the malls that would be affected by the Proposed Project's first phase. These five malls include both long and short segments and contain planters, benches, and bicycle racks. The mall between Hester and Canal Streets has benches and planters near the mall's Canal Street end, restricting access to this mall. The mall between Canal and Division Streets also has benches and planters near Canal Street restricting access. Much of the pavement is broken and displaced. Low fencing, planters, and benches are located along this mall's perimeter. Division Street separates Allen Street to the north from Pike Street to the south. The street grid shifts at Division Street, with Allen Street following a northeast-southwest trajectory and Pike Street following a north-south trajectory. A pair of shorter, parallel malls is located between Division Street and East

Broadway. The eastern mall in this location has an approximately 6-foot-tall perimeter chain link fence and includes an art installation piece—an approximately ten-foot-tall curving brown brick wall. The western portion of this double mall is approximately 20 feet wide and has trees and fence posts but no fence at its perimeter. The East Broadway to Henry Street mall has a chain link perimeter fence, broken and displaced pavement, and a large wooden planter restricting access from Henry Street.

A. PRECONTACT CONTEXT

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

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

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

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

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

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

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

B. PREVIOUSLY IDENTIFIED NATIVE AMERICAN ARCHAEOLOGICAL SITES

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

Table 3
Previously Identified Native American Archaeological Sites

Site Name	Site #	Approximate Distance from APE	Time Period	Site Type	References
Shell Point/ Werpoes	NYSM: 4059	.5 miles (2,640 feet)	Pre-Historic	Native American village and shell middens	Parker (1922) Bolton (1922)
Nechtanc	NYSM: 4060	.28 miles (1,500 feet)	Pre-Historic, Contact	Native American village used as a retreat during 17th century wars with the Dutch	Parker (1922) Bolton (1922)

Notes: See Figure 1.

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

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

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

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

A. THE DEVELOPMENT HISTORY OF PIKE/ALLEN STREET BETWEEN DELANCEY AND CHERRY STREETS

After New Amsterdam was established in the early 17th century, the Dutch West India Company (WIC) created several large farms known as *bouweries* that they intended to grant to individual settlers. The Pike/Allen Street project site would have been situated within portions of four such farms: Bouweries 4, 5, and 6 and the Mansion House Plot. As the original high water mark was located at modern Cherry Street, the southern portion of the project site was almost completely inundated by the East River throughout the 17th and 18th centuries (Figure 3). The city remained confined to the southern tip of Manhattan during the 1600s, and there was minimal development of roads, structures, or land along the waterfront as far north as Pike (Charlotte) Slip at that time.

The majority of the project site was situated within Bouwery Number 6, which extended as far north as Division Street (which derived its name from its role dividing historic farms), as far south as modern Madison Street and as far west as the "Old Kill" in the vicinity of modern James and Catherine Slips. Separating the farm from the East River was a tract of marshland known as the "upland parcel." It appears that the WIC reserved the land to the south of Bouwery Number 6 for the common good rather than granting it to a specific individual. This reserved parcel, which extended south from Madison Street to the shoreline of the East River (and would therefore have included the southern portion of the project site) was instead set aside by the WIC as "a suitable place in which ships, sloops, or barges could be laid down, or to be repaired and caulked" (*Van Rappard, Doc C*; cited in Stokes 1967 VI: 134). However, it is also possible that the marshy tract was used exclusively by the tenants of Bouwery Number 6 (Stokes 1967).

The WIC first granted Bouwery Number 6, in 1630 to Wolphert Gerritsen van Couwenhoven. He held the property until 1636 and as a result, the marshy meadowland to the south became known as "Wolphert's Marshes" (Stokes 1967). After several other tenants, in 1647 the Bouwery was granted to Cornellis Jacobsen Stille, whose heirs retained the farm and the adjacent Upland Parcel for the remainder of the 17th century.

North of Bouwery 6, the streetbeds of Pike and Allen Streets continued through Bouwery 5, the northeastern corner of which was located in the vicinity of modern Clinton Street between Broome and Delancey Streets. Bouweries 5 and 6 were separated by Division Street, which served as its southern border. In 1630, the farm was leased from Wolphert Gerritson by Claes Cornelissen Swits, who was killed in a skirmish with Native Americans in 1641. In 1645, the farm was regranted to Swits' son, Cornelis Claesson Swits, who was also killed by Native Americans. This property was incorporated into the lands of Lieutenant Governor James DeLancey, Sr. in the early 18th century.

Bouwerie 4, also known as the "Pannebacker's bouwery," was situated to the north of Bouwery 5 and received its nickname from an unknown tile or brick maker who must have lived on the property in the 17th century (Stokes 1967). Like other Bouweries, it was leased by a variety of farmers who used the land for agricultural and pastoral purposes until its purchase by James DeLancey in the early 18th century.

Finally, the northernmost portion of the project site was originally located within a farm known as the "Mansion House Plot." This property was bounded roughly by Rivington, Orchard, and Broome Streets and the Bowery. Only a small stretch of Allen Street south of Delancey was included within this farm. In 1647, Dutch Director-General Peter Stuyvesant granted the farm was granted to a free individual of African descent named Bastien. The property was regranted by Stuyvesant to Paulus Heymans in 1653 and changed hands numerous times throughout the 17th and 18th centuries before it was consolidated into the lands of James DeLancey in 1744. DeLancey's house stood within the boundaries of Bastien's former farm, near the northwest corner of modern Chrystie and Delancey Streets (Stokes 1967).

18TH CENTURY HISTORY OF PIKE/ALLEN STREET

THE ESTABLISHMENT OF THE RUTGERS AND DELANCEY FARMS

In 1728, Stille's heirs sold their farmland in former Bouwery 6 to Harmanus Rutgers, Jr. At the time of this purchase, the property contained a farm house, barns, and outbuildings, however, their locations are not known. The remainder of the adjacent land formerly known as the upland parcel was sold to Rutgers by Thomas Fayerweather in 1732 (Stokes 1967). The Rutgers farm included a substantial portion of the area later known the Seventh Ward of New York City as well as part of what would be defined as the city's Fourth Ward. Harmanus Rutgers, Jr. was a brewer (as was his father) and he grew barley on the property for that purpose. The Rutgers farmhouse was located to the northwest of the project site near modern Oliver Street and East Broadway, while a barn was situated along Catherine Street, west of the APE (Crosby 1886).

Harmanus Rutgers, Jr. died in 1753, "a very eminent brewer of this city and a worthy, honest man" (Crosby 1886: 87). His son, Hendrick, who was born in 1712, had already been living on the property by the time of his father's passing along with his wife, Catharine. By 1754, the Rutgers' had constructed a new farmhouse closer to the river, in the area now bounded by Jefferson, Clinton, Monroe, and Cherry Streets. It is depicted in a 1768 drawing by J. Kirk, which also shows the undeveloped countryside in the vicinity of the project site. The Rutgers house is also depicted on maps created by Montresor and Ratzer/Ratzen (Figure 4) depicting the city in the late 1760s (but published in 1776).

As mentioned earlier, James DeLancey began purchasing land in the area north of Division Street in the early 18th century and quickly bought up the northern portion of the project site. He died in 1760, and his property was inherited by his son James DeLancey, Jr. By that time, the family had acquired a tremendous amount of property in the area and had gained a reputation for being loyal to the British crown. DeLancey visited England in the spring of 1775 and because of the impending American rebellion, neither he nor his family ever returned to America. As a result of the *Act of Confiscation* of 1779, the DeLancey estate was divided and sold by Isaac Stoutenburgh and Philip Van Cortlandt, who were Commissioners in Forfeiture (Stokes 1967). After the sale of the land, it was heavily and quickly developed.

Around the time of Rutgers' and DeLancey's land acquisitions, docks and shipyards lined the East River waterfront, as seen on the Lyne map of 1731, which does not depict the island as far north as Pike Slip. It does not appear that significant waterfront development occurred near the project site during the first decades of the 18th century. The Grim map, drawn in 1813 but depicting the city as it appeared in the early 1740s, does not indicate the presence of any structures near the project site, but rather suggests that the area was occupied by orchards or farms, however the map's accuracy is questionable.

The maps published by Montresor in the late 18th century depict a country lane in the vicinity of the project site. One of these appears to have been a precursor to modern Division Street, identified as "Love lane," while another ran in the vicinity of modern Grand Street and was referred to as the "Road to Crown Point," and a third was in the vicinity of Delancey Street which ran along the southern side of James DeLancey's home. The Montresor maps depict a series of small plots of farmland in the location of the modern day streetbed and also depict a small structure on the southern side of the Road to Crown Point in the vicinity of modern Allen Street. This structure is not shown on the Ratzer maps, which are thought to be more accurate (Augustyn and Cohen 1999). The Ratzer maps are the first to depict the laying out of the modern street grid within the southern portion of the DeLancey farm, with a large area known as "Delancey's Square" or "the Great Square" reserved in the area bounded by Broome, Canal (then called Pump), Eldridge (then called Third) and Essex Streets.

At that time, Allen Street was not yet laid out. Therefore, the area now occupied by the streetbed of Allen Street was partially occupied by "Delancey's Square" and partially ran through the center of the blocks made up by the newly laid out streets. The Ratzer maps show that the block then bounded by Eldridge, Orchard, Hester, and Canal Streets was developed with structures (represented by a shaded rectangle on the block's southern border), however no building footprints are depicted and it is not clear if structures were present within the project site at this time. To the south of Division Street, farmland still covered all the land extending to the East River shoreline. However, it is not clear if these streets were all constructed by that time or if they were simply proposed as the 1782 British Headquarters map and the 1782 Hills map only depict streets in the vicinity of modern Bayard, Canal, and Hester Streets as well as Eldridge, Orchard, and Essex. DeLancey's Square is depicted on neither map.

RISING TENSIONS DURING THE REVOLUTION

As the 18th century drew to a close, tensions between the American colonists and the British government grew fierce. After the beginning of the Revolutionary War in 1776, the British, who had taken control of New York City that same year, began to increase fortifications along the East River, one of their most valuable military assets due to its location. Fortifications were especially heavy on the Lower East Side where the tall hills afforded views of the entire harbor and where the British could look out for approaching American ships or troops. The large elevated area to the east of the project site, known as Jones' Hill or Mount Pitt, was the location of an American fort sometimes referred to as the "Crown Point Battery" which was later occupied by the British and strengthened with "fraises and pickets" (New York State Division of Military and Naval Affairs [NYSDMNA] 2006). During the war, several smaller batteries were constructed around the fort as well (ibid). Many Hessians, German mercenaries who fought on the side of the British, were camped in this area during the war (Stokes 1967).

As mentioned previously, James DeLancey was a loyalist during the war and as a result, his land was confiscated after the American victory. Hendrick Rutgers, however, sided with the Americans during the Revolutionary War, and after the British captured New York in 1776, he fled to Albany, where he died in 1779 (Crosby 1886). In his absence, his property was occupied by the British army. After the American victory and the subsequent British evacuation of New York in 1782, Henry Rutgers, son of Hendrick Rutgers, inherited most of his father's property. Henry Rutgers never married and lived in a house to the east of the project site, gradually selling off pieces of his estate until his death in 1830 (ibid).

Both the 1782 British Headquarters map and the 1782 Hills maps also depict many fortifications within and in the vicinity of the project site. Several batteries were constructed on the hills overlooking the waterfront in the vicinity of the project site. A substantial fortification wall was constructed in the vicinity of modern Grand Street that connected to the Jones Hill fort. This wall had several firing platforms, one of which may have been partially situated within the streetbed of Allen Street. Both the British Headquarters and Hills maps also show that shipyards lined the East River waterfront at the foot of what is now Pike Street. An additional fortification wall appears to have crossed through the project site just south of Monroe Street, as well (Stokes 1967). The British Headquarters Map also depicts a structure in the path of the Allen Street streetbed on the southern side of Hester Street.

POST-REVOLUTIONARY GROWTH

Because of the military presence in the area during the Revolutionary War, the area surrounding Pike/Allen Street was not heavily developed until after the war ended and the British evacuated the city in 1783. The end of the war resulted in the division of large farms, resulting in the rapid urbanization of the Lower East Side. Development in the area was spurred in the late 18th century by the division and sale of both the DeLancey farm property by the Commissioners of Forfeiture in the 1780s and the Rutgers farm after the death of Hendrick Rutgers. The division of these large farms also resulted in an increase in street development, as evident on the 1789 McComb map of Manhattan. This map shows that a neat street grid had been constructed through the Rutgers farm south of Division Street. Among the streets laid out at this time was Charlotte Street, as Pike Street was originally known. It is not clear if the streets were actually constructed at this time, as Charlotte Street is depicted as continuing directly between a point north of Broome Street and Cherry Street. Historically, Pike and Allen Streets were separated by approximately 70 feet at Division Street.

The Rutgers farm—which included "a geographic monopoly of the…Seventh Ward"—was divided by Henry Rutgers into small lots which were then leased individually (Blackmar 1989). A map produced by John Holmes that depicted the Rutgers farm as it was in 1784 showed that nearly all of the lots adjacent to Pike Street south of Division Street were still under the control of Hendrick Rutgers' heirs—Henry Rutgers, Anna Bancker, Mary McCrea, Catherine DePeyster, John Beekman, William B Crosby, Catherine R. McCrea—although several lots were identified as having been sold.

In order to ensure that the land was properly developed, each lessee of a Rutgers lot was ordered to construct no more than one "good, substantial, and workmanlike brick building" of at least two stories on each lot and that the lease could not be transferred to another individual without Rutgers' consent (Blackmar 1989: 41). No such regulations were enforced on the former Delancey property, so structures located along Allen north of Division Street were less uniform (Howe 2000). The lots on the Rutgers property were mostly leased by merchants, professionals, entrepreneurs, and shipbuilders who flooded the Seventh Ward's waterfront during the early 19th

century. The more prosperous residents lived in the northern parts of the ward, while the working classes tended to live on or near the new landfill closer to the waterfront. For the first time, domestic residences and workspaces were no longer included within the same building and the high rents along the East River forced many merchants and shipbuilders to live elsewhere (Blackmar 1989). McComb's map does not depict individual buildings; however it does use shading to indicate which blocks were developed with structures at the time. The map indicates that all blocks on either side of Pike/Allen Streets between Broome and Henry Streets were developed as was the eastern side of Pike Street between Monroe and Cherry Streets.

Road construction, grading, and maintenance were also occurring at the end of the 18th century. The *Minutes of the Common Council* [*MCC*] contain numerous references to the grading or regulation of Pike and Allen Streets as well as the many roads that run across it. For example, in 1796 the council ordered that Pike Street be regulated by as much as 5 to 7 feet between Division and Cherry Streets to divert water from northern streets into Pike Slip (*MCC* 1784-1831 II: 1303).

The 1797 Taylor-Roberts map depicts a more accurate depiction of the project site in the late 18th century. By that time, both Pike (shown on the map as Charlotte) and Allen (shown on the map as Fourth) Streets had been laid out and at least partially constructed.[1] As previously mentioned, Pike Street ran between Cherry and Division Streets and Allen Street began at Division Street approximately 70 feet west of the western side of Pike Street and continued north as far as modern Houston Street (shown as North Street on the 1797 map). Once again, this map indicates only the presence of structures rather than individual building footprints. Because of street widening, portions of former domestic lots containing structures are now situated beneath the streetbed of Pike/Allen Street. The Taylor Roberts map identifies structures on the eastern side of Allen Street between Delancey and Broom (Bullock) Streets, at the southeast corner of Allen and Hester (Eagle) Streets, at the northeast corner of Allen and Canal (Pump) Streets, and lining the western side of Pike Street between Division and Cherry Streets.

19TH CENTURY SITE HISTORY

INITIAL DEVELOPMENT

By the beginning of the 19th century, new structures had been built across most of the former Rutgers and DeLancey farms. Maps published by Bonar in 1804 and Longworth in 1808 suggests that all the blocks adjacent to Pike and Allen Streets as far north as Broome Street had been developed with structures, although no building footprints are depicted. At this time, both residential and commercial structures lined Pike and Allen Streets. These buildings relied on shaft features such as cisterns, privies, and wells for the purposes of sanitation and water gathering. The Common Council minutes include numerous references to privies belonging to houses lining Pike and Allen Streets that were identified as public health "nuisances." Other "sunken" lots adjacent to the streetbeds of Pike and Allen Streets were also identified as nuisances in the early decades of the 19th century. Racial tensions were high at this point (slavery was not abolished in New York until 1827) and the *Minutes of the Common Council* noted that many Seventh Ward residents complained that homes on Pike Street were "frequented at unseasonable hours by idle Negroes and other dissolute persons" (*MCC* 1784-1831 V: 192).

Throughout the beginning of the 19th century, road construction and paving continued in sections and the Common Council did not order the portion of Allen Street between Grand and Houston Streets to be paved until 1810. In 1813, Charlotte Street was renamed Pike Street, after Zebulon Pike, the famous explorer and recently deceased war hero (Moscow 1979). Similarly, in 1817, "Fourth Street" was renamed Allen Street in honor of naval hero William H. Allen, in the hopes that although "he lost his life and his vessel" serving the country in the War of 1812, "his name will not be forgotten as long as his country lasts" (*MCC* 1784-1831 IX: 72).

Plans to widen and extend Pike Street date to as early as 1823. That year, Common Council Minutes note that property owners in the vicinity of Pike Street, including Henry Rutgers, petitioned the council to widen Pike Street

[1] The Taylor-Roberts map suggests that all streets in the vicinity of the project site were developed at this time, however two subsequent maps created by Bonar in 1804 and Longworth circa 1808 suggest that only the streets south of Broome Street (inclusive) had been fully constructed. However neither map correctly depicts the correct alignment of Pike/Allen Streets. The placement of structures on the Taylor-Roberts Plan suggests that the streets had been at least laid out, as no buildings were present in the streetbeds.

and extend it from Cherry Street to the intersection of Allen and Canal Streets. The petitioners asked that the work be done before lot owners in that area started building on those lots, indicating that in the early 1820s, there were few structures in the vicinity of Pike and Allen Streets near Canal Street (*MCC* 1784-1831 XII: 744). The street was expected to be widened to the east and west by 10 feet, increasing the total width from 40 feet to 60 feet, as the Rutgers family had ceded a 60-foot right-of-way to the city government for the street's construction. In 1823 residents of the area asked that the Council only widen the street by 10 to 20 feet to the west, as there were "but few buildings held in fee by Individuals on that side which will be required to be paid" (*MCC* 1784-1831 XIII: 316). However, in subsequent entries in the Common Council Minutes, other residents protested the street expansion/widening and the City determined that legally, the right-of-way granted to the City would have to include 10 feet on both the eastern and western sides of the street (*MCC* 1784-1831 XIII: 776). An entry in the Common Council minutes in 1825 notes that the widening of the street was delayed because of the slow removal of buildings that were impeding the street's new path (*MCC* 1784-1831 XIV: 405, 709).

CONTINUING GROWTH

Maps dating to the 1820s and 1830s (i.e. the 1824 Hooker, 1828 Morin, 1832 Burr, and 1836 Colton maps) depict development in the vicinity of the project site although none depict individual building footprints with the exception of public or institutional structures (i.e. churches and markets) or homes on large estates (i.e. Henry Rutgers home near the former intersection of Monroe and Jefferson Streets). The 1824 Hooker map depicts one such building on the eastern side of Allen Street midway between Hester and Canal Streets. The map may be identifying a Quaker meeting house that was located there and which is more clearly depicted on the 1852 Dripps map (Figure 5). A portion of the Quaker meeting house property would have been included within the modern streetbed of Allen Street in this area as a result of 20th century street widening. Neither the 1828 Morin nor the 1836 Colton maps depict this structure, although both show the North Dutch Church on Orchard Street between Delancey and Broome Streets. However it does not appear that any portion of this church's lot is now located beneath the streetbed of Allen Street. Both maps also depict the churches that were located on the western side of Allen Street between Hester and Grand Streets and on the eastern side of Allen Street between Delancey and Rivington Streets (both outside of the project site). Churches in the vicinity of the project site are discussed in greater detail, below.

The first map to clearly depict the footprints of the buildings that were situated within and adjacent to the project site is the 1852 Dripps map. The map shows that every lot within and adjacent to the project site was occupied by one or more structures and nearly all had an open rear or center yard. Several industrial and commercial enterprises were in the vicinity of the project site as well, including the Truslow & Brothers Coal Yard on Cherry Street just east of Pike Street, The Eagle Hose Company on Madison Street just east of Pike Street, and the East Broadway House on East Broadway at the corner of Pike Street. The map also identifies a "Racket Court," an early tennis court, west of the Quaker Meeting House on the eastern side of Allen Street between Canal and Hester Streets. The racquet court had been constructed circa 1800 by a Scottish immigrant named James Knox and was later taken over by his son, Robert (Holloman 2003). The court was "open and double…built of brick and faced with brown stone" (ibid: 74).

The 1852 Perris map provides more information on the structures that were located along Pike and Allen Streets at that time. Most were made of brick although many were of wood frame construction. Although by that time water and sewer lines would have been accessible in the streetbed, many of the buildings in the area continued to have outbuildings that may have been privies. In addition, the Perris map does not depict the racquet court seen on the Dripps map, but rather depicts a public school, Public School Number 42, in the area.

NEIGHBORHOOD CHANGES IN THE MID-19TH CENTURY

Despite the increased development in the area, during the second half of the 19th century the Hudson River grew more prominent in the shipping industry and the industries that once characterized the neighborhood began to relocate to other parts of the city. The neighborhood's transformation was not limited to commerce, however, and a new class of people moved into the area. In the second half of the century, the Seventh Ward, in which the portion of the project site south of Division Street was situated, was notoriously occupied by the working class, including mechanics, longshoremen, and sailors (Smith 1864). The Tenth Ward, in which the portion of the project site north of Division Street was situated, was "at one time inhabited by some of [the city's] most respected citizens of moderate ideas, confined to houses of two stories in height" although it had become home to "many substantial tenant houses to accommodate the increase of the population" (Kennedy 1864: 91).

The Lower East Side quickly became littered with overcrowded slums, filth, and disease, and it was considered by many to be one of the worst neighborhoods in New York City. Sanitary inspection reports of the Seventh Ward describe the squalid conditions of the neighborhood in 1864 (Smith 1864). The tenements were overcrowded, diseases including typhus and small pox ran rampant, and infant mortality rates were higher than 44 percent. Liquor stores were a constant presence, as "rum and poverty [went] hand in hand," (ibid: 106). However, living conditions in the Tenth Ward were better and sanitation reports from that area (Kennedy 1864) indicate that while "the moral and physical tone of the neighborhood was fearful" during the time when the Collect Pond stood in the area, after it was filled in, life had improved for the residents (ibid: 92). Sanitation reports for the Tenth Ward from 1864 state that the only major health "nuisance" for the ward was caused by odors emanating from garbage that collected in the streets. Otherwise, the district was reported as having excellent drainage, ventilation, clean, large tenant houses, and a healthy population, many of whom were of German descent (ibid).

THE LATE 19TH CENTURY

As the 19th century drew to a close, the shipping industry's presence in the area continued to dwindle. In 1888, a *New York Times* article noted that the dry docks and ship yards along the East River waterfront between Rutgers and Pike Slips were no longer in use and "the block which begins at Rutgers Slip…[had] a very tumble-down appearance" (*NYT* 1888: 12). The neighborhood's economic shift resulted in a subsequent demographic shift, as lower-class immigrants flooded the Lower East Side and lived in the overcrowded tenements that lined the neighborhood's streets. At the beginning of the mid 19th century, the area was home to many Irish immigrants and the infamous outlaw "Billy the Kid" is presumed to have been born to Irish parents at 70 Allen Street in 1859 (Mendelsohn 2009). The Lower East Side quickly became a German enclave throughout the mid-1800s although during the last few decades of the 19th century, it became populated mostly by Jewish immigrants from Eastern Europe (Howe 2000). During the surge of immigration in the mid-19th century, many of the old 2-story wood frame rowhouses that lined the streets of the Lower East Side were replaced with 4 to 5-story brick tenements designed to house large numbers of people, most of whom were poor immigrants (ibid).

Overcrowded tenements were a major factor in the deterioration of living conditions during the late 19th century. Late 19th century atlases including the 1879 Bromley, 1885 Robinson-Pidgeon, and 1891 Bromley atlases, suggest that nearly all of the lots bordering the streetbeds of Pike and Allen Streets were occupied by brick structures, many of which still had open rear yards, although a few wood frame structures remained and many new larger structures had been built occupying entire lots, including a large dry goods factory that was located on the eastern side of Allen Street near its intersection with Grand Street. Public School 42, located on Allen Street between Hester and Canal Streets was described by social reformer Jacob Riis as "one of the worst, if not the worst in the city" (Riis 1894: 659). Riis also noted that the school was overrun with rats (Riis 1899).

However, the main contributor to poor quality of life conditions along Allen Street north of Division Street was the construction of a branch of the Second Avenue Elevated (El) rail line in 1879. The El line covered nearly the entire width of Allen Street (which at the time was only 50 feet), preventing any sunlight from entering the street below, making it "the street of perpetual shadow…unfit for human habitation" (*New York Times* 1929: 19). An award-winning fictional story written by Fannie Hurst in 1919 reflected upon the experiences of the individuals residing in the adjacent tenements, where "the third floor windows no sooner shudder[ed] into silence from the rushing shock of one train than they [were] shaken into chatter by the passage of another" and on the ground below there was "a sort of submarine and greenish gloom, as if humanity were actually moving through a sea of aqueous shadows" (Hurst 1921: 149).

As a result of the El line, the vicinity of Allen Street, and to a lesser extent, Pike Street to the south, became one of the city's worst areas, plagued by poverty, pollution, and crime. Articles published in the *New York Times* in the late 19th and early 20th centuries reported numerous crimes in the area, ranging from pick-pocketing to murder. Pike Street became known for its rapidly accumulating volume of garbage. In 1882 the *New York Times* reported that in the vicinity "large express wagons and coal carts [were] firmly grounded in garbage which [was] dumped against and around them" (page 8). By the 1890s, when a large Jewish population was settled in the area, Allen Street was the base of operations for many prostitutes (Burrows and Wallace 1999). Indeed, because of the high volume of both synagogues and brothels in the area, "vice and orthodoxy lived side by side" (Maffi 1994: 121). A Sanborn Map from 1894 reflects the changes seen in the neighborhood at this time. Many factories and industrial structures were interspersed with the tenement buildings along Pike and Allen Streets, as were several schools, churches, and

synagogues. Stations for the El rail line were located at Grand and Canal Streets. Although many synagogues were present both within the project site and across the Lower East Side, many were built in converted tenement apartments rather than in formal structures built for religious purposes (Bergoffen 2008). Many synagogues at that time contained tiled ritual baths known as *mikvahs* located in their basements. Several *mikvahs* have been investigated during archaeological investigations in the area, including one at 5 Allen Street, adjacent to the project site on the western side of Allen between Canal and Division Streets (ibid).

20TH CENTURY SITE HISTORY

In the first decades of the 20th century, the neighborhood surrounding Pike and Allen Streets continued to decline although it was impacted by many large infrastructure improvements as a result of the consolidation of the boroughs of New York City in 1898. The neighborhood remained a Jewish enclave during this time and in 1905, during the construction of the Manhattan Bridge—which lines the western side of Pike Street and Pike Slip south of Monroe Street—immigrant laborers working on the bridge, mostly made up of Irish émigrés, attacked a crowd of Jewish individuals on a recreational pier at the foot of Pike Street (*New York Times* 1905).

The Manhattan Bridge opened in 1909 and became the third East River bridge constructed to link Manhattan with the boroughs of Queens and Brooklyn, which had been annexed to the City of the New York in 1898. Hundreds of families were displaced for the bridge's construction, as the City acquired large tracts of land through condemnation or purchase and demolished many tenements to make way for the bridge's construction (*New York Times* 1907). In addition, in conjunction with the construction of the Williamsburg Bridge, the streetbed of Delancey Street was widened to 150 feet. The widening was proposed in 1901 and completed by 1905 (*New York Times* 1901). The widening of Delancey Street to the south resulted in the demolition of several buildings formerly located at the southeast corner of Delancey and Allen Streets. A branch of the Brooklyn Rapid Transit Company's Centre Street loop subway line (now the JMZ subway line) was constructed below Delancey Street by 1915 to connect to the Williamsburg Bridge, constructed 1903 (Walker 1918).

In the early 1900s a gang led by a man named Monk Eastman was headquartered on Allen Street and had at least one infamous shootout there with a rival Italian gang beneath the El tracks (Lardner and Reppetto 2001). By 1924, Allen Street was referred to as "the city's worst plague spot…a section of dilapidated old buildings, breeding disease, poverty and crime" (*New York Times* 1924a: 17). However, the neighborhood had also become known for its copper and brassware stores, many owned by Russian immigrants, which sold quality items for less money than similar stores uptown (*New York Times* 1926 and 1928). Sanborn maps of the area published in 1922 and 1923 (Figure 6) depict these structures.

In the 1920s, plans began to widen Allen Street in order to clear the area of slums but also to alleviate traffic congestion from First Avenue, which connects to Allen Street at Houston Street. The original plan involved widening the street by 87 feet to the east by acquiring all the structures lining the eastern frontage of the street and demolishing them. Pike Street was also to be widened to the west between East Broadway and Division Street to connect to the newly widened Allen Street. The finished street corridor was to be constructed with many central medians that would serve as parks and Allen Street was expected to become as fine as Park Avenue (*New York Times* 1931a).

However, in 1927 the city initiated work on widening only the portion of Allen Street between Delancey and Houston Streets (*New York Times* 1927). When the work was finally completed, it was greeted with much enthusiasm, although not enough to result in the immediate widening of the remainder of the street. The additional land was finally condemned in 1931, although work did not begin immediately and the buildings designated for demolition were filled to capacity with tenants paying very low rents, knowing that at any moment they could be evicted so that the work could begin (Duffus 1931). The *New York Times* reported that those tenants were finally ordered to vacate the buildings on June 2, 1931. By August 5, 1931, the demolition of the almost 100 buildings lining the eastern side of the street had begun and the work was completed by December 14th of that year (*New York Times*). In April of 1932, a parade was held to celebrate the opening of the expanded streetbed that stretched between Houston Street and East Broadway.

The newly widened streets were constructed with park areas placed on medians through the center of the entire project corridor. As seen on plans produced by the Parks Department in 1931 and 1936, each median was paved with asphalt and lined with poplar trees, benches, and a 2.5-foot high iron fence (see Figure 7). Planting plans

produced by the parks department in 1937 and 1938 indicate that the medians were remodeled at that time with new plantings and replaced water fountains. The plans note that "during excavation [for tree planting] any old foundations encountered shall be broken off to a depth of 2'-0" below grade and all depressions shall be filled with good earth." Tree pits to be excavated at that time were planned to be 6 feet in diameter and 2.5 feet in depth and the shrub beds that lined the perimeter of the medians were to be dug to a depth of 1.5 feet below grade.

Water fountains were located at the northern and southern ends of most of the medians, and water and sewer pipes were connected to each. Lampposts were also installed on each median, making electric lines necessary in the area. Because the El train continued to run down Allen Street, staircases leading to the El platforms were relocated to the center medians on the northern sides of Grand and Canal Streets. Originally, the newly widened portion of Pike Street between East Broadway and Division Street was constructed with a single center median measuring approximately 38 feet in width with an 80-foot roadway to the east and a 50-foot roadway to the west. The 1951 Sanborn map continues to depict only one center median, however plans produced by the Parks Department in 1956 in association with the redevelopment of the Allen and Pike Street malls depict two parallel medians between East Broadway and Division Street. At that time, it also appears that the median located between Division and Canal Streets, which was formerly linear, was reconstructed at an angle to mimic the curvature of the street.

The majority of the city's subway lines had been constructed by the 1940s and as a result, the El rail lines had fallen out of favor. In 1942, the Second Avenue El was closed and its tracks demolished, including those that ran along Allen Street. Sanborn maps from 1950 and 1951 depict the newly widened streetbed with the new center medians identified as park areas. The maps also show that while Pike Street had not yet been widened between Cherry Street and East Broadway, some of the lots had become vacant. As immigration laws changed in the early 20th century, the flow of immigrants into New York City slowed considerably, the population of the Lower East Side dropped dramatically, and many tenements were abandoned or demolished at that time (Howe 2000).

Although the city had proposed widening the remainder of Pike Street since at least 1941, when the Parks Department produced plans depicting the proposed work, it was more than a decade before the plan was actually implemented, a delay caused in part by a housing shortage on the Lower East Side (*New York Times* 1950). The remainder of Pike Street was finally widened in 1958, as part of a new planned truck route through the length of Manhattan between the Willis Avenue and Manhattan Bridges (*New York Times* 1958). At that time, the streetbed was widened to the west by approximately 87 feet to the same width as Allen Street to the north and central medians designed as park spaces were constructed in the center of the roadway. The Pike/Allen Street corridor has remained a functioning City streetbed since that time.

B. HISTORY OF PIKE SLIP BETWEEN CHERRY AND SOUTH STREETS

The portion of Pike Street between Cherry and South Streets is known as Pike Slip, a reference to the area's history as a small waterway where ships would dock in the late-18th and early-19th centuries. This portion of the project site is composed of landfill that was gradually deposited until the entire streetbed was filled in as far south as South Street by the mid-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. In this way, land-making had a crucial impact on the development of New York's burgeoning economy. 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. The East River remained the focus of New York's 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.

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 incorporated into the landfill itself.

The Dongan Charter of 1680 had the most profound effect upon the transformation of the New York City waterfront. This charter permitted the city government to raise money by selling water lots, "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 river's swift currents.

Like many neighborhood residents in the early 1770s, the Rutgers family began to add to their real estate holdings through the acquisition of water lots. The lots were granted to them by the city with the condition that the new owners create new land and then construct city streets across the landfill. Water lot grants in the vicinity of Pike Slip were granted to Hendrick Rutgers in June 1772. The original terms of these water lot grants stipulated that a slip must be built at the foot of Pike Street, then known as Charlotte Street, that was a minimum of 80 feet in width with a 24 by 200 foot pier on either side (*MCC* 1675-1776 VII: 362). The combined width of the original slip and its eastern and western piers was 128 feet; this width has remained consistent to the present day. A late 18th century map referred to as the "Upland and Water Lots Map" depicts the proposed layout of Charlotte Slip between Cherry (then called North) and South Streets. Rutgers and his family were in control of the lots immediately to the north, between Cherry and Monroe (then called Lombardy) Streets.

In 1790 the City's Common Council ordered that a bulkhead be constructed across the slip to complete Cherry Street in that area (*MCC* 1784-1831 I: 557). However, although Rutgers' original water lot grant ordered that the slip and adjacent piers be constructed by 1782, they were not built until the early 19th century. The Taylor-Roberts plan of 1797 shows that Cherry Street was completed across the southern end of Pike Street, then called Charlotte Street, and that some wharves had been constructed on either side, forming a small slip. By 1803 the piers lining the eastern and western sides were still not fully constructed. That year, the Common Council ordered that the docks be completed because the area was "in great want of accommodation for the market boats" and there were "no public slips between Catherine and Rutgers Slips" (*MCC* 1784-1831 III: 240). At that time, one of the men ordered to construct the docks, Isaac Hicks, was granted an extension because logs were very expensive at that time and were therefore difficult to obtain (ibid: 332).

Complaints about the slip's condition continued into early 1804, when the slip, then being used as a lumber and ship yard[1] was described as being in "a rude and unfinished state" (*MCC* 1784-1831 III: 452) that was congested with accumulated mud and sediments causing it to be "bare for many feet below the bulkhead" at the low water mark (*MCC* 1784-1831 III: 387). The majority of the complaints about the slip that are listed in the *Minutes of the Common Council* were in regards to the western pier, as Isaac Clason had constructed a new 120-foot pier on the eastern side by the early 19th century. Hooker's 1824 map of New York City identifies a pier belonging to Clason to the east of the Slip, but not adjacent to it, so it is not clear if Clason's pier was located within the project site.

In May 1804, the Council ordered that the west side of Pike Slip be developed with a similar pier and that a new bulkhead be constructed 122 feet south of the original bulkhead to allow for Water Street to be continued across it. The section of Pike Slip between Cherry Street and the former line of Water Street is shown on historic maps as approximately 120 feet in length, consistent with the location of the bulkhead. The new bulkhead, or at least a portion of it, was constructed by a man named Abraham Hurd early in 1805, although it was found to be defective (*MCC* 1784-1831 III: 701). The Council ordered that a man named Charles Dickensen should secure and repair the bulkhead with piles and timbers (*MCC* 1784-1831 III: 704). The newly constructed land was not paved until at least 1812, when the Common Council received complaints that sand and debris were being washed from the new streetbed into the slip (*MCC* 1784-1831 VII: 253).

The Common Council minutes continue to note problems with the western side of the slip in the early 19th century, many of which referenced deficiencies or lack of cooperation on the part of Messrs Dunlop and Grant, who were in control of a pier to the west of the slip, outside of the project area. By 1809 the wharf does not appear to have been completed, as Isaac Clason petitioned the Council to order one built along John Grant's lot in order to "form a safe

[1] The 1804 Bonar and 1808 Longworth maps indicate that shipyards were present to the west of the slip, along the waterfront between modern Pike and Market Streets.

and convenient basin" (*MCC* 1784-1831 V: 583). In 1810, the lack of piers rendered it "nearly useless" as a slip and the Council ordered that it be outfitted with a new wharf with "deep bridges and square timber" (*MCC* 1784-1831 VI: 242). By August of that year, all the blocks of that wharf had been sunk, however it is not clear exactly where that wharf was located.

A map of the former Rutgers Estate prepared by Bridges and Poppleton in 1813 depicts the pier along the eastern side of the slip south of Cherry Street. However, on the west side, a dashed line depicts the location of the proposed pier. The map shows that at that time, Pike Slip had been completely filled in as far south as Water Street. By 1818, the City appears to have constructed a pier along the western side of the pier. That year John Grant, of the firm Dunlap and Grant, complained that the city's pier, which extended 7 feet west of the slip line, blocked the right-of-way of his neighboring pier, preventing more than one ship from docking there and damaging his business (*MCC* 1784-1831 X: 604). Both the Dunlap and Grant pier and the city's new pier are depicted project south from Water Street on the 1824 Hooker Map of New York City.

With the eventual completion of the piers on either side, Pike Slip eventually became a successful commercial area like many other slips along the East River waterfront in the early 19th century. And, like other slips, it also became a dumping ground for local residents and commercial institutions. East River Slips were often used to dispose of household and commercial trash, and in 1808, Stephen Hitchcock, the city's contractor for street manure, requested permission to dispose of the manure he collected on the city streets in Pike Slip (*MCC* 1784-1831 V: 748).

Pike Slip remained an open waterway south of Water Street well into the 19th century. Burr's map of 1832 is the first to depict the filling out of the adjacent land west of the Slip as far as South Street. An updated map published by Burr two years later shows that both sides of the slip had been similarly developed, although the Slip remained open south of Water Street. The 1836 Colton map includes greater detail with respect to the development of the landfill around Pike Slip. That map is the first to depict the filling in of the slip itself as far south as South Street, which was not yet continued through the project site, as depicted on the earlier Burr maps. Colton's map also suggests that the slip was filled in as far west as the old Dunlap and Grant pier, however subsequent maps suggest that there was a gap between that pier and the filled-in portion of Pike Slip. In addition, Colton's map identifies portions of the blocks adjacent to the slip's eastern side as filled in, but not yet open for development. Finally, the area to the west of the slip's western pier is depicted as unfilled, in contrast to the earlier Burr maps.

Although it was less well-known that other slips that featured ferries or markets, Pike Slip was a successful commercial location for the remainder of the 19th century. By the mid-1860s, a floating dock was constructed between the piers at the foot of the slip, south of South Street. This was later home to popular oyster shacks. In 1909, the Manhattan Bridge was constructed over a portion of Pike Slip. One of the bridge's footings is located along the western side of Pike Slip/Pike Street in the vicinity of Cherry Street. The 1879 Galt-Hoy bird's eye view of Manhattan depicts a small structure at the foot of Pike Slip to the north of South Street. However, this structure is not depicted on any historic maps, nor are any other substantial structures depicted within the streetbed of Pike Slip between Cherry and South Streets.

CREATING LAND AND LANDFILL TECHNOLOGY

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 (see Table 1). These sites include the Assay and Barclay's Bank Sites (Louis Berger and Associates 1990 and 1986), the Whitehall Ferry Terminal (Louis Berger and Associates 2000), the Telco Block (Soil Systems Inc. 1982), the Schermerhorn Row Block (Historic Sites Research 1991), and the sites located at 175 and 209 Water Street (Schuyler et al 1978 and Geismar 1983, respectively). 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 typically 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. 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).

C. SUBSURFACE INFRASTRUCTURE IN THE VICINITY OF THE PROJECT SITE

HISTORIC UTILITIES IN THE APE

Despite its status as one of America's largest and most industrial cities, New York did not have a reliable network of water and sewer lines until the mid-19th century. Instead, water and waste management in domestic lots was handled by the use of shaft features such as privies, cisterns, and wells. Public wells were constructed by the city in publicly accessible areas along city streets and early gutters and drains carried waste directly into the East River.

The city's Common Council minutes show that in 1795, a new public well was installed near the intersection of Pike and Henry Streets and a year later neighborhood residents petitioned for another well in Pike Street, although its exact location was not disclosed (*MCC* 1784-1831 II: 177 and 306). Petitions for additional wells and/or pumps were made at various times throughout the early 19th century, including near the intersection of Pike and Madison Streets in 1809 (*MCC* 1784-1831 V: 660), at the intersection of Henry and Pike Streets in 1819 (*MCC* 1784-1831 XI: 223), along Allen between Broome and Delancey Streets in 1821 (*MCC* 1784-1831 XII: 4), and in 1824 near the intersection of Pike and Monroe Streets next to an existing well that would be filled up (*MCC* 1784-1831 XIII: 788). In 1864, a disused well on Allen Street near the corner of Grand Street was one of many that was filled to the street surface although other wells were protected with stone coverings at that time (Croton Aqueduct Board 1865).

The Common Council's minutes also discuss other early infrastructure. For example, in 1824, John Beekman was given permission to construct a drain from his house near the intersection of Pike and Cherry Streets out into Pike Slip (*MCC* 1784-1831 III: 552). Similarly, in 1817, Thomas Hazard, Jr. requested permission to build vaults near the corner of Pike and Cherry Streets and he subsequently requested permission to dig a cellar for a new house near Pike Slip (*MCC* 1784-1831 XI: 110 and 286). An historic directory from 1826 identifies Hazard's business address as 205 Cherry Street, which was formerly located at the southwest corner of Pike and Cherry Streets, so it is possible that the vaults and cellar were located there. In 1821, Henry Wandell also requested permission to construct a vault in Pike Street "opposite the corner of Lombardy [Monroe] and Pike Street" (*MCC* 1784-1831 XI: 572). An historic directory lists both a Henry Wendell, a baker, and a Henry G. Wendell, a grocer, at 95 Lombardy (Monroe) Street, near the corner of Pike Street. Finally, in 1825, a man named N.C. Hart requested permission to build a cistern in the street near the intersection of Pike and Division Streets. While contemporary historic directories include listings for a Nathaniel C. Hart, who was a teacher and later a "superintendant," he does not appear to have lived or worked in the vicinity of Pike or Allen Streets at that time.

THE FIRST WATER AND SEWER PIPES

The first water pipes were installed in the early 19th century by the Manhattan Water Company, the precursor to the Chase Manhattan Bank. These wooden pipes carried water from local sources (i.e. the Collect Pond) to other areas in downtown Manhattan. Examples of these early pipes were discovered in 1889 under Peck Slip, southwest of Pike Slip, during construction for a sewer line. The cedar logs discovered at that time measured eight feet in length and twelve inches in diameter, with two-inch holes bored in the center (*New York Times* 1889). By 1829, the city had constructed a reservoir near the intersection of modern 13th Street and the Bowery. An iron pipe ran between the reservoir and Catherine Street, bringing water to the Lower East Side (Burrows and Wallace 1999). Water pipes may have been present within the streetbeds of Pike and Allen Streets or in the cross streets that run through the project site, as the 1834 "Firemen's Guide" identifies several hydrants in the area. These hydrants were located in Cherry Street just west of Pike, near the northwest corner of Pike Street and East Broadway, and near the northeast corner of Grand and Allen Streets.

Despite its initial success, the wooden pipe water supply system could not be sustained for very long because local water sources became too polluted. It was not until 1842 that the Croton Aqueduct system brought significant amounts of clean water into Manhattan. A map of the complex distribution system associated with the Croton waterworks published by Endicott in 1842 depicts water lines and stop cocks running through the streetbeds of both Pike and Allen Streets throughout the length of the project corridor. Additional water lines were present in each of the cross streets that ran through the APE. Although water lines were present by 1842, sewers were probably not installed until the 1850s (Pickman 2006). Therefore, the use of privies could have continued on domestic lots until sewer lines were constructed and perhaps even well after. A sewer map prepared by the Department of Public Works in 1942 (updated through 1958) covers the portion of the project site north of Grand Street. The map indicates that a 4-foot by 2-foot 8-inch sewer was installed within Grand Street west of Allen Street with branches extending north and south down Allen Street in 1854. Another sewer line of the same size was installed in Grand Street east of Allen in 1859. An additional 12-inch sewer line was installed in Allen Street south of Delancey in 1860.

A contract to build a sewer in Allen Street between Hester Street and a point 200 feet to the north was issued by the city in 1858 at which time a similar sewer in Allen Street south of Grand Street was planned (Valentine 1859). In 1859, the city contracted for another sewer in Allen Street between Canal Street and a point 100 feet north of Division Street (Croton Aqueduct Board 1860). By 1864, sewage and wastewater from the houses lining Pike and Allen Streets were likely discharged into Pike Slip from one of two large sewer outlets identified there in sanitation reports (Smith 1864). In 1866, a 275-foot long sewer measuring 12 inches in diameter was installed in Allen between Broome and Delancey Streets (Croton Aqueduct Board 1867). An additional sewer was installed in Allen Street between Canal and Rivington Streets in 1868 (Croton Aqueduct Board 1869). However, despite the presence of water and sewer lines in the streets, many tenement buildings were not connected to them immediately. Privies remained in use for many years, although in the 1860s the privies were more commonly connected to public sewers. Although tenement legislation became increasingly strict in the late 19th century, running water and water closets in every apartment was not mandated until 1901 (Bergoffen 2008).

After the mid-19th century, as clean water was pumped in and waste was carried away, the city's sanitation efforts were greatly improved. The 1879 Bromley atlas shows that more than one dozen fire hydrants lined the streetbed of Pike and Allen between South and Delancey Streets, confirming the presence of water lines in the area. An 1891 version of the Bromley Atlas is the first to clearly show the utility lines that ran through the streetbeds of Pike and Allen Streets. The map shows one continuous sewer line and a parallel 6-inch water main running through the length of Pike Slip/Street between South and Division Streets, as well as intermittent sewer lines in Allen Street between Division and Delancey Streets. Subsequent historic maps and atlases depict additional water lines in the streetbeds.

In 1924, the *New York Times* reported that a tunnel had been uncovered below the street near the intersection of Cherry and Pike Streets. The tunnel, which was investigated by police after neighborhood boys reported finding two skeletons in it, was described as being at least 40 to 50 feet long and only tall enough for a man to crawl through. The tunnel was discovered after a portion of the Pike Street sidewalk caved in, however the walls were not determined to be stable enough for police officers to fully investigate the tunnel or the claims of human remains being present within it. The tunnel's specific location was not disclosed, although it was described as being immediately below "an old three-story brick structure, now a rag warehouse, which is supposed to be one of the oldest buildings in lower New York" (*New York Times* 1924b: 22). The 1924 Sanborn map depicts two 3-story

structures (with basements) that were used for rag storage at 71 and 73 Pike Slip, at the southeast corner of Cherry Street. It was thought at the time that the tunnel was associated with "the smuggling and piracy of old freebooting days" and was not thoroughly investigated nor were any skeletons reported to have been recovered (ibid).

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 to 3 feet and electrical utilities are usually found 1 to 2 feet below grade, although they are occasionally located at greater depths.

Current maps of utilities within the APE indicate that numerous utility lines run through the APE, however, the majority are located within the boundaries of the original streetbeds of Pike and Allen Streets. A sewer line measuring 4 feet by 2 feet 8 inches runs through the center of Pike Slip from South Street and continues along the eastern side of Pike Street (within the historic streetbed) as far north as Division Street. Additional sewer lines of the same size connect to this main from each of the cross streets that intersect with Pike Street in this area and smaller 12- and 15-inch sewers are present in the streetbed as connected storm drains. Sewers along the Allen Street portion of the project site are all located within the western portion of the streetbed, beginning at a point approximately 35 feet north of Division Street although, as stated above, these sewers are not contiguous throughout the length of Allen Street and most empty into sewer mains running through the area's cross streets. The larger sewers are generally found at depths around 13 to 14 feet below grade, although the depth varies, while the smaller diameter sewers are at 6 to 7 feet below the surface of the street.

Water lines are present throughout the Pike/Allen streetbeds as well, although like sewers, in many locations they only run through the historic boundaries of the streetbeds. A water line runs along the western side of Pike Street between Monroe Street and East Broadway and another short water main is present on the eastern side of Allen Street in the vicinity of Canal Street. With the exception of numerous electric and gas lines and the occasional steam line, few utilities are present within the widened portions of Pike/Allen Streets and below the center medians. Therefore, there does not seem to be a significant amount of disturbance generated in the vicinity of the former historic lots now incorporated into the streetbeds as a result of utility installations except in those locations where cross streets cover former historic lots.

D. SUMMARY OF CEMETERIES AND INTERMENT OF HUMAN REMAINS IN THE VICINITY OF THE PROJECT SITE

On October 20, 2009, Amanda Sutphin, Director of Archaeology for the LPC, stated that an anonymous note entered into LPC's GIS database in 2007 contained the following information:

> *LPC research files for designation of The African Burial Ground and The Commons have newspaper articles from c. 1900 dating to the construction of the Sun Building and indicating that human remains were disinterred and reinterred on Allen Street and that there may also be a reference to re-interment of burials on Allen Street in Stokes' Iconography of Manhattan Island; further research is needed to verify this reference.*

Ms. Sutphin explained that she reviewed the files of the African Burial Ground and The Commons to which the note referred, but found no articles or references relating to Pike or Allen Streets. In response to this comment, AKRF conducted preliminary research to determine the potential for buried human remains associated with the African Burial Ground to exist within the Pike and Allen Street project site.

In order to collect information on the research topic, AKRF visited several New York City repositories, such as the Municipal Archives and the City Hall Library, and consulted on-line collections. Document types gathered included historic and modern cartographic resources, historic photographs, and historic newspapers and periodicals such as the *New York Times* and the *Brooklyn Daily Eagle*. Stokes' *Iconography of Manhattan Island* was consulted as were many other primary and secondary source publications. Historic designation reports for the African Burial Ground and the Sun Building (also known as the A. T. Stewart Building) were reviewed, as were archaeological studies written in connection with the African Burial Ground site in Lower Manhattan.

HISTORY OF THE A. T. STEWART BUILDING/THE SUN BUILDING

The A.T. Stewart/Sun Building is located on the east side of Broadway between Chambers and Reade at 280 Broadway, 53-63 Chambers, and 31-39 Reade Street. The site of the A. T. Stewart Building was previously the location of Washington Hall,—a Federalist Party meeting place constructed between 1809 and 1812 that was later used as a hotel before being destroyed by a fire—and several residences constructed during the early nineteenth century (LPC 1993).

Between 1845 and 1846, the first portion of the A.T. Stewart building was constructed by Joseph Trench & Co on the site of Washington Hall after its destruction. Between 1850 and 1851, the store was expanded to occupy the entire Broadway frontage of the block. This expansion extended "east along Chambers and Reade Streets in several phases, replacing early dwellings, with the last addition completed in 1884" (ibid). The building served as A.T. Stewart's retail store until 1862, when Stewart converted this structure into a warehouse. The structure was then the headquarters of the *New York Sun* newspaper between 1919 and 1952. The building was acquired by the City in 1965 and now houses municipal offices (ibid).

Based on archaeological reports and designation reports associated with the African Burial Ground Historic District, it is clear that the A. T. Stewart Building was constructed atop a portion of the African Burial Ground. However, no references have been found to suggest that human remains were encountered during the construction of the building or its additions nor was any evidence suggesting that soils excavated for the building's construction were deposited on Allen Street.

BURIAL GROUNDS IN THE VICINITY OF PIKE AND ALLEN STREETS

Several churches and cemeteries are known to have existed in the vicinity of the project site and there have been numerous cemeteries documented on the Lower East Side of Manhattan from the first half of the 19th century. New York City's burial laws grew increasingly stringent during that time, and in 1823 the City outlawed human interment south of Canal and Grand Streets and across the rest of Manhattan in 1851 (Inskeep 2000). Therefore, any burial grounds in the vicinity of the project site would have dated to before that time.

The most well-known cemetery near the Pike/Allen Street project site may be the Allen Street Methodist Episcopal Church, which was built on the east side of Allen Street between Delancey and Rivington Streets (north of the project site). Carolee Inskeep's *The Graveyard Shift* notes that burials occurred in the Allen Street Methodist Episcopal Churchyard from 1810 to 1851. Burials in this cemetery ceased in 1851 after stringent burial laws prohibited further human interments in Manhattan. An article in the *Brooklyn Daily Eagle* notes that burials from Allen Street were relocated to Cypress Hills Cemetery and suggests that the disinterment and reinterment were undertaken in a haphazard fashion (1893: 8). References in historic newspapers and maps suggest that the Allen Street Methodist Episcopal Church closed in the late 1880s or early 1890s and a synagogue operated on the site for several decades thereafter. The site of the former church/synagogue is now occupied by the center malls and eastern streetbed of Allen Street.

Other churches were formerly located within or adjacent to the project site before 1851, including the Allen Street Presbyterian Church at 61 Allen Street, on the western side between Grand and Hester Streets outside the project site), the Welsh Calvinistic Methodist Church formerly at 78 Allen Street between Grand and Broome Streets (now incorporated into the streetbed), the Second Universalist Church on Orchard between Broome and DeLancey Streets (outside but adjacent to the project site), and the Quaker's Church on Orchard Street between Hester and Walker Streets (the rear of which may have entered the project site). Preliminary research turned up no evidence that any of these churches had burial grounds on their property.

Additional cemeteries in the vicinity of the project site tended to be located near Chrystie Street, to the west. One such cemetery was more clearly associated with the African Burial Ground. When the African Burial Ground was closed in the 1790s, a group of African-Americans formed the African Society and requested that the City allocate land for a new African-American burial ground (Hanson and McGowan 1998). This new burial ground was opened on Chrystie Street circa 1795. Most accounts (Bergoffen 2008, Burrows & Wallace 1999, and Inskeep 2000) suggest that this cemetery measured 50 by 200 feet and was situated on the western side of Chrystie between Stanton and Rivington Streets and it is depicted in this location on both the 1797 Taylor-Roberts Plan and the 1852 Dripps map, although the boundaries of the cemetery are smaller on the latter map. The Chrystie Street cemetery was taken over by Saint Phillip's Church on Centre Street in 1827 and it was assumed that the burial ground remained active until

Manhattan burials were banned in 1851 (Inskeep 2000). Inskeep (2000) notes that in 1863, the remains from this cemetery were moved to Cypress Hills cemetery in Queens, although this has not been confirmed (Bergoffen 2008). During the construction of the Museum of Contemporary Art (235 Bowery), "disarticulated bone fragments were discovered in fill at the rear (west end) of the lots at 195-197 Chrystie Street" (ibid I: 29).

A *New York Times* article published on July 19, 1891 suggests that human remains associated with this cemetery were excavated during the construction of Public School (PS) Number 20, shown on the 1899 Bromley atlas on the eastern side of Chrystie between Delancey and Rivington Streets. The 1852 Dripps map depicts the Bethesda Baptist Church on the site that would later become P.S. 20. This cemetery was likely associated with the Bethel Baptist Church, formerly located on Delancey Street between Chrystie Street and the Bowery (Inskeep 2000).

The aforementioned *New York Times* article suggests that a cemetery may have extended along Chrystie Street between Grand and Houston Streets. While there is little evidence to suggest that one contiguous cemetery was located there, the 1852 Dripps map shows that many cemeteries were present in the vicinity. These included the two New York City Marble Cemeteries which still stand on either side of Second Avenue between Second and Third Streets, two Methodist Cemeteries near the northwest and northeast corners of Second Avenue and First Street, a cemetery on the northern side of Houston Street between First and Second Avenues (possibly associated with the First Baptist Church and dating to 1815), a large cemetery surrounding the General Evangelical Missionary Church on the southern side of Houston between Eldridge and Forsythe Streets (possibly associated with the Reformed Dutch Church and dating to 1796), a Presbyterian Cemetery on the southern side of Houston between Forsythe and Chrystie Streets (possibly dating to 1803), a Friends' (Quaker) Cemetery on the southern side of Houston Street between Chrystie Street and the Bowery (dating to circa 1825), the Moravian Church Cemetery behind the Brainard Presbyterian Church on Rivington between Orchard and Ludlow Streets, and the Forsythe Street Methodist Episcopal Churchyard on the eastern side of Forsythe Street between Bayard and Walker Streets (Inskeep 2000).

SUMMARY OF FINDINGS

The preliminary research conducted for this assessment yielded no evidence of a connection between excavation at the Sun Building site and the deposition of soils in or in the vicinity of Allen or Pike Streets. As indicated by Amanda Sutphin, no references to such a connection were found in the LPC files for the African Burial Ground or The Commons sites. Furthermore, in comparing the timeline of the Sun Building's major construction episodes with that of known alterations to Pike and Allen Streets, no clear chronological correlations appear to exist. Therefore, research suggests that there is no correlation between the project site and human remains associated with the African Burial Ground in the Sun Building vicinity. In addition, additional research conducted to determine whether other burial grounds may have existed within the project site showed that several former churchyards, vaults, and burial grounds were identified between one and three blocks of the project site although no documented burial locations were present within the project site.

Chapter 5: Conclusions and Recommendations

A. CONCLUSIONS

As part of the background research for this Phase 1A Archaeological Documentary Study, various primary and secondary resources were analyzed, including historic and current utility maps and construction plans and historic maps and atlases, 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 Pike and Allen Streets from the early 19th century on. The street has been graded and repaved numerous times since that time and the center medians have been constructed and renovated. As a result, the entire APE is likely disturbed to a depth of 1 to 2 feet below grade due to this roadwork. Numerous utilities are located within the historic boundaries of the Pike and Allen streetbeds as well as through the cross streets that intersect with the project site corridor. The portions of those streets constructed as a result of street widening in the early 20th century have experienced significantly less disturbance as a result of the installation of utility lines within the streetbed. However, several utility lines, mostly electric, 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. Additional water and stormwater sewer lines and catch basins also connect to the medians in several locations, which would have resulted in disturbance to greater depths.

Most of the historic lots located within the current streetbeds of Pike and Allen Streets were developed with structures with basements that covered the full extent of the lot. The excavation of each basement would therefore have generated disturbance beyond the depths to which the proposed project will require excavation (4 to 5 feet). This disturbance is confirmed by soil borings, which show the presence of 8.5 to 37 feet of fill throughout the project site (most of the borings were located in the vicinity of historic basements). The following lots do not appear to have been disturbed for the excavation of basements, although many have experienced disturbance for other reasons. For example, all appear to have been impacted to some extent during the construction of the original center medians, which included excavation for tree pits, shrubs, and fence posts. As mentioned previously, planting plans dating to the 1930s mentioned that tree pits would be excavated to a depth of 2.5 feet and shrub beds would be excavated to a depth of 1.5 feet. Additional plans produced for the Parks Department in 1931 (Figure 7) depict the profile of the planned tree pits and iron fence posts, and while they do not indicate the exact depth of either, they suggest that the fence posts would be excavated to a depth greater than the tree pits. Therefore, it is possible that around the perimeter of each median, the ground would likely have been disturbed to a depth of at least 3 feet as a result.

60 TO 64 PIKE STREET (AT SOUTHWEST CORNER OF MONROE STREET)

A small portion of the rear yards of these three structures is located in the project site. However, the rear yard areas located within the project site are less than 10 feet in width and are adjacent to the footprints of historic structures that were constructed with basements. All three rear yards were developed with structures that were not identified as having basements on Sanborn maps. Finally, plans of the center medians dating to the 1930s suggest that each median was lined with trees and fences around its perimeter. The perimeter of the original median in the vicinity of 60 to 64 Pike Street would have been located in the vicinity of these former rear yard areas. As a result of this area's narrow size and its close proximity to the former basement locations, it is assumed that this portion of the project site would have been disturbed to a depth of at least 3 to 4 feet (the anticipated maximum depth of the proposed project) as a result of basement excavation and the construction of the original center median in this area.

20 TO 22 PIKE STREET/101 HENRY STREET AND 16 PIKE STREET/115 EAST BROADWAY

The lots at 20 to 22 Pike Street/101 Henry Street and 16 Pike Street/115 East Broadway were all redeveloped with buildings with basements in the late 19th century. However, small portions of these lots remained open. At 20 to 22 Pike Street/101 Henry Street a small area measuring approximately 10 feet by 20 feet was not covered with a building. This area would have fallen within the footprint of an earlier building and is therefore not likely to have ever contained domestic shaft features. At 16 Pike Street/115 East Broadway, a 10-foot by 10-foot portion of a historic rear yard remained undeveloped. This area, however, was bordered on three sides by structures with basements. Both open areas at 20 to 22 Pike Street/101 Henry Street and 16 Pike Street/115 East Broadway were in locations that would have been partially disturbed during the initial construction of the center medians as a result of shallow excavation for tree pits and fence foundations.

108 TO 114 EAST BROADWAY AND 99 TO 105 DIVISION STREET

Pike Street was widened to the west, covering the historic lots formerly at 108 to 114 East Broadway and 99 to 105 Division Street. These properties all contained structures with basements, however, each lot had an open rear yard that was never developed. As mentioned previously, while this area now contains two parallel center medians, there was originally only a single median in the center of the road. During the construction of the original median, shallow excavation for tree pits and iron fence foundations would have caused some disturbance to the eastern side of 110 East Broadway/101 Division Street and to the western side of 114 East Broadway/105 Division Street. The existing eastern median on Pike Street between Henry Street and East Broadway is centered around the historic lots formerly at 116 East Broadway and 117 Division Street, where, in the 20th century, a large structure with a basement was constructed across both lots. A small portion (approximately 5 feet) of the adjacent historic lots to the west (114 East Broadway and 105 Division Street) would have been located in this area. Additional disturbance would be expected around the perimeters of both the eastern and western medians currently located in this area as a result of tree pit excavation.

108-110 DIVISION/2 ALLEN

The center median originally constructed on Allen Street between Canal and Division Streets was linear, whereas the one presently situated in that location is angled to mimic the curvature of the street. The existing median is located over numerous historic lots, although only those at 108 through 110 Division Street (2 Allen Street) contained open rear yards that do not appear to have ever been redeveloped with structures with basements. Some disturbance would have been generated in these lots as a result of tree pit and fence excavation.

69-71 CANAL STREET/14 ALLEN STREET

In the early 1850s, these two lots were occupied by brick buildings with open rear yards. By the late-19th century they had been redeveloped with brick structures that occupied all of the lot formerly at 69 Canal Street (14 Allen Street) and most of the lot at 71 Canal Street, though a small alley remained open in the rear of that building. Neither structure was constructed with a basement, and therefore the former rear yards of the early- to mid-19th century structures that stood there do not appear to have been disturbed for basement excavation. As part of the construction of the center median in the 1930s, the entrance to the Canal Street El station was relocated to the southern end of the median between Canal and Hester Streets, in the vicinity of the former structures at 69 and 71 Canal Street. In addition, a water fountain with water and sewer connections was also installed at the southern end of the median.

28-34 ALLEN STREET

The property formerly at 28 to 34 Allen Street was occupied by Public School (PS) Number 42, which was constructed circa 1852. Prior to that, the property had been occupied by several structures and a racquet court, which were depicted on the 1852 Dripps map (the school was first depicted on the 1852 Perris map). The racquet court had been constructed circa 1800 by a Scottish immigrant named James Knox and was later taken over by his son, Robert (Holloman 2003). The court was "open and double…built of brick and faced with brown stone" (ibid: 74).

The footprint of the school covered nearly all of the lots at 28 through 34 Allen Street, although its side yards were left open. By the 1920s the school appears to have been converted into a factory and the 1923 Sanborn map shows that 1-story additions had been constructed on either side of the school in the locations of the former side yards. However, Sanborn maps suggest that none of the structures located on the project site were constructed with

basements. Portions of this area would have been disturbed during the construction of the center medians (for tree pit and fence foundation excavations) as well as for the installation of two fire hydrants located along the western side of the median in this area.

40-42 ALLEN STREET/95 HESTER STREET

By the 20th century, this lot was completely covered with a structure without a basement. However, before this structure was constructed, four wood frame structures stood on the lot, all of which had open rear or side yards. Therefore shaft features could have been located along the eastern side of this lot. Historic plans of the central medians show that a drinking fountain with water and sewer connections was located at the southern end of this historic lot and a hydrant was located along the western side. A test pit was excavated at the southern end of this lot (Test Pit 2) which identified 4 feet of fill and cobbles (the pit was only excavated to a depth of 4 feet and the depth of fill in that area is unknown, although a soil boring a short distance to the north identified approximately 18.5 feet of fill in the location of a former basement).

310 GRAND STREET

By 1922, the lot at 310 Grand Street was fully covered with a structure without a basement. Before that, the lot had been occupied by a variety of small wood-frame structures with an open rear yard. Portions of this lot could have been disturbed to a depth of 3 to 4 feet as a result of the excavation of tree pits and fence foundations associated with the construction of the original center median, as well as for the construction of new stairs and columns for the El station that were located at the southern end of the median between Grand and Broome Streets. A drinking fountain with water and sewer connections was located at the southern end of this median as well, however the majority of disturbance caused by its installation would likely have been located within the boundaries of the adjacent historic lot at 70 Allen Street/308 Grand Street, which had been previously disturbed for the excavation of a basement.

72 ALLEN STREET

This small (15 by 50 foot) lot was fully covered with a building without a basement by the late 19th century and appears to have been formerly included within the rear portion of the historic lots at 308 and 310 Grand Street. During the mid-19th century, this area was occupied by a small industrial or commercial structure that fronted on Allen Street with a small open rear yard to the east (to the north of the historic lot at 310 Grand Street). Although the lot was later redeveloped with a structure, that structure did not have a basement. Like the other lots, portions of the historic property at 72 Allen Street could have been disturbed as a result of tree pit/fence post excavation.

76 ALLEN STREET

The portion of the lot formerly at 76 Allen Street was almost completely covered by a structure by the mid-19th century. That building appears to have remained on the lot until it was demolished in the 1930s for the widening of Allen Street. Maps from the late-19th century show that a small alley or pathway along the northern side of the building provided access to rear structures that stood at the rear of the historic lot (outside the APE). However, the project site in this area appears to be located entirely within the footprint of this structure and therefore, it is less likely that shaft features would have been located within the APE in the vicinity of 76 Allen Street.

84 ALLEN STREET

A small 1-story structure measuring approximately 10 feet by 50 feet is depicted between 82 and 84 Allen Street on the 1922 Sanborn map. The 1852 Perris map shows the area as included within a larger historic lot that was entirely covered with a brick structure. It is not clear if this building, which stood until the 19th century, was constructed with a basement. By 1905, the lots at 84-86 Allen Street/271-273 Broome Street had been redeveloped with one large 6-story structure with a basement, with the exception of the 10-foot area at the southern end of the lot, which was developed only with a 1-story addition without a basement. A building with a basement was also constructed to the south of this structure. Because of the narrow width of the lot, the excavation of the basements to the north and south of this area could have disturbed the ground located beneath the 1-story structure. In addition, because this portion of the historic lot appears to have fallen entirely within the footprint of the mid-19th century structures on the site, it is less likely that shaft features would have been located in this area.

272 BROOME STREET

The property at 272 Broome Street contained a structure with a basement but also contained an open rear yard that does not appear to have ever been developed. The eastern side of this rear yard could have been disturbed to a depth of at least 3 feet as a result of the excavation of tree pits and fence posts during the original construction of the center median.

PRECONTACT SENSITIVITY ASSESSMENT

The precontact sensitivity of project sites in the New York City is generally evaluated by a site's proximity to high ground (but not exceeding 30 percent slopes), fresh water courses, well-drained soils, and previously identified precontact archaeological sites. Because the portion of the project site south of Cherry Street is situated in an area that was formerly inundated by the East River, it is unlikely that Native American habitation, hunting, or camping sites would have been located within that portion of the APE. Although there were periods of time when the water levels were lower, leaving the project site dry enough for human exploitation, documentary research suggests that the coastal area of Lower Manhattan was rocky and not ideally suited for precontact habitation.

The varied resources provided by both the wetlands and the river would have been essential to Native American life, however, and it is highly likely that such resources were frequently exploited. The presence of a Native American trail leading to the East River situated to the west of the project site confirms this. The remainder of the project site (the streetbeds of Pike and Allen Streets between Cherry and Delancey) would also not likely have been the location of a habitation site, as high ground such as Jones' Hill to the east, where the Native American village of *Nechtanc* was located, would have been favored. However, it is possible that the location surrounding the project site was used for the gathering and processing of resources, which is supported by the presence of a Native American trail through the area in the vicinity of modern Division Street.

Despite the likelihood that Native Americans used the project site as a temporary hunting or fishing location, Native American archaeological sites tend to be shallowly buried, often within 4 to 5 feet of the precontact ground surface. During the historic period, the landscape of the project area was greatly transformed as a result of farming, grading, the demolition of hills, the cutting of streets, and the construction of buildings. Subsequently, basement excavations and utility installations would have generated additional disturbance to the ground surface, the elevation of which has changed little since the mid-19th century according to historic maps (see Table 2). Therefore, it appears that the original ground surface in this area would have been sufficiently altered so as to have disturbed any precontact archaeological resources which could have been located there at one time. Therefore, the project site is determined to have low sensitivity for precontact archaeological resources.

HISTORIC SENSITIVITY ASSESSMENT

PIKE SLIP BETWEEN CHERRY AND SOUTH STREETS

As discussed previously, this portion of the project site was almost entirely inundated by the East River or by marshland prior to the 18th and 19th century landfilling episodes which converted it into dry land. The slip originally located in this area was gradually filled between the late 1770s, when evidence of wharf-building at Pike Slip was first documented, and the early 1830s, when maps first depict the entire area as fast land. Therefore, this portion of the APE rests atop a network of landfill and landfill retaining devices of unknown construction. The docks that formerly lined the slip as well as collection of debris and domestic refuse that were dumped into the slip by individuals who lived and worked nearby were most likely incorporated into this landfill. These refuse deposits would be present within the fill many feet below the ground surface well below the depths to which the proposed project is expected to impact (3 to 4 feet). Wooden landfill retaining structures, such as wharves, piers, and cribbing could be present at shallower depths, however. No maps depict structures within this portion of the APE, although a late-19th century bird's eye drawing depicts a small, insubstantial structure at the foot of Pike Slip, just north of South Street. Therefore, it appears that the only historic period archaeological resources that could potentially remain within the APE in Pike Slip would be related to landfilling or 19th century infrastructure such as wooden water pipes or early drains or culverts.

The elevation of the project site in the vicinity of Peck Slip has changed little since the mid-19th century. Some portions of the APE in this area have been heavily disturbed as a result of utility installations, most notably in the vicinity of a sewer measuring 4 feet by 2 feet 8 inches that runs below the eastern half of the existing center median

at a depth of approximately 7 to 8.5 feet below grade. A branch of this sewer extends to the west near the northern end of the median in the vicinity of gas, electric, water, and telecommunications lines, which would have resulted in disturbance of approximately 2 to 5 feet below grade. However, the portions of the APE through which no utilities run have experienced little documented disturbance. Also, as mentioned previously, the entire APE has been disturbed to a depth of approximately 2 feet as a result of street grading, construction, paving, and during the construction of the original center medians.

Therefore the portions of the Pike Slip APE that do not contain utilities are determined to have moderate sensitivity for the recovery of historic period archaeological resources associated with the landfill or landfill technology or 19th century infrastructure at depths greater than 2 feet below the ground surface except in the locations of existing utility lines. Preliminary plans identify proposed hydrants, dry wells, and tree pits in sensitive areas, which could potentially impact archaeological resources.

PIKE AND ALLEN STREETS BETWEEN CHERRY AND DELANCEY STREETS

The majority of the APE between Cherry and Delancey Street is situated in the vicinity of former historic lots rather than historic streetbeds. Therefore, there is little likelihood that undisturbed 19th century infrastructure (i.e. early wooden water mains) would be impacted by the proposed project.

60 to 64 Pike Street (at southwest corner of Monroe Street)

The narrow portions of the historic lots formerly located between 60 and 64 Pike Street that do not appear to have been disturbed by basement excavation or utility installation are immediately adjacent to areas that have been disturbed by basement construction and in locations that appear to have been disturbed to a depth of at least 3 feet during the construction of the existing center median. As a result, the portions of these lots that are located within the APE are determined to have no sensitivity for archaeological resources.

20 to 22 Pike Street/101 Henry Street and 16 Pike Street/115 East Broadway

Similarly, the small portions of the historic lots at 20 to 22 Pike Street/101 Henry Street and 16 Pike Street/115 East Broadway that remained undeveloped were sufficiently close to the areas that were disturbed for basement construction that they were likely disturbed to some extent given their small size and close proximity to the excavated areas. Therefore, the portions of these lots that are located within the APE are determined to have no sensitivity for archaeological resources.

108 to 114 East Broadway and 99 to 105 Division Street

The rear yards of the lots formerly located at 108 to 114 East Broadway and 99 to 105 Division Street appear to have experienced minimal disturbance with the exception of disturbance to a depth of approximately 3 feet in the vicinity of existing electrical lines and along the perimeters of both the original and current center medians, where excavations for tree pits and fence posts could have disturbed the ground to a depth of at least 3 feet. Therefore, the former rear yard areas are determined to have moderate sensitivity for archaeological resources below these depths. However, because plans for this portion of the project site have not yet been finalized, it is unclear if the proposed project would impact potentially sensitive levels (i.e. deeper than 2 to 3 feet below grade).

108-110 Division/2 Allen

The former rear yards once located behind the structures on historic lots formerly at 108 Division Street (aka 2 Allen Street) and 110 Division Street were not completely disturbed as a result of basement excavation. Minimal disturbance to a depth of at least 3 feet has been documented in this area with the exception of an electric line and excavation for tree pits and fence posts for both the original center median as well as the realigned median constructed in the 1950s. Therefore, the former rear yard areas are determined to have moderate sensitivity for archaeological resources below these depths. However, because plans for this portion of the project site have not yet been finalized, it is unclear if the proposed project would impact potentially sensitive levels (i.e. deeper than 2 to 3 feet below grade).

69-71 CANAL STREET/14 ALLEN STREET

The rear yards behind the structures that occupied the lots at 69 Canal Street (aka 14 Allen Street) and 71 Canal Street were not redeveloped with structures with basements. Disturbance to a depth of at least 3 feet has been

documented in portions of this area as a result of the installation of electric lines and the excavation for tree pits and fence posts during the construction of the center median. While additional disturbance would have resulted from the installation of water and sewer connections to a drinking fountain as well as for the construction of a new entrance to the Allen Street El train, this disturbance was likely confined to the area within the footprint of the lots' earliest buildings and would have had only a small impact on the rear yards. Therefore, the former rear yard areas are determined to have moderate sensitivity for archaeological resources below these depths. However, because plans for this portion of the project site have not yet been finalized, it is unclear if the proposed project would impact potentially sensitive levels (i.e. deeper than 2 to 3 feet below grade).

28-34 ALLEN STREET

The portion of the historic lots formerly located at 28-34 Allen Street were occupied by at least two buildings and a racquet court until circa 1852, when it was redeveloped with a public school. Because the school was not constructed with a basement, minimal disturbance to a depth of at least 3 feet has been documented in this area with the exception of an electric line and excavation for tree pits and fence posts for the original center median. The former open areas to the sides and rear of the former buildings located on the site as well as the former racquet court and side yards of the school could therefore contain historic period archaeological resources such as shaft features or historic trash deposits. Therefore, the former side and rear yard areas surrounding the buildings seen on the 1852 Dripps and 1852 Perris maps are determined to have moderate sensitivity for archaeological resources below these depths. However, because plans for this portion of the project site have not yet been finalized, it is unclear if the proposed project would impact potentially sensitive levels (i.e. deeper than 2 to 3 feet below grade).

40-42 ALLEN STREET/95 HESTER STREET

As discussed above, this lot was formerly occupied by several small wood frame structures with a shared rear yard lining the eastern side of the lot which may not have been disturbed to depths exceeding 2 feet. Therefore, the former side and rear yard areas surrounding the buildings seen on the 1852 Dripps and 1852 Perris maps are determined to have moderate sensitivity for archaeological resources below that depth. Current project plans suggest that the only work planned in the sensitive area at this location would involve excavation for two understory tree pits adjacent to existing trees. If excavation for these trees will exceed 2 to 3 feet in depth, archaeological resources such as shaft features could potentially be impacted.

310 GRAND STREET AND 72 ALLEN STREET

In the mid-19th century, the lot formerly at 310 Grand Street contained a portion of a common rear yard behind the structures at 306-310 Grand Street and 70 to 72 Allen Street. While the lot at 306-308 Grand Street was later redeveloped with a structure with a basement, the properties at 310 Grand Street and 72 Allen Street were not. Therefore, the former rear yard areas as seen on the 1852 Dripps and 1852 Perris maps are determined to have moderate sensitivity for archaeological resources below a depth of at least 2 to 3 feet. A new water line is proposed for this area, which would likely result in disturbance to greater depths than have been previously disturbed. Therefore, the project has the potential to impact potential archaeological resources in this location. Please see Appendix A for information on the residents of this area.

76 ALLEN STREET

Although the lot at 76 Allen Street was not developed with a structure with a basement, no former rear yard areas associated with this structure are located within the APE, which is located almost entirely within the footprint of the historic structure. Therefore, this portion of the APE is determined to have low sensitivity for historic period archaeological resources. While a water line will be constructed through this area and tree pits are planned, this disturbance is not expected to impact archaeological resources.

84 ALLEN STREET

Only a small portion of the lot formerly located at 84 Allen Street was not redeveloped with a structure with a basement, although this narrow area is bounded to the north and south by structures with basements. Therefore, this area is determined to have low sensitivity for archaeological resources.

272 BROOME STREET

The open rear yard behind the structure formerly at 272 Broome Street appears to have been disturbed to a depth of 2 to 3 feet. Therefore, the former rear yard areas as seen on the 1852 Dripps and 1852 Perris maps are determined to have moderate sensitivity for archaeological resources below a depth of at least 2 to 3 feet. As this lot is located within the median that has already been renovated, no new work is planned here at this time. However, if excavation at depths greater than 2 to 3 feet is planned in the future, archaeological resources could be impacted.

B. RECOMMENDATIONS

As discussed above, potential archaeological resources including shaft features, 19th century infrastructure, landfill deposits, and landfill retaining devices could be impacted by the proposed project, depending upon the location, size and depth of subsurface impacts. The proposed project is expected to disturb approximately 1 to 2 feet below the ground surface throughout the majority of the APE and could extend to depths of 3 to 5 feet in areas where tree pits, water lines, catch basins, and other deep infrastructure improvements are planned. The project site has already been disturbed to a depth of 2 to 3 feet as a result of road construction, paving, and grading as well as tree pit and fence post excavation in the vicinity of the center medians. Deeper disturbance was generated within those former lots that contained buildings with basements.

Further study in the form of a Phase 1B archaeological investigation or monitoring during construction is recommended for those areas where excavation for the proposed project will exceed 2 feet below the ground surface in those areas not disturbed by basement excavation. A map of those areas where archaeological testing is recommended is included in this report as Figure 8. Once project plans are finalized for the proposed center median renovations located between Henry and Hester Streets, they should be reviewed by archaeologists to determine if the proposed work could impact potential archaeological resources. If so, additional documentary research may be necessary for those areas to identify the historic occupants of those lots in various historic records such as census records, tax assessments, directories, etc.

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Figures

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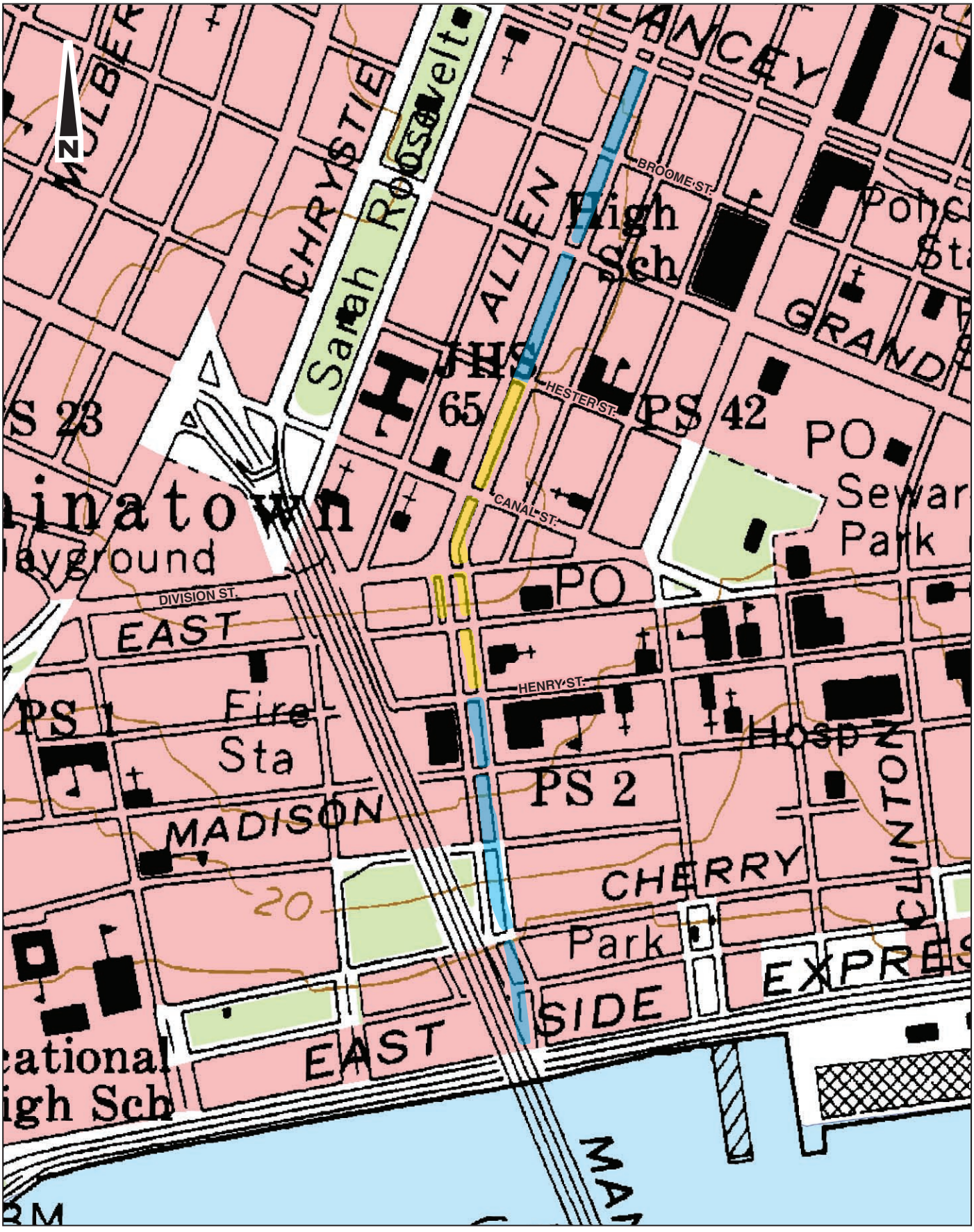

Funding to be Determined

Funded by LMDC

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SCALE

USGS Map, Brooklyn Quadrangle

Pike/Allen Malls

Figure 1

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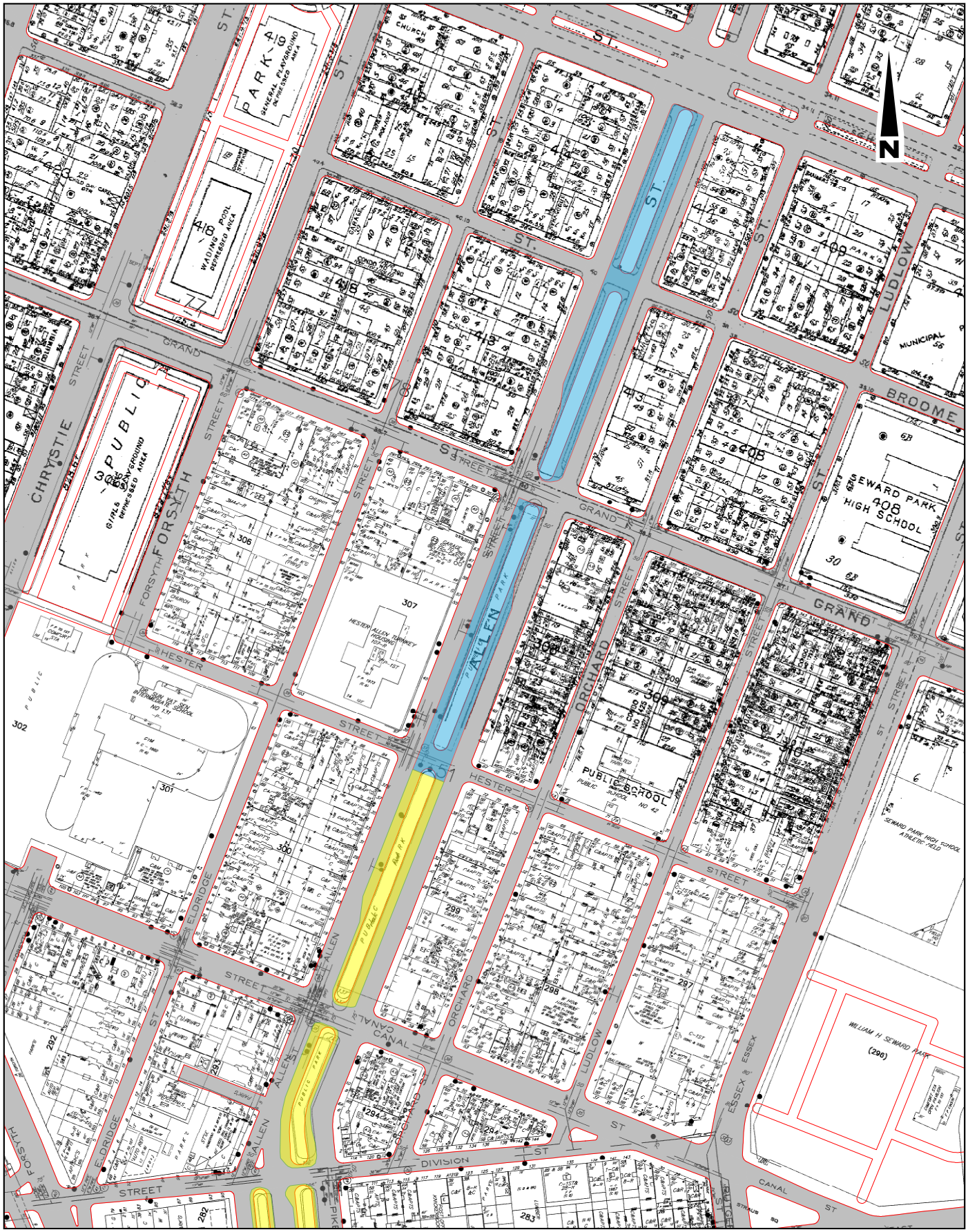

Funding to be Determined

Funded by LMDC

2009 Streets

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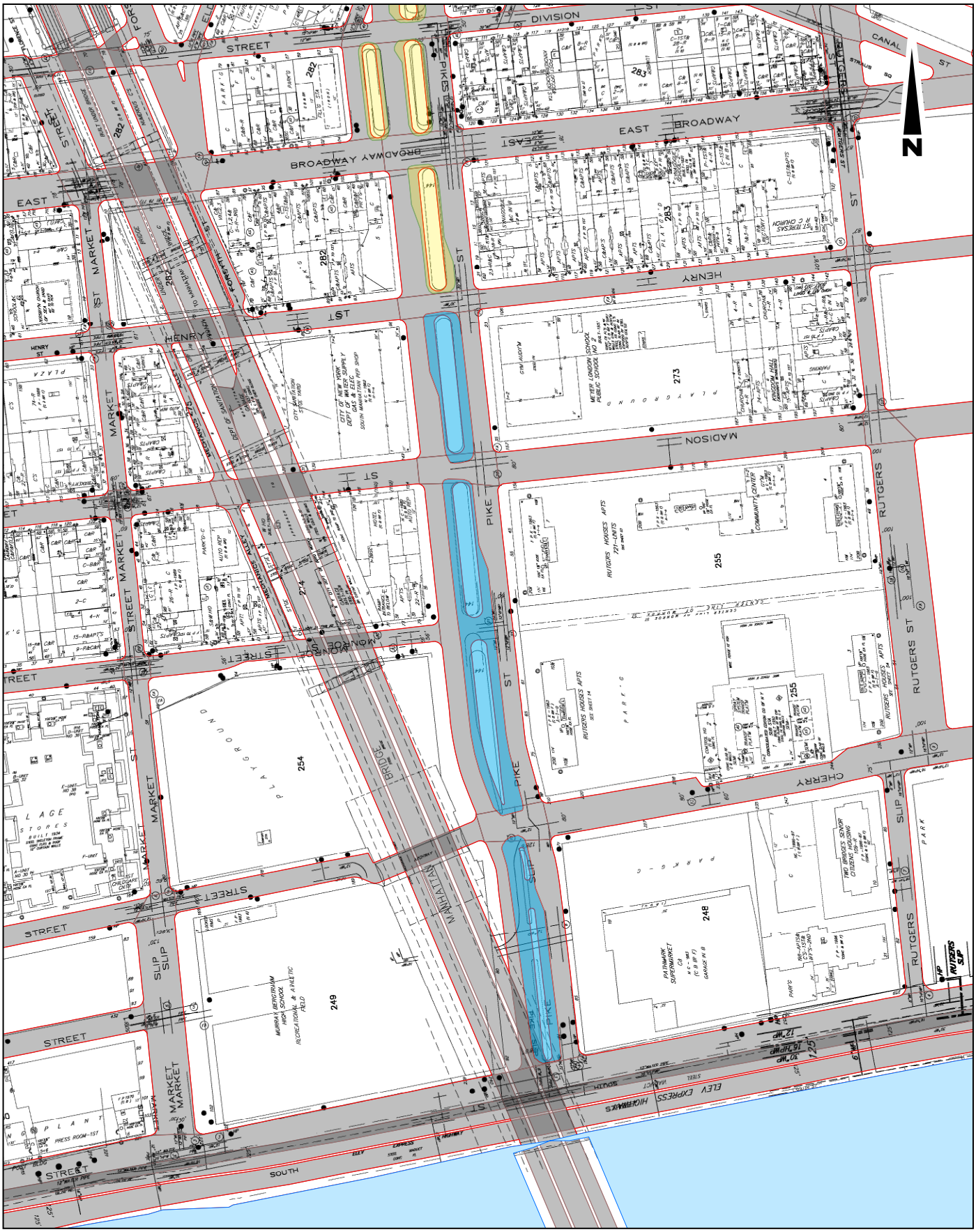
SCALE

2006 Sanborn Map (Northern Section)

Pike/Allen Malls

Figure 2A

1.28.10



Funding to be Determined

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2009 Streets

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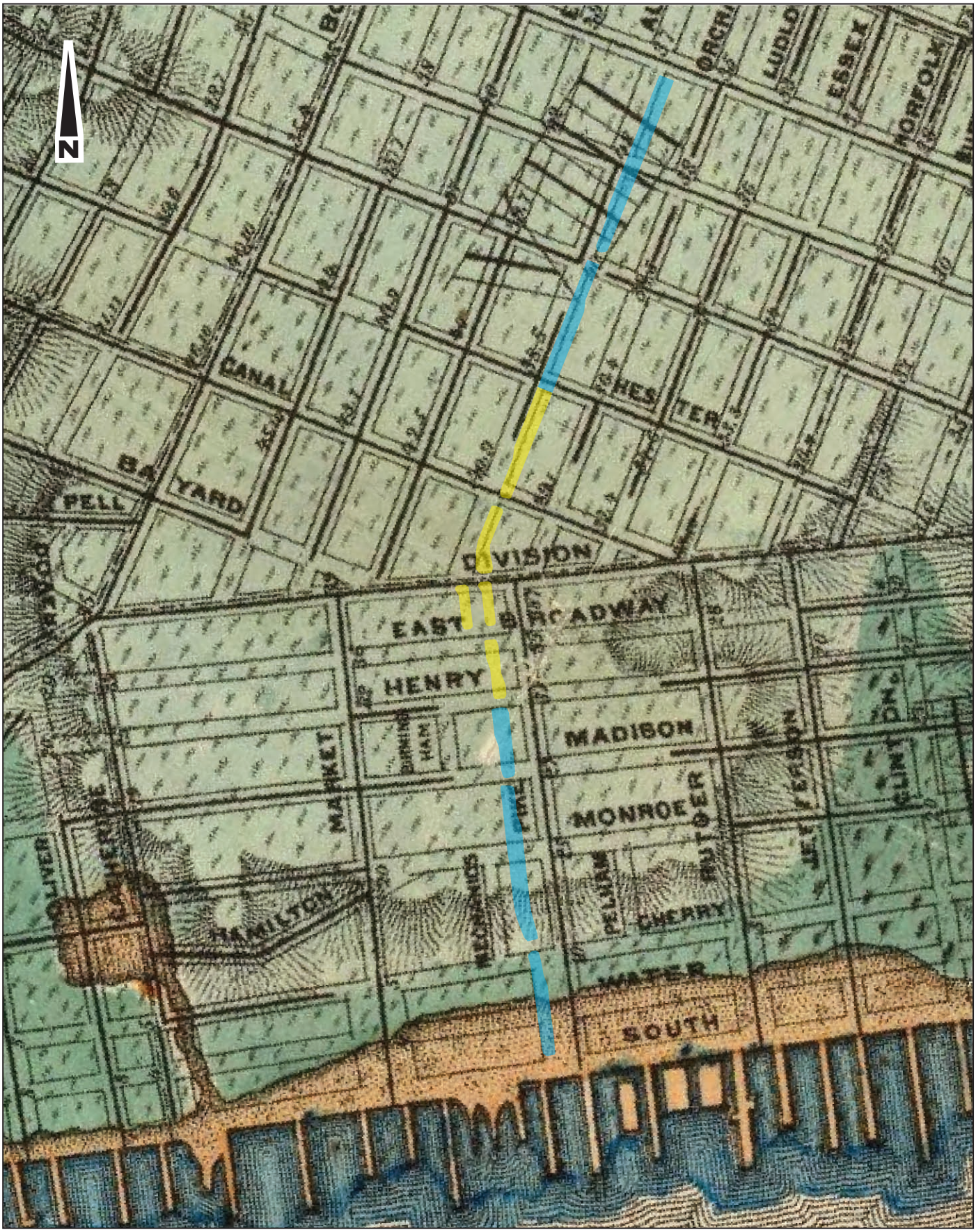
SCALE

2006 Sanborn Map (Southern Section)

Pike/Allen Malls

Figure 2B

1.28.10



Funding to be Determined

Funded by LMDC

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SCALE

Pike/Allen Malls

1865 Viele Map

Figure 3

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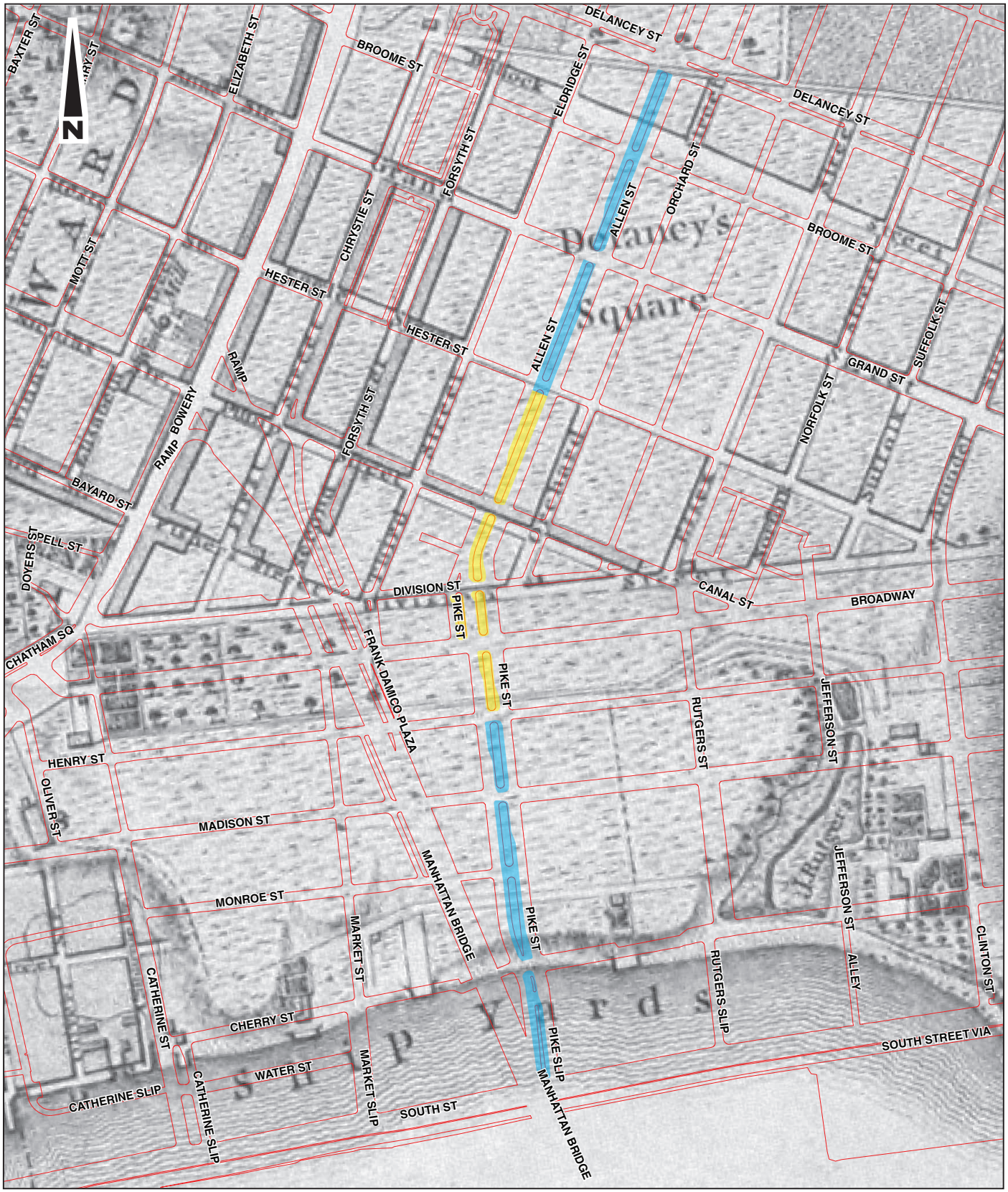


Funding to be Determined

Funded by LMDC

2010 Streets

0 800 FEET

SCALE

B. Ratzer Map, 1766

Figure 4

Pike/Allen Malls

Funding to be Determined

Funded by LMDC

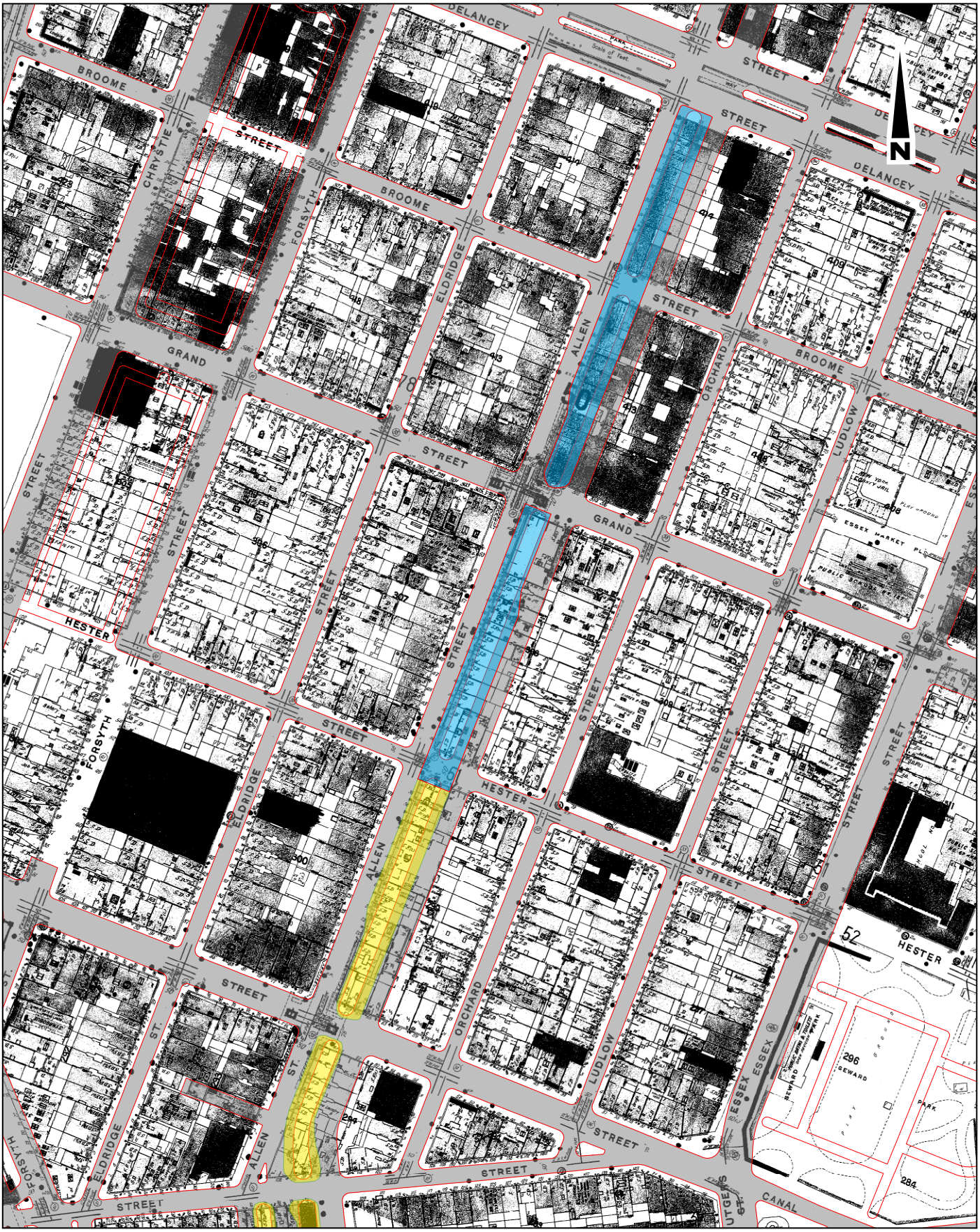
2010 Streets

Allen and Pike Street Malls

M. Dripps Map, 1852

Figure 5

1.28.10



Funding to be Determined

Funded by LMDC

2009 Streets

0 200 400 FEET

SCALE

1922 Sanborn Map (Northern Section)

Pike/Allen Malls

Figure 6A

1.28.10

Funding to be Determined

Funded by LMDC

2009 Streets

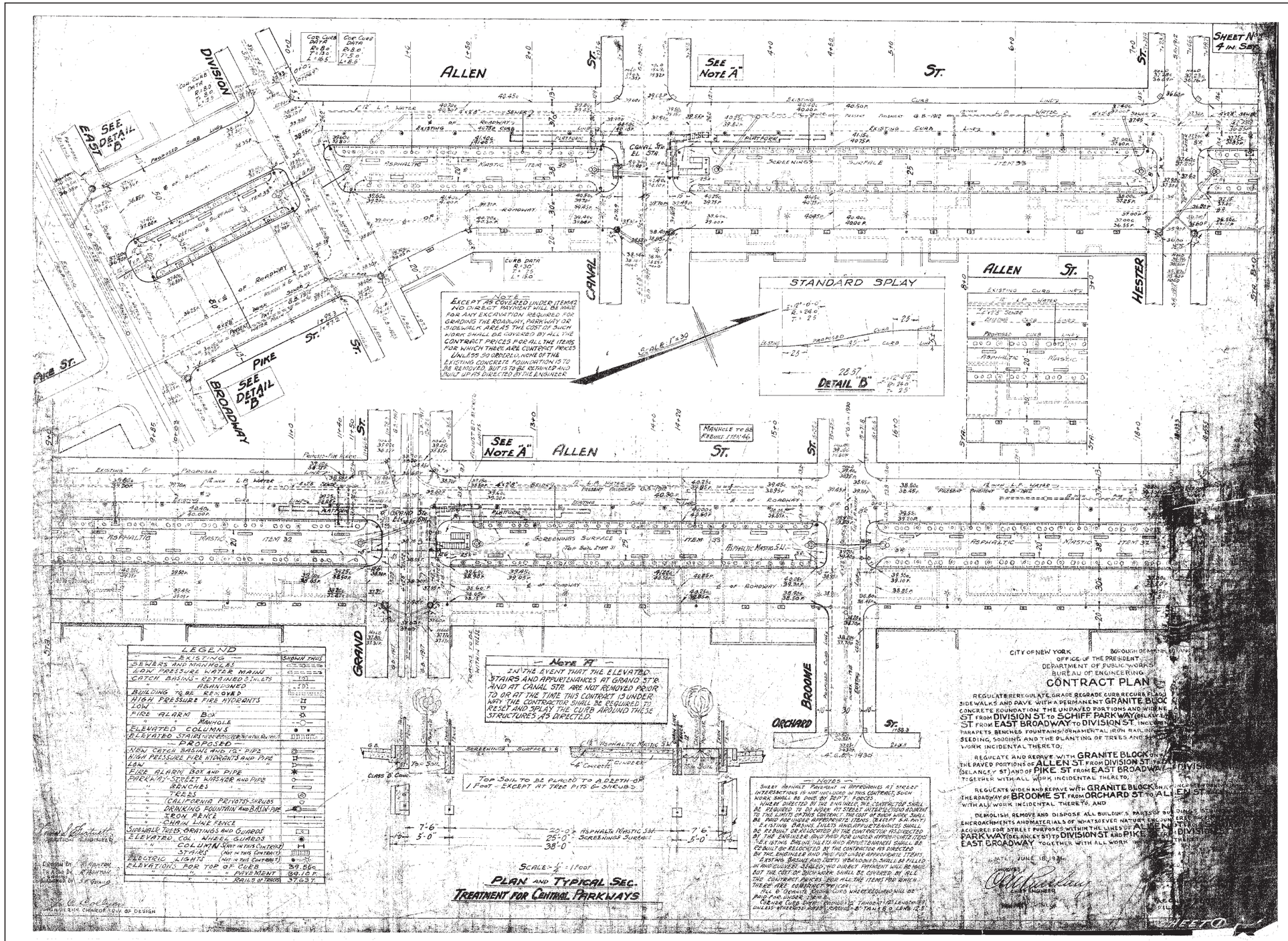
0 200 400 FEET

SCALE

1922 Sanborn Map (Southern Section)

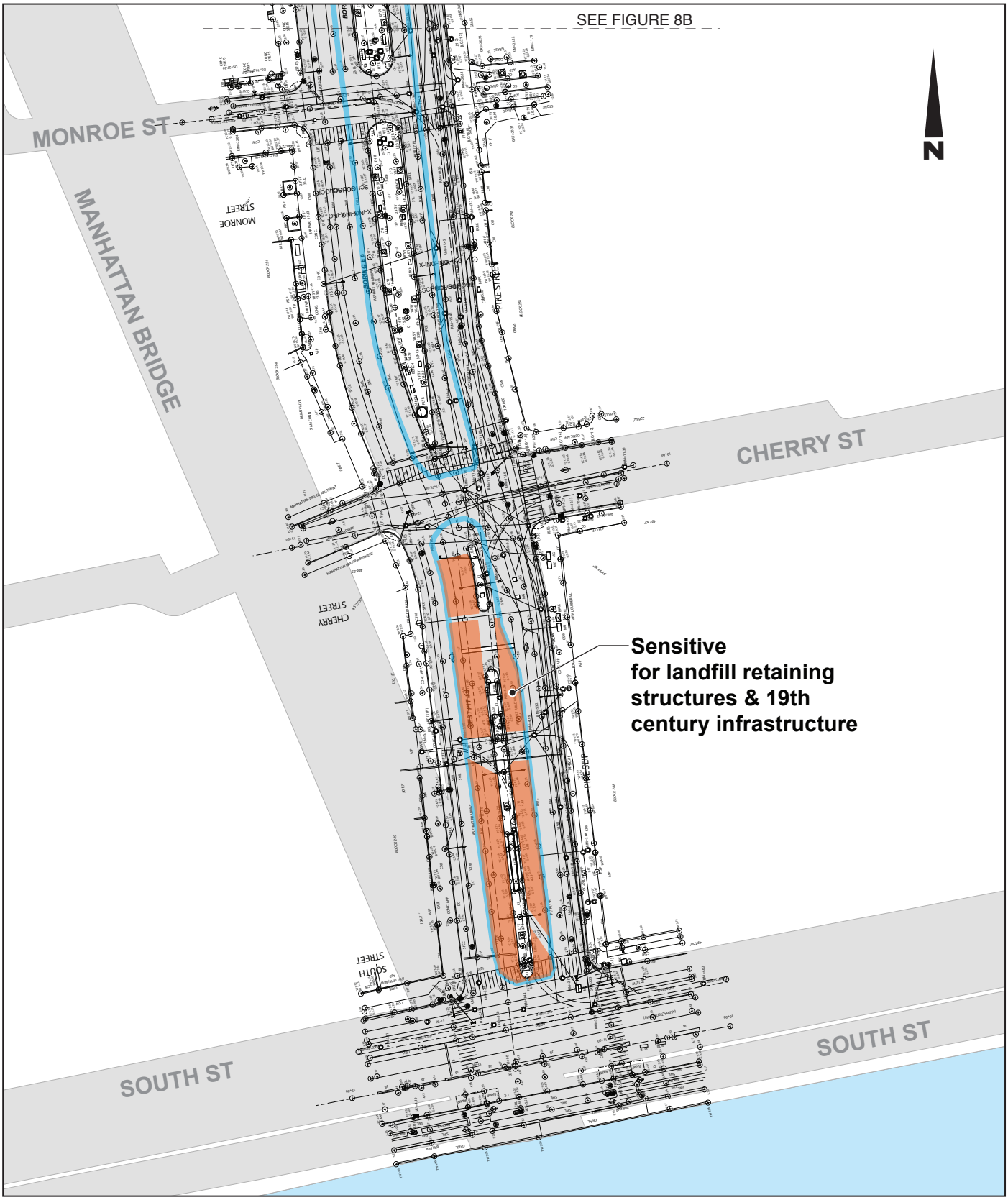
Pike/Allen Malls

Figure 6B



Parks Department Contract Plan for Allen Street Malls, 1931

Figure 7



Archaeological APE for areas funded by LMDC

Areas of potential archaeological sensitivity at depths greater than 2 feet

Archaeological APE for areas where funding is to be determined

Potentially sensitive areas that should be reexamined when project plans are finalized

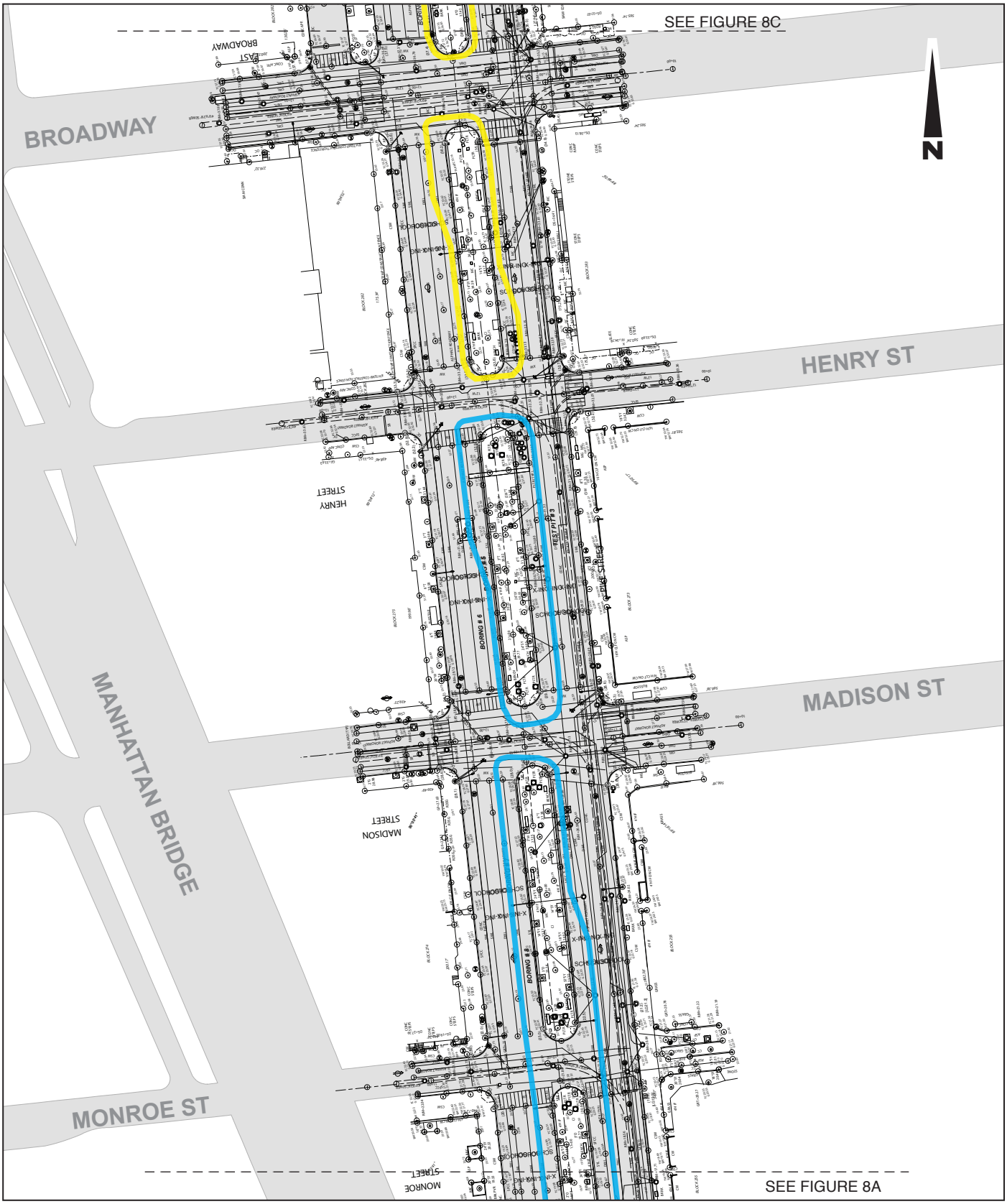
0 200 FEET

SCALE

Areas of Potential Archeological Sensitivity

Pike/Allen Malls

Figure 8A



Archaeological APE for areas funded by LMDC

Areas of potential archaeological sensitivity at depths greater than 2 feet

Archaeological APE for areas where funding is to be determined

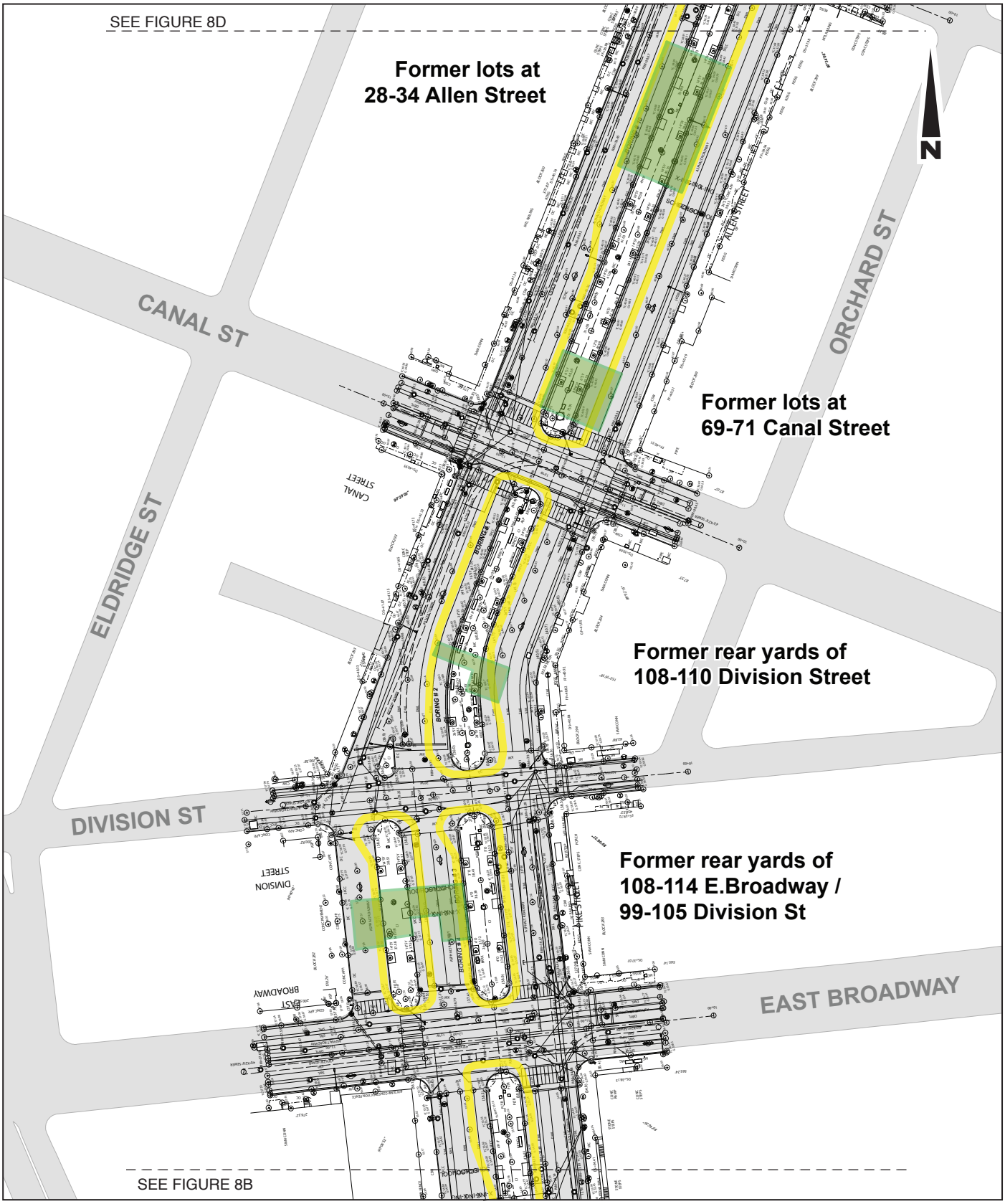
Potentially sensitive areas that should be reexamined when project plans are finalized

Areas of Potential Archeological Sensitivity

Pike/Allen Malls

Figure 8B

2.2.10



Archaeological APE for areas funded by LMDC

Areas of potential archaeological sensitivity at depths greater than 2 feet

Archaeological APE for areas where funding is to be determined

Potentially sensitive areas that should be reexamined when project plans are finalized

0 200 FEET

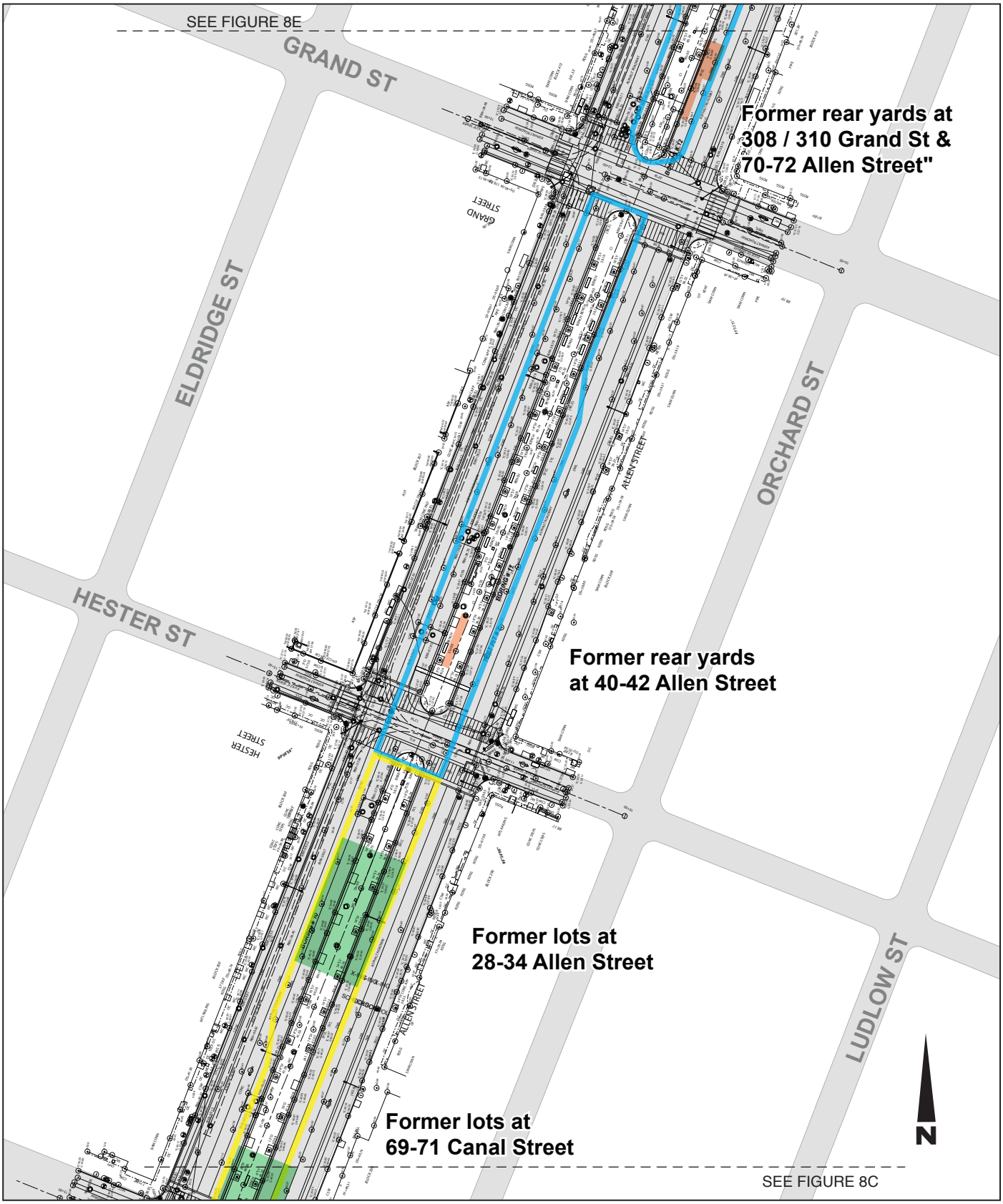
SCALE

Areas of Potential Archeological Sensitivity

Pike/Allen Malls

Figure 8C

2.2.10



Archaeological APE for areas funded by LMDC

Areas of potential archaeological sensitivity at depths greater than 2 feet

Archaeological APE for areas where funding is to be determined

Potentially sensitive areas that should be reexamined when project plans are finalized

0 200 FEET

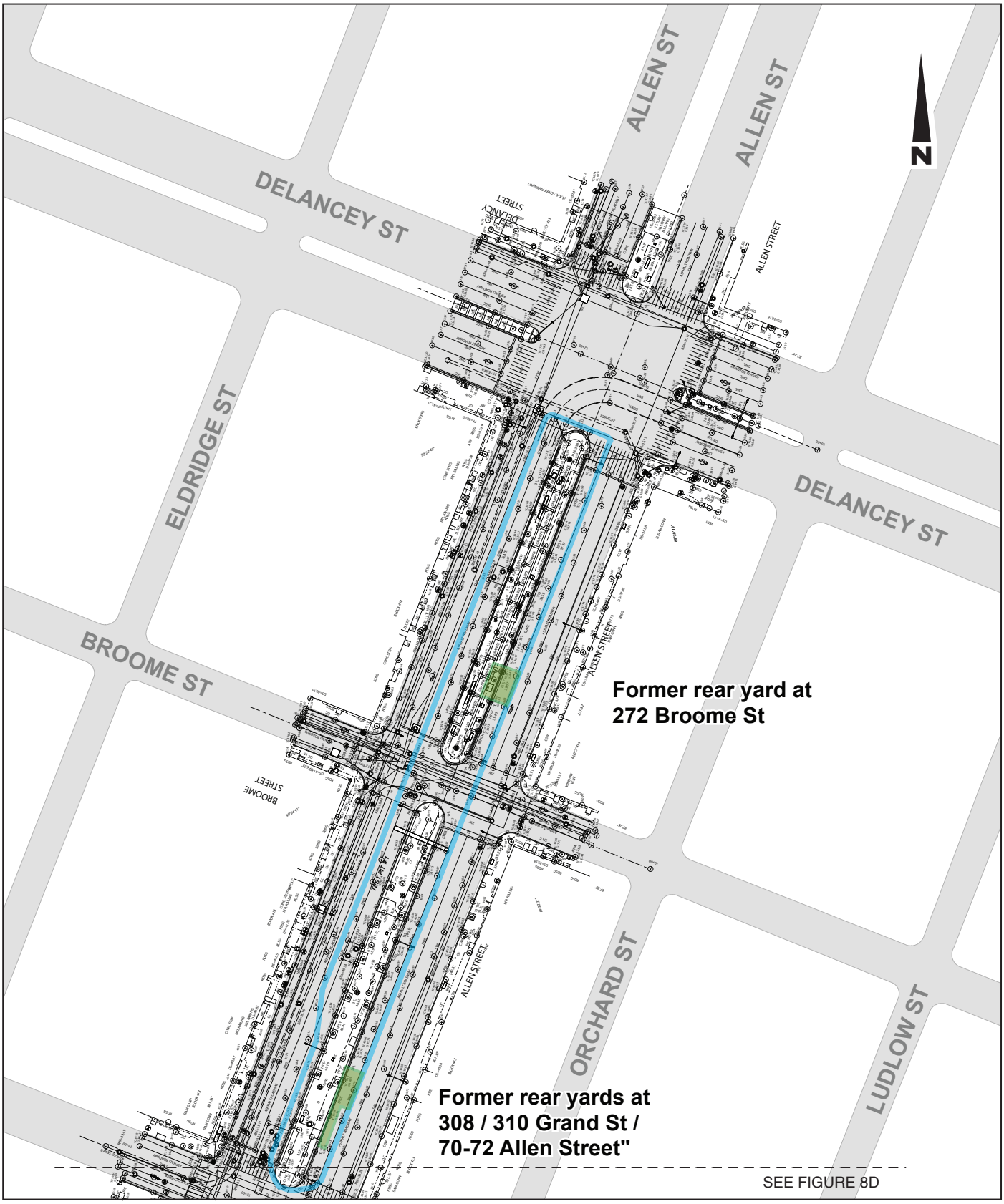
SCALE

Areas of Potential Archeological Sensitivity

Pike/Allen Malls

Figure 8D

2.2.10



Archaeological APE for areas funded by LMDC

Areas of potential archaeological sensitivity at depths greater than 2 feet

Archaeological APE for areas where funding is to be determined

Potentially sensitive areas that should be reexamined when project plans are finalized

0 200 FEET

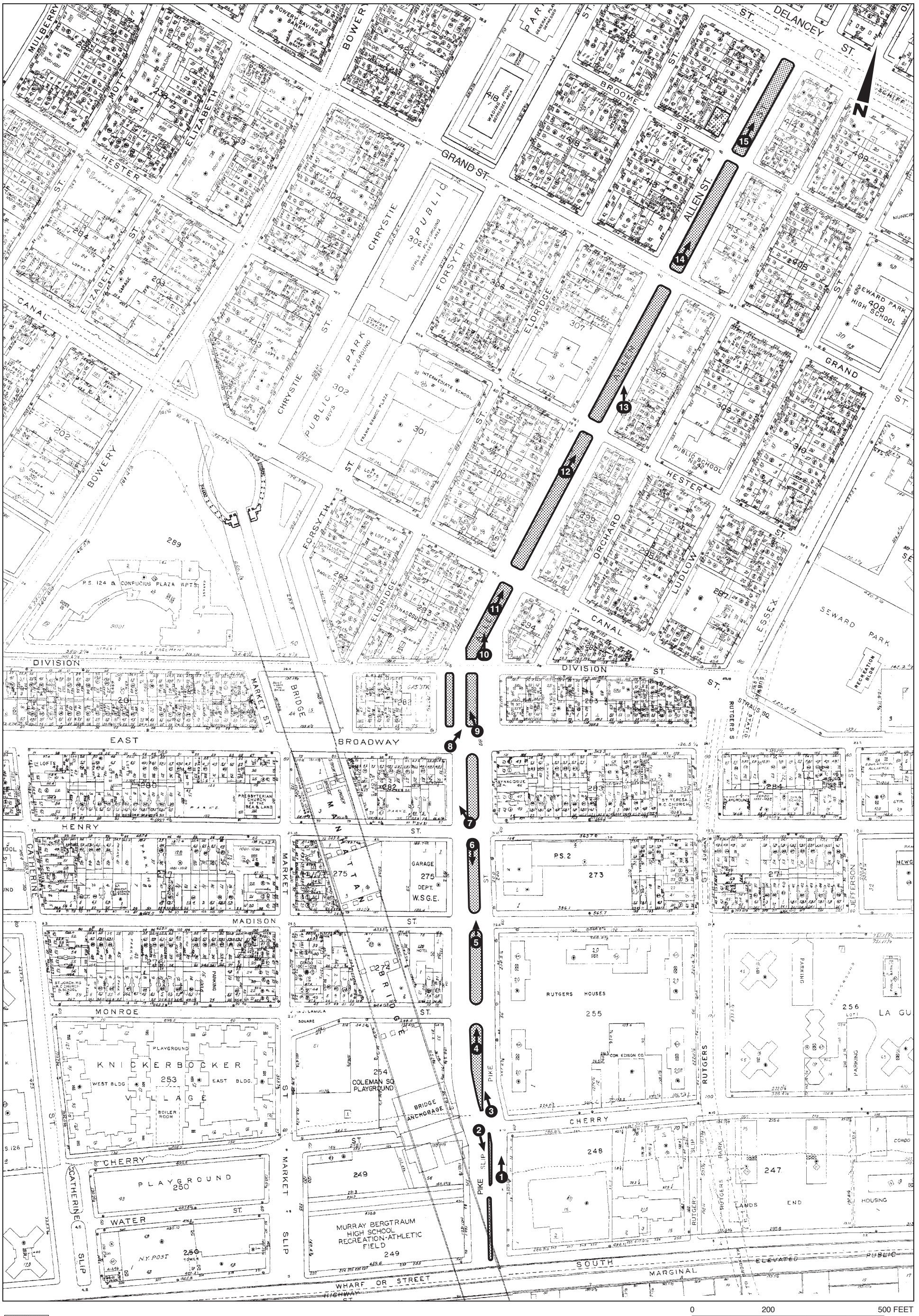
SCALE

Areas of Potential Archeological Sensitivity

Pike/Allen Malls

Figure 8E

Photographs



Project Area

1 Photograph View Direction and Reference Number

0 200 500 FEET

SCALE

Allen and Pike Street Malls

Photograph Index

Looking north along center median in Pike Slip, north of but not including South Street; note Manhattan Bridge footing at left **1**

Center medians in Pike Slip, looking south from Cherry Street **2**

Looking north at Pike Street center malls from Cherry Street **3**

Pike Street center median between Cherry and Monroe Streets, looking north **4**

Photos of Project Site and Surrounding Area

Looking north at Pike Street malls from Madison Street **5**

Looking south from Henry Street; note broken pavement and chain link fence **6**

Center mall between Henry Street and East Broadway, looking north **7**

Looking northeast at the two center malls between East Broadway and Division Street **8**

Looking northwest at the two center malls between East Broadway and Division Street **9**

Allen Street center median, looking north from Division Street **10**

Looking north at curved center median on Allen Street between Division and Canal Streets **11**

Allen Street , looking north between Canal and Hester Streets **12**

Looking northwest at center mall between Hester and Grand Streets **13**

Allen Street center median between Grand and Broome Streets, looking north **14**

Demonstration Mall, looking north from Broome Street **15**

Appendix A:

Lot Histories for 308-310 Grand Street/70-72 Allen Street

Appendix A: Lot Histories for 308-310 Grand Street/70-72 Allen Street

A. INTRODUCTION

The street numbers 308-310 Grand and 70-72 Allen Street refer to two historic lots at the northeast corner of Allen and Grand Streets, also referred to as lots 692 (308 Grand Street/70-72 Allen Street) and 693 (310 Grand Street). While this area was historically two separate lots, during the 19th century, 4 to 7 structures stood there (different maps depict the buildings as separate entities while some maps show that they were interconnected), all of which shared a rear yard area.

The building numbers for the numerous structures located on these two lots changed frequently, making it difficult to identify the lots' residents. While the Allen Street numbers appear to have remained the same during the 19th and 20th centuries, Grand Street was renumbered circa 1849. Before that time, 308 Grand Street was referred to as 286 Grand Street and 310 Grand Street was formerly 286.

In many cases, intermediate house numbers (i.e. 310 ½ Grand Street or 70 ½ Allen Street) were used to distinguish between multiple buildings on the same lot, although these were not consistent and their use varied from year to year. In addition, the house numbers themselves were not consistently linear with respect to adjacent blocks, for example the numbers 68 and 70 Allen Street were occasionally used to refer to the structures on lots 692 and also for the structures across the street, at the southeast corner of Allen and Grand Streets. Some historic maps (i.e. the 1894 Sanborn) label the structures on both sides of Grand Street structures as 68-70 Allen Street. Therefore, the information in the tables below may not be entirely complete or may include extraneous information as a result of the confusion regarding street numbers.

B. DEMOGRAPHICS

In general, historic documents show that the occupation history of these lots was similar to that of the rest of the Lower East Side. Historic tax assessment entries for these lots (see Table A-1) dating to the first two decades of the 19th century could not be located, although similar assessments for the entire neighborhood suggest that many of the lots in the area were developed by that time. Houses stood on both lots by at least 1826. Census records (Table A-2) and historic directories (Table A-3) provide more information about the individuals who lived on the properties. Throughout most of the 19th century, German occupants resided on the lots, most of whom were skilled workers such as tailors, tinsmiths, and cigar makers. It seems that many of these individuals both lived on the site and manufactured their goods there. Later in the century, oyster saloons and restaurants were located on the property and German immigrants appear to have been replaced by Russian- and New York-born individuals, a trend seen across the Lower East Side at the end of the 19th century.

Table A-1: Historic Tax Assessment Records

YEAR	Owner/Occupant	Address/Lot Number	Property Description	Real Estate Value	Personal Estate Value
1825	Robert Coles	Allen between Broome and Grand	House and Lot	1400	500
1826	George Phillips	288 Grand	House and Lot	1000	
1826	Robert Coles	corner Allen (east side) and Grand	House and Lot	1600	500
1826	Archebald McFarland	in above			200
1830	George Phillips	288 Grand	House and Lot	2300	
1830	Robert Coles	corner Allen (east side) and Grand	[illeg] House and Lot	2500	200
1830	Archebald McFarland	in above			300
1840	T. Cadwalder Bonner etc.	286 Grand/692	House and Lot	5000	
1840	Archebald McFarland	288 Grand/693	House and Lot	4000	500
1845	Charles Coles	286 Grand/692	House and Lot	5000	
1845	William Cadwallader	288 Grand/693	House and Lot	4300	
1850	Charles Coles	308 Grand/692	House and Lot	5000	
1850	William Cadwallader	310 Grand/693	House and Lot	4300	

Notes: Tax assessment records for this portion of the Tenth Ward did not consistently list properties by address, lot number, or block until the mid-1820s. In addition, many microfilm reels containing data for this area were illegible or missing. The above table represents an attempt to record tax assessment data for 308-310 Grand Street/70-72 Allen Street every 5 years until 1850.

Sources: Tax assessment rolls for the Tenth Ward, on file at the New York City Municipal Archives.

Table A-2: Summary of Census Research

Year	Address	Name	Age	Occupation	Place of Birth
1830	*286 Grand*	Home of Elijah Crane:		*Not provided*	*Not provided*
		1 Male	0<5		
		2 Males	10<15		
		1 Male	15<20		
		1 Female	5<10		
		1 Female	20<40		
		2 Females	40<50		
	286 Grand	Home of Abraham Palmer:		*Not provided*	*Not provided*
		1 Male	20<30		
		1 Male	40<50		
		1 Female	20<30		
		1 Female	40<50		
	288 Grand	Home of [illegible] Mc[Illegible]:		*Not provided*	*Not provided*
		1 Male			
		1 Male	10<15		
		1 Female	20<30		
		1 Female	10<15		
			30<40		
1840	*72 Allen*	Home of William Folie:		*Not provided*	*Not provided*
		1 Male	20<30		
		1 Male	50<60		
		1 Female	50<60		
	72 Allen	Home of Hiram Riddle:		*Not provided*	*Not provided*
		2 Males	0<5		
		1 Male	20<30		
		1 Female	20<30		
	288 Grand	Home of A. McFarland:		*Not provided*	*Not provided*
		1 Male	5<10		
		1 Male	10<15		
		1 Male	20<30		
		1 Male	50<60		
		1 Female	5<10		
		1 Female	15<20		
		1 Female	40<50		
	288 Grand	Home of William Clark:		*Not provided*	*Not provided*
		1 Male	0<5		
		1 Male	30<40		
		1 Female	30<40		
1850	*70 Allen*	Thomas Smithe	40	Dyer	England
		Ann Smithe	26		England
		Polly Smithe	6		NY
		James Smithe	4		NY
		Thomas Smithe	2		NY
		James Smithe	78		England
	72 Allen	Jacob Micheloup	40	Tin Smith	Austria
		Barbara Micheloup	39		Austria
		Harrietta Micheloup	40		Austria
		Pauline Micheloup	6		Austria
		George Micheloup	1 mo.		NY
		Rosa Burson	20		Austria

Table A-2 (continued): Summary of Census Research

Year	Address	Name	Age	Occupation	Place of Birth
1850 (continued)	*308 Grand*	Michael Rosenstein	32	Tanner	Germany
		Celia Rosenstein	36		Germany
		Lewis Rosenstein	9 mo		NY
	310 Grand	John C. Hertz	45	Cigar Maker	Germany
		Mary Hertz	43		Germany
		Charles Hertz	20	Cigar Maker	Germany
		Augustus Hertz	18	Cigar Maker	Maryland
		Susan Hertz	14		Maryland
		Henry Hertz	8		Maryland
1860	*70 Allen*	Francis Frey	36	Dyer	Germany
		Barbara Frey	35		Germany
		Josephine Fray	5		NY
		Francis Frey	3		NY
		Gustave Frey	1		NY
		Ignetz Frey	28	Dyer	NY
		Christiana Volger	26	Servant	Germany
		Henry Berdon	26	Comb Maker	Germany
	72 Allen	UNOCCUPIED			
	308 Grand	Robert Schmidt	39	Art Florist	Germany
		Lizatta Schmidt	38		Germany
		Englebert Kautz	12		Germany
		Christiana Heine	17		Germany
	308 ½ Grand	Leopold Aegeltinger	35	Furrier	Germany
		Ann Aegeltinger	39		Germany
		Leopold Aegeltinger	13		NY
	310 Grand	John Hartz	55		Germany
		Mary Hartz	53		Germany
		Augustus Hartz	26	Segar Maker	Maryland
		Henry Harman	17	Segar Maker	Germany
		Edward Henry	15	Segar Maker	Germany
		Charles Kembaum	35	Silversmith	France
		Louisa Kembaum	24		Maryland
		Augustus Kembaum	3		NY
		Amelia Kembaum	5		NY
1870 (1st Enum)	*70 Allen*	John Burke	45	Carpenter	Prussia
		Pauline Burke	36	Keeping House	Germany
		Albert Burke	11		Texas
	72 Allen	John Trusty	38	Oyster Saloon	Sweden
		Mary Trusty	36	Keeping House	NY
		Charles Trusty	9		NY
		Alvin Trusty	6		NY
		Emma Trusty	4		NY
		Sarah Trusty	2		NY
		George Trusty	1 mo		NY
	308 Grand	Thomas Leite	63	Tailor	Ireland
	310 Grand	John Hertz	64	Segar Maker	Germany
		Augusta Hertz	50	Keeping House	Germany
		Sistore Hertz	37	Segar Maker	Maryland
		Susana Karbum	36		Maryland

Table A-2: Summary of Census Research (continued)

Year	Address	Name	Age	Occupation	Place of Birth
1870 (1st Enum, continued)	*310 Grand* (c'td)	Charles Karbum	11		NY
		Emily Karbum	15	Neck Ties	NY
		Augusta Karbum	12		NY
		Anne Karbum	9		NY
		Jacob Bach	22	Segar Maker	NY
	70 Allen	John H. Trusty	38	Oyster Saloon	Sweden
		Mary Trusty	36		NY
		Charles Trusty	9		NY
		Alvin Trusty	6		NY
		Emma Trusty	4		NY
		Sarah Trusty	2		NY
		George Trusty	7 mo		NY
	70 ½ Allen	LEFT BLANK			
	72 Allen	LEFT BLANK			
	68 Allen (NE corner Allen and Grand)	John Banker	55	Carpenter	Germany
		Pauline Banker	36	Keeping House	Germany
		Albert Banker	12		NY
	310 Grand	Thomas Teit	49	Tailor	Ireland
		John Hertz	64	Segar Store	Germany
		Augusta Hertz	49	Keeping House	Germany
		Gustave Hertz	38	Segar Maker	Germany
		Susan Karbaum	36		Germany
		Amelia Karbaum	16		NY
		Augusta Karbaum	13		NY
		Anne Karbaum	10		NY
		Charles Hertz	12		NY
		Jacob Bach	22	Cigar Maker	Germany
1880	70 Allen	George P. Andrae	33	Oyster Saloon	Germany
		Matilda Andrae	26	Keeping House	NY
		Julia Andrae	4		NY
		George Andrae	2		NY
		Charles Scherer	43	Servant	Germany
	72 Allen	NO ENTRY FOUND FOR THIS ADDRESS			
	308 Grand	NO ENTRY FOUND FOR THIS ADDRESS			
	310 Grand	Charles Frank	73	Optician Goods Store	England
		Rosena Frank	42	Keeping House	England
		Charles Frank, Jr.	19	Clerk in Store	NY
		Louis Frank	17	Clerk in Store	NY
		Rosena Frank, Jr.	15	At School	NY
		Harry Frank	13	At School	NY
		Arthur Frank	3		NY
	310 ½ Grand	Jacob Bach	32	Segar Store	Germany
1900	70 Allen	NO ENTRY FOUND FOR THIS ADDRESS			
	72 Allen	David Schwartzberg	32	Saloon	Russia
		Beckie Schwartzberg	32		Russia
		Betzie Schwartzberg	13	At School	Russia
		Abie Schwartzberg	9	At School	Russia
	308 Grand	NO ENTRY FOUND FOR THIS ADDRESS			

Table A-2: Summary of Census Research (continued)

Year	Address	Name	Age	Occupation	Place of Birth
1900 (continued)	310 Grand	Louis Franks	38	Optician	Pennsylvania
		Amelia Franks	33		NY
		Edward Franks	12	At School	NY
		Arthur Franks	6		NY
		Mildred Franks	1		NY
		Jonathan Drucker	43	Cigar Maker	NY
		Katie Drucker	37		NY
		Minnie Drucker	18		NY
		Lizzie Drucker	16	Milliner	NY
		Celia Drucker	14		NY
		Anna Drucker	12	At School	NY
		Mary Drucker	10	At School	NY
		Joseph Drucker	8	At School	NY
		Edward Drucker	5		NY
		John Drucker	3		NY
		Othmar Drucker	1		NY

Notes: Census records that predate 1870 (2nd enumeration) do not list street addresses or street names, although some do include street names. Addresses in italics are estimated based on position in original census ledgers and comparison with other historic documents.
Sources: Federal census ledgers accessed through Ancestry.com.

Table A-3: Historic Directory Entries for 308-310 Grand Street/70-72 Allen Street

YEAR	LAST NAME	FIRST NAME	OCCUPATION	PRIMARY OR WORK ADDRESS	HOME ADDRESS
1819	Jacobson	Joseph	Brewer	45 Cheapside	70 Allen
1819	Stillwell	John	carpenter	70 Allen	
1823	Stillwell	John	carpenter	70 Allen	
1825	Coles	Robert	Dry good store	286 Grand	
1826	Hughson	William A.	accountant	70 Allen	
1827	Wood and Son	Caleb	finding and leather store	13 Jacob and 286 Grand c. Allen	
1827	Phillips	George	cartman	288 Grand	
1828	McFarland	Archibald	shoemaker	288 Grand	
1828	McCartney	James	shoemaker	288 Grand	
1828	Coles	Robert	dry goods	70 Allen	
1829	Crane	Elijah	shoe store	286 Grand	54 Orchard
1829	Coles	Robert	dry goods	70 Allen	
1830	Crane	Elijah	shoe store	286 Grand	54 Orchard
1830	McFarland	Archibald	shoemaker	288 Grand	
1830	Coles	Robert	dry goods	70 Allen	
1831	Clark	William	shoemaker	288 Grand	
1831	Coles	Robert	dry goods	70 Allen	
1831	Wood and Son	Elhanah	botanist, etc.	70 Allen c. Grand	
1832	Way	Benjamin	shoemaker	70 Allen	
1833	Palmer	Ebenezer C.	shoe store	286 Grand c. Allen	
1833	McFarland	Archibald	shoemaker	288 Grand	
1833	Wheaton	William	tailor	70 Allen	68 Hester
1833	Reed	Ely	carter	70 Allen c. Grand	
1834	Rile	Lydia	widow Abram S.	286 Grand	
1834	Myers	John H.	barber	70 Allen	
1835	Bell	John S.S.	shoemaker	286 Grand c. Allen	
1835	McFarland	Archibald	shoemaker	288 Grand	
1835	Wheaton	William	tailor	70 Allen	68 Hester
1835	Rile	Lydia	widow Abram S.	70 Allen	
1836	Palmer	Ebenezer C.	shoe store	286 Grand c. Allen	
1836	Wheaton	William	tailor	70 Allen	68 Hester
1836	Rile	Lydia	widow Abram S.	70 Allen	
1837	Palmer	Ebenezer C.	shoe store	286 Grand c. Allen	
1838	Palmer	Ebenezer C.	shoe store	286 Grand c. Allen	
1838	McFarland	Archibald	shoemaker	288 Grand	
1840	Clark	William	shoemaker	288 Grand	
1840	McFarland	Archibald	shoes	288 Grand	
1840	Foley	William		72 Allen	
1841	McFarland	Archibald	shoes	288 Grand	
1841	Purdy	Alexander		288 Grand	
1841	Galloway	Catherine	widow John	288 Grand	
1841	Riddle	John	insp. Dom. Spts.	39 Water	72 Allen
1842	Purdy	Alexander	collector	282 Grand	r. 288 Grand
1842	McFarland	Archibald	shoes	288 Grand	
1842	Campbell	Catherine F.	nurse	288 Grand	

Table A-3: Historic Directory Entries for 308-310 Grand Street/70-72 Allen Street (continued)

EAR	LAST NAME	FIRST NAME	OCCUPATION	PRIMARY OR WORK ADDRESS	HOME ADDRESS
1842	Straede	Charles	watchmaker	288 Grand	
1842	Riddle	Hiram	tailor	70 Allen	
1842	Smith	Mortimer	paints	72 Allen	
1842	Marten	Leonard	shoe store	72 Allen c. Grand	
1842	Campbell	Catherine	nurse	r. 288 Grand	
1843	Halz	Benjamin	tailor	286 Grand	
1843	Beers	David B.	tailor	72 Allen	
1844	Buissart	S.	woodenware dealer	288 Grand	
1844	Smith	Thomas	dyer	70 Allen	
1844	Godfrey	Phillip	porterhouse	70 Allen	
1844	Beers	David B.	tailor	72 Allen	
1845	Tyrell	Peter G.	tinsmith	288 Grand	
1845	Smith	Thomas	dyer	70 Allen	
1845	Ross	Charles B.	Coach maker	72 Allen	
1846	Rothschild	Seligman	tailor	286 Grand	r. 49 Essex
1846	Rothschild	and Bernheimer	tailor	286 Grand	
1846	Buissart	S.	toystore	288 Grand	288 Grand
1846	Beers	David B.	tailor	288 Grand	
1846	Smith	Thomas	dyer	70 Allen	73 Allen
1846	Redfield	Nathan B.	newscarrier	r. 288 Grand	
1847	Moehring	William	cigars	72 Allen	288 Grand
1848	Jolley	Oscar and Co	fancy goods	310 Grand	310 Grand
1848	Smith	Thomas	dyer	70 Allen	70½ Allen
1849	Beers	David B.	tailor	308 Grand	32 Norfolk
1849	Beers	David B.	tailor	308½ Grand	
1849	Hertz	John C.	segars	310 Grand	
1849	Jolley	Oscar and Co	fancy goods	310 Grand	273 Division
1850	Spicer	David W.	porterhouse	308 Grand	67 Orchard
1850	Hertz	John C.	segars	310 Grand	
1850	Rothschild	Simon		310½ Grand	
1850	Smith	Thomas	dyer	70 Allen	70½ Allen
1850	Smith	Thomas	dyer	70 Allen	70½ Allen
1850	Micholup	Jacob	tinsmith	72 Allen	
1850	Rosenthal	Michael	tanner		r. 310 Grand
1851	Micholup	Jacob	tinsmith	72 Allen	
1851	Smith	Thomas	silk dyer	70 and 70½ Allen	
1851	Spicer	David W.	porterhouse	308 Grand	
1851	Rothschild	Seligman	clothier	310½ Grand	
1853	Rothschild	Seligman	tailor	142½ Nassau	310½ Grand
1853	Rothschild	Seligman	clothing	310½ Grand	
1853	Frey	Francis	dyer	70 Allen	70 Allen
1853	Short	Joseph	smith	72 Allen	
1853	Gaffney	James	blacksmith	72 Allen	103 Hester
1853	Stetcher	Joseph	shoemaker		72 Allen
1854	Moore	John		308 Grand	
1854	Flushey	Harry S.	patent medicines	308½ Grand	
1854	Klump	John	scourer	310 Grand	
1854	Frey	Francis	dyer	70 Allen	

Table A-3: Historic Directory Entries for 308-310 Grand Street/70-72 Allen Street (continued)

YEAR	LAST NAME	FIRST NAME	OCCUPATION	PRIMARY OR WORK ADDRESS	HOME ADDRESS
1854	Short	Joseph	smith	72 Allen	
1854	Short	Joseph	smith	72 Allen	
1854	Short	Joseph	smith	72 Allen	
1854	Karbaum	Charles	silversmith	r. 310 Grand	
1855	Short	Joseph	smith	72 Allen	
1856	Hertz	Charles C	segars	142 1/2 Nassau	310 Grand
1856	Hunt	L.H.	boots	308 Grand	
1856	Rothschild	Seligman	clothing	310 Grand	
1856	Frey	Francis	dyer	70 Allen	
1857	Frey	Francis	dyer	70 Allen	
1857	Allgeier	William	boots and shoes	72 Allen	
1857	Allpener	William	shoes		72 Allen
1858	Dean	George	Furrier	310 Grand	157 East Broadway
1858	Rothschild	Seligman	tailor	310½ and 364 Grand	364 Grand
1858	Rothschild	and Klingenstein	tailor	310½ Grand	
1858	Frey	Francis	dyer	70 Allen	
1858	Algiere	William	shoes	72 Allen	
1859	Harris	Henry T.	tailor	308 Grand	143 Allen
1859	Frey	Francis	dyer	70 Allen	70 Allen
1859	McKenna	Charles	horseshoer	72 Allen	128 Forsythe
1860	Hertz	John C.	segars	310 Grand	
1860	Aigeltinger	Leopold	pictures	310 Grand	26 East 117th
1860	McKenna	Charles	horseshoer	72 Allen	128 Forsythe
1860	McKenna	Charles	smith	72 Allen	
1861	Hertz	John C.	segars	310 Grand	
1861	McKenna	Charles	horseshoer	72 Allen	128 Forsythe
1862	Hesse	Henry	worsted goods	308 Grand	29 Delancey
1862	McKenna	Charles	smith	72 Allen	Melrose
1863	Geotze	Theodore	hosiery	308 Grand	10 Av B
1863	Hesse	Henry and Co.	yarn	308 Grand	
1863	Hertz	John C.	segars	310 Grand	
1863	Frey	Francis	dyer	70 Allen	
1863	Thorp	James E.	carpenter		308 Grand
1864	Geotze	Theodore	hosiery	308 Grand	10 Av B
1864	Drebling	Gustave	confectioner	310 Grand	
1864	Frey	Francis	dyer	70 Allen	70 Allen
1864	Bramer	Louis	beer	70 Allen	70 Allen
1864	Montgomery	Matthew J.	smith	72 Allen	
1865	Harris	Henry T.	clothing	308 Grand	143 Allen
1865	Klufer	Gustavus	pasting	70 Allen	70½ Allen
1865	Montgomery	Matthew J.	smith	72 Allen	97 Orchard
1866	Loesch	Frederick	oysters	70 Allen	
1866	Sattler	Julius	saloon	70½ Allen	
1867	Trusty	John H.	saloon	70 Allen	
1867	Montgomery	Matthew J.	smith	72 Allen	152 Eldridge
1867	Aal	Bernard	hatter		310 Grand
1868	Hesse	Henry	woolens	308 Grand	
1868	Goldmand	Manassah L.	hates	310 Grand	

Table A-3: Historic Directory Entries for 308-310 Grand Street/70-72 Allen Street (continued)

YEAR	LAST NAME	FIRST NAME	OCCUPATION	PRIMARY OR WORK ADDRESS	HOME ADDRESS
1868	Trusty	John H.	oysters	70 Allen	
1869	Hertz	John C.	segars	310 Grand	
1869	Leonard	Francis	tailor	310 Grand	567 Broome
1869	Trusty	John H.	oysters	70 Allen	
1869	Bross	Peter G.	barber	70½ Allen	270 Broome
1869	Paul	Jacob	laborer		72 Allen
1870	Hesse	Henry	trimmings	308 Grand	77 Orchard
1870	Hertz	John C.	segars	310 Grand	
1870	Trusty	John H.	oysters	70 Allen	
1870	Montgomery	Matthew J.	shoer	72 Allen	131 Eldridge
1870	Sommer	Moritz	junk	72 Allen	122 Broome
1871	Hesse	Henry	furnishing and yarn	308 Grand	77 Orchard
1871	Hertz	John C.	segars	310 Grand	
1871	Trusty	John H.	oysters	70 Allen	
1871	Montgomery	Matthew J.	shoer	72 Allen	131 Eldridge
1872	Trusty	John H.	oysters	70 Allen	
1872	Thomsen	William	printer	72 Allen	178 Orchard
1872	Thomsen	and Wolf	printers	72 Allen	
1873	Eggreger	George	clothing	310 Grand	80 Rivington
1873	Trusty	John H.	oysters		70 Allen
1874	Hesse	Henry	yarn	308 Grand	77 Orchard
1874	Hertz	Augusta	wid. John C./segars	310 Grand	300 Grand
1874	Eggreger	George	clothing	310 Grand	80 Rivington
1874	Klingenstein	Henry	clothier	310½ Grand	80 Rivington
1874	Ruton	George	machinist		70 Allen
1874	Ruton	George S.	binder		70 Allen
1876	Klingenstein	Henry	clothing	701 8th Avenue and 310 Grand	80 Rivington
1876	Klingenstein	Sigmund	clothing	701 8th Avenue and 310 Grand	80 Rivington
1876	Klingenstein	Brothers	clothing	701 8th Avenue and 310 Grand	
1877	Andrae	George P.		70 Allen	
1877	Klingenstein	Henry	clothing	701 8th Avenue and 310 Grand	80 Rivington
1877	Klingenstein	Sigmund	clothing	701 8th Avenue and 310 Grand	80 Rivington
1877	Klingenstein	Brothers	clothing	701 8th Avenue and 310 Grand	
1878	Hesse	Henry	woolens	308 Grand	77 Orchard
1878	Hesse	Henry	yarn	308 Grand	29 Delancey
1878	Hesse	Henry	imp	308½ Grand	77 Orchard
1878	Franks	Charles	optician	310 Grand	
1880	Franks	Charles	optician	310 Grand	
1880	Bach	Jacob	segars	310 Grand	
1880	Andrae	George P.	oysters	70 Allen	70 Allen
1881	Klingenstein	Henry	clothier	310½ Grand	80 Rivington
1881	Klingenstein	Sigmund	clothier	310½ Grand	80 Rivington
1883	Franks	Charles	optician	310 Grand	

Table A-3: Historic Directory Entries for 308-310 Grand Street/70-72 Allen Street (continued)

YEAR	LAST NAME	FIRST NAME	OCCUPATION	PRIMARY OR WORK ADDRESS	HOME ADDRESS
1883	Bach	Jacob	segars	310 Grand	
1883	Babieri	Andre	fruit	70 Allen	
1883	Andrae	George P.	eatingh	72 Allen	
1884	Hesse	Henry	importer of kniting yarns and hosiery	308 Grand	77 Orchard
1884	Bach	Jacob	segars	310 Grand	
1884	Klingenstein	Henry	clothing	701 8th Avenue and 310 Grand	248 East 60th
1884	Klingenstein	Sigmund	clothing	701 8th Avenue and 310 Grand	355 East 116th
1884	Klingenstein	Brothers	clothing	701 8th Avenue and 310 Grand	
1884	Andrae	George P.	eatingh	72 Allen	34 Chrystie
1884	Poggi	James	driver		70 Allen
1884	Poggi	Julia	widow Andrew		70 Allen
1885	Franks	Charles	optician	310 Grand	
1885	Andrae	George P.	eatingh	72 Allen	
1886	Franks	Charles	optician	310 Grand	
1886	Andrae	George P.	eatingh	72 Allen	
1886	Andrae	George P.	oysters	72 Allen	
1887	Poggi	James	fruit	308 Grand	77 Allen
1887	Franks	Charles	optician	310 Grand	
1887	Klingenstein	Henry	clothing	701 8th Avenue and 310 Grand	248 East 60th
1887	Klingenstein	Sigmund	clothing	701 8th Avenue and 310 Grand	355 East 116th
1887	Klingenstein	Brothers	clothing	701 8th Avenue and 310 Grand	
1887	Andrae	George P.	eatingh	72 Allen	
1888	Poggi	James	fruit	308 Grand	77 Allen
1888	Andrae	George P.	oysters	72 Allen	
1889	Franks	Charles	optician	310 Grand	
1889	Drucker	Phillip	Cigars	310 Grand	257 East Broadway
1889	Drucker	Brothers	Cigars	310 Grand	
1889	Andrae	George P.	oysters	72 Allen	
1890	Hesse	Henry	yarn	308 Grand	961 Lexington
1890	Drucker	John A	Cigars	310 Grand	
1891	Poggi	James	fruit	308 Grand	163 Essex
1891	Kiefer	Henry	eatinghs	70 Allen	
1892	Hesse	Henry	importer	308 Grand	502 East 87th
1892	Franks	Charles	optician	310 Grand	
1893	Poggi	James	fruit	308 Grand	77 Allen
1893	Drucker	John	Cigars	310 Grand	31 Ridge
1893	Kiefer	Henry	oysters	72 Allen	
1894	Kiefer	Henry	oysters	72 Allen	
1895	Hesse	Otto	importer	308 Grand	218 E. 14th
1895	Hesse	Otto	importer	308 Grand	502 East 87th
1895	Kiefer	Henry	oysters	72 Allen	
1897	Franks	Charles	optician	310 Grand	

Table A-3: Historic Directory Entries for 308-310 Grand Street/70-72 Allen Street (continued)

YEAR	LAST NAME	FIRST NAME	OCCUPATION	PRIMARY OR WORK ADDRESS	HOME ADDRESS
1897	Franks	Louis E. B.	optician	310 Grand	51 Cannon
1898	Drucker	John A	Cigars	310 Grand	304 5th
1898	Schwartz	John	eatinghs	72 Allen	
1899	Schwartz	John	eatinghs	72 Allen	
1900	Franks	Charles	optician	310 Grand	
1900	Franks	Louis E. B.	optician	310 Grand	51 Cannon
1900	Rodack	Emmanuel	liquors	72 Allen	
1900	Schwartz	John	eatinghs	73 Allen	72 Allen

Sources: New York City directories accessed through www.footnote.com.