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STAGE 1A ARCHAEOLOGICAL ASSESSMENT

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MTA/Long Island Rail Road
East Side Access Project

Prepared for:

AKRF, Inc.

Prepared by:

Historical Perspectives, Inc.

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STAGE 1A ARCHAEOLOGICAL ASSESSMENTS

for the

MTA/LIRR East Side Access Project

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Prepared For:

AKRF, Inc.
117 East 29th Street
New York, NY 10016

Principal Investigators:
Betsy Kearns, RPA
Cece Saunders, RPA

Prepared by:

Historical Perspectives, Inc.
P.O. Box 3037
Westport, CT 06880

Authors:
Sara Mascia, RPA
Richard Schaefer, RPA
Faline Schneiderman-Fox, RPA

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EXECUTIVE SUMMARY

In March 1998, a Major Investment Study (MIS) was published for the MTA/Long Island Rail Road (LIRR) East Side Access (ESA) Project and preliminary archaeological assessments of the project were completed. Since publication of the MIS, some major components of the project were revised and refined, and new elements were incorporated. These project elements and other project variations from the MIS study required archaeological evaluation. Therefore, this Stage 1A Archaeological Assessment was conducted for portions of the project that require subsurface excavation and that have the potential to disturb archaeological resources, if present.

This Stage 1A report identifies areas of potential prehistoric and historic-period archaeological sensitivity that may be impacted by the ESA project, assesses project impacts, and provides mitigation measures where necessary for the specific project areas: Manhattan alignment, Sunnyside Yard and Yard A in Queens (Queens alignment), Roosevelt Island, and the four replacement rail yards—Highbridge Yard in the Bronx and Blissville, Maspeth, Fresh Pond Yards in Queens. The study of archaeological resources in these areas was coordinated with the New York State Office of Parks, Recreation and Historic Preservation (OPRHP).

Background research (including documentary and cartographic review) performed and field visits undertaken for each of the study areas, or Areas of Potential Effect (APEs), identified potentially sensitive prehistoric areas in all the project APEs—the Manhattan alignment, the Queens alignment, Roosevelt Island, and Blissville, Maspeth, Fresh Pond, and Highbridge Yards. Areas of potential historic-period archaeological sensitivity were identified in the Queens alignment and Highbridge Yard APEs. These potentially sensitive areas are locations where there is some possibility that archaeological resources are buried.

In many of these locations, the specific depth of fill materials that may have covered and protected earlier archaeological resources was unknown. In addition, in some locations, the specific depth and extent of project disturbance is also not yet known. In all such areas, the analysis conservatively assumed that the project could result in significant adverse impacts to archaeological resources in the areas identified as sensitive. Therefore, additional analysis of subsurface conditions in the form of continuous tube soil borings would be performed in those areas of potential sensitivity—the Manhattan alignment, Queens alignment, Roosevelt Island, and Blissville and Fresh Pond Yards—to determine depths of fill, and, where possible, the sensitivity of the areas to be affected by the proposed project.

Upon completion of the soil borings, impacts would be reevaluated based on indication of potential sensitivity. Appropriate mitigation measures would be developed through ongoing consultation with OPRHP so that no adverse impact would occur. This may include Stage 1B subsurface archaeological testing in the form of trenching/shovel test pits to investigate the sensitive sections that would be impacted by proposed construction. The testing would be done to locate and identify any potential prehistoric or historic cultural features or deposits. Mitigation may also include Stage 2 resource assessment of National Register eligibility through further study and research. If resources are determined to meet National Register eligibility criteria, Stage 3 data recovery in the form of a full-scale excavation or avoidance of the resources would be undertaken. A Memorandum of Agreement and/or Programmatic Agreement would be executed by MTA/LIRR, OPRHP, and, if necessary, the Advisory Council on Historic Preservation, outlining the process and measures to be undertaken to avoid any significant adverse impacts to archaeological resources.

1.0 INTRODUCTION

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In March 1998, a Major Investment Study (MIS) was published for the MTA/Long Island Rail Road (LIRR) East Side Access (ESA) Project. As part of the MIS process, a wide range of alternatives was considered for the project, and preliminary archaeological assessments were completed. In June 1998 the New York Metropolitan Transportation Council (NYMTC) selected the locally preferred alternative which is now being considered in the EIS. The other two alternatives which are being considered are the No Action Alternative and the Transportation Systems Management (TSM) Alternative. The No Action Alternative is not examined in this archaeological assessment since it involves measures that are available to the LIRR as routine management and does not require a major new construction effort. Portions of the TSM Alternative that require subsurface excavation and that have the potential to disturb archaeological resources, if present, are included in this assessment.

The Preferred Alternative would provide new LIRR service to Grand Central Terminal by connecting the Port Washington Branch and Main Line tracks adjacent to the Sunnyside Yard in Queens to the lower level of the existing 63rd Street Tunnel beneath the East River, and continuing in a new tunnel to Grand Central Terminal in Manhattan. Although preliminary archaeological assessments of the project were completed for the MIS, some major components of the project have been revised and refined since the MIS was prepared, and the project now incorporates additional elements. These new project elements and other project variations from the MIS study require archaeological evaluation. Therefore, a Stage 1A Archaeological Assessment is being conducted for the Preferred Alternative.

This Stage 1A report 1) identifies areas of potential historical and archaeological sensitivity that may be impacted by the East Side Access (ESA) project, 2) assesses project impacts, and 3) provides mitigation alternatives where necessary. Potential resources are identified within the project corridor, and in a series of railroad yards which may experience subsurface impacts as a result of displaced service, realignments, tunneling, utility installation, and similar actions associated with the project. Included in this assessment as individual chapters are archaeological resource evaluations for specific project areas which include:

Chapter 2	Manhattan Alignment
Chapter 3	Sunnyside Yard and Yard A in Queens;
Chapter 4	Highbridge Yard in the Bronx;
Chapter 5	Roosevelt Island;
Chapter 6	Blissville Yard in Queens;
Chapter 7	Maspeth Yard in Queens; and
Chapter 8	Fresh Pond Yard in Queens.

Each chapter includes all figures, photographs and appendices pertinent to itself, while a comprehensive bibliography including references from all chapters is presented in

Chapter 9. The potential impact areas for each of these project sites are discussed more extensively below in section 1.4, AREAS OF POTENTIAL EFFECT.

1.1 Regulatory Setting: Applicable Regulations, Policies and Guidelines

Section106 of the National Historic Preservation Act of 1966 as amended, 23 CFR 771, the guidelines developed by the Advisory Council on Historic Preservation published November 25, 1980 and the "Procedures for the Protection of Historic and Cultural Properties" as set forth in 36 CFR Part 800, require the effects of federally-assisted projects on any district, site, or structure included in, or eligible for inclusion in, the National Register of Historic Places to be assessed before the project can be approved. To comply with these statutes, a thorough background research study has been conducted to identify significant archaeological resources within areas that may be affected by the project. The impact of the proposed action on archaeological resources is then analyzed, and mitigation measures, if necessary, recommended.

The study of archaeological resources has been coordinated with the New York State Office of Parks, Recreation and Historic Preservation (SHPO). The evaluation has also been sent to the New York City Landmarks Preservation Commission (LPC) for review and comment.

1.2 Project Description

To relieve capacity congestion at Penn Station New York, and to provide LIRR passengers with direct access to East Midtown Manhattan, the LIRR would provide new service into Grand Central Terminal by connecting the Port Washington Branch and Main Line tracks within Harold Interlocking in Queens to the lower level of the 63rd Street Tunnel.

From the Manhattan end of the 63rd Street Tunnel, the new service would continue underground to Park Avenue and then south under Park Avenue to Grand Central Terminal. The project would also create a new passenger station at Sunnyside, Queens, just south of Sunnyside Yard beneath the Queens Boulevard bridge. Finally, the project would also include new rail facilities at three existing rail yards: Highbridge Yard in the Bronx, Fresh Pond Yard in Queens, and Blissville or Maspeth Yard in Queens.

Construction work would be required at Yard A, Sunnyside Yard, and the Main Line LIRR tracks (Harold Interlocking) in Queens; along the project route in Manhattan; at the three new yard facilities; and at certain other locations where ancillary structures (vents and substations) would be needed.

1.3 Study Approach

The first task for the Stage 1A archaeological assessment was to define the Areas of Potential Effect (APEs) for each project element. Areas of Potential Effect are areas

where the proposed project could disturb potential archaeological resources, if present. Once the APEs were defined, for each APE, the scope of work was designed to:

- Establish the original site topography and evaluate any subsequent alterations;
- Determine prior usage - specifically if prehistoric and/or historical resources and/or their associated features existed within the project area;
- Identify the extent of prior disturbances such as grading and construction, which would have caused subsurface impacts to potential resources.

This study was designed to address two major questions. What is the likelihood that potential prehistoric and historic archaeological resources of significance exist within each APE; and, what is the likelihood that such resources have survived later disturbances? Sufficient information was gathered to compare, both horizontally and vertically, the prehistoric past, the historical past, and the subsurface disturbance record.

To fulfill this requirement, Historical Perspectives, Inc., performed a documentary and cartographic review of each APE. Research was conducted at various institutions, such as the New York Public Library, the Westchester County Historical Society, the Bronx Historical Society, the Queens Historical Society, and the Westchester County Archives. Site file searches were performed at the New York State Office of Parks, Recreation, and Historic Preservation and the New York State Museum in Albany. In addition to documentary research, field visits were undertaken for each APE. At this time, obvious signs of disturbance were recorded and historical features were noted.

1.4 Areas of Potential Effect

A memorandum outlining the Areas of Potential Effect (APEs), and the project components that would not cause subsurface disturbance extensive enough to cause potential harm to archaeological resources was submitted to the New York State Historic Preservation Office (NYSHPO) in June, 1999. Specifically, no potential for impact exists where deep tunneling would occur through bedrock, far below the anticipated depths of archaeological resources, or where track work would occur and would not be deep enough to disturb potential cultural layers. Also, where tracks would be replaced, or where existing tunnels would be refurbished, there is no archaeological concern due to lack of sensitivity or prior disturbance.

Areas of Potential Effect (APEs) were defined as areas which may experience impacts to potential archaeological resources. Impacts could result from either cut-and-cover construction, excavations, and any other ground disturbing activity which would extend from the existing grade down into potentially sensitive strata.

The APEs for some components of the project have been altered since the June 1999 Scope of Work was created, as project plans have become more explicit. In some cases impact areas have been refined, and in others new project elements have been added.

The following describes the APEs for the project site.

1.4.1 Manhattan

Areas which may create impacts to potential archaeological resources exist where cut-and-cover construction would cause disturbance from the ground surface down into potentially sensitive strata, and where pedestrian exits and ventilation shafts are proposed to link tunnels to the surface. Areas of potential effect (APEs) are:

- Between 52nd and 55th Streets, west of Park Avenue. Here the proposed tunnel would be west of Park Avenue and the existing Metro-North Railroad tracks, but outside the existing lower level of Grand Central Terminal. Cut and cover work beneath existing buildings and street beds would be required to build this new tunnel area. The buildings in these three blocks would be underpinned to support their foundations with the tunnel in place. The APE is the area of construction impact.

- 347 Park Avenue. South of 52nd Street new entrances to the platforms of Grand Central Terminal area also proposed. There are no APEs for the four proposed pedestrian entrances sited between Vanderbilt and Lexington Avenues since they would be placed where there is prior disturbance from cut-and-cover excavations for the Grand Central Terminal complex. However, the site of the proposed pedestrian entrance at 347 Madison Avenue falls outside the area of prior impact from tunnel construction, and therefore may be archaeologically sensitive. Therefore, the APE for this pedestrian access way is the perimeter of the construction area required for its installation.

- Ventilation facilities along Park Avenue north of Grand Central Terminal are also proposed. The potential locations are on Block 1279, between 44th and 45th Street and Vanderbilt and Madison Avenues (and possibly extending into the adjacent 44th Street roadbed). This site was not previously disturbed by tunnel construction and has archaeological potential. Therefore, the APE for this element is the proposed footprint of the ventilation facility. The other potential sites for ventilation facilities are on 53rd, 54th, and 55th Streets both east and west of Park Avenue. The APEs for these potential vent sites are the street beds of East 53rd, 54th, and 55th Streets between Lexington and Madison Avenues, excluding Park Avenue.

1.4.2 *Sunnyside Yard, Yard A, and Harold Interlocking*

All aspects of the project creating subsurface disturbance at these yards may have the potential to disturb archaeological resources. This includes all of Yard A, the area of Sunnyside Yard affected by the tunneling work and loop track, and the Harold Interlocking area (Main Line tracks adjacent to Sunnyside Yard). It also includes the site of three buildings at 2950-2970 Northern Boulevard.

1.4.3 Highbridge Yard, Bronx

As part of the project, Highbridge Yard, an existing rail yard along the Harlem River in the Bronx, would be reconfigured to provide the new facilities for Metro-North. The yard would not be expanded beyond its current boundaries. Track work at the yard is not expected to disturb any potential archaeological resources, since tracks are laid at grade and most of the site has already been covered with tracks at one time or another. Work at Highbridge Yard for the proposed project which may cause subsurface disturbance includes construction of several new maintenance and crew structures.

Because the horizontal and vertical extent of impacts are not yet clearly defined, the APE is conservatively assumed to be the entire Highbridge Yard.

1.4.4 Roosevelt Island

Potential impacts at Roosevelt Island are related to the creation of a substation on the west side of Main Street adjacent to an existing subway vent. To be conservative, a 100 foot by 100 foot area surrounding the existing ventilation shaft is the APE for this project element.

1.4.5 Maspeth Yard, Blissville Yard, and Fresh Pond Yard, Queens

LIRR's Yard A at Sunnyside is currently used by New York & Atlantic Railway (NYAR), a freight railroad. The NYAR facilities would be relocated to the existing Fresh Pond Yard and Maspeth Yard or Blissville Yard in Queens. Limited facilities would be constructed at these yards to meet NYAR's needs, but the yards would not be expanded beyond their current boundaries.

There would be limited subsurface impacts at each of these yards. Installing new tracks and realigning old ones will not cause subsurface disturbance to depths expected to impact potential archaeological resources. However, there may be excavations for utility trenches which could extend into archaeologically sensitive areas, and a new structure is proposed for construction in Fresh Pond Yard. Since the locations of utility trenches and unforseen subsurface work is unknown, the APE for each yard is the entire yard.

1.5 Impact Evaluation Factors

The potential for disturbing archaeologically sensitive sites by excavation or compaction; was used as the criterion to determine significant impacts, the level of significance, and the need for mitigating measures to be implemented.

As described above in the discussion of the APEs, because engineering work for the project is still underway, APEs for the project were conservatively defined as larger than the areas of specific project elements. Consequently, the assessment's broad conclusions about project impacts are conservative, but may be refined as the engineering work proceeds.

2.0 MANHATTAN ARCHAEOLOGICAL RESOURCE EVALUATION

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The proposed project would provide new Long Island Rail Road (LIRR) service to Grand Central Terminal by connecting the Port Washington Branch and Main Line tracks at the rail yard complex at Sunnyside in Queens, to the lower level of the existing 63rd Street Tunnel beneath the East River, and continuing in a new tunnel to Grand Central Terminal in Manhattan. Within Manhattan, both the creation of a new portion of the tunnel as well as new pedestrian entrances and ventilation plants would cause subsurface disturbance to areas that could be of potential archaeological concern (Figures 1, 2; Photographs 1, 2). This study is addressing the archaeological potential of the following areas which may experience subsurface impacts:

- The proposed tunnel beneath existing buildings and streets west of Park Avenue between 52nd and 55th Streets;
- At the site of a proposed pedestrian entrance at 347 Madison Avenue;
- At the site of a proposed ventilation plant, on Block 1279 and possibly extending into the adjacent 44th Street roadbed; and
- At the site of proposed ventilation plants located at East 53rd, 54th, and 55th Streets respectively. To be conservative while project engineering is under way, the Areas of Potential Effect (APEs) for these plant sites are considered to be the street bed of East 53rd Street between Park and Madison Avenues, and East 54th and 55th Streets between Lexington and Madison Avenues excluding Park Avenue.

For reference and to clarify their locations cartographically, the proposed ventilation plant sites are referred to as V1 through V4 respectively (Figure 2). Each of these areas was subjected to a comprehensive documentary study in order to determine its archaeological potential, and to assess impacts which may result from the proposed East Side Access (ESA) project.

2.1 Study Area Description

The history of Manhattan was in part shaped by the topography, ecology, and economic conditions that prevailed at various times. Understanding the city's geologic history aids in understanding the land-use history. During the Pleistocene period, ice advanced in North America several times. In the last 50,000 years, the Wisconsonian period, ice was 1,000 feet thick over Manhattan. Gravel and boulders deposited at the ice sheets melting margins formed Long Island about 15,000 years ago (Kieran 1982). For a brief period Manhattan was largely covered by a glacial lake. Glacial Lake Flushing occupied broad, low-lying areas when deglaciation of the region produced vast volumes of meltwater. Higher elevations of Manhattan may have been marginal to this lake (Church and Rutsch

1984). By 12,000 years ago the lake drained and sea levels have gradually risen as glaciers retreated.

The project area is within the embayed section of the Coastal Plain which extends along the Atlantic Coast and ranges from 100 to 200 miles wide. The Manhattan prong, which includes southwestern Connecticut, Westchester County and New York City, is a small eastern projection of the New England uplands, characterized by 360 million year old highly metamorphosed bedrock (Schuberth 1968). The Manhattan ridge generally rises in elevation toward the north, and sinks toward the south.

The prevalent gneissoid formation is known as Hudson River metamorphosed rock. The city is characterized by a group of gneissoid islands, separated from each other by depressions which are slightly elevated above the tide and filled with drift and alluvium. Beneath most of the project area is the Manhattan schist formation, a highly foliated mica schist known to have once outcropped throughout the island.

Historical development has altered many of the natural topographic features that once characterized Manhattan (Gratacap 1909). Soil within Manhattan is mostly glacial till, clays, sand, gravel, mud, and assorted debris (Kieran 1982). The groundwater level fluctuates with tidal variations in the river.

2.2 Contextual Overview

In order to fully understand the use of the project site through time it is necessary to develop a historical context for the ESA project area. As defined by the National Park Service, "historic contexts provide a framework for the identification, evaluation, designation, and treatment of cultural resources associated with particular themes and time periods. Historic context-based planning permits recognition of individual properties as parts of larger systems. Historic contexts also help managers and others evaluate properties within their proper levels of significance. As such, they provide both a systematized basis for comparison and a comprehensive frame of reference. In so doing, historic contexts provide cultural resource managers with a guide for rational decision-making" (Grumet 1990). The following discussions establish a contextual framework for the historical eras pertinent to the project site.

Much of the following historical overview is derived from previously performed historical research completed for sites throughout midtown Manhattan (See Kearns, Kirkorian and Schaefer 1993, 1995; and Kearns, Kirkorian, and Mascia 1995). In addition, other cultural resource reports were reviewed at the NYCLPC, as were predictive models.

2.2.1 Prehistoric Context

Archaeologists have divided North American prehistory into four periods, the Paleo-Indian, Archaic, Woodland, and Contact, with the Archaic and Woodland periods generally subdivided into the Early, Middle, and Late subperiods. Changes in the prehistoric environment, the characteristics of prehistoric peoples, and the cultural artifacts that were left behind enable archaeologists to present a chronological framework for the prehistory of North America. What follows is a brief overview of these periods with emphasis on the characteristics of, and archaeological evidence for, each period in the New York City area.

- Paleo-Indian Period (10,000 - 7,000 B.C.)

Although it is postulated that near the end of the Wisconsin glacial age the first humans crossed into the New World via a narrow land bridge in the vicinity of the Bering Strait, recent evidence suggests that the parts of the New World may have been occupied as early as 35,000 years ago. Regardless, in the metropolitan New York area evidence of human habitation only extends back to ca.10,000 B.C. These nomadic hunters, distinguished by the fluted points they created, were called Paleo-Indians.

Archaeological evidence at several camp sites in the Northeast lead scholars to suggest that seasonal patterning or perhaps territoriality commenced during the latter part of this period (Ritchie 1965). The warming climate and the new open river valleys provided ample hunting grounds. Consequently, Paleo-Indian habitation sites were frequently situated on elevated land near fresh water, particularly in the vicinity of former glacial lakes and moraines (Ritchie 1965). The closest recorded Paleo-Indian site to the project area is Port Mobil, a small camp site, recovered in Staten Island (Ritchie 1980).

- Archaic Period (7,000 - 1,000 B.C.)

The transition from the Paleo-Indian period to the Archaic was marked by increased mobility and resource availability. An increase in the number and size of sites recovered from the Archaic period suggests that the human population had expanded and that Archaic peoples were becoming more settled and therefore having a greater impact on the landscape. The Lamoka, Vosburg, and Brewerton phases (recurring complexes of distinctive archaeological traits representing individual cultural groups), are among those identified in New York State by Ritchie (1980).

A number of small multi-component sites have been recovered in coastal New York. These have been found near fresh water ponds, tidal inlets, coves, and bays. Many sustain evidence of shellfish harvesting, particularly oysters and clams. No large camp site or settlement has been found within the boundaries of the five boroughs and the few Archaic sites recorded within the city are isolated finds.

- Woodland Period (1,000 B.C. - ca.1600 A.D.)

The advent of ceramic technology and horticultural activity distinguish the Woodland period. Primary habitation sites, or villages, had increased in size and were permanent (year-round) settlements. Larger sites were located near fresh water sources (e.g., pond, lakes, tributaries, or rivers), while task-specific sites (e.g., shellfish gathering and/or processing, tool making), were usually situated near the location of the resource.

Near the end of the Middle Woodland stage (ca.800-1000 A.D.), agriculture was practiced, and by the Late Woodland, cultigens had become an essential element in daily life. Late Woodland sites of the East River Tradition in Manhattan and other parts of southern New York have been noted on the high ground above high water level on tidal inlets, tidal streams, bays and coves, and other well-drained sites (Ritchie 1980; Smith 1950).

- Contact Period (A.D. 1600-A.D.1800)

Using legal documents and early ethnohistoric accounts, archaeologists have learned much about the Native groups that were present upon contact with Europeans. Grumet notes that the 1610 Velasco map used the name *Manahata* as the designation for the native inhabitants of both banks of the lower Hudson River (1981). The Manhattan Indians were identified on Dutch 17th-century maps but not on many other documents. In addition, no individual Manhattan Indian was referred to by name in the documentary record.

Isaak de Rasieres reported ca.1628, that the island was "inhabited by the old Manhatesen; they are about 200 to 300 strong, women and men, under different chiefs." The Wiechquaesgeck have been identified as the denizens of northern Manhattan, as well as parts of the Bronx and Westchester County. The Manhattan and their Wiechquaesgeck relatives had few furs to trade with the Dutch. As a result, there was little motivation on either side for good relations, and Nieuw Amsterdammers probably considered the local Indians an annoyance. In addition, the sometimes cruel and often dishonest practices of European traders led to Wiechquaesgeck retaliation, which took the form of several murders between 1640 and 1642, leading to various raids and counter raids between Dutch and Indians (Grumet 1981; Kammen 1975).

The Dutch practice of trading firearms to the upriver Mahican and Mohawk, while denying guns to the Indians of the lower Hudson, left them vulnerable to attack. When a large force of Mahican or Mohawk attacked the Wiechquaesgeck and Tappan in 1643, the surviving Indians fled to the Dutch in New Jersey and Corlaer's Hook on Manhattan for protection. Governor Kieft and his advisors seized this chance to revenge themselves, and sent a force to attack the refugee camp at Pavonia (now Jersey City), massacring 80 Tappan, while another force killed another 40 Wiechquaesgeck on Manhattan. Eventually every lower Hudson native group joined in war against the Dutch, with disastrous results for European settlers. "Governor Kieft's War" ended when the Manhattan and Wiechquaesgeck sued for peace in 1644, after a series of surprise attacks

on Indian villages ended in brutal massacres. Nevertheless, friction with the Dutch continued, as the Wiechquaesgeck participated in the "Peach War" (1655-1657) and the "Esopus War" (1659-1664) (Grumet 1981; Brodhead 1853; Bolton 1975).

These hostilities, coupled with the introduction of European diseases against which Native American populations had no natural protection, decimated Indian populations in the New York City area, and forced many groups to merge in order to maintain viable communities. The last of the Manhattans apparently left the island sometime after 1628, joining the mainland Wiechquaesgeck, where they were noted in 1680 as the ***former*** inhabitants of Manhattan Island (Grumet 1981).

Site File Search Results. The only Native American feature reported by Grumet in this area is the Wickqquasgeck Road - a Native trail which ran from the southern tip of Manhattan to the northern tip of Manhattan. The road, which was west of the project site, was well traveled and connected settlements at the southern part of the island with those on the north (Grumet 1981). In addition, Arthur C. Parker reported traces of occupation in the area of 59th Street near First and Second Avenues (Appendix 2.7.2; New York State Museum Site #1061). The extent of the Native American presence is unknown.

2.2.2 Historic Context

New York City, with Manhattan Island as its commercial and locational center, developed at a rapid pace over the last three centuries. An important factor was the flourishing commercial waterfront and the growth of the surrounding mercantile and later industrial ventures. The expansion and development of the waterfront along the East River began in the early 17th century. Although early Dutch trading expeditions had already been visiting the Hudson River for many years, the first settlement in New Netherland was not undertaken until 1624, under the authority of the Dutch West India Company. The purpose of this expedition was to strengthen Dutch ownership claims by occupying strategic points in the territory. Surprisingly, Manhattan was ignored in favor of Governors Island, where eight men were left to build a fort to protect the mouth of the Hudson. The main groups of colonists traveled north and established Fort Orange, now part of Albany, in an area advantageously situated for participation in the lucrative fur trade (Brodhead 1853).

Eventually, Manhattan was recognized as the strategic heart of the region and colonization began in earnest in 1625 when an expedition of Company farmers with livestock, tools and provisions arrived on the Hudson River, establishing themselves at the southern tip of Manhattan Island, with the purpose of building a fort and laying out nine Company farms, or bouwerijen (bow-wer-RAY-en). These bouwerijen were intended to supply Company personnel with agricultural provisions, so that the Manhattan post would be self-sufficient (Bachman 1969). As it was Company policy to acquire lands from native peoples in an amicable fashion, in 1626 Governor Peter Minuit

purchased Manhattan Island from the local Indians for about 60 guilders worth of goods (Brodhead 1853).

The midtown region of Manhattan has maintained a diversity of neighborhoods, industries and institutions throughout the historical period. During the 17th and early 18th centuries, this region was only woodland with sparsely sited farms. The first significant development within this area was the establishment of the Boston Post Road which ran through Manhattan near the present route of Third Avenue (Church and Rutsch 1984). This section of the route was known as the Eastern Post Road, built between 1669 and 1671. This important road was the vital link to the colonial village on the island's southern tip. Early settlements in this area tended to cluster along this road, and the East River shorefront. As a result of this thoroughfare, the last decades of the 17th century witnessed a growth of farmsteads.

In two transactions dated to 1677, the colonial Governor, Sir Edmund Andros, deeded 60 acres north of East 70th Street to John Bassett and an adjoining 60 acres to the southeast to Cornelius Mattysen (Stokes 1928 (6)). By 1742 David Provoost, the first Protestant Episcopal bishop of New York, had taken ownership of the Basset land and the northern 30 acres of the Mattysen tract (Church and Rutsch 1984). This Provoost tract, otherwise known as Jones' Wood, became the Louvre Farm and was more intensively settled than the surrounding properties. Property in the vicinity of the East 30s belonged to Jacob Kip, and the Spring Valley Farm spanned the East 50s (WPA 1982). An important service in the area was the Dove Tavern, an early 18th century tavern formerly located at the intersection of East 67th Street and Third Avenue.

- Manhattan in the American Revolution

A Quaker by the name of Robert Murray had acquired almost all of the midtown area, now Murray Hill, prior to the American Revolution. In 1776 the fleeing Continentals charged north through this area after the British invaded Manhattan. It was at Murray's mansion, located at the corner of 30th Street and Park Avenue, that Mary Lindley Murray stalled General Howe while General Putnam's army escaped to the north (WPA 1982). British frigates were stationed near Kip's Bay (23rd to 34th Streets between Second Avenue and the East River) for the duration of the war. The British occupation of Manhattan wreaked havoc on much of this area. Woodlands were decimated and orchards pillaged and raided for wood.

After the Revolutionary War, the Common Council voted to have the Murray Hill region surveyed and divided into lots for sale. As a result, families established a hamlet called Yorkville, in the vicinity of the Post Road. This community extended north between East 60th and East 96th Streets east of Third Avenue, and was the site of a number of summer houses and estates. This settlement had good access to Newtown across the river, via the Horn's Hook - or Hell Gate - ferry across the East River. This formerly stopped at the foot of what is now East 86th Street at the East River. Yorkville eventually

became a crowded section of tenements and brownstones populated by immigrants from Middle Europe (WPA 1982).

- Nineteenth Century Manhattan

In 1815 the Common Council authorized the construction of Third Avenue which was to be 60 feet wide. In the 1820s the road was macadamized making it an extremely delightful thoroughfare to travel (Rubinson et al 1984). As a result, by the first half of the 19th century this area was being transformed into a domesticated landscape containing a few estates bordering the East River shore, some mixed but scattered development along or near the Post Road, and the single hamlet of Yorkville to the north.

In the 1820s the city was faced with the continued problem of how to dispose of the deceased. According to Stokes' records of the Common Council's actions, a public facility for interment was prepared in 1825 between Third and Fourth Avenues and 48th and 50th Streets (Stokes Vol.5). On other pages he states that the potter's field was moved to 50th Street between Fourth (now Park) Avenue and Lexington Avenue (Stokes Vol.3). This area was ideally suited for such a venture because of its remoteness.

By 1836 there were several large estates situated in this area mostly concentrated east of Second Avenue along the East River (Colton 1836). Mt. Vernon and Spring Valley were situated east of Second Avenue in the upper 50s and lower 60s. East of Second Avenue between 40th and 47th Streets near Turtle Bay there were several more houses. A glass manufacturer stood about eight blocks southeast of what is now GCT, in the vicinity of what was then Kips Bay (Colton 1836).

Nineteenth century maps show the transformation of this area from rural to suburban and then urban (Colton 1836; Perris 1862; Dripps 1866; Bromley 1879; Robinson & Pidgeon 1890). Fast and steady growth in the area resulted in an oddly mixed land use - for example in some places small run down shanties were situated next to large opulent estates. However, in other areas the mid-19th century marked the true appearance of class-segregated neighborhoods. The industrial working class was just beginning to emerge in the 1820s-1830s. There was an influx of European immigrants at that time, and in downtown the poor inherited the abandoned homes of the uptown-moving rich, who settled in the midtown and upper east side areas. The city proper tapered off about 14th Street in 1825 - but by 1853 it extended much further north (NYCLPC 1983). All streets up to 42nd Street were regulated and paved by this time, and a series of villages was established including Yorkville, Manhattanville, and Harlem to the north.

By the 1830s the deplorable quality of groundwater in Manhattan was recognized as contributing greatly to the yellow fever and cholera outbreaks of the previous decades. In 1835 the city approved a plan to dam rivers upstate to create reservoirs, and pipe clean water into the city through an extensive aqueduct system. Water was piped into Manhattan, through Central Park and down Fifth Avenue into a massive receiving

reservoir built in 1842 at the intersection of 42nd Street and Fifth Avenue where the New York Public Library now stands.

In the 1850s and 60s, "Manhattan north of Forty-second Street was not pleasant countryside; it was garbage dumps, shanty towns, and decrepit taverns, all punctuated by outcroppings of rock" (Lockwood 1976). One census counted more than 10,000 squatters in this area, while the *New York Times* conservatively estimated the Manhattan squatters' population at 20,000 in 1864 (Plunz 1990). Since squatting in the area slated for Central Park was widespread after 1853 when the City began acquiring private land for the park, one of Frederick Law Olmsted's first acts as Park Commissioner in 1857 was to remove 300 shacks from the area. The subsequent construction of Central Park had an important impact on the east side of Manhattan. The creation of the park made Fifth Avenue, which formed its eastern border, New York's new fashionable neighborhood. As a result, real estate prices and development increased there and on adjacent side streets.

As populations grew, efforts were made to improve the midtown area. DeVoor's Mill Stream, which emptied into the East River near 49th Street, was a source of health problems in the early and mid-19th century. As a result, it was covered up and piped into the East River at Turtle Bay (Rubinson et al 1984). Growth in the region slowed in conjunction with the onset of the Civil War. Furthermore, the 1863 opening of the first conscription office at East 46th Street and Third Avenue precipitated the famous Draft Riots when impoverished residents in the area protested their induction into the army (WPA 1982).

The midtown region was never entirely residential, but continuously had a mix of small industries and services. Some of the examples of the types of non-residential uses in this region include Columbia College at Park Avenue and 49th Street in 1857, an orphan asylum at 51st Street and Park Avenue, Mt. Sinai Hospital which was built between 1872-1904. Slaughterhouses, gas and coal yards, and other offensive industries thrived along the East River shoreline, and breweries, piano manufacturers, and other "lighter" industries were situated throughout the project area.

- Manhattan Elevated Trains

Following the Civil War, prosperity brought growth to midtown Manhattan. Between 1867 and 1880 four elevated train lines were built in Manhattan, the closest on Second Avenue (Parsons Brinckerhoff Quade & Douglas, Inc., et al 1991). Further changes to the midtown area occurred with the construction of the Third Avenue Elevated (el) train in 1878-1881 which brought additional people and businesses to the region. Steam powered trains chugged through Manhattan leaving soot and smoke in their trails. While the Els were relatively inexpensive and quick to build, they were noisy, interfered with street traffic, and blocked light and air from abutting properties (Ibid.). Many of the residents adjacent to these lines considered them a blight. But the el mobilized the city population and forever changed the city's character. Run-down neighborhoods, bisected

by the opulent Beekman and Sutton Place communities, predominated the landscape north to East 59th Street.

- Manhattan's Grand Central Terminal

The construction of the New York and Harlem Railroad, which ran up Park Avenue by 1837, opened up the study area to further settlement (Church and Rutsch 1984). A cut was made through Murray Hill in Fourth Avenue (Park Avenue) south of 42nd Street to allow for the placement of tracks below street level for steam powered trains. In 1842 the use of steam power south of 32nd Street was outlawed, so horses were used to pull the trains instead. In 1846 the Common Council further ordered the street cut in Park Avenue south of 42nd Street to be bridged. Subsequently it was turned into Belmont Tunnel, an arched brick structure which still runs beneath Park Avenue (WPA 1982). In 1858 steam services south of 42nd Street were further banned, and there was a clear need to improve the city's transportation network.

Seizing the opportunity to capitalize on the city's need for a new railroad system, Cornelius Vanderbilt purchased New York's three rail lines: the New York & Harlem, the Hudson River, and the New York Central Railroads. He consolidated the three as the New York Central & Hudson River Railroad and planned for the construction of the Grand Central Depot at the intersection of 42nd Street and Park Avenue. The depot, designed by John B. Snook, was not of a practical design and was constantly being rearranged and enlarged. A huge iron-and-glass train shed and a rail yard were located to the north of the station (White and Willensky 1988). In 1885/86 the railroad rearranged and enlarged its yard at the depot and provided it with new interlocking switches and signals (Middleton 1977).

To the south of the depot, tracks were submerged, but to the north tracks were at street level to 68th Street, submerged between 68th and 96th Street, and then elevated. When the grade-level tracks proved unsafe, tracks north of 45th Street were also submerged. Open cuts between retaining walls allowed elevated bridges to be built across the tracks at 45th and 48th Streets, and seven more such bridges spanned the tracks between 49th and 56th Streets. Between 56th and 67th Streets the tracks were placed in a "beam tunnel" which consisted of two single-track tunnels connected for ventilation purposes, with a double-track center tunnel opened at the top to allow steam and smoke to escape (Middleton 1977). As a result, Park Avenue was widened to 140 feet with a 15-foot wide sidewalk on either side of the landscaped boulevard. A below grade station was provided at 60th Street (Ibid.).

There were numerous problems with the tracks and terminal as they existed in the 1890s. Complaints of the noise, steam, flying sparks, and hazardous conditions forced further action. In response to these complaints and as technologies improved, the tracks on Park Avenue were electrified and a roof was built over them. At the same time it was realized that the existing train depot at 42nd Street was not meeting its growing passenger demands. As a result, the terminal was rebuilt in the late 1890s, and improvements were

made to the yard's signal and interlocking systems (Middleton 1977). The new system did little to solve the real problem in the approaches to Grand Central Depot. There was just too much traffic for the existing depot to handle.

By 1900 the terminal was servicing up to 500 trains daily. The impracticality and inadequacy of the Grand Central Depot building forced its early replacement. In conjunction with electrifying and submerging the tracks, William Wilgus, the chief engineer responsible for these changes, proposed building a new depot and generating revenues by selling and leasing the air rights over the tracks between Madison and Lexington Avenues from 42nd to 50th Streets (Jackson 1995). The firm of Reed and Stem was subsequently chosen to devise a system of ramps and tunnels separating automobile, pedestrian, train, and subway traffic around the newly proposed depot. Whitney Warren, of the architectural firm of Warren and Wetmore, was contracted to design the new GCT facade. The two teams worked together to create the extant GCT.

Building of the new terminal was completed in 1913, and it is currently a National Historic Landmark, a New York City Landmark, and is listed on both the State and National Register of Historic Places. The new terminal "gave the city a three-dimensional composition that was a major achievement of the City Beautiful era" (White and Willensky 1988). Capacity for trains increased threefold, and the terminal now covers three blocks between 42nd and 45th Streets. The double deck railroad yard beneath the terminal extends north to 50th Street and extends east and west of Park Avenue (and includes the west block fronts on Park Avenue between 50th and 52nd Streets), and the tracks then continue under Park Avenue to 59th Street. At that point all the tracks converge to a four-rail wide track on one level beneath Park Avenue which stays under ground until East 96th Street where it is then elevated. There are loop tracks at each level allowing for trains to turn easily rather than having to be backed out from the station platforms. Together with storage tracks, there is a total of 66 tracks on the upper level, and 57 on the lower (NYCLPC 1980). In total, the subterranean tracks span about 48 acres (Figure 3).

The largest and most advanced signal and interlocking system for the early 20th century was built to control Grand Central's traffic. Five separate all-electric interlocking plants were constructed for this purpose; two in the terminal's upper and lower levels near 49th Street, one just south of 50th Street just west of Lexington Avenue in the upper level yard, one in the lower level at the same location, and a fifth at 57th Street which controlled the approaches to the terminal (Middleton 1977). A building was constructed on Lexington Avenue between 49th and 50th Streets to house a large substation, and a storage battery installation for the electrification system, and another for boilers and generating equipment that supply heat and lighting to the entire terminal. Excavations for the two-level terminal and yard extended from 23 to 46 feet deep below the surface, for as much as two blocks wide and half a mile long (Figure 4). Between 42nd and 50th Streets the excavation extended from Lexington Avenue to Madison Avenue and from 50th to 57th Streets excavation spanned the full width of Park Avenue (Middleton 1977). Nearly two million cubic yards of rock and a million cubic yards of earth were blasted,

dug, and removed to fill sites to the north that were being improved. As a result of the new terminal's construction, hundreds of buildings were razed, 25 miles of water and sewer lines had to be removed or relocated, and intercepting sewers had to be built in Park Avenue from 49th to 54th Streets. A new six-foot diameter brick and concrete outfall sewer was built beneath 46th Street carrying rainfall and sewage from the terminal to the East River (Ibid.).

The lower level of the new terminal is now 40 feet below street level, and is set on concrete beds above bedrock. Steel columns and girders support the upper level tracks and platforms, and to the north of the terminal they are designed to support building foundations (NYCLPC 1980).

- Manhattan Subway Lines

Connecting with Grand Central Terminal are three levels of subway lines built in the first decades of the 20th century: the Times Square-Grand Central shuttle which is part of the original IRT line dating to 1904, the Queens line which is part of the original Steinway Tunnel line which was completed in 1907 but went into operation in 1915; and the Lexington Avenue line which opened in 1918. Street level railway lines, or trolleys, served as a link for passengers by connecting the terminal with the rest of Manhattan.

Many of the earlier subway tunnels were built by the cut and cover method, but this technique proved dangerous to pedestrian and street traffic. By the 1930s, most subways in Manhattan were tunneled below the surface. In 1927 an IND subway line was proposed to connect Queens and Manhattan (Cudahy 1988). The IND line, which was opened in 1932, runs beneath 53rd Street and was constructed using deep tunnel boring (personal communication, Frederick Kramer - IND Subway Historian, October 28, 1999). The Fifth Avenue Station, consisting of two levels, is situated one block west of the project site, but its eastern end extends into Madison Avenue (Sanborn 1997, Figure 8). The upper level platform is about 60 feet below the street, while the lower level is about 80' deep (Darlington 1999). The Lexington Avenue Station, situated at the intersection of Lexington Avenue and East 53rd Street, is located approximately 80 feet below the surface (Ibid.).

- Twentieth Century Growth in Manhattan

As part of the planning and construction of GCT, an area of 30 city blocks became available for "air rights" development above GCT's extensive track network. As a result, the early decades of the 20th century saw extensive improvements to Park Avenue and the surrounding neighborhoods within the study area. A Park Avenue address was considered chic by those people who were displaced from Fifth Avenue by fast-growing commerce, and newly available real estate on the thoroughfare was highly valued. As a result, luxurious elevator apartment buildings catering to these residents were built along this thoroughfare. With the office building boom of the 1950s and 1960s, most of these were converted or replaced.

2.3 Existing Conditions

2.3.1 Prehistoric Archaeological Potential

Pedestrian Entrance at 347 Madison Avenue **and** Ventilation Plant V1, on Block 1279 and the Adjacent 44th Street Roadbed

The NYCLPC did not identify the vicinity of proposed ventilation plant or the proposed Pedestrian Entrance at 347 Madison Avenue, both on Block 1279, as sensitive for prehistoric cultural resources, probably because of the distance to fresh water (NYCLPC 1982). Despite this assessment, there is the possibility that either of the project sites were inhabited or utilized by prehistoric people at some time. However, given the extent of subsurface disturbance that both APEs have experienced, there is no longer any sensitivity for this resource type.

The hill top portrayed on early topographic maps (Colton 1836; Viele 1864) would have been razed and leveled with the creation of East 44th and East 45th Streets. Subsequent to their openings, utility conduits were laid in the street beds, and a series of buildings - each with basements - were built on both project site lots. Each of these actions would have impacted the prehistoric landscape.

The extant building (ca.1887) was constructed on Lot 25, the ventilation plant APE. While the adjacent GCT rail yard does not extend beneath the project site, a retaining wall was constructed along its westernmost edge directly under Lot 25. The construction of this retaining wall, which also served to stabilize structures over and adjacent to the yard, would have caused subsurface disturbance beneath the existing structure and streetbed within the project site.

Give that the project site had only a minimal sensitivity for prehistoric resources, and that there has been extensive subsurface disturbance with the grading required for the creation of East 44th and East 45th Streets, the installation of utility lines, the construction of several buildings with basements on the project lots, and the construction of a retaining wall for the subsurface railroad yard next to Lot 25, neither of the APEs have the potential to yield *in situ* undisturbed prehistoric cultural deposits.

Proposed Tunnel Beneath Buildings and Streets West of Park Avenue Between 52nd and 55th Streets and Ventilation Plants Beneath East 53rd, 54th, and 55th Streets Between Lexington and Madison Avenues

The NYCLPC identified each of these cross streets between Lexington and Madison Avenues and the location of the proposed tunnel as potentially sensitive for prehistoric resources based on the presence of upland zones in proximity to fresh water resources (NYCLPC 1982). Their generalized assessment of sensitivity does not take into account subsequent disturbance to the prehistoric landscape, but instead is based on early topographic conditions prior to development. It is essential to establish the extent of

historic land manipulation involved with the implementation of the street grid system imposed on the landscape in order to arrive at a more accurate estimation of prehistoric sensitivity.

The likelihood that prehistoric resources were once deposited on upland areas in proximity to fresh water within the project site is high. The higher elevations portrayed on 19th century topographic maps (Colton 1836; Viele 1859 [Figure 5], 1864), would have been ideal for prehistoric habitation. Conflicting topographic information, provided by the same cartographer, placed a stream either within or north of the project site (Ibid., Figure 5). In either case, fresh water would have been close enough to provide for the needs of Native inhabitants.

Low lying marsh and poorly drained areas in the vicinity of the project site were not well suited for Native American habitation (Figure 5). Although these land forms would have been exploited for resource procurement, the types of activities which leave a more substantial footprint on the surface, and thus contribute to archaeological visibility, would have probably occurred on the upland areas. There is only a minimal potential for prehistoric resources to have been deposited where low-lying areas formerly existed.

Given the historic topography portrayed on 19th century maps (Colton 1836; Viele 1858, 1864 [Figure 5]), it is clear that some degree of grading and/or filling must have taken place before each of these cross streets could have been regulated and opened and the blocks could have been created. In all likelihood, the upland areas were leveled and the low-lying marshes were filled. The extent of these activities is unknown, but it is highly unlikely that prehistoric resources, which in the Northeast tend to be shallowly buried beneath the prehistoric land surface, escaped disturbance by these activities. If they were deposited on the hill tops, then they would have been severely disturbed, if not entirely removed, when the knolls were truncated.

Little information could be found on the actual extent of grading required to regulate and open either East 53rd, 54th or 55th Street. Elevations that could be found postdated this event (Robinson 1885). Furthermore, efforts were made to locate soil borings for the project site at the Department of Design and Construction (formerly the Subsurface Exploration Bureau). They have no record of borings taken within the project site boundaries. Although it is possible that borings have been completed within the project site by private companies, none were found. However, two borings were completed within the street bed of East 54th Street directly west of Park Avenue for the ESA project (Appendix 2.7.3).

The easternmost boring, MA141, contained fill to a depth of 12 feet below grade (PBSTV Boring Log MA-141, 10/15/99). Directly beneath the macadam were ten feet of medium sandy silt with gravel, and between ten and 12 feet below grade was a layer of silt with clay and sand, designated as fill. From 12 feet down were non-fill levels of silt mixed with clay and sand, but lacking organics. Rock fragments were encountered at 35 feet below grade and coring was begun at 38.4 feet.

Boring MA140, taken to the west of MA141, contained brown clayey silt with gravel and cinders to about 20 feet below grade (PBSTV Boring Log MA-140, 10/15/99). Beneath this were two inches of clay and silt also designated as fill. Beneath the fill was a reddish brown silt to a depth of 22 feet below grade, and below this were layers of clayey silt with sand down to at least 33 feet below grade where coring was started. No evidence of organic material was recorded for any of the levels.

The two borings taken in East 54th Street depict fill levels beneath the roadbed extending between 12 to 20 feet below grade. This, combined with the presence of sandy silt levels, suggests that historically this area was in fact low-lying as depicted on some topographic maps, and was filled for the creation 54th Street. Had it once been elevated upland, little or no fill would have been observed in the borings. As stated earlier, low-lying areas are only considered minimally sensitivity for prehistoric resources. The lack of organic material within the non-fill levels and the lack of a buried A or B horizon, indicative of a prehistoric living surface, suggests that there is little chance that Native American's utilized this immediate area for habitation. Even if this location was utilized in some capacity prehistorically, it did not contain the topographic features associated with long-term habitation or repeated occupation which generate archaeologically visible deposits. Therefore, this roadbed has no prehistoric sensitivity.

It is currently unclear just how much fill was introduced onto the remainder of the project site to raise low-lying areas for the creation of street beds, or how much grading was necessary to raze upland knolls. While there has clearly been subsurface disturbance to the street beds over the last century caused by excavations for the installation of utility lines (e.g., sewer, water, electric, gas, telephone, and cable), most of these utility lines were placed roughly five to ten feet below grade. If these utility lines were laid within fill levels, then undisturbed strata may exist beneath them. Even if utility lines were laid within non-fill deposits, there is the possibility that undisturbed soils exist outside of the utility impact area. Therefore, without soil borings to clarify existing subsurface conditions, there is the possibility that the East 54th Street APE east of Park Avenue, and the East 55th Street APE may possess undisturbed areas which could contain buried prehistoric cultural resources.

The eastern end of 53rd Street between Park and Madison Avenues is currently occupied by a vent plant that serves the IND subway below. Construction of this vent plant would have greatly disturbed this portion of 53rd Street, in effect destroying any potential prehistoric cultural resources. The vent is 18 feet by 30 feet, but it is assumed that its construction disturbed an area at least five to ten feet outside its perimeter. Therefore, the immediate site of the vent has no prehistoric potential, and the remainder of the 53rd Street roadbed has only minimal sensitivity.

The project site beneath East 52nd Street has been disturbed by the construction of the subterranean railroad yard which was built from the surface down. Therefore, there is no sensitivity for prehistoric resources within this APE.

The city blocks within the project site, from south to north Blocks 1288, 1289, and 1290 respectively (Figure 7b), experienced extensive late-19th and 20th century development. Huge structures were built on each of the blocks post-dating the Grand Central Terminal tunnel construction, which necessitated the removal of buildings formerly on the project site. Buildings post dating tunnel construction were all substantial structures, some with basements, one with a subterranean parking garage. All would have required massive foundations and/or pile supports due to their size and mass. The construction of each of these buildings would have impacted any remnants of the prehistoric topography within the project site west of the existing GCT tunnel. Within the footprint of the tunnel itself, excavations were from the surface down and would have removed any traces of the prehistoric surface. Therefore, these three city blocks have no sensitivity for prehistoric cultural resources.

2.3.2 Historic Archaeological Potential

Pedestrian Entrance at 347 Madison Avenue **and** Ventilation Plant on Block 1279 And the Adjacent 44th Street Roadbed

No historic structures or features were observed on cartographic sources for either of these project sites, other than a small wooden structure, whose function is unknown, which stood on Lot 25 within the Ventilation Plant site. This structure, which was built sometime before 1879, was replaced in 1887 with a larger five-story brick dwelling with a basement. This was then enlarged during the early 20th century. No remnants of the earlier frame structure could have survived the excavations needed to create the five-story building and the later addition to the rear of the lot, and the installation of a cement retaining wall for the railroad yard to the east. Furthermore, the excavations for the retaining wall GCT rail yard beneath East 44th Street would have disturbed this section of the project site as well. Therefore, Lot 25 and the adjacent roadbed are not considered potentially sensitive for historic archaeological resources.

The lack of earlier historic development on Lot 48, and the 20th century construction of a 20-story office building with a basement on the lot indicates that this lot is not considered potentially sensitive for historic archaeological resources either. Therefore, both of the project sites on Block 1279 have no potential for historic resources.

Proposed Tunnel Beneath Buildings and Streets West of Park Avenue Between 52nd and 55th Streets, and Proposed Ventilation Plants at East 53rd, 54th, and 55th Streets

No historic structures or features were observed on cartographic sources for either the East 52nd, 53rd, 54th, or 55th Street roadbeds, and no undocumented historic archaeological resources are anticipated (see Appendix 2.6.1 for complete block and lot histories).

The city blocks within the project site, from south to north Blocks 1288, 1289, and 1290 respectively, experienced extensive late-19th and 20th century development. Huge structures were built on each of the blocks postdating the Grand Central Terminal tunnel

construction, which caused buildings formerly on the project site to be razed. Buildings post dating tunnel construction were all substantial structures, some with basements, one with a subterranean parking garage. All would have required massive foundations. The construction of each of these would have impacted any remnants of the historic landscape and earlier structures within the project site west of the existing tunnel. Therefore, these three city blocks have no sensitivity for historic cultural resources.

2.4 Impact Assessment

The East 54th Street APE west of Park Avenue (Figure 2) was determined to lack any potential archaeological sensitivity. The 53rd and 55th Street roadbeds between Lexington and Madison Avenues, excluding Park Avenue, and the East 54th Street roadbed east of Park Avenue have only a minimal potential to possess prehistoric resources (Figure 2). Those areas which have experienced prior disturbance via the installation of buried utility pipes and lines and/or subway vents (e.g., the vent plant on East 53rd Street), no longer hold archaeological potential. However, small undisturbed pockets of the prehistoric landscape may still exist outside of these disturbed areas, as has been observed elsewhere in Manhattan. It is possible that these undisturbed areas could possess evidence of a Native American presence.

The proposed enlargement of the existing Ventilation Plant on East 53rd Street is expected to expand the width of the plant from 18 feet to 36 feet out to the curb line, and the length from 30 feet to 130 feet. Expanding the width will probably not have any impact on potentially undisturbed areas since it is assumed that the original construction of the plant would have disturbed an area at least five feet outside of the vent's perimeter, making the width of disturbance about 28 feet (18 feet plus five on either side). However, the proposed expansion of the Ventilation Plant an additional 100 feet in length may impact archaeologically sensitive areas since the vent's construction would have not disturbed more than five feet in length on either side. Therefore, the increased length of the Ventilation Plant may have a negative impact on areas determined to have a minimal potential for prehistoric resources.

The proposed installation of Ventilation Plants somewhere in the streetbed of East 54th and 55th Streets also has the potential to disturb prehistoric resources, if any exist beneath the roadbeds. However, it has been demonstrated that East 54th Street west of Park Avenue lacks archaeological sensitivity.

Although most of the APEs were determined to have only minimal prehistoric sensitivity, and the likelihood that prehistoric resources would have survived the grading and filling required to actually create these cross streets is considered slight, there is the possibility that undisturbed pockets of the prehistoric landscape may remain undisturbed beneath fill. While the probability of finding intact, significant resources worthy of inclusion on the National Register of Historic Places is remote, the scant possibility that *in situ* Native American resources may exist in this part of Manhattan renders any proposed disturbance a negative impact.

The remainder of the APEs, Blocks 1279, 1288, 1289, and 1290, have all experienced extensive subsurface disturbance with the 20th century construction of buildings with basements and/or massive foundations. Therefore, the proposed project will have no impact on any potential prehistoric resources within these APEs.

No potential historic period cultural resources are anticipated from any of the project site APEs due to the lack of initial deposition (see Appendix 2.7.1 for complete block and lot histories), and/or the extent of subsequent disturbance. Therefore, the construction of a proposed Ventilation Plants and pedestrian entrances within any of these APEs would have no impact on any historic archaeological resources.

2.5 Mitigation Recommendations

There is the possibility that many of the project APEs were inhabited at some time prehistorically, but the sensitivity for prehistoric resources is considered minimal due to topographic changes to the prehistoric landscape. Only the East 53rd, 54th, and 55th Street roadbeds were determined to have potential sensitivity, excluding the site of the existing Ventilation Plant and East 54th Street west of Park Avenue, since the extent of their prior disturbance could not be ascertained. The remainder of the APEs were clearly demonstrated to have either lacked sensitivity or experienced considerable subsurface disturbance during the 20th century which would have negated all archaeological potential.

Although the likelihood that prehistoric resources would have survived the grading and filling required to actually create East 53rd, 54th, and 55th Streets is considered slight, there is the possibility that undisturbed pockets of the prehistoric landscape may remain undisturbed beneath fill. While the probability of finding intact, significant resources worthy of inclusion on the National Register of Historic Places is remote, the scant possibility should be corroborated, if possible, by evidence from soil borings. The possibility that *in situ* Native American resources may exist in this part of Manhattan necessitates further investigation of subsurface conditions

Mitigation recommendations include completing a series of continuous tube soil borings to establish the depth of fill throughout the project site, and to search for the distinctive presence of markers typically associated with a prehistoric presence. The absence of definitive signs of a Native American presence, and/or the presence of a habitable living surface buried beneath the fill would suggest that no prehistoric potential remains.

Continuous tube soil borings, three inches in diameter, should be completed within the East 54th and East 55th Street roadbeds, excluding East 54th Street west of Park Avenue, where the new Ventilation Plants would be installed, and where the existing Ventilation Plant on East 53rd Street will be expanded in length. Approximately one boring should be completed for each 90 feet of linear impact. At least one boring should also be completed in East 53rd and 55th Streets where the new tunnel is planned. If refusals are encountered, borings should be offset from these locations by no more than 10' if

possible. Borings should extend beneath all fill layers and either down to bedrock or to the maximum depth of anticipated impacts, whichever is reached first. This would allow archaeologists to better assess subsurface conditions.

If soil borings indicate potential sensitivity, mitigation would include reevaluating potential impacts. The locations of potential prehistoric resources, if any are indicated, should be compared to proposed disturbance areas to assess if this resource type would be impacted.

If avoidance of potential resources, if any are indicated, is possible, then this is considered a viable mitigation alternative. However, if the avoidance of impact to potentially National Register eligible archaeological resources is not possible, the appropriate mitigation procedures could take the form of construction monitoring, or exploratory excavations, or finally, data recovery.

2.6 Figures and Photographs

1. Project Site Location

2. Project Site Boundaries

3. Grand Central Terminal Suburban Lower Level

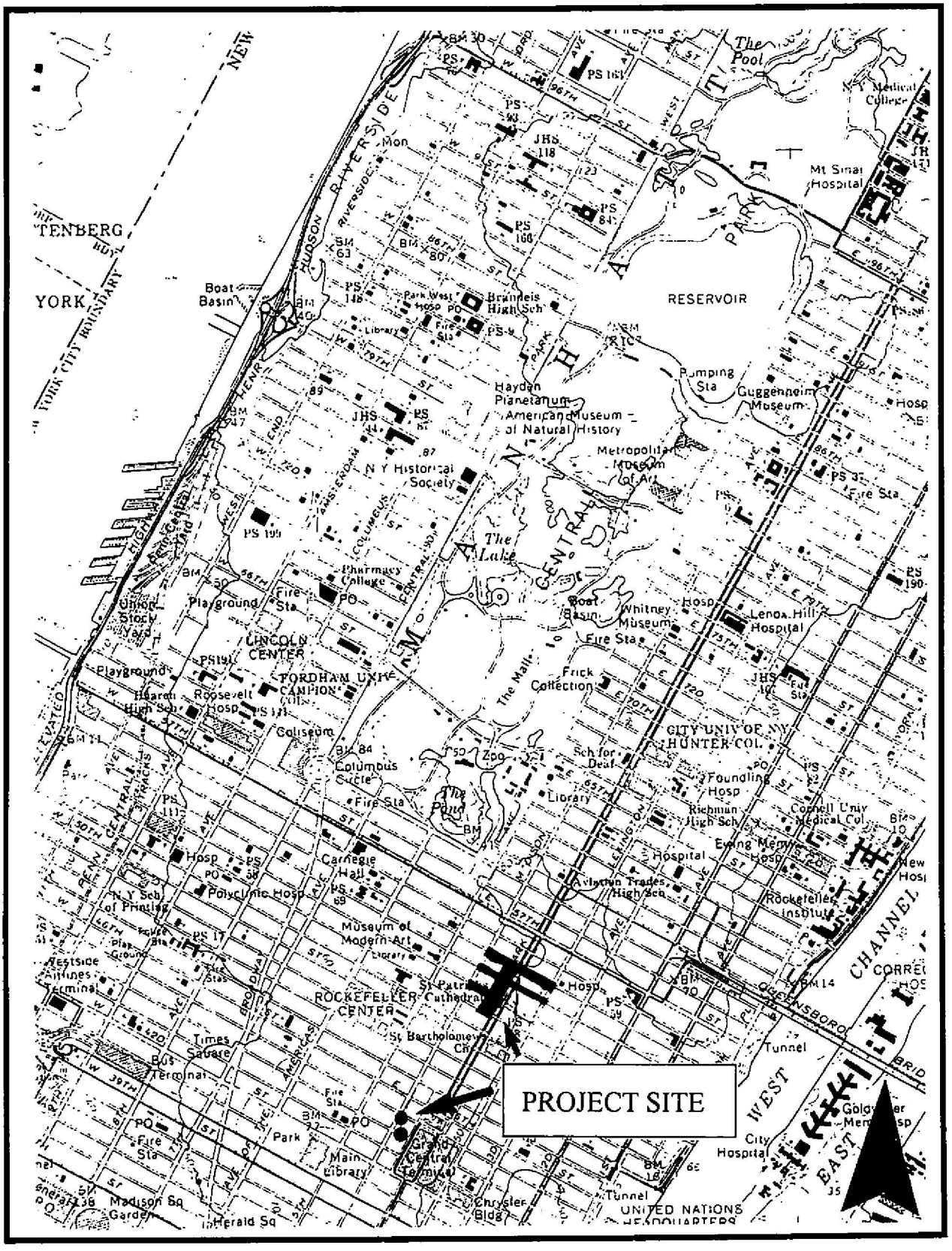
4. Excavations for Grand Central Terminal Railroad Yard

5. *Map of the City of New York from the Battery to 80th Street, Showing the Original Topography of Manhattan Island.* Viele, 1859

6. *Insurance Maps.* Sanborn, 1892

7. *Insurance Maps.* Sanborn, 1951

8. *Insurance Maps.* Sanborn, 1997


PROJECT SITE
RESERVOIR
The Pool
The Lake
The Mall
The Pond
Boat Basin
Boat Basin
Hayden Planetarium
American Museum of Natural History
Metropolitan Museum of Art
Guggenheim Museum
Pumping Sta
N Y Historical Society
Pharmacy College
LINCOLN CENTER
FORDHAM UNIV
Playground
Playground
Union Stock Yard
Roosevelt Hosp
Coliseum
Columbus Circle
Zoo
Frick Collection
Whitney Museum
Lenox Hill Hospital
Mt Sinai Hospital
Medical College
Brandeis High Sch
Park West Hosp
JHS 118
JHS 44
JHS 167
PS 199
PS 161
PS 93
PS 84
PS 165
PS 145
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PS 111
PS 190
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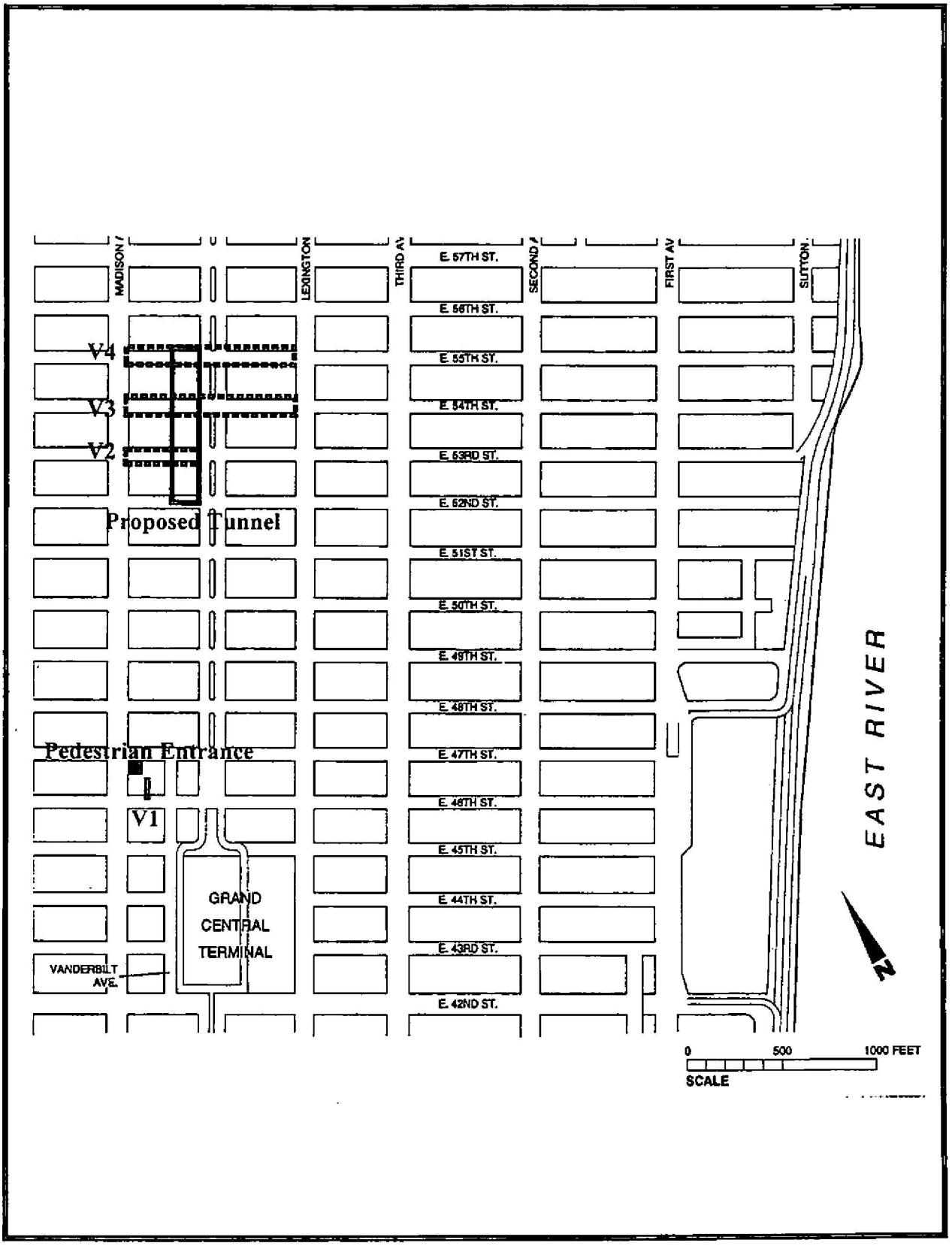


FIGURE 2
Project Site Boundaries

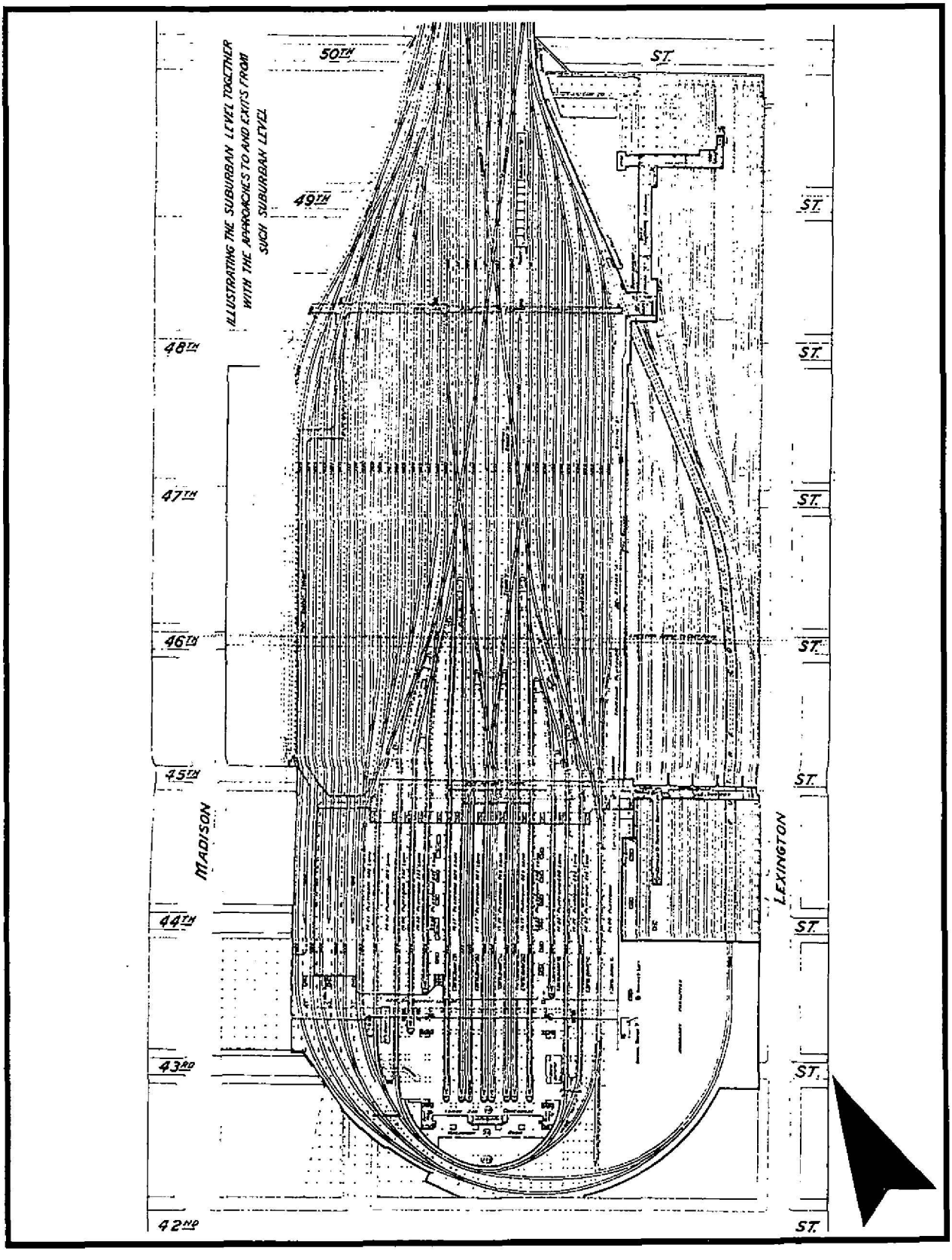
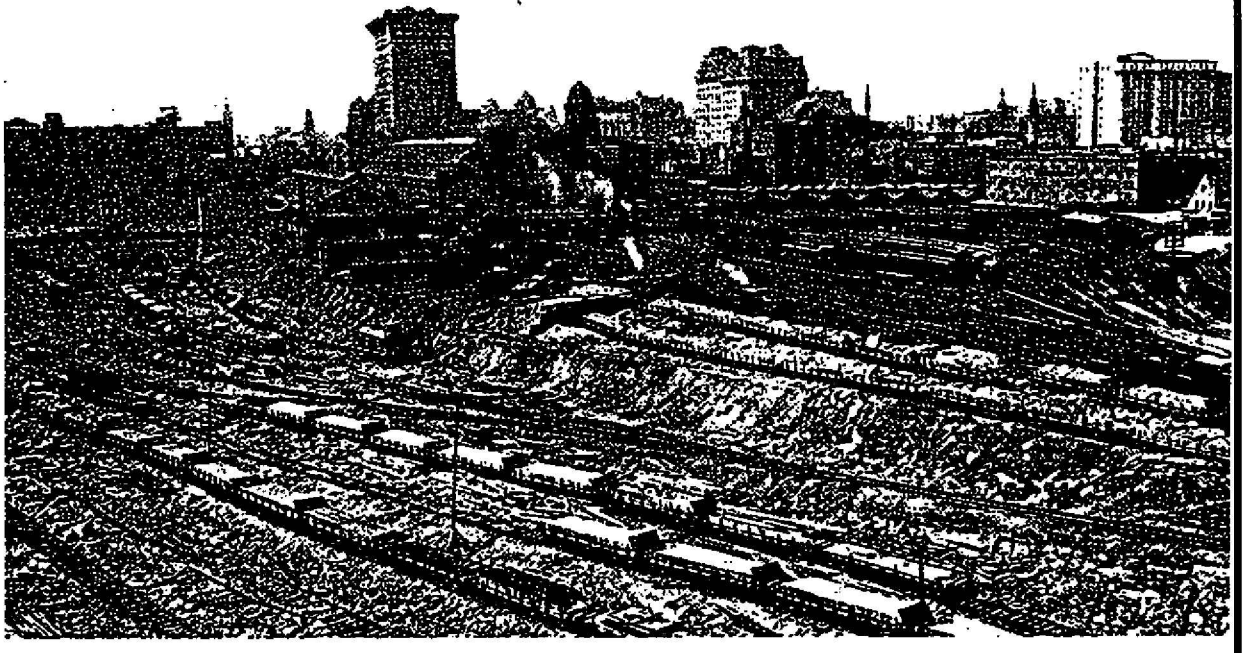


FIGURE 3
Grand Central Terminal Suburban Lower Level



This photograph, reproduced from the September 16, 1905, issue of *Scientific American*, shows excavation work in progress on what chief engineer Wilgus termed "Bite No. 1." Most of the real estate involved in this initial phase of the work was newly acquired, and the old station and its yard had not yet been disturbed. Only some engine storage tracks and milk car platforms, which previously extended through the area where the steam shovel is at work, had given way to the construction forces.

FIGURE 4
Excavations for Grand Central Terminal Railroad Yard

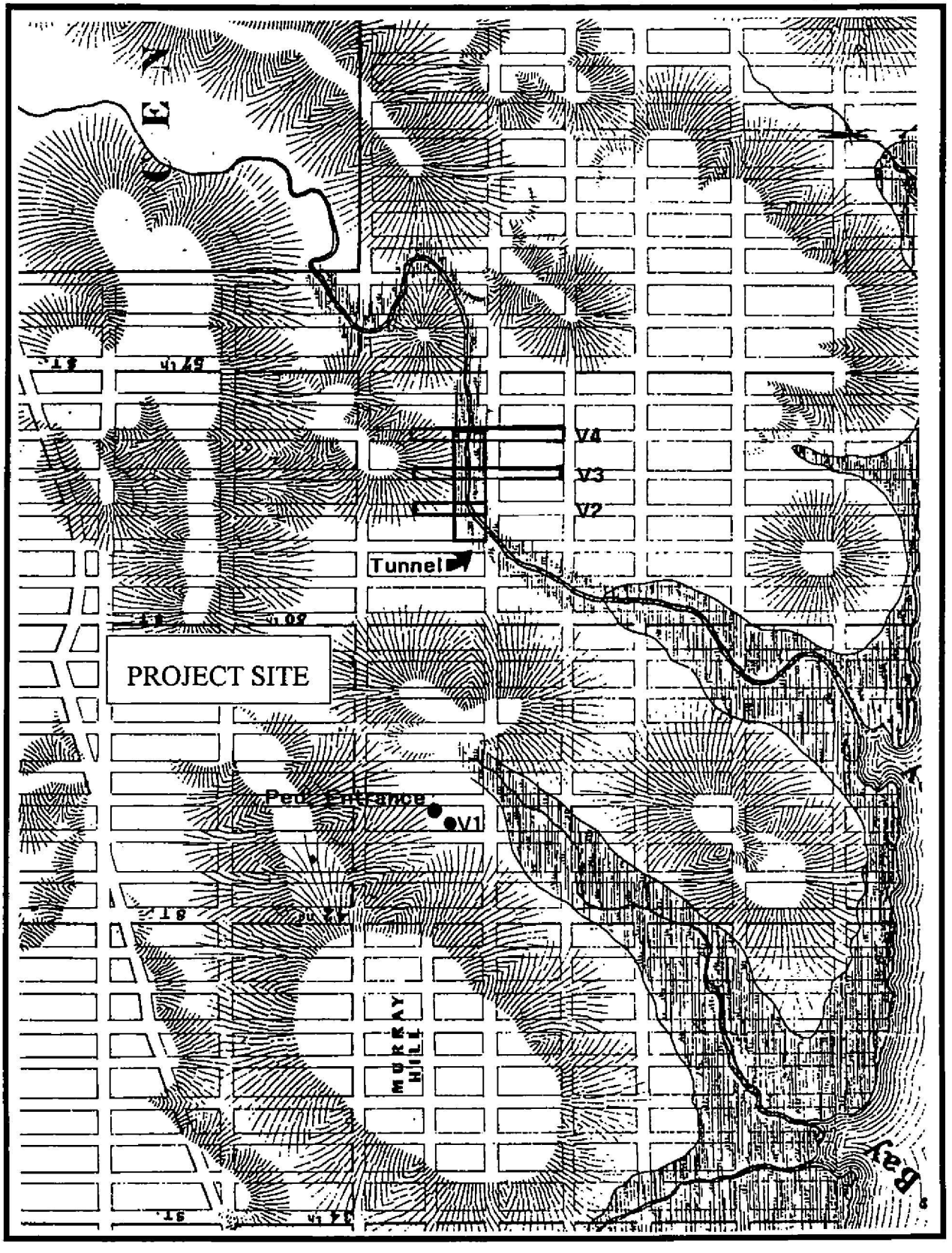


FIGURE 5

Map of the City of New York from the Battery to 80th Street, Showing the Original Topography of Manhattan Island. Viele, 1859.

No Scale.

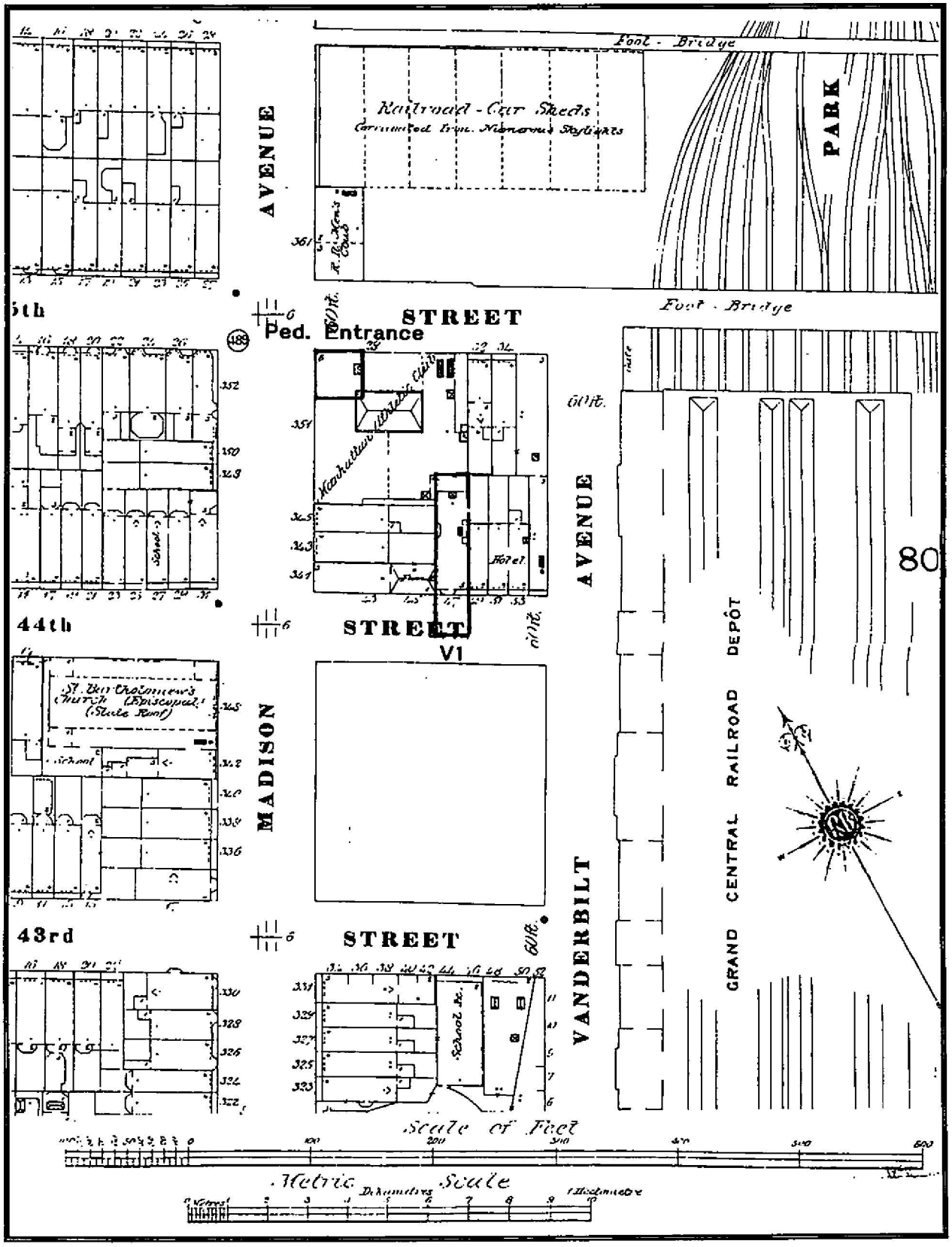


FIGURE 6a
Insurance Maps. Sanborn, 1892.

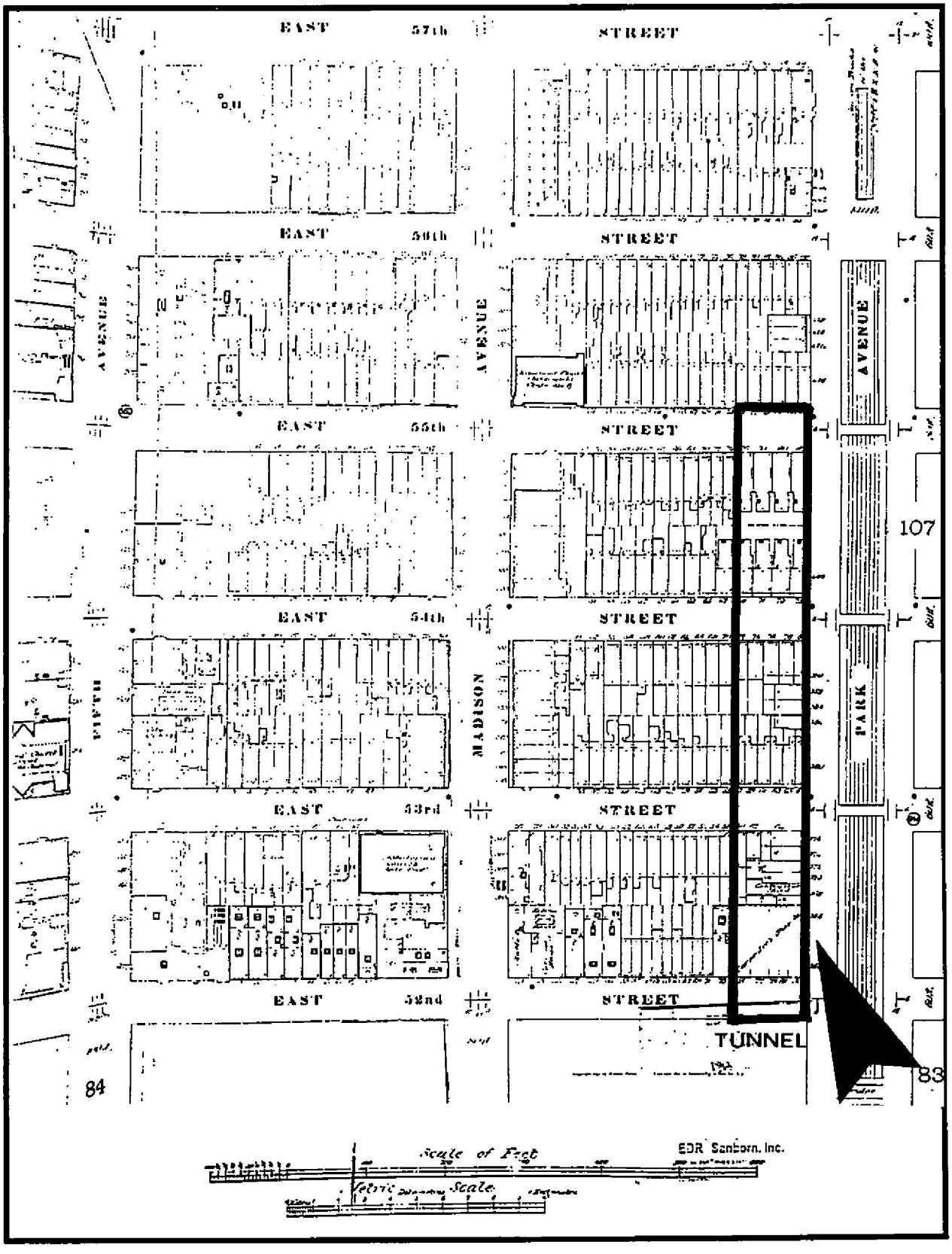


FIGURE 6b
Insurance Maps. Sanborn, 1892.

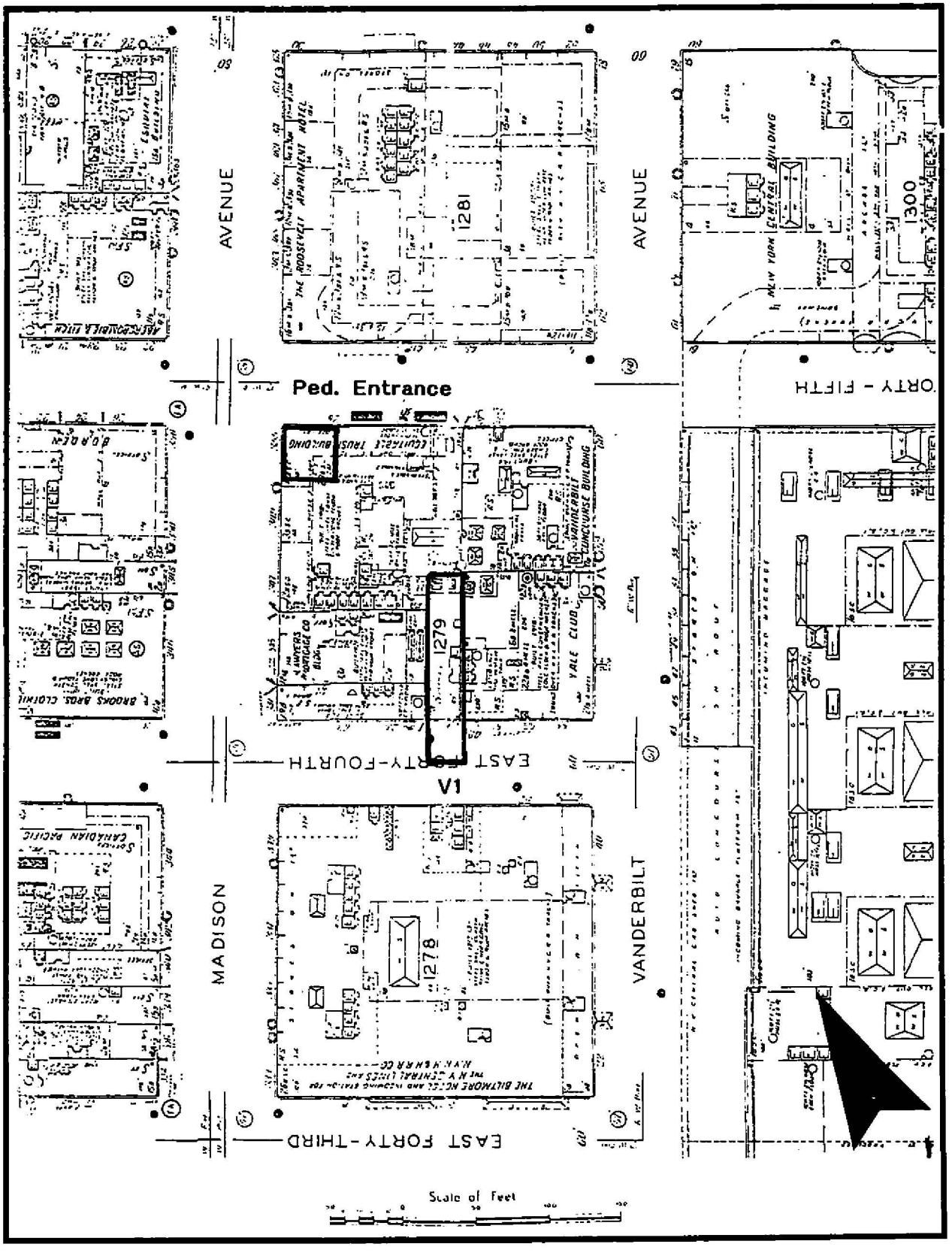


FIGURE 7a
Insurance Maps. Sanborn, 1951.

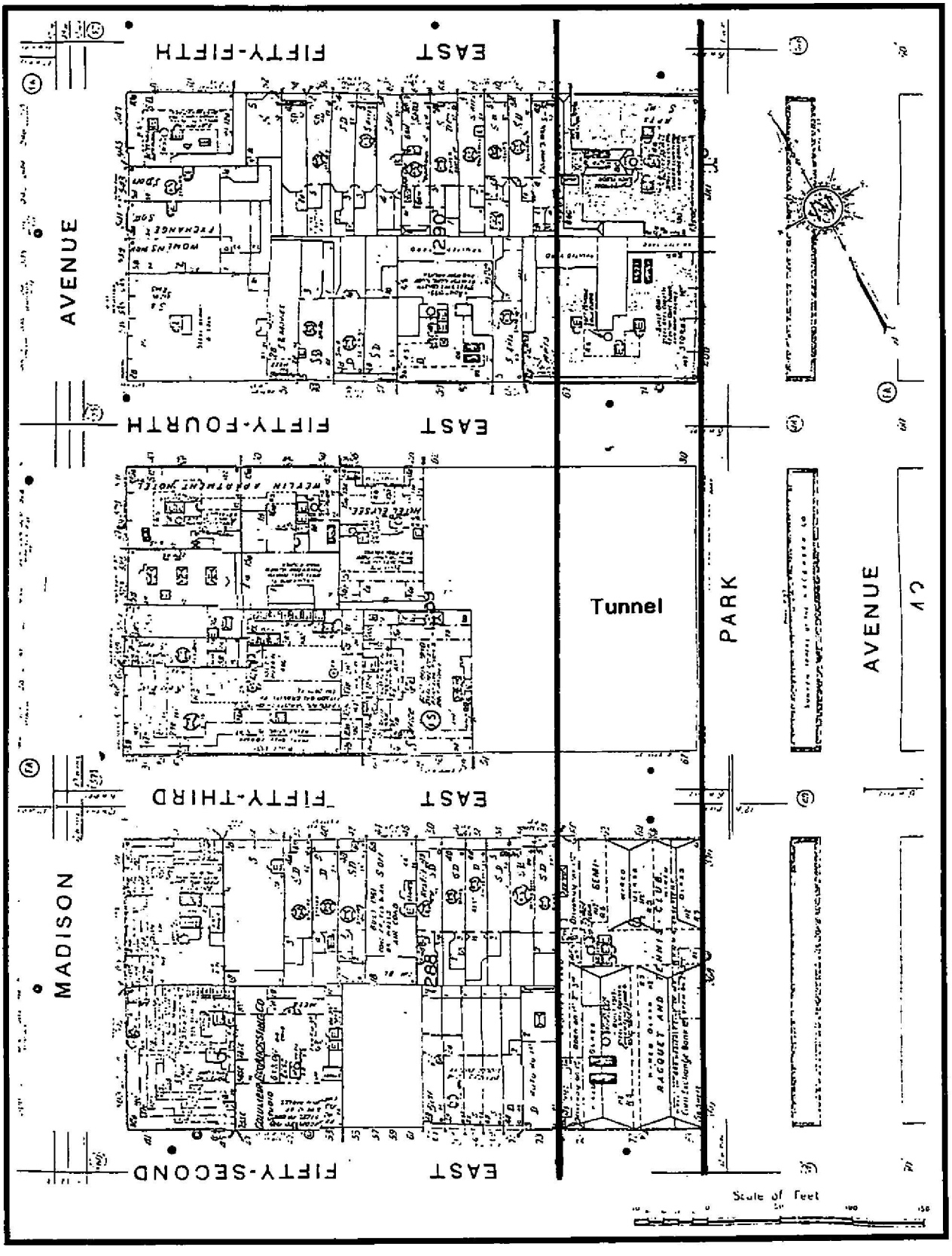


FIGURE 7b

Insurance Maps. Sanborn, 1951.

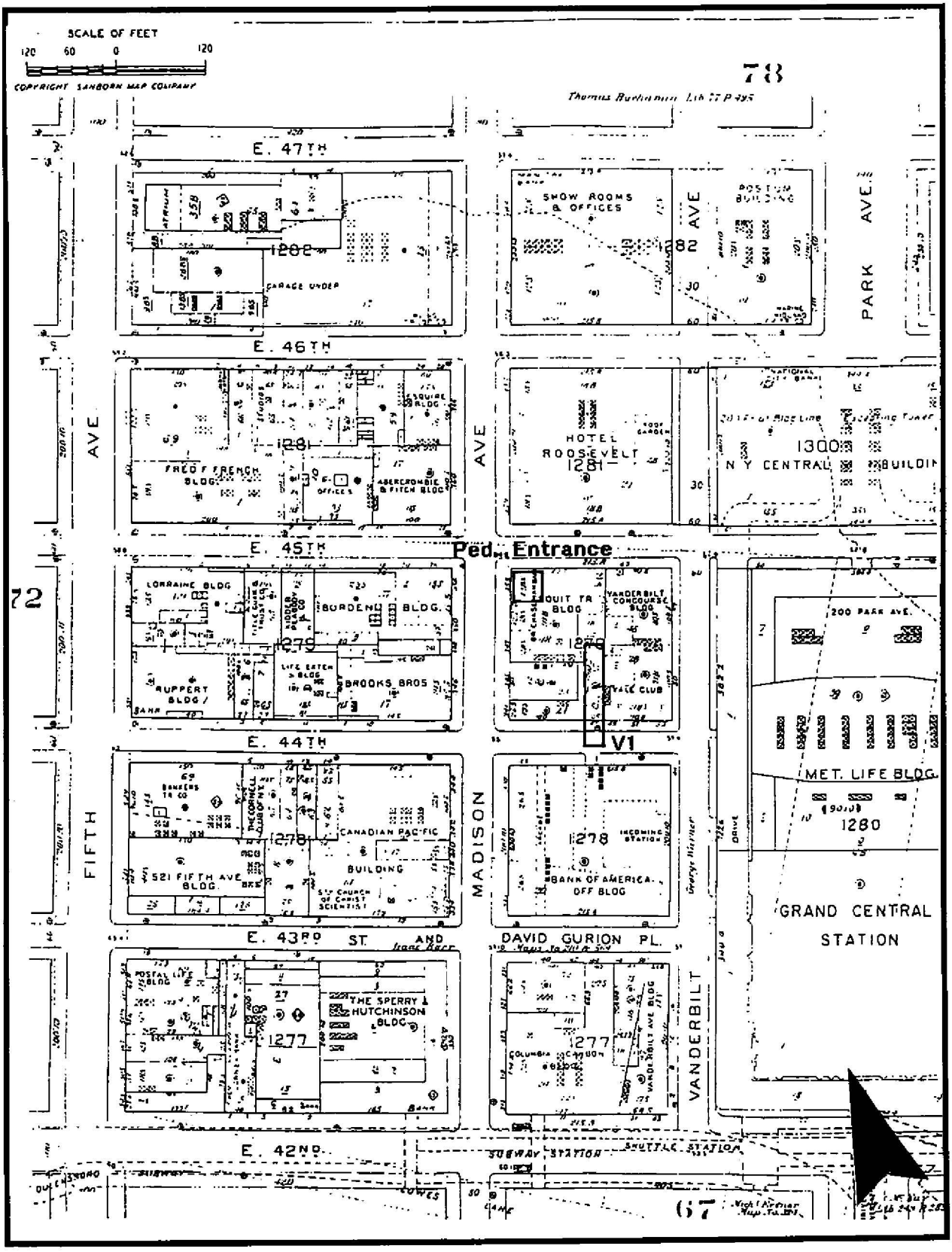


FIGURE 8a

Insurance Maps. Sanborn, 1997.

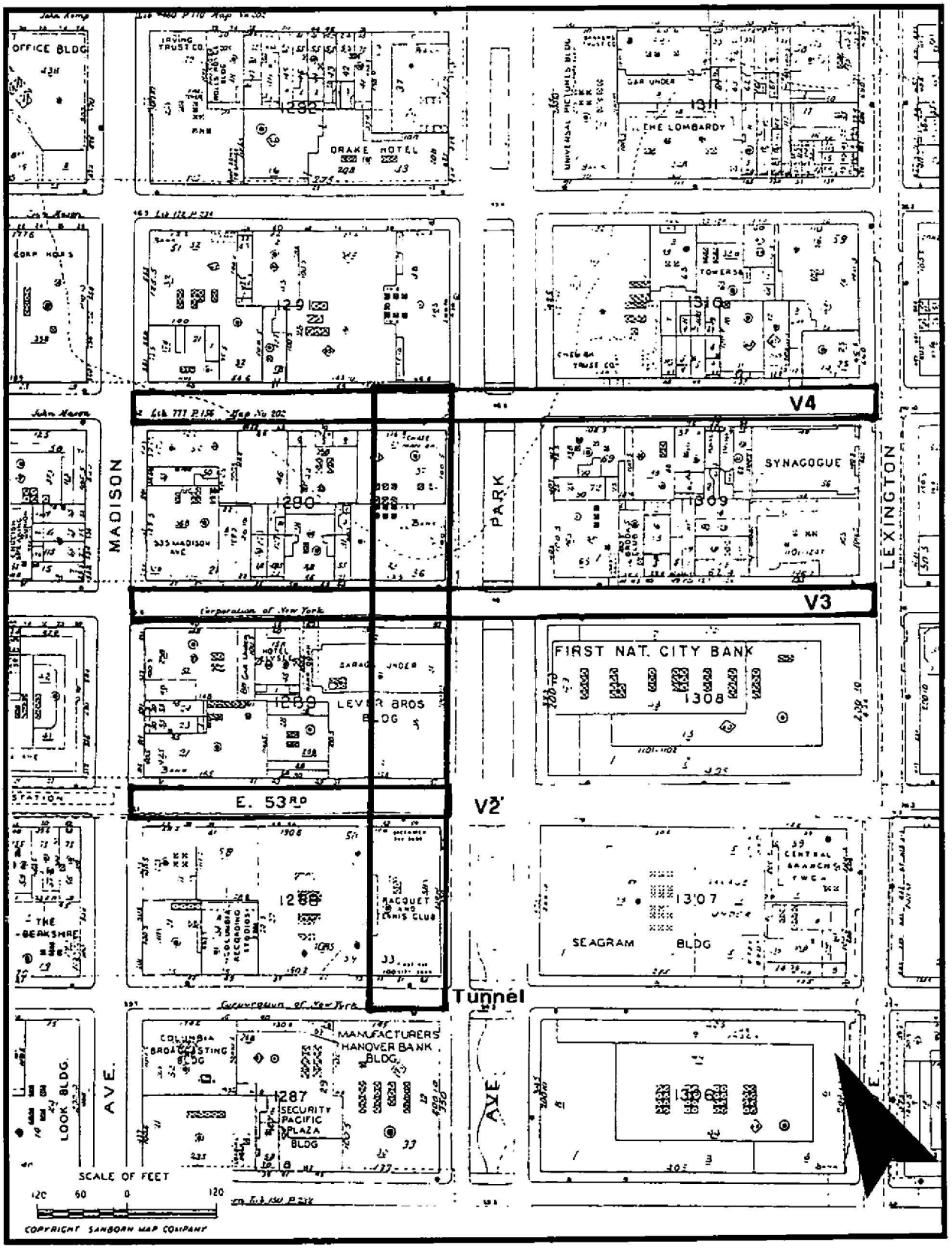
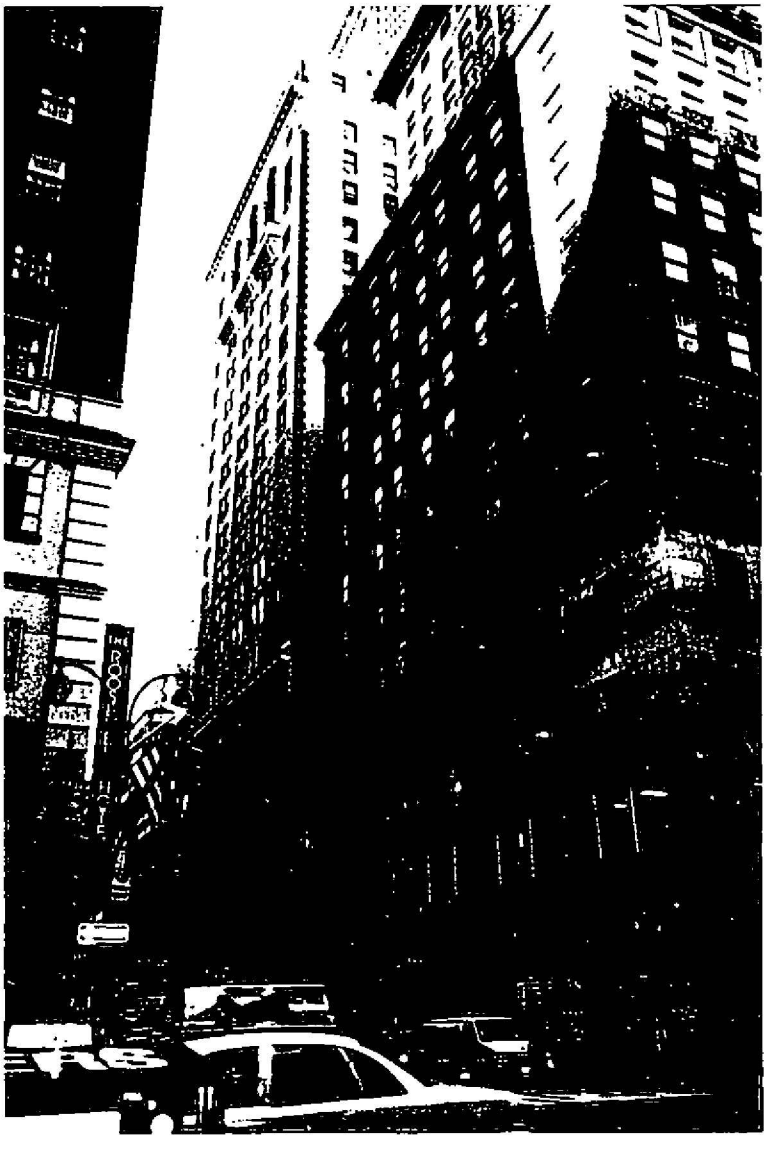


FIGURE 8b

Insurance Maps. Sanborn, 1997.

Photograph 1: Building at 47 East 44th Street, Block 1279, Lot 25. North side of East 44th Street between Madison and Vanderbilt Avenues. Facing northeast.



Photograph 2: Building at 347 Madison Avenue, Block 1279, Lot 48. Facing southeast towards south side of East 45th Street at Madison Avenue.

2.7 Appendix

2.7.1 Block Histories

The project site was divided up into six separate APEs, each defined by proposed construction activities and impact location. A cartographic review was completed for each of the following APEs:

1. Tunnel beneath buildings and streets west of Park Avenue between 52nd and 55th Streets.

2. A proposed shaft for a pedestrian entrance at 347 Madison Avenue.

3. Ventilation Plant (V1), on Block 1279 and the adjacent 44th Street roadbed.

4. Ventilation Plant (V2) at East 53rd Street between Park and Madison Avenues, minus the Park Avenue roadbed.

5. Ventilation Plant (V3) at East 54th Street between Lexington and Madison Avenues, minus the Park Avenue roadbed; and

6. Ventilation Plant (V4) at East 55th Street between Lexington and Madison Avenues, minus the Park Avenue roadbed.

The following chronological history of development within each of these APEs is based on a review of maps and atlases dating from the late 18th century through 1999.

1. TUNNEL EAST 52ND TO 55TH STREETS, WEST OF PARK AVENUE.

This APE extends approximately 150 feet west of Park Avenue between East 52nd and East 55th Streets, including the street beds of East 52nd, East 53rd, and East 54th Streets, and small sections of city blocks 1288, 1289, and 1290 which fall between these cross streets respectively (Sanborn1997, Figure 8).

Late 18th and early 19th century maps depict this area as undeveloped woodland, interspersed with a series of small streams which drained east toward the East River (British Headquarters Map 1782; Randel 1811; Randel 1827). Most of the development in the vicinity was centered around Turtle Bay, south and east of the project site.

By 1835 the railroad had been constructed on Park, then Fourth, Avenue and the project corridor between East 52nd and 55th Streets was depicted as low-lying land adjacent to the tracks (Colton 1836). An 1851 map of the area showed that the topography virtually unchanged from the way it appeared in 1836 (Dripps 1851). Although development occurred nearby, none took place within the project boundaries.

An 1859 topographic map showed the project site as directly over a stream with surrounding marsh land (Viele 1859; Figure 5). A later topographic map, also prepared by Viele, showed the project corridor as undulating land, rising to a series of peaks west of the project site. The stream was depicted as running diagonally from the intersection of East 5th Street and Fifth Avenue, southeast to East 54th Street and Park Avenue, then veering northeast (Viele 1864).

By 1857 East 52nd, 53rd, 54th, and 55th Streets were laid out as they are today (Perris 1857-60). While Lexington Avenue was clearly laid out, Madison had not yet been cut through the city blocks bounded by Park (Fourth) and Fifth Avenues. Many of the blocks in the vicinity of the project site were lotted and developed with residential and commercial structures. Within the project site, Block 1288 had been lotted. One structure stood fronting East 52nd Street, and four stood in the northeast corner of the block fronting East 53rd Street within the project site (Perris 1857-60). Both Blocks 1289 and 1290 to the north were vacant.

Between 1857 and 1867 the building on Block 1288 fronting East 52nd Street was gone, but the rest of the block remained unchanged. Blocks 1289 and 1290 were still vacant (Dripps 1867).

In 1879, Block 1288 appeared the same, but both Blocks 1289 and 1290 had been divided into uniformly sized city lots, each measuring 25 feet by 100 feet, and had been developed. Although specific structures were not portrayed on this map, the fronts of all of the project lots, except those at the northeast corner of Block 1290, were shaded indicating that they had been developed (Bromley 1879).

The 1885 atlas clearly depicted individual structures within each of the project blocks. On Block 1288, formerly block 437, there were now buildings at the northeast corner of the block within the project site. Block 1289, formerly block 438, possessed ten structures covering most of the project site. Block 1290, formerly block 439, contained eight buildings which covered most of the project site. All of these appeared to be small multi-family dwellings, with vacant back-yards (Robinson 1885). At this time elevations at Park Avenue and East 52nd Street were 54.3 feet above sea level (ASL), at East 53rd Street 49.5 feet ASL, at East 54th Street 18 feet ASL, and at East 55th Street 46.6 feet ASL (Ibid.).

By 1892 a large one-story carpenter shop had been built at the corner of East 52nd Street and Park Avenue on Block 1288 (Sanborn 1892, Figure 6). The shop took up the southern half of the project site, where it was formerly vacant, but to its north were numerous small one-story structures and a narrow construction yard. These buildings appeared similar to their 1885 configuration (Robinson 1885; Sanborn 1892, Figure 6). Both Blocks 1289 and 1290 were unchanged from their 1885 configuration (Ibid.).

By 1907 the carpenter shop on Block 1288 had been modified and taken over by an Electric Garage company. On the north half of the block the small one story structures

were occupied by offices, stores, and dwellings. The construction yard was still in use, only now it was renamed "contractors yard" (Sanborn 1907). The configurations of structures on Blocks 1289 and 1890 were unchanged from the way they appeared in 1885. The buildings on Block 1289 were mostly four and five-story dwellings, each with basements and storefronts at grade. The eight buildings on Block 1290 were all five-story dwellings with basements, and no stores (Ibid.). A narrow alley ran between the structures fronting East 54th Street and those fronting East 55th Street.

In conjunction with the construction of the new Grand Central Terminal and subsurface railroad yards, the buildings fronting Park Avenue on Block 1288 were razed. While the westernmost limit of the rail yard only extends about 50 feet west into the block, the entire project site (extending about 200 feet west into the block) was cleared for tunnel construction (Middleton 1977). In 1917 a large building was constructed over the entire project site at the eastern end of Block 1288. The five-story building with a basement, was of steel shell construction with cinder and concrete floors (Sanborn 1926). By 1951 this building was occupied by the Racquet and Tennis Club. The main level fronting Park Avenue was occupied by the Corn Exchange Bank (Sanborn 1951, Figure 7). This building is extant and in 1997 was occupied by two banks and the Racquet and Tennis Club (Sanborn 1997, Figure 8).

Buildings on Block 1289 within the project site were also leveled as part of the Grand Central Terminal railroad yard construction during the early 20th century. The project site remained vacant for some years (Sanborn 1951, Figure 7), and by 1976 was host to the two-story Lever Brothers Building, with a subterranean garage built beneath the northern half of the structure (Sanborn 1976). This extant structure has not changed over the last twenty years (Sanborn 1986, 1997, Figure 8).

Block 1290 experienced a similar history as Blocks 1288 and 1289. The buildings on this block were razed in the early 20th century, and in 1918 were replaced by two large apartment buildings of steel construction with concrete floors (Sanborn 1926). Each of the structures covered almost the entire block, although a vaulted yard - entered from Park Avenue - was left between them. The lower-levels were occupied by a series of stores. No basements were indicated for either building, but a sidewalk elevator servicing the northern apartment building suggests that there must have been one (Ibid.). The structures appeared unchanged in 1951(Sanborn 1951, Figure 7).

By 1976 the apartment buildings had either been enlarged or replaced by two 21-story buildings for the Chase Manhattan Bank (Sanborn 1976). No vaulted yard remained between the structures, which covered the entire project site. Although no basements were indicated on the map, subsurface excavations and underpinnings necessary to sustain the weight and structural integrity of such massive structures surely necessitated the creation of an extensive underground foundation. The buildings are extant (Sanborn 1997, Figure 8).

2. PEDESTRIAN ENTRANCE AT 347 MADISON AVENUE

This APE encompasses Lot 48, Block 1279, and a section of the East 45th Street roadbed near Madison Avenue.

Late 18th and early 19th century maps depict the project site as an undeveloped wooded hill, about two blocks west of a small stream which drained east toward the East River (British Headquarters Map 1782; Randel 1811; Randel 1827). Most of the development in the vicinity was centered around Turtle Bay, south and east of the project site.

In 1836 the project site was portrayed as an undeveloped wooded tract situated about a block west of a north-south flowing stream (Colton 1836). At that time there was no development either within or in the immediate vicinity of the project site, but about three blocks to the south, south of 42nd Street, there were extensive agricultural lands (Ibid.).

An 1859 topographic map portrayed the project site at the top of a large knoll, and also depicted a stream approximately one block to the east (Viele 1859; Figure 5). The second topographic map prepared by Viele some years later echoed this configuration (Viele 1864). In some cases, these two Viele maps were not in agreement, but for this APE site they were.

By 1867 Madison Avenue had been laid out, but the project site and the remainder of the city block were vacant (Dripps 1867). By 1879 Vanderbilt Avenue had been created directly east of the project site, and Block 1279 had been divided into building lots. The Church of the Disciples, which encompassed the northwestern one-quarter of the block, covered the entire project site (Bromley 1879). The structure appeared unchanged in 1885, although it was then occupied by the Madison Avenue Congregational Church (Robinson 1885). At that time, the elevation of the street bed at its intersection with Fifth Avenue was 58.8 feet above sea level (ASL).

Between 1885 and 1890, the church had removed and replaced by the Manhattan Athletic Club, a six-story structure (Sanborn 1890). By this time, a six inch water pipe had been laid beneath East 45th Street. In 1910 the athletic building was depicted as a seven-story building with a basement, and was occupied by the Tiffany Studio (Sanborn 1910). After this time, the lot may have been cleared in conjunction with the construction of Grand Central Terminal and the adjacent railroad years, which were built directly east of the site. Also east of the project site, a retaining wall was built at the westernmost limit of the railyard.

The seven-story building was replaced in 1918 by a 20-story building with a basement, of steel shed construction with cinder and concrete floors (Sanborn 1929). By 1929 it was occupied by the Equitable Trust, who maintained their offices there (Sanborn 1929). The structure remained virtually unchanged throughout the 20th century and is currently standing (Sanborn 1951, 1976, 1986, 1997, Figures 7, 8).

3. VENTILATION PLANT (V1), ON BLOCK 1279 AND THE ADJACENT 44TH STREET ROADBED

This APE encompasses lot 25, Block 1279, and a section of the East 44th Street roadbed about half way between Vanderbilt and Madison Avenues.

Late 18th and early 19th century maps depict the project site as an undeveloped wooded hill, about two blocks west of a small stream which drained east toward the East River (British Headquarters Map 1782; Randel 1811; Randel 1827). Most of the development in the vicinity was centered around Turtle Bay, south and east of the project site.

In 1836 the project site was portrayed as an undeveloped wooded tract situated about a block west of a north-south flowing stream (Colton 1836). At that time there was no development either within or in the immediate vicinity of the project site, but about three blocks to the south, south of 42nd Street, there were extensive agricultural lands (Ibid.).

An 1859 topographic map portrayed the project site at the top of a large knoll, and also depicted a stream approximately one block to the east (Viele 1859; Figure 5). The second topographic map prepared by Viele some years later echoed this configuration (Viele 1864). In some cases, these two Viele maps were not in agreement, but for this APE site they were.

By 1867 Madison Avenue had been laid out, but the project site and the remainder of the city block were vacant (Dripps 1867). By 1879 Vanderbilt Avenue had been created directly east of the project site, and Block 1279 had been divided into building lots. The project site, which remained vacant, encompassed a lot measuring about 25 feet wide by 100 feet deep (Bromley 1879). Between 1879 and 1885 a small wooden building had been built in the center of the lot (Robinson 1885). Elevations at East 44th Street and the crossing avenues adjacent to the project site were not provided on the map, but at the intersection of East 44th Street and Fifth Avenue the surface elevation was 63' above sea level (ASL).

In 1887 small frame structure on the project lot had been removed and replaced by a five-story brick building with a basement, which covered virtually the entire lot (Sanborn 1890). A small section of the northern end of the lot was vacant, and there were window wells built into the east and west sides of the building. A six inch water pipe had been laid beneath East 44th Street, and Grand Central Railroad Depot stood east of Vanderbilt Avenue. In 1910 the five-story building was labeled as a dwelling, possibly a tenement, and a small one-story addition had been built at its northwestern end (Sanborn 1910).

By 1929 the building had been enlarged to cover the entire lot (Sanborn 1929). By this time the building was occupied by a store and offices (Ibid.). The structure's footprint remained unchanged through the remainder of the 20th century, although there were numerous changes to its interior and use (Sanborn 1951, 1976, 1986, 1997, Figures 7, 8).

The current elevation at the intersection of East 44th Street and Madison Avenue is 55 feet ASL, and at Vanderbilt Avenue it is 57 feet ASL.

4. VENTILATION PLANT (V2) AT EAST 53RD STREET BETWEEN PARK AND MADISON AVENUES

Late 18th and early 19th century maps depict the project site as undeveloped woodland, interspersed with a series of small streams which drained east toward the East River (British Headquarters Map 1782; Randel 1811; Randel 1827). Most of the development in the vicinity was centered around Turtle Bay, south and east of the project site.

The 1836 Colton map portrayed the topography of East 53rd Street between Madison and Lexington Avenues as irregular. There appeared to be a knoll rising near Madison Avenue, and another situated where Lexington was eventually cut through. About a block to the east, a small stream channel ran below the knoll (Colton 1836). The project site remained unimproved woodland.

The mid-19th century topography of the site appeared unchanged from its 1836 configuration (Dripps 1851). While some of the surrounding city blocks were starting to be developed, no structures appeared within the project site boundaries.

In 1857 East 53rd Street was laid out as it is today and no development protruded into the street bed at that time (Perris 1857-60). While Lexington Avenue was clearly laid out, Madison had not yet been cut through the city blocks spanning between Park (Fourth) and Fifth Avenues. Many of the blocks in the vicinity of the project site were lotted and developed with residential and commercial structures, but none were built within the street bed.

An 1859 topographic map showed a knoll near the intersection of Fifth Avenue and East 53rd Street, sloping downward to the east and terminating at a north-south flowing stream. The stream was situated just to the west of Park Avenue, and land directly surrounding it was depicted as wet marsh (Viele 1859; Figure 5). A later topographic map, also prepared by Viele, showed East 53rd Street as undulating land, rising to the peak of a knoll situated close to Madison Avenue and another near Lexington Avenue. Between these two knolls the land dipped down where Park Avenue lay, but the stream was clearly at least one block to the north (Viele 1864).

In 1867 East 53rd Street appeared to have been laid out and presumably grading had leveled the irregular surface observed on earlier maps to allow for the street crossing (Dripps 1867). By this time the railroad had been laid on Park (then Fourth) Avenue. The Steinway Piano Factory had been built south of 53rd Street between Park and Lexington Avenues.

In 1879 the project site appeared unchanged, except that a street car line had been established on Madison Avenue (Bromley 1879). Manhole covers were depicted on the

map across 53rd Street, suggesting that water and probably sewer lines had been installed by this time.

In 1885 elevations were provided on 53rd Street at the intersections of Third, Fourth, and Fifth Avenues, but not at Lexington and Madison Avenues. Elevations rose from 26.9' above sea level (ASL) at Third, to 49.5' at Park, and 59.10' at Fifth Avenue. The project site appeared to be sloping upward to the east at a grade of about 10' per block or every 900' (Robinson 1885). Although pre-road regulating elevations were not found, clearly the undulating surface observed on earlier topographic maps had been graded to provide for this gentle slope.

Twentieth century Sanborn maps show that the 53rd Street roadbed, including the elevations at cross streets, remained virtually unchanged over the last century with few exceptions (Sanborn 1892, 1907, 1910, 1926, 1929, 1976, 1997, Figures 6-8). By 1907 there were clearly two utility pipes laid in East 53rd Street, one 6" in diameter, the other 12". And by 1932 the IND subway line had been created beneath East 53rd Street. This was built via deep tunnel boring, far beneath the surface (ca.60+ feet), and beneath the existing Park Avenue railroad tunnel.

5. VENTILATION PLANT (V3) AT EAST 54TH STREET BETWEEN LEXINGTON AND MADISON AVENUES

Late 18th and early 19th century maps depict the project site as undeveloped woodland, interspersed with a series of small streams which drained east toward the East River (British Headquarters Map 1782; Randel 1811; Randel 1827). Most of the development in the vicinity was centered around Turtle Bay, south and east of the project site.

In 1836, where East 54th Street was laid out near Madison Avenue the topography was sloping downward from east to west. Heading east towards Lexington Avenue, the street was laid out across the southern slope of a knoll which rose just to the north (Colton 1836). A stream, originating to the north, ran about a block east of Lexington Avenue. No structures or development had occurred in proximity to the project site by this time.

An 1851 map of the area showed that the topography at East 54th Street was virtually unchanged from the way it appeared in 1836 (Dripps 1851). Although development occurred nearby, none took place within the project boundaries.

In 1857 East 54th Street was laid out as it is today (Perris 1857-60). While Lexington Avenue was clearly laid out, Madison had not yet been cut through the city blocks bounded by Park (Fourth) and Fifth Avenues. Many of the blocks in the vicinity of the project site were lotted and developed with residential and commercial structures, although none extended into the street bed.

An 1859 topographic map showed a knoll near the intersection of Fifth Avenue and East 54th Street, sloping downward to the east and terminating at a north-south flowing

stream. The stream was situated just to the west of Park Avenue, and land directly surrounding it was depicted as wet marsh (Viele 1859; Figure 5). A later topographic map, also prepared by Viele, showed East 54th Street as undulating land, rising to the peak of a knoll situated close to Madison Avenue and another smaller one near Lexington Avenue. Between these two knolls the land dipped down where Park Avenue lay, and the stream formed a U, with its base at 54th Street (Viele 1864).

An 1867 map portrayed this cross street as cut through and surrounding blocks partially developed (Dripps 1867). Grading was probably necessary to level the undulations in the topography observed on earlier maps.

By 1879, developed had occurred on many of the surrounding city blocks, but the 54th Street roadbed was vacant, except for the presence of water and possibly sewer lines. By this time a street car line had been established on Madison Avenue.

In 1885 elevations were provided on 54th Street at the intersections of Third, Fourth, and Fifth Avenues, but not at Lexington and Madison Avenues. Elevations rose from 34.2' above sea level (ASL) at Third, to 48' at Park, and 52' at Fifth Avenue. The project site appeared to be sloping upward to the east, with a steeper grade between Third and Park Avenues, and a gentler grade between Park and Fifth Avenues (Robinson 1885). Although pre-road regulating elevations were not found, clearly the undulating surface observed on earlier topographic maps had been graded to provide for this slope.

Twentieth century Sanborn maps show that the 54th Street roadbed, including the elevations at cross streets, remained virtually unchanged over the last century (Sanborn 1892, 1907, 1910, 1926, 1929, 1976, 1997, Figures 6-8). By 1907 there was a 6" water pipe laid in East 54th Street.

6. VENTILATION PLANT (V4) AT EAST 55TH STREET BETWEEN LEXINGTON AND MADISON AVENUES

Late 18th and early 19th century maps depict the project site as undeveloped woodland, interspersed with a series of small streams which drained east toward the East River (British Headquarters Map 1782; Randel 1811; Randel 1827). Most of the development in the vicinity was centered around Turtle Bay, south and east of the project site.

In 1836, East 55th Street near Madison Avenue was sloping downward from east to west. Heading east toward Lexington Avenue, it ran across the northern decline of a knoll which rose just to the south (Colton 1836). A stream ran about a block east of Lexington Avenue. There was no development or signs of obvious improvements to the land at that time.

The topography of East 55th Street appeared virtually the same in 1851 (Dripps 1851). By this time some topographic changes had occurred in the area as more of the streets were actually laid out. The stream which was formerly northeast of the study area was

not portrayed on the 1851 map, and was probably culverted in conjunction with street improvements.

By1857 East 55th Street was laid out as it is today. No development protruded into the street bed at that time (Perris 1857-60). While Lexington Avenue was clearly laid out, Madison had not yet actually been cut through the city blocks yet. Many of the blocks in the vicinity of the project site were lotted and developed with residential and commercial structures.

An 1859 topographic map showed a knoll near the intersection of Fifth Avenue and East 53rd Street, sloping downward to the east and terminating at a north-south flowing stream. The stream was situated just to the west of Park Avenue, and land directly surrounding it was depicted as wet marsh (Viele 1859; Figure 5). A later topographic map, also prepared by Viele, showed East 55th Street between Madison and Lexington Avenues as traversing a stream which snaked twice through the project site, forming a U. Knolls rose up on either side of this stream, appeared to be higher west of Park Avenue, and lower east of it (Viele 1864).

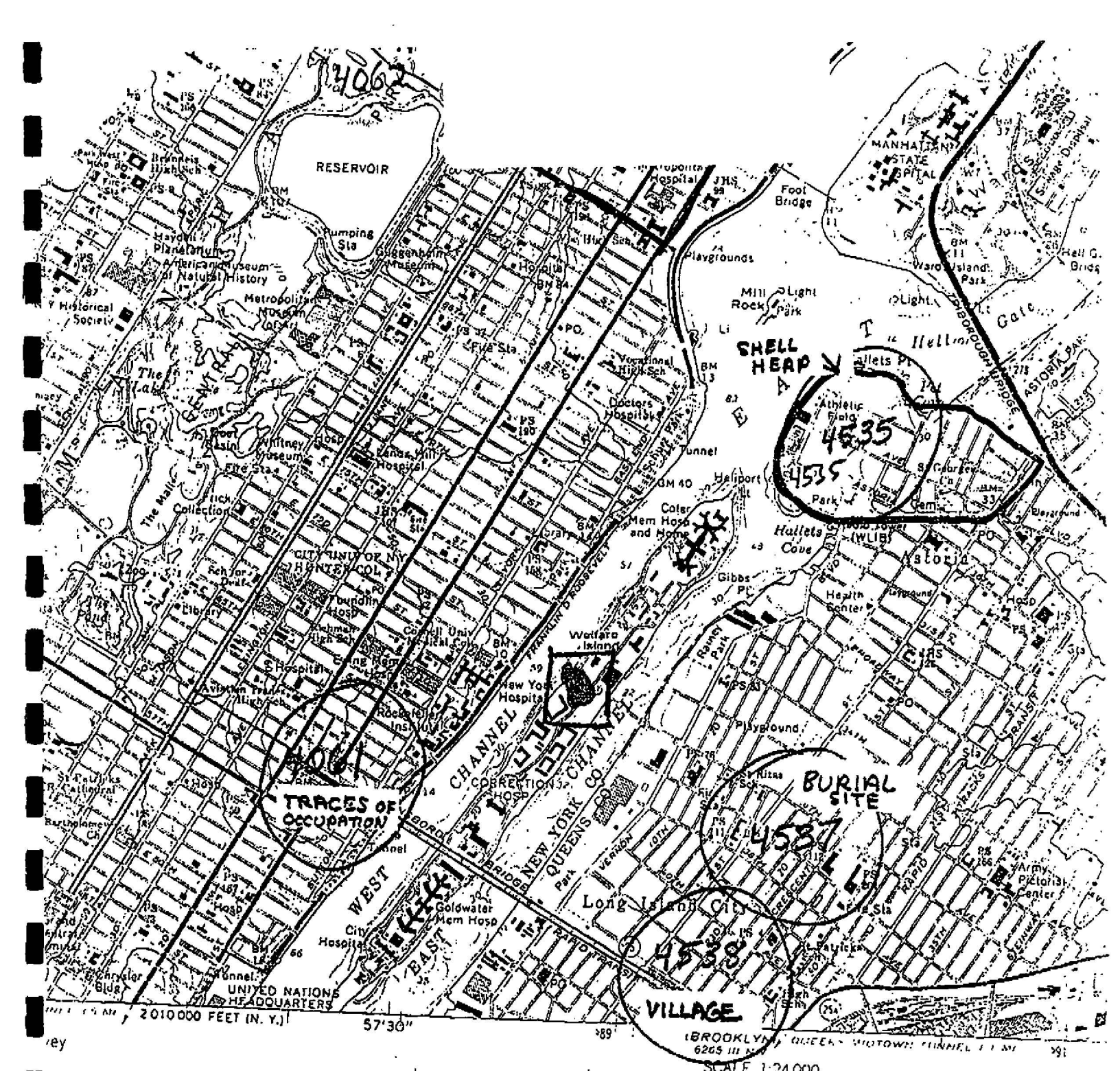
By 1867 the street bed was laid out, but development had not really begun on the adjacent blocks (Dripps 1867). Park Avenue had a train line running up it, and Madison Avenue had been cut through the city blocks.

In 1879 the project site appeared to be surrounded by development, but the street bed was unencumbered. A street car ran up Madison Avenue, and man-hold covers were located in the 55th Street roadbed (Bromley 1879).

In 1885 elevations were provided on 55th Street at the intersections of Third and Fourth Avenues, but not at Lexington, Madison, or Fifth Avenues. Elevations rose from 33.3' above sea level (ASL) at Third to 46.6' at Park. The project site appeared to be sloping upward to the east (Robinson 1885). Although pre-road regulating elevations were not found, clearly the undulating surface observed on earlier topographic maps had been graded to provide for this slope.

Twentieth century Sanborn maps show that the 55th Street roadbed, including the elevations at cross streets, remained virtually unchanged over the last century (Sanborn 1892, 1907, 1910, 1926, 1929, 1976, 1997, Figures 6-8). By 1907 there was a 6" water pipe laid in East 55th Street.

2.7.2 Site File Search Results, NYCLPC, NYSOPRHP and NYSM



SCALE 1:24 000

0 1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

0 1 KILOMETER

Charts T-4567, T-5453, T-5458, aerial photographs

1966

26, 274, 745, igational purposes

Island zone, shown in blue

own

MN GN

12° 213 MILS 0°42' 12 MILS

UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

CONTOUR INTERVAL 10 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOW WATER

TIDE RELATIONSHIP BETWEEN THE TWO DATUMS IS VARIABLE

SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER

THE AVERAGE RANGE OF TIDE IS APPROXIMATELY 2 FEET

4 FEET IN THE HUDSON RIVER AND 5.7 FEET IN THE EAST RIVER

ROOSEVELT ISLAND PROJ.

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS

FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092

A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

all Parker Sites

N.V.S.M. SENSITIVITY EVALUATION WILL BE SENT TO YOU Q.

NEW YORK STATE MUSEUM: OFFICE OF THE STATE ARCHEOLOGIST
PREHISTORIC SITE FILE: FILE USE REQUEST FORM
PROJECT SCREENING FILE

NAME HARTGEN C/O HISTORICAL PERSPECTIVES, INC.

ADDRESS P.O. BOX 331, RIVERSIDE, CONNECTICUT 06831

AC PHONE # 518 283-0534

AGENCY/COMPANY/INSTITUTION REPRESENTED HARTGEN/HISTORICAL PERSPECTIVES

The screening file gives site locations within generalized .5 mile circles.

PURPOSE OF REQUEST: (Identify the proposed project and contractor, indicate the nature of the work, depth and extent of ground disturbance)

EVENTUAL DISTRIBUTION OF DATA: (Specify range of data use and distribution, publication, reproduction, etc.).

REQUESTED APPOINTMENT:

1st Choice _____ _____ 2nd Choice _____ _____
date time (or any) date time (or any)

(Appointments are on the hour between 9 a.m. and 12 noon on Wednesday of each week. Mail this request at least two weeks in advance of the appointment date. You will be notified by mail of your appointment date and time).

U.S.G.S. 7.5' MAPS REQUESTED: (indicate 15' maps)

CENTRAL PARK _____ _____ _____

FOR THE FOLLOWING attach the project map, site data list and self-addressed envelope to this request. Responses will be mailed or provided on the following day.

The following site(s) may be within or adjacent to the project area. If so, please provide the location of:

SITE #.	7.5' MAP
4061	CENTRAL PARK
4535	CENTRAL PARK
4537	CENTRAL PARK
4538	CENTRAL PARK

X Please provide a sensitivity rating for the attached project area.

I understand that the information provided is to be used solely for the preparation of an environmental impact statement as required by State or Federal law.

A. E. Hartley-Brown 5 July 198_
(Signature) (Date)

MADISON AVE

MADISON AVE

NOTE: 12 BORINGS IN BUILDING BASEMENTS ARE NOT SHOWN ON THIS PLAN

MATCH LINE

MATCH LINE

LEXINGTON AVE

LEXINGTON AVE

55TH STREET

56TH STREET

57TH STREET

58TH STREET

59TH STREET

60TH ST

LEGEND

- PROPOSED PHASE 1 - STAGE 2 TEST BORINGS TO BE DRILLED IN GCT, METRO NORTH TUNNELS AND NYCT SUBWAY LINES
- PROPOSED PHASE 1 -STAGE 2 TEST BORINGS TO BE DRILLED IN STREETS
- COMPLETED TEST BORINGS IN GCT AND METRO NORTH TUNNELS
- COMPLETED TEST BORINGS IN STREETS

NOTES:

1. OW - OBSERVATION WELL
2. BORINGS MG24/24A, MG54 & MG74 HAS BEEN DESIGNATED FOR DEEP TUNNEL OPTION.

SCALE IN FEET

80' 40' 0 80' 160'

EAST SIDE ACCESS
LONG ISLAND RAIL ROAD
GRAND CENTRAL CONNECTION

BORING LOCATION PLAN
MANHATTAN TUNNELS

Parsons Brinckerhoff Quade & Douglas, Inc./STV Incorporated

FIGURE 3

SHEET 2 OF 3

NEW YORK STATE MUSEUM
CULTURAL EDUCATION CENTER
ALBANY, NEW YORK

NYSM SITE #	OTHER SITE #'S	SITE NAME	TIME PERIOD	SITE TYPE	SOURCE OF DATA	15' QUAD NAME	7.5' QUAD NAME	REPORTER NAME	PROJECT NAME OR #
061	ACP NYRK-(UN NUMBERED)	—	—	TRACES OF OCCUPATION	—	HARLEM	CENTRAL PARK	PARKER	—
4535	ACP QUNS-12	—	—	SHELL HEAP	—	//	//	//	—
537	ACP QUNS-14	—	—	BURIAL	—	//	//	//	—
4538	ACP QUNS	—	—	VILLAGE	—	//	//	//	—

FROM : PHONE NO. : 2036558479 Oct. 08 1999 01:30PM P3

2.7.3 Soil Boring Logs

BORING LOG

BORING NUMBER: MA-140
SHEET NUMBER: 1 of 2
PROJECT NUMBER: 26420A

PROJECT: East Side Access
LOCATION: Manhattan, GCT and MNR tunnels
CLIENT: MTA
CONTRACTOR: WGI
DRILLER: E. Thomas
INSPECTOR: K. Ravishankar
DRILLING METHOD: Rotary Wash
RIG TYPE: Acker

LOCATION: 54th St & Park SW
COORD. N: 440.0 E: 3,080.0
STN. NO.: OFFSET:
SURFACE ELEV.: 48.0 feet
DATUM:

START DATE: 10/18/99 TIME: 12:40 pm
FINISH DATE: 10/21/99 TIME: 10:00 am

	Casing	Split Spoon	Shelby Tube	Piston	Pitcher	Core Barrel
Type/Symbol		S	U	P	L	C
I.D.	4"	1.375"	2.938"	2.938"	2.875"	2.125"
O.D.	4.5"	2"	3"	3"	3"	3"
Length	-	24"	24"	24"	24"	-
Hammer Wt.	300 lbs	140lbs	Drill Rod Size		N	
Hammer Fall	24"	30"	I.D. (O.D.)		1.875" (2.65")	

GROUNDWATER DATA

Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
10/19/99	7:30 am	26.5	33.8	33.8
10/20/99	7:30 am	27.5	33.8	95.7
10/21/99	7:30 am	27.2	33.8	155.0

DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft) CORING (Min./ft)	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE SYMBOL	SAMPLE DEPTH (feet)	SOIL (Blows/6 in.) 0/6	6/12	12/18	18/24	REC. (in.)	FIELD CLASSIFICATION AND REMARKS
							CORING					
							RUN (in.)	REC. (in.)	REC. %	L>4" (in.)	RQD %	Depth Elev.
												0-5' hand excavated.
5												
10			S	1		10.0 - 12.0	3	1	4	2	10	Brown Clayey SILT, trace fine Gravel, trace Cinders. (ML-CL)(Fill)
15			S	2		15.0 - 17.0	3	4	6	4	0	No recovery.
20			S	3		20.0 - 22.0	9	9	9	17	24	Top 2" (S-3A) grayish brown CLAY and SILT and coarse to medium GRAVEL. (ML-CL)(Fill) Bottom 22" (S-3B) reddish brown SILT. (ML)

BORING LOG MG_MA.GPJ PB_NYC.GDT 11/17/99

BORING LOG
(continued)

BORING NUMBER: MA-140
SHEET NUMBER: 2 of 2
PROJECT NUMBER: 26420A

PROJECT: East Side Access
LOCATION: Manhattan, GCT and MNR tunnels
CLIENT: MTA

CONTRACTOR: WGI
DRILLER: E. Thomas
INSPECTOR: K. Ravishankar

DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft) CORING (Min./ft)	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE SYMBOL	SAMPLE DEPTH (feet)	SOIL (Blows/6 in.) 0/6	6/12	12/18	18/24	REC. (in.)	CORING RUN (in.)	CORING REC. (in.)	CORING REC. %	CORING L>4" (in.)	CORING RQD %	Depth Elev.	FIELD CLASSIFICATION AND REMARKS
			S	4		25.0 - 27.0	2	6	8	8	24							Dark brown Clayey SILT, trace fine Sand. (ML)
30			S	5		30.0 - 30.8	10	9	11	100/2	15							Dark brown Clayey SILT and medium to fine SAND, trace fine Gravel. (ML-CL)
																		Started coring at 33.8', see coring log.
																	33.8	
35																		
40																		
45																		
50																		
55																		

BORING LOG WG MA.GPJ PB_NYC.GDT 11/17/99

BORING LOG

BORING NUMBER: MA-141
SHEET NUMBER: 1 of 8
PROJECT NUMBER: 26420A

PROJECT: East Side Access
LOCATION: Manhattan, GCT and MNR tunnels
CLIENT: MTA
CONTRACTOR: WGI
DRILLER: E. Thomas
INSPECTOR: K. Ravishankar
DRILLING METHOD: Raotary Wash
RIG TYPE: Acker

LOCATION: 54th St & Park SW
COORD. N: 420.0 E: 3,080.0
STN. NO.: OFFSET:
SURFACE ELEV.: 48.0 feet
DATUM:

START DATE: 10/12/99 TIME: 8:30 am
FINISH DATE: 10/15/99 TIME: 12:00 pm

	Casing	Split Spoon	Shelby Tube	Piston	Pitcher	Core Barrel
Type/Symbol		S	U	P	L	C
I.D.	4"	1.375"	2.938"	2.938"	2.875"	2.125"
O.D.	4.5"	2"	3"	3"	3"	3"
Length	-	24"	24"	24"	24"	-
Hammer Wt.	300 lbs	140lbs	Drill Rod Size		N	
Hammer Fall	24"	30"	I.D. (O.D.)		1.875" (2.65")	

GROUNDWATER DATA

Date	Time	Water Depth (ft)	Casing Depth (ft)	Hole Depth (ft)
10/13/99	7:30 am	31.0	38.4	43.4
10/14/99	7:40 am	23.0	38.4	95.4

DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft) CORING (Min./ft)	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE SYMBOL	SAMPLE DEPTH (feet)	SOIL (Blows/6 in.) 0/6	6/12	12/18	18/24	REC. (in.)	CORING RUN (in.)	CORING REC. (in.)	CORING REC. %	CORING L>4" (in.)	CORING RQD %	Depth Elev.	FIELD CLASSIFICATION AND REMARKS
																		Brown, medium to fine SAND, some Silt, little coarse to fine Gravel, trace Mica flakes. (SM)
10			S	1		10.0 - 12.0	3	10	8	5	10							Brown SILT and CLAY, little medium to fine Sand, trace decomposed Rock. (ML-CL)(Fill)
15			S	2		15.0 - 17.0	2	2	4	3	18							Grayish brown SILT and CLAY, trace fine Sand. (ML-CL)
																		Drilling fluid changed color changed to reddish brown at 18".
20			S	3		20.0 - 22.0	7	8	8	9	12							Reddish brown SILT. (ML)
																		Drilling fluid color changed to dark brown at 24".

BORING LOG MG_MA.GPJ PB_NYC.GDT 11/17/99

PB STV

BORING LOG
(continued)

BORING NUMBER: MA-141
SHEET NUMBER: 2 of 8
PROJECT NUMBER: 26420A

PROJECT: East Side Access
LOCATION: Manhattan, GCT and MNR tunnels
CLIENT: MTA

CONTRACTOR: WGI
DRILLER: E. Thomas
INSPECTOR: K. Ravishankar

DEPTH (feet)	GRAPHIC LOG	CASING (Blows/ft) CORING (Min./ft)	SAMPLE TYPE	SAMPLE NUMBER	SAMPLE SYMBOL	SAMPLE DEPTH (feet)	SOIL (Blows/6 in.) 0/6	6/12	12/18	18/24	REC. (in.)	FIELD CLASSIFICATION AND REMARKS
							CORING RUN (in.)	REC. (in.)	REC. %	L>4" (in.)	RQD %	Depth Elev.
			S	4		25.0 - 27.0	1	2	2	3	24	Dark brown Silty CLAY. (CL)
30			S	5		30.0 - 32.0	23	21	14	7	8	Dark brown Clayey SILT, some medium to fine Sand, trace fine Gravel. (ML-CL)
35			S	6		35.0 - 37.0	11	8	10	15	5	Same as above. (S-6A) Rock fragments found at the tip of spoon. (S-6B) Started coring at 38.4', see coring log. 38.4
40												
45												
50												
55												

BORING LOG MB_MAGPJ PB_NYCGDT 11/17/08

3.0 SUNNYSIDE YARD AND YARD A ARCHAEOLOGICAL RESOURCE EVALUATION

3.0 SUNNYSIDE YARD AND YARD A ARCHAEOLOGICAL RESOURCE EVALUATION

The proposed project would provide new LIRR service to Grand Central Terminal by connecting the Port Washington Branch and Main Line tracks at the railyard complex at Sunnyside in Queens, to the lower level of the existing 63rd Street Tunnel beneath the East River, and continuing in a new tunnel to Grand Central Terminal in Manhattan. Proposed Queens Alignment project construction would cause subsurface disturbance to areas that could be of archaeological concern (Figures 1, 2). This study addresses the archaeological potential of the following areas which may experience subsurface impacts:

- Areas of the proposed tunnel construction commencing west of Northern Boulevard (Block 403, Lot 1) and demolition of the warehouse buildings at 2950-2970 Northern Boulevard between Northern Boulevard and Yard A (Block 239, Lot 36). The existing 63rd Street tunnel runs beneath 41st Avenue and terminates near Northern Boulevard (Photographs 1 and 2). A new tunnel would be built under Northern Boulevard to the warehouse property to the east (Photographs 3-5), and continue eastward to Yard A;

- Proposed work in Yard A including staging area and utility installation (Photographs 5 and 6);

- Proposed construction in Sunnyside Yard, including the creation of new tunnels and tunnel portals for East Side Access tracks A, B/C, D, and one each for the inbound and outbound lead tracks (Photograph 7);

- The site of the proposed new Sunnyside passenger station adjacent to Sunnyside Yard;

- The areas of proposed Harold Interlocking work (Photographs 8-10);

- Area of the proposed loop track reconstruction (Photographs 10-15).

Each of the above areas, or Area of Potential Effect (APE), was subjected to a comprehensive documentary study in order to determine its archaeological potential, and to assess the effect of subsurface impacts which may result from the proposed East Side Access (ESA) project.

3.1 Study Area Description

The Queens Alignment project area, located on western Long Island, is physiographically a part of the coastal plain, actually the top of a coastal plain ridge

formation that is covered with glacial drift. The plain is an elevated sea bottom demonstrating low topographic relief and extensive marshy tracts (Eisenberg 1978).

Continental glaciation has affected the surficial geology of Long Island as glaciers have advanced and receded at least three times in the last million years. Two great ridges of drift that form the north (Harbor Hill Moraine) and south (Ronkonkoma Moraine) forks of Long Island, combine west of central Nassau County to form the Terminal Moraine, a single ridge marking the limit of the ice sheets' advance. The moraine reaches a height of almost two hundred feet above sea level in some parts of Brooklyn and Queens (Gratacap 1901; Schuberth 1968). It lies approximately 3.6 miles south of the project area, along Eastern Parkway. Glacial till and outwash, made up of clay, sand, gravel and boulders were deposited there by the stabilized front of the melting ice sheet, and with the final retreat of the ice, this material covered all of Long Island.

North of the moraine, the complex rising and subsidence of the coastal plain, relieved of its glacial burden, as well as the rising sea level caused by the volume of melting ice, created a coastline of embayed rivers or estuaries, with extensive marshy tracts, which stabilized approximately 3,000 years ago (Schuberth 1968). These marshy tracts, drained by meandering creek systems no longer visible on the present landscape, were characteristic of the Queens section of the study area until the 20th century, when with the residential and commercial development of northwestern Queens, most of these low-lying areas were filled in.

Predevelopment maps show the western section of the Sunnyside Yard and Yard A project site dominated by vast salt meadows drained by Dutch Kills and its fellow tributaries of Newtown Creek. The marsh began west of the former Rapelje Avenue and School Street (slightly west of the line of present Van Dam Street), and extended west to Northern Boulevard/Jackson Avenue, and continued south and west of the project site to the shores of Newtown Creek and the mouth of Dutch Kills (Figure 4; Sidney 1849).

A salt meadow was separated from the Dutch Kills system by a small neck of relatively dry land about 2,500 feet west northwest of the study site, near present 41st Avenue and 21st Street. Draining these meadows northward to the East River near Astoria was Sunswick Creek. The meadows and creeks virtually isolated the Sunnyside Yard and Yard A study area from the East River shore and from other dry areas to the north (Figures 3, 4; Beers 1873).

East of the Dutch Kills meadows, the remainder of the Sunnyside Yard and Yard A site, stretched eastward through a landscape of hills, small ravines, and small north-south running ridges, interspersed with wooded areas (USC&GS 1844-5).

During the urban improvements that followed the consolidation of the study area into Long Island City in 1870, the land contours were severely homogenized. Meadows were filled in, and old roads raised to a higher grade, often utilizing local hills as fill sources.

With the construction of the Sunnyside Yard during the first decade of the 20th century, the hills in that part of the study area were leveled, and an estimated 2.5 million cubic yards of earth were deposited on the 250 acres of meadow at the Dutch Kills headwaters, now the westernmost third of the project site, roughly west of the line of present Van Dam Street (Seyfried 1984b). Dutch Kills itself has been reduced to a small canal below 47th Street (about 500 feet south of the study site).

The current USGS topographic map (Brooklyn and Central Park Quads) presents the result of this manipulation of the landscape of Sunnyside Yard and Yard A project site, which, except for what appears to be berms around the edges of the yard, and elevated trackbeds, generally lies below the surrounding street level, between the 10- and 30-foot contour lines (Figure 1).

3.2 Contextual Overview

3.2.1 Prehistoric Context

In order to understand the use of the project site through time, it is necessary to develop a prehistoric context for the Queens Alignment project area. The following discussions establish a contextual framework for the prehistoric eras pertinent to the project area.

The archaeological evidence of the Indian habitation of Long Island is generally divided into four periods, based on changing diet, tool kit, and the presence of ceramics and agriculture - in essence, the material remains of adapting Native American cultures. These periods are known as the Paleo-Indian (ca. 10,000 to 7,000 B.C.), the Archaic (ca. 7,000 to 1,000 B.C.), the Woodland (ca. 1,000 B.C. to A.D. 1600) and the European Contact Period (ca. A.D. 1600 to 1800). Before it is possible to formulate hypotheses concerning prehistoric archaeological potential, the following brief overview of these cultural periods is first necessary in order to determine the attractiveness of the Queens Alignment project area to Native American settlement patterns.

- Paleo-Indian Period (10,000 - 7,000 B.C.)

Near the end of the Wisconsin glacial age the first humans crossed into the New World via a narrow land bridge in the vicinity of the Bering Strait. These nomadic hunters, known as the Paleo-Indians, are identified by their utilization of a distinctive artifact, the fluted point. Archaeological evidence suggests that although Paleo-Indians were limited in number and traveled in small groups, they soon spread across the pristine environment of North America. Perhaps they were following the migration patterns of the game animals they depended upon for subsistence. Numerous Paleo-Indian "kill sites" have been discovered in the western and southwestern United States. In contrast, none have been recovered in the Northeast. Several camp sites have been excavated in the Northeast, however, leading scholars to suggest that seasonal patterning or perhaps territorialism commenced during the latter part of this period (Ritchie 1965).

The environment during the Paleo-Indian period was dominated by the retreating glaciers and the change toward the deciduous woodland setting prominent in the Archaic Period. The warmer climate and the new open river valleys provided ample hunting grounds. As a result, the favored location for Paleo-Indian sites, and all prehistoric sites, were well-elevated large fertile valleys close to a fresh water source. Along with the fluted point, scrapers and borers were part of the nomadic hunter's "tool kit." These tools were used to hunt and butcher mastodon, elk, caribou, bison, and other smaller mammals. A variety of these animals, dated to this time period, have been excavated in New York State, particularly in the vicinity of former glacial lakes and moraines (Ritchie 1965).

Although Paleo-Indians were dispersed across the North American continent, no human skeletal material or artifacts, such as animal hides or wood objects, have been recovered. Perhaps due to the transitory nature of these people, little remains of their culture but lithic material. In New York State a few camp sites have been examined (For a detailed discussion on Paleo-Indian, Archaic, and Woodland sites in New York see Ritchie 1980). The closest recorded Paleo-Indian site to the project area is Port Mobil, a small camp site, recovered in Staten Island (Ritchie 1980).

- Archaic Period (7,000 - 1,000 B.C.)

The transition from the Paleo-Indian period to the Archaic was marked by the availability of a larger variety of plants and small-game as the post-glacial Archaic peoples exploited the now dominant deciduous woodland environment. The decreased population of big-game animals led to the hunting of smaller game including the white-tailed deer, moose, wild turkey, and rabbit. In addition, Archaic peoples began to exploit the marine environment. Although not as mobile as the Paleo-Indians, archaeological evidence indicates that early Archaic peoples continued to travel seasonally. Their group movements, however, were within well-defined territorial boundaries and the camp sites that have been recovered indicate that they were repeatedly occupied over time.

River valleys and around other sources of fresh water were locales that could support the game animals exploited by Archaic hunters. The tool kit of the Archaic Period was expanded to include the grooved axe, beveled adz, and narrow bladed projectile point. In addition, the mortar and pestle, grinders, and various implements used for fishing, are evidence of the Archaic peoples expanded diet (fishing and increased gathering).

An increase in the number and size of archaeological sites recovered from the Archaic period suggests that the human population had expanded and that Archaic peoples were becoming more settled and therefore having a greater impact on the landscape. A result of becoming more settled, and the establishment of specific territories, was the emergence of different cultural phases. A phase has been defined "as a recurring complex of distinctive archaeological traits" representing an individual cultural group (Ritchie 1965). The Lamoka, Vosburg, and Brewerton phases are among those identified in New York State by Ritchie (1980).

A number of small multi component sites have been recovered in coastal New York. Like the inland sites, they are usually located near fresh water ponds, tidal inlets, coves, and bays. These locales provided abundant resources including small game, fish, shellfish, and a large variety of plants and tuberous grasses. Sites discovered in coastal areas around New York City indicate that by the Late Archaic there was a distinct reliance upon shellfish, particularly oysters and clams. No large camp site or settlement has been found within the boundaries of the five boroughs and the few Archaic sites recorded within the city are isolated finds.

- Woodland Period (1,000 B.C. - A.D.1600)

The Woodland period is characterized by the introduction of pottery and horticultural activity, as well as the establishment of clearly defined trade networks. During the Woodland Period primary habitation sites, or villages, had increased in size and were permanent (year-round) settlements. As in the Archaic Period these sites were located near a large fresh water source (e.g., pond, lake, tributary, or river). Secondary sites, where specific activities took place (e.g., shellfish gathering and/or processing, tool making), were usually situated near the location of the resource.

The first significant and identifiable use of pottery in New York State can be traced to the Early Woodland Period, around 1,000 B.C. By the Middle Woodland Period a wide variety of stamped, impressed and cord-decorated pottery types were developed. Smoking pipes, another Woodland innovation, reflected different cultural styles which archaeologists have been able to link to specific groups. The tool kit of the Woodland peoples expanded to include a larger variety of knives, drills, hammerstones, etc. Although some Archaic human burials have been recovered, those discovered dating from the Woodland Period suggest that more complex ceremonial burials commenced during the later period. Furthermore, this widespread mortuary ceremonialism peaked during the beginning of the Middle Woodland and was essentially nonexistent by the close of the Period.

Although the use of cultigens was evident in many areas of North America during the Early Woodland, it was not until near the end of the Middle Woodland stage (ca.800-1000 A.D.) that agriculture may have played a part in the economy of New York State culture groups. By the Late Woodland, cultigens had become an essential element in daily life. The introduction of agriculture brought about a major change in settlement patterns as larger villages, some fortified or palisaded, were established. One such site was noted by the early Dutch explorer Adriaen Block, who described seeing "large wigwams of the tribe on Castle Hill" in the Bronx (Skinner 1919). With the creation of more permanent sites came the development of extensive trade networks for the exchange of goods between the coastal and inland areas.

Late Woodland Stage sites of the East River Tradition in Manhattan and other parts of southern New York have been noted on the "second rise of ground above high water

level on tidal inlets," and situated on "tidal streams or coves" and "well-drained sites" (Ritchie 1980). Carlyle S. Smith, who studied and analyzed the distribution of prehistoric ceramics in coastal New York, stated that "village sites" are found on "the margins of bays and tidal streams" (Smith 1950). Early 20th-century archaeologist Reginald P. Bolton writes that "the indispensable elements in the selection of native dwelling places," were an accessible spring, and shelter from prevailing winter winds, which on Manhattan Island was found on "the eastern side of hills, or a southern exposure" (Bolton 1922).

- Contact Period (A.D. 1600-A.D. 1800)

Much of what is known about the Contact Period has been acquired from the documentary record. Using legal documents and early ethnohistoric accounts, archaeologists have been able to learn much about the Native groups that were present upon first contact with Europeans. One example is the journal of Robert Juet who traveled with Henry Hudson on his 1609 voyage. Juet provided a description of the native population encountered and the exchange of "Indian Wheate" (maize) and tobacco for beads and knives (Van Zandt 1981).

At the time of European contact, the inhabitants of western Long Island are believed to have been Munsee-speaking Delaware Indians. One of the founders of the town of Jamaica, Queens, Daniel Denton, reported in 1670 that the Indians of western Long Island lived principally by hunting, fishing, fowling and the cultivation of corn. They relocated their "small moveable tents" two or three times a year, going to their principal quarters where they plant their corn, hunt, and fish (Denton 1902). Like their Manhattan neighbors, Long Island Indians suffered the same depredations from war and disease introduced by European settlers and explorers. Denton noted that the number of Indian villages on western Long Island had already decreased from six to two (Denton 1902).

However, the affiliation of these Native Americans is unclear, because although written records report the presence of Indians in northwestern Queens, they seldom report group affiliation. In addition, declining populations, war and hostilities with European settlers and other Indians, particularly during the 1640s and 1650s, caused many Long Island Indian groups to combine and reorganize in complex ways in order maintain viable communities, and for general safety.

The traditional interpretation, based on the 20th-century research of archaeologist Reginald P. Bolton, is that the occupants of the vicinity of the Sunnyside Yard and Yard A project site were subject to, or members of the Rockaway chieftaincy, whose territory stretched diagonally across Long Island, from the East River to Jamaica Bay (Bolton 1922). Their main settlement was in present Far Rockaway, Queens (Grumet 1981).

Both Parker and Bolton suggest the present Maspeth neighborhood, along Mespacht Kill, or Mespaethches (present Maspeth Creek), approximately 1.7 miles south of the study

area, as the location of a village. The New York State Museum records the site in its inventories as NYSM#4536 (ACP Queens13; See Section 3.7.2). Several incidents between the Dutch and Native Americans occurred here during the Governor Kieft War (1643-1645), and a wigwam was recorded at Maspeth Kills in 1669 (Grumet 1981). According to historian James Riker, writing in ca.1852, the Indians' "rude implements," chiefly "stone axes and arrowheads, and arrows of reed" were still to be found (Riker 1852). Other researchers have suggested that Maspeth or Mispat is also the name of a subdivision of the Canarsee chieftaincy, whose main village was at Canarsie in southern Brooklyn, but who had settlements scattered above the Newtown Creek wetlands. However, this assertion in not supported by surviving documentation (Grumet 1981).

Recorded place names, or toponyms, are also an indication of the Native American presence in the study area. Dutch Kills, which (as noted in Section 3.3), prior to filling in the early 20th century which drained the western third of the project site, is referred to as Canapaukah. A 1656 deed describes the "small Creeke called by the Indyans Canapaukah," mentioned in conjunction with Burger's Mill, a water-powered grist mill built within the project site, between 41st Avenue and 41st Road, slightly south of Jackson Avenue (Grumet 1981; Seyfried 1984b).

Site File Search Results. A search of inventoried sites conducted at the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) and the New York State Museum (NYSM) has noted six recorded prehistoric sites in the vicinity of the Queens Alignment project area (See Section 3.7.2).

OPRHP #A081-01-0100 "Sunwick"
NYSM #3613, ACP Kings no #
NYSM #4535, ACP Queens #12
NYSM #4538, ACP Queens no #
NYSM #4537, ACP Queens #14
NYSM #8217, ACP Queens no #

In an attempt to describe more accurately the generalized locations provided by the NYSM, the information provided was supplemented by other archaeological and historical sources (Bolton 1972; 1922; 1920; Skinner 1915; Beauchamp 1971; 1900; Grumet 1981). Unfortunately, these publications provide little additional data with which to pinpoint the site locations on the present landscape.

Four of the sites identified fall outside of the project area. OPRHP #A081-01-0100 "Sunwick" was described by archaeologist Reginald Bolton who reported that Sunwick (also Sunwicks or Sunswicks) was a "native station" which yielded shell deposits and a few artifacts. Sunwick was in Ravenswood Park, and although the original Ravenswood Park lay roughly between 38th and 43rd Avenues from 11th to 21st Streets, roughly 2,500 feet west of the project site (Whitney 1876), the site description better conforms to the location pinpointed by the New York State Museum at present Rainey Park, along

the East River Shore, about 5,500 feet to the north of the study parcel (Bolton 1922; Grumet 1981). In addition, Sunswick Creek, which drained the area beginning about 1,500 feet west of the study area near 21st Street and extending to Astoria, might refer to a location in Nassau County (Grumet 1981).

NYSM #3613, ACP Kings no # is a site in Greenpoint, Kings County, at the mouth of Newtown Creek. Archaeologist Arthur C. Parker[1] reported "traces of occupation" there (Parker 1920). It lies approximately 2,500 feet southwest of the study area, on the opposite shore of Newtown Creek.

NYSM #4535, ACP Queens 12 identifies a shell heap or midden found at Sanford's Point in Astoria, Queens. Parker writes that "early and modern relics" were recovered, and Bolton mentions "various Indian objects." Parker's map places the midden on the northern shore of Hallett's Cove, about 6,000 feet north northeast of the study area (Parker 1920; Bolton 1972).

NYSM#8217 (ACP Queens No #) is a camp site, north of the shell heap discussed in the previous paragraph (NYSM#4535), at Sanford's Point, in Astoria, Queens (Parker 1920). The location is about 7,000 feet north of the study area.

Two of the sites may fall within the Sunnyside Yard and Yard A area:

NYSM#4538, ACP Queens No# refers to a village site in Long Island City, Queens. The location provided by the NYSM includes the entire section of the study area from the railyard complex at Sunnyside on the east, to 12th Street on the west. Parker's published map appears to show the village somewhat further north, approximately centered on 35th Avenue and Crescent Street (Parker 1920), which would place it within 3,250 feet to the north of the study area. However, since the NYSM and OPRHP site evaluations may rely on Parker's more detailed unpublished maps, this village site must be considered as potentially within the project area, or, considering the extensive marshes along the west side of the project area, immediately adjacent to it.

NYSM#4537, ACP Queens 14 identifies a burial site in Long Island City, Queens. Parker places this burial on Crescent Street, but does not provide the cross street. His map seems to put it northeast of the village site (NYSM#4538 from the previous paragraph) on or northeast of Broadway, which would mean that it was at least 6,500 feet outside the project area (Parker 1920). Bolton reports human burials (note the plural), "near Crescent Street," although his map siting is the same as Parker's (Bolton 1972). The locations and comments provided by the NYSM suggest two or more burials, giving

[1] Parker's research into the known prehistoric sites of New York State identified a number of sites within New York City, which he describes, and often gives numbered designations (ACP#) in his 1920 publication, "The Archaeological History of New York." The NYSM locates these sites based on his maps.

two locations, both centered on Crescent Street. They overlap the study area between the western edge of the railyard complex at Sunnyside and the line of 11th Street on the west.

3.2.2 Historical Context

The northwestern section of Queens was originally an outlying section of the town of Newtown, approximately four miles to the east. However, due to its proximity to Manhattan Island, agriculture, commercial, industrial and residential development has been dominated by the needs of the population and economy of New York City. The study area can be divided into three general sections based on historical settlement and development: Ravenswood, along the East River; Dutch Kills, the area in the vicinity of Bridge Plaza, which includes the western parts of the railyard complex at Sunnyside, and the remaining area of the Sunnyside railyard complex to the east.

The earliest recorded European residents within the project area vicinity were in the Dutch Kills area. In 1643, Burger Jorissen, a native of Silesia, received a land grant to the area around the headwaters of Dutch Kills, the vicinity of present Bridge Plaza, and eastward along Jackson Avenue. Here he settled with his wife and five sons. By 1650 he had built a dam and water-powered grist mill on Dutch Kills, between 41st Avenue and 40th Road, south of Jackson Avenue. The farm and mill were purchased in 1690 by Burgon Brocard or Bragaw, a French Huguenot refugee, whose family built a house on the site of Burger Jorissen's dwelling and a second house nearby in ca.1790. After 1818 this house came into the hands of the Payntar family (Munsell 1882; Seyfried 1984b).

To the west of Jorissen was the property of Joris Stevenson van Alst, who purchased two farms on the west banks of Dutch Kills by 1670. The property remained in the Van Alst family for two centuries.

There were few roads in the vicinity of project area, which was virtually isolated from the rest of Long Island. Crops were transported to New York City markets via boats on the East River, or from a wharf on present Court Street, down Dutch Kills and Newtown Creek to the East River. As shown on the 1781 map of western Long Island, the study area occupied a strategic location. The only road across the Dutch Kills swamp crossed the creek at the line of present Queens Plaza North, then following the line of 39th Avenue (former Middleburg Avenue) through the center of the present railroad yards, and eastward. This road linked other roads going south, north and west (Taylor and Skinner 1781; Seyfried 1984b). One road ran north and south along the west side of the Dutch Kills swamp, along the present path of Jackson Avenue. From the study area, between about 41st and 43rd Avenues, it headed west to the East River shore along present 43rd Road (Taylor and Skinner 1781).

By the time of the Revolution, Dutch Kills was a crossroads hamlet with two or three long-established farms. Other occupants of this part of the study area included the

Bragaws who built a farmhouse north of 41st Avenue at Jackson Avenue in the early 1700s. The Payntar family occupied this house from 1801 until it was torn down in 1912. There was an early tavern at 41st Avenue and 28th Street (about 500 feet west of the project area), which was run by John Francis Ryerson during the second half of the 18th century. Killed in a tavern brawl in 1798, Ryerson's grave and tombstone were found during the excavation of the basement of Long Island City High School (29th Street and 41st Avenue), six feet below the 29th Street sidewalk (Seyfried 1984b).

East of the hamlet, in the present area of the railyard complex at Sunnyside, there were a few isolated farmsteads clustered along the old road, which generally ran midway between present Skillman Avenue and Northern Boulevard. It was later named Middleburgh Road or Middleburg Avenue, and its remnants east of the yards are known as 39th Avenue. Within the yards, at former 39th Avenue and at 39th Street, was a farm acquired by John Griswold or Gressell in 1678, owned by Joris Brinckerhoff in 1714, and passed to his son Teunis, who died there in 1784. The dwelling house, at the south end of Block 112 (Middleburg Avenue between Harold and Bragaw Streets), was later owned by Richard Bragaw (Seyfried 1984b).

British forces occupied northwestern Queens from 1776 until 1783. Middleburg Avenue, which formerly ran through the center of the railyard complex at Sunnyside, was the chief communication and transportation route between east and west, and the eastern sections of the yard site were heavily manned with British troops. Officers took over the better rooms of the farmhouses, ten to twenty per house, preferring to take over the kitchen. The soldiers were a scourge on the area, stealing valuables and livestock, and destroying fences, buildings and orchards in search of firewood (Munsell 1882; Seyfried 1984b; Gregory 1994).

Common soldiers were bivouacked in huts and tents on the farms all along the road and in the fields. The narrow rectangular huts were 50 feet long, and open along the southern side to admit sunlight. The inner walls were of square-hewn logs. The slanting roofs were of thatch, and the sides were sodded to the eaves to keep out the northwest winds. The soldiers would parade and drill at the center of the enclosure formed by the huts. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics. Some sources maintain that foundations were still visible when the Sunnyside Yard construction began in 1905.

- Nineteenth Century Queens

While Dutch Kills and the Sunnyside Yard and Yard A area returned to a peaceful agricultural existence, Ravenswood, about 2,000 feet northwest of the project site, was purchased by the City of New York in 1831 as a home for an orphan asylum, home for pauper children, and a junior farm. This land was the former Johannes Duryea property, which extended along the East River from 38th Avenue to approximately 43rd Avenue. The three buildings eventually constructed were near 43rd Road and Vernon Boulevard.

The project was abandoned in 1845, and irate residents of nearby Astoria burned the structures down when they discovered that the site was to be turned into a ship fever hospital and pest house (Seyfried 1984b).

Residential Ravenswood was the brainchild of Col. George Gibbs, a wealthy New York businessman, who envisioned a beautiful private residential park with city views along the East River shore. Gibbs purchased all the land north of 38th Avenue in 1814, but died in 1838 before his dream could be completed. Other investors stepped in, building Vernon Avenue as a turnpike in 1840, as well as a shorefront promenade open to all residents. A steamboat traveled from New York City to the foot of 37th Avenue several times daily. By the 1850s, handsome mansions were being built along the East River shore, all west of present Vernon Avenue, and extending well south of 43rd Avenue (Seyfried 1984b).

With the incorporation of Astoria, Ravenswood, Dutch Kills (including the project area), Hunters Point and Blissville as Long Island City in 1870, numerous municipal improvements were made against a background of the worst Tammany Hall-style political corruption. As a result, the work was interminable and expensive. Hunters Point, at the mouth of Newtown Creek was the industrial hub of the area, and contained the majority of the population, mostly factory workers. It was there that street grading, paving and sewerage was started in the early 1870s. Long Island City remained an independent municipality until consolidation with New York City in 1898.

However, with improvements, land became more valuable, and Ravenswood's proximity to Manhattan and the East River waterway made its estates more valuable as industrial sites. The Long Island Gas Light Company was the first to move into Ravenswood, erecting a new works on the waterfront between 37th and 38th Avenues in 1875. Gradually, old residents moved away or died, and more and more mansions were torn down or converted into factories during the 1880s and 90s.

The concentration of new factories and businesses in Hunters Point, Astoria and later Ravenswood, encouraged the residential and commercial development of previously empty areas during the 1860s and 1870s. The land was becoming too valuable to be left as marsh or farm. The areas north and west of the study site, between Vernon Avenue and 30th Avenue, which appear empty on the Walling map of 1859, were filled with more than one hundred small buildings by 1873 (Walling 1859; Beers 1873).

Similarly, during the 1880s many of the farms on the site of the future railyard complex at Sunnyside were subdivided, and more than a hundred small frame and brick houses, and even several churches had been erected there around the old farmhouses by 1891 (Figure 11).

- Sunnyside

The residential neighborhood within the present railyard complex was of short duration, because the Pennsylvania Railroad, the new owner of the Long Island Rail Road, was seeking a location for a new railyard to complement its new East River tunnel and Pennsylvania Station. Agents began secretly acquiring lots between Skillman Avenue and Northern Boulevard from 31st to 43rd Streets in 1902. From 1903 to 1905 all the houses were razed and the plots were leveled, including a two hundred-acre hill between 34th and 35th Streets. The earth was used to fill in the Dutch Kills and its remaining marsh, which until that time formed most of the western third of the project site, an area roughly west of the line of present Van Dam Street (Figures 4, 5). In 1909, viaduct bridges were constructed over the yards and track was laid. Sunnyside Yard, divided into the "North Yard" (now Yard A) and "South Yard" (now Sunnyside Yard), opened in 1910, simultaneously with the new station and tunnel. (Seyfried 1984a; WPA 1982).

The development of Queens was primarily speeded by the opening of the Queensboro Bridge in 1909. Bridge Plaza, now Queens Plaza (along the northwestern edge of the project area), started as an open green square, but with the construction of rapid transit lines, it became a banking, commercial and rapid transit center. In the two decades following the bridge's opening, the population of the borough quadrupled. The remaining swampy lands in Long Island City, beneath and north of the bridge, were finally filled and 40th Avenue was at last completed in 1907-8 (Seyfried 1984b).

- BMT Subway Line

The opening of the Queens extension of the IRT subway line had tremendous impacts from its junction at Queens Plaza radiating out north to Astoria and east to Corona. In 1920 BMT trains came to Long Island City and development in the study area boomed. "Builders suddenly converged on the area as soon as the war was over and began a frenzied pace of home and apartment building that had no equal before or since" (Seyfried 1984b). Neighborhoods grew and subway ridership went up.

- Twentieth-Century Development

At present, the study area north of the Queensboro Bridge, and west and immediately adjacent to Sunnyside Yard and Yard A is dominated by low-rise industry, warehouses, lofts and automobile service, repair and parking areas. North, east and south of the yards are more small dwellings, apartment buildings and stores. Southwest of the project site, Hunters Point, along Newtown Creek and Dutch Kills, is still a heavily industrialized area, dominated by light manufacturing, warehouses, and oil refineries along the shores (Sanborn 1993). However, Long Island City, still a municipal and judicial center, has undergone a renaissance, with the renovation and conversion of former factory buildings into office and showroom space. Change is particularly noticeable in the vicinity of Thomson Avenue, between Jackson (Northern Boulevard) and Skillman Avenues (about 100 feet south and west of the project site), with the conversion of three buildings, including the former Sunshine Biscuit bakery, into the International Design Center (IDCNY), completed in 1988. Adjacent LaGuardia Community College, CUNY, had already converted its main building from the old White Motor Company factory by 1977. Citicorp's office building, near Jackson Avenue, was completed in 1989, and is the tallest structure in New York City, outside Manhattan (Willensky and White 1988).

3.3 Existing Conditions

The following chapter reviews past construction and grading activities, and their real and potential affects on buried cultural resources in the sections of the project area that will be affected by planned construction. In general, this evaluation is based on a comparison of topographic maps, in particular, a 1907 contour map (Figures 5-8) prepared by the Pennsylvania Railroad prior to the construction of the Sunnyside Yard (ASCE 1910). Also utilized were detailed surveys of current yard elevations (TAMS 1989; Amtrak 1994; MTA/LIRR 1999). Although Louis Barker's paper on Sunnyside Yard construction was utilized, its detail was insufficient to elucidate questions of disturbance raised by the cartographic comparisons (ASCE 1910).

Historical block and lot histories for each APE, based on maps and documents, are provided in the Appendix, Section 3.7.1. These lot histories established potential archaeological resources on each block. This chapter documents subsequent disturbance episodes which may have destroyed or compromised archaeologically sensitive areas. Documented impacts are described in this section and areas of remaining prehistoric and historic potential are explained and summarized in their respective sections (3.3.1 and 3.3.2).

Due to differences in technology, land use, and lifeways, archaeological resources from the prehistoric and historical periods generally vary in depth of burial relative to the ground surface at the time of deposition. As a result, subsequent activities such as construction or grading result in different degrees of impact on buried cultural remains.

Under normal circumstances, prehistoric archaeological resources are shallowly-buried, usually within three or four feet of the pre-development surface. As a result, they are extremely vulnerable to post-depositional construction.

Historical archaeological resources relating to dwellings, workplaces and schools are often preserved in privies, cisterns or wells, which in the days before the construction of municipal services - namely sewers and a public water supply - were an inevitable part of daily life. These shafts became convenient receptacles for all sorts of trash, providing a valuable time capsule of stratified deposits for the modern archaeologist. They frequently provide the best domestic remains recovered on urban sites. Truncated portions of these shaft features are often encountered on homelots because the shafts' deeper (to approximately eight feet) and therefore earlier layers remain undisturbed by subsequent construction. In fact, construction often preserves the lower sections of these features by sealing them beneath structures and fill layers.

Other commonly occurring, but much more shallowly-buried historical remains include foundations and builder's trenches, which, if a structure did not include a basement, would extend only a few feet below the pre-development land surface. Even more fragile backyard remains such as fence lines, paths, traces of landscaping and sheet midden scatter can provide valuable data to the archaeologist.

Because the Queens Alignment project area covers such a vast area, and exhibits great variation in pre-development topography and land use (including subsurface disturbance), as well as varying depths of proposed subsurface disturbance, the different APEs will be discussed in sections, divided by geographic area. Discussion will begin with the APE of the proposed tunnel construction, commencing west of Northern Boulevard, where new construction would begin, and include Northern Boulevard and the area of the warehouse buildings between Northern Boulevard and Yard A, which are proposed for demolition. Discussion would then move from west to east in sections divided by the viaduct bridges, as follows:

- Area of Potential Effect (APE) between the Hunters Point and Thomson Avenue bridges;
- APE between the Thomson Avenue and Queens Boulevard bridges;
- APE between the Queens Boulevard and Honeywell Street bridges;
- APE between the Honeywell Street and 39th Street bridges;
- APE between the 39th Street bridge and the edge of Sunnyside Yard at 43rd Street; and
- APE between the edge of Sunnyside Yard at 43rd Street and 48th Street.

Therefore, APEs could include more than one project element that could cause subsurface impacts, such as the area between Queens Boulevard and Honeywell Street bridges, which would include proposed tunnel construction, work within Yard A, the

location of the new Sunnyside station, and proposed Harold Interlocking work (Figure 2).

Due to the sheer size of the project site, and because much of the historical occupation of the area was organized by blocks and lots, the APEs will be discussed according to the pre-yard street grid system. These streets and block numbers can be found on the 1903 (Figures 13, 18) and 1907 maps (Figures 5-8), as well as on the other historical figures. For orientation, please refer to Figures 5-8 of the 1907 pre-yard street grid system, which has been overlaid by the present-day viaduct bridges and other currently-existing streets.

- **APE of Tunnel Alignment West of Northern Boulevard, Northern Boulevard, and Area of Warehouse Buildings between Northern Boulevard and Yard A**

West of Northern Boulevard (Block 403, Lot 1)

Block 403 was numbered Block 97 on historical maps as late as 1903. The existing tunnel has been completed to within 160 feet of Northern Boulevard/Queens Plaza East. Project construction will commence on this lot, which traverses the block, extending from the intersection of 29th Street and 41st Avenue on the west to Northern Boulevard on the east.

Prior to 19th- and 20th-century development, this lot was part of an elevated area west of Dutch Kills and its surrounding marsh. An 1874 topographic map shows Northern Boulevard running along the edge of a large hill or ridge, with Block 403 Lot 1 near the peak of the hill, sloping down to the east and southeast. (Figure 4) In 1874, street elevations were raised along Northern Boulevard (then Jackson Avenue) from three to eight feet, as part of road improvements taking place throughout Long Island City (Seyfried 1984b). It is not clear whether fill was required on this section of the project area, since it was already elevated.

The 1907 contour map, the 1903 Hyde atlas and modern surveys indicate that Block 403 land contours, at least in general, follow those shown in 1874. The 1907 map places a contour line equal to 22.75 feet parallel to, and immediately south of the tunnel route, indicating an elevation of just under 22.75 feet (Figures 6, 13). This agrees with current contour maps, which show a sharp drop of five feet from 41st Avenue (el. 32.5 feet) to Block 403 Lot 1 (el. 27.5 feet), and a continued downslope to 22.5 feet at the western edge of Northern Boulevard (STV 1992:AP-2).

Block 403 Lot 1 was part of the project site of an earlier study for the New York City Transit Authority (NYCTA) subway connection tunnel, to the north of the ESA project site. According to these reports, borings performed at the eastern edge of the block noted "fairly deep fill," but the report concluded that the northern part of the lot had experienced too much documented disturbance for further archaeological consideration

(NYCTA 1990). In accordance with these findings the NYCTA project has proceeded, and presently Block 403 Lot 1, including the LIRR tunnel site, has been excavated to approximately 70 feet below the current ground surface (Photographs 1 and 2). This excavation would have effectively destroyed any archaeological deposits from the historical or prehistoric periods.

Northern Boulevard

The APE on Northern Boulevard, formerly Jackson Avenue, extends from approximately 223 feet to 260 feet northeast of present 41st Avenue, formerly Skillman Avenue (Photograph 3). Maps record no historical archaeological resources on Northern Boulevard.

Prior to the Sunnyside Yard's construction, the elevations in this part of the APE were between 17.75 and 22.75 feet above sea level. Any buried historical or prehistoric cultural resources beneath the Northern Boulevard roadbed were impacted and destroyed by the construction of the existing subway tunnel there. In addition, since the tunnel for this section of the project area will run beneath the existing subway tunnel, it will not impact even the disturbed area between the subway tunnel and the street surface.

Area Between Northern Boulevard and Yard A (Block 239, Lot 36)

Block 239 was numbered Block 188 as late as 1903. The APE, which includes all of Lot 36, begins about 40 feet northeast of present 41st Avenue along the east side of Northern Boulevard, and extends to approximately 313 feet northeast of 41st Avenue along Northern Boulevard. Along the southeastern side of the block, adjacent to Yard A, the APE ranges from about 35 to 290 feet northeast of 41st Avenue.

The 1844-45 USC&GS map shows a building in the approximate location of the APE, adjacent to present Northern Boulevard, on the high ground just west of the marsh. A dwelling and an outbuilding, a Payntar family house and property, are depicted within the southern section of this APE on the 1852 map as well as on the 1874 topographic map, between the Boulevard and the railroad tracks (Figure 3; Conner 1852; Figure 4). The dwelling was still present in 1903, a two-story stone building on former Lot 8, approximately 60 feet north of 41st Avenue, within the APE, and the exact location of the outbuilding is unclear (Figure 14).

Marsh conditions prevailed on the southeastern side of Lot 36 in 1907. To the northwest of this, the land sloped up steeply toward Northern Boulevard, giving the northwestern half of the block elevations ranging from 17.75 feet to below 22.75 feet, compared with below 7.75 feet in the marsh. In this elevated area, the proposed tunnel location appears to abut the low side of the 22.75-foot contour line (Figure 6).

This part of the tunnel alignment (Lot 36) is completely covered by a warehouse, except for the rear of the lot (to the southeast along Yard A) which has elevations between 11 and 12 feet (Photographs 3-5). The warehouse and its related buildings surround a courtyard with an elevation of 25.5 feet which indicates a substantial fill overmantle beneath the structures, especially over the downslope and former marsh areas near the eastern side of the site, ranging from approximately eight to 18 feet, and three feet or more on the unbuilt parts near Yard A (TAMS 1989). The western portion of the project area, along Northern Boulevard would have between three and eight feet of fill.

This interpretation is generally supported by soil borings QB-3, QB-4, and 13 which record between ten and 20 feet of fill over a layer of organic silts, clays and peat, indicating the edges of the Dutch Kills Marsh. Although the marsh deposits are thin (0.5 feet) in QB-3 and QB-4, perhaps suggesting their removal and replacement, soil boring 13 indicates at least ten feet of marsh deposits at the southeastern end of this section of the APE (See Appendix 3.7.3 for soil boring logs/profiles).

Recorded construction disturbance on the tunnel alignment site is confined to the warehouse section of the Walworth Company factory/warehouse complex. Built in 1922, the warehouse had no cellar, and a foundation extending only four feet below grade (NB 12900-1922; Alt 1542-1943). A later building permit records a basement at the rear of the warehouse, in the southeastern part of the lot (BN 3037-1968). Although the depth of this foundation is not given, one of the adjacent buildings with a basement had foundations eight feet deep (Miscellaneous 3541-1946).

The expected thick layers of fill (three to eight feet thick) on the location of the present warehouse in the northwestern section of the APE, where recorded subsurface disturbance is no more than four feet below grade, and on the southeastern part of the site (fill layer of eight to 18 feet) where the recorded disturbance is not greater than eight feet below the current surface, would have protected any potential prehistoric and historical archaeological resources. Similarly, the unbuilt sections of the APE have no recorded subsurface disturbance, and are protected by a fill overmantle three or more feet thick.

Tunnel excavation and other subsurface disturbance for this APE would eradicate any potentially surviving buried cultural materials from the prehistoric and historical periods. For recommendations and mitigation measures concerning Block 239 Lot 36, see Section 3.5.

- **APE Between the Hunters Point and Thomson Avenue Bridges**

Former 49th/Hunters Point Avenue; Former Block 72; Former Arch Street; Former Block 89; Former Beech Street; Former Block 90; Former Crane Street; Former Block 91; Former Davis Street; Former Block 92; Former Pearson Street; Former Block 93; Former Anable Avenue/Amstel Place; Former Block 94; Former

Court Street; Former Block 95; Former Nott Avenue; Former Block 196; Former Purves Street; Former Block 199

The APE for these blocks and streets south and west of the Thomson Avenue Bridge ranges between approximately 165 and 215 feet north of the line of current Skillman Avenue, formerly Meadow Street.

No potential historical archaeological sites were documented in this area (Wolverton 1891; Figures 17, 18).

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshland surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the southeast of the Long Island Rail Road trackbed, including this APE, is marsh and/or creekbed (Figure 4). The 1907 topographic map, drawn prior to railyard construction, but subsequent to road building and filling activities in this area, records elevations east of Court Street (i.e., Blocks 95, 196, and 199; Nott Street and Thomson Avenue) ranging between 7.75 feet and below 2.75 feet (Figures 5, 6).

Although the marshes which once existed in the APE would have been attractive hunting and gathering locations for prehistoric Americans, it is unlikely that any sort of pre- or proto-historic campsite, settlement or processing area would have been located within the marsh, rather than on nearby dry, elevated land. As a result, this section of the project site is considered to have a very low potential for hosting prehistoric archaeological remains, and is not sensitive.

No potential historical archaeological sites were documented in this APE.

- **APE Between the Thomson Avenue and Queens Boulevard Bridges**

Old Long Island Rail Road Trackbed
(Between Thomson Avenue and Queens Boulevard Bridges)

This section of the LIRR trackbed will be discussed below in the Queens Boulevard Bridge to Honeywell Street Bridge APE.

Former Blocks 200 and 201

The section of the APE on former Blocks 200 and 201 extends between approximately 350 feet and 530 feet north of present Skillman Avenue. It lies north of the Thomson Avenue Bridge and along the south side of the old 1861 LIRR trackbed.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). Historical

maps record two structures on these blocks, apparently constructed after filling operations.

The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the south and east of the old Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4). The 1907 topographic map, drawn prior to railyard construction, but subsequent to road building and filling activities in this area, shows these areas as dry land, and records elevations ranging between 7.75 feet and below 2.75 feet (Figure 6).

Present elevations at the locations of the old homelots on Blocks 200 and 201 are between 11 and 25 feet (MTA/LIRR 1999), indicating that at least 3.25 feet of fill or more has been added to these locations, most likely at the time of yard construction. Such a fill overmantle would have protected potential historical archaeological resources associated with these homelots, such as foundations and shaft features.

Although the marshes which once existed on Blocks 200 and 201 in the APE would have been attractive hunting and gathering locations for prehistoric Americans, it is unlikely that any sort of pre- or proto-historic campsite or processing area would have been located within the marsh, rather than on nearby dry, elevated land. As a result, this section of the APE is considered to have a low potential for hosting prehistoric archaeological remains, and is not sensitive.

Excavation for this section of the project area would eradicate any potentially surviving buried cultural materials from the historical period. For recommendations and mitigation measures, see Section 3.5.

Dutch Kills Street; Former Queens Street; Former Block 204; Former Orchard Street; Former Block 205; Former West (Barn) Street; Former Block 206; Foster Avenue (Rapelje Street to LIRR Trackbed);

The APE on these blocks and streets lies in present Yard A, south of the old 1861 LIRR trackbed, extending from former Dutch Kills Street on the west to the west side of former Block 208 on the east. Former Blocks 200 and 201 have been covered separately in the previous paragraphs of this APE.

Prior to filling during the construction of the railroad yards, this section of the APE was part of the extensive marshland surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated clearly on the 1874 topographic map, where all land to the southeast of the old Long Island Rail Road trackbed, including this APE, is marsh and/or creekbed (Figure 4). The 1907 topographic map, drawn prior to railyard construction, shows encroachment on adjacent areas of the marsh from road building and filling activities, but these sections of the APE were apparently unaffected

by these actions. The 1907 map records elevations ranging between 7.75 feet and below 2.75 feet (Figure 6).

Current elevations in this part of the APE range from 12.5 feet to more than 35 feet, indicating the addition of between approximately five feet to more than 32 feet of fill in this entire section of the APE.

As discussed in the prehistoric overview, salt marshes, such as the one surrounding Dutch Kills and its tributaries offered valuable resources to pre- and proto-historic Native Americans. However, because it is a marsh, undergoing regular inundation or partial inundation, it is extremely unlikely that Native Americans would have established a campsite, processing area, or larger settlement within its boundaries. Therefore, this part of the APE has a very low potential for prehistoric archaeological remains, and is not considered sensitive.

No potential historical archaeological sites have been documented in this area (Figures 11,14 and 17).

- **APE Between the Queens Boulevard and Honeywell Street bridges;**

Old Long Island Rail Road Trackbed (Thomson Avenue to Middleburg Avenue)

The Thomson Avenue to Middleburg Avenue section of the old LIRR trackbed in this part of the APE was completed by 1861.

The 1844-45 topographic map depicts the Thomson Avenue to former Skillman Avenue section of the old LIRR trackbed as elevated ground adjacent to the western edge of the Dutch Kills marshes, and suggests rising elevations toward the west (Figure 3). The 1874 map, with railroad tracks in place, seems to show this part of the APE as an embankment along the edge of the marsh, with elevated ground to the west, and marsh to the east (Figure 4). Elevations from the 1907 topographical map are difficult to read, but appear to be above 7.75 feet (Figure 6).

Current elevations in this area along the edge of Yard A range from 11 to 15 feet (TAMS 1989), indicating the deposit of a protective fill overmantle of between four and eight feet thick, possibly deposited at the time the LIRR trackbed was first constructed. This indicates that the embankment fill has protected the pre-development surface, and any potential buried prehistoric cultural materials, from subsequent railroad yard construction impacts.

No historical structures were recorded in the Thomson Avenue to former Skillman Avenue section of the old LIRR trackbed in this APE.

Construction excavation for this section of the APE may eradicate any potentially surviving buried cultural materials from the prehistoric period. For recommendations and mitigation measures, see Section 3.5.

A comparison of the 1844-45 and 1874 topographic maps show that north of former Skillman Avenue, the old 1861 LIRR embankment was constructed through the Dutch Kills marsh (Figures 3, 4), suggesting a low pre-construction elevation. The 1907 contour map shows the elevated embankment, approximately 80 feet wide, with still-existing marsh on each side. Adjacent marsh elevations are below 7.75 feet to the west and 2.75 feet to the east (where the creek widens to form a pond), while the embankment elevations within the impact area range from 7.75 feet at the base of its slopes, to as much as 22.75 feet at its crown (Figure 6).

Current elevations in this area along the edge of Yard A are 8.75 feet (TAMS 1989), indicating that the embankment has protected the pre-development surface from yard construction impacts. This is supported by soil borings QB-5 and QB-123, which record approximately 15 feet of fill in this section of the APE. Beneath the fill are marsh deposits, more than five feet thick in the case of QB-123 (See Section 3.7.3 for soil boring logs/profiles).

In addition to prehistoric archaeological potential, the LIRR embankment was also on the site of the pre-1650 Burger Jorissen grist mill, which stood in the line of 32nd Avenue between 40th Road and 41st Avenue (Seyfried 1984b).

Tunnel excavation for this section of the APE would eradicate any potentially surviving buried cultural materials from the historical and prehistoric periods. For recommendations and mitigation measures, see Section 3.5.

Former Block 209

The 1907 contour map indicates that this block was part of the marsh and Dutch Kills creek bed, and that the APE encompasses what was formerly (in 1903) a winding section of the creek, with a wide pond-like section of the creek in the western corner of the block. Elevations of 1907 along the APE range from below 2.75 feet around the creek to between 2.75 and under 7.75 feet on the southeastern half of the block (Figure 6).

Current elevations in this section of present Yard A are between 11 and 12 feet (TAMS 1989), indicating that a fill layer has been added, ranging between 3.25 and more than nine feet thick. In these areas of fill, construction impact to the pre-development surface would have been minimal.

Although the marshes which once existed on Block 209 would have been attractive hunting and gathering locations for prehistoric people, it is unlikely that any sort of pre-

or proto-historic campsite or processing area would have been located within the marsh, rather than on nearby dry, elevated land.

Archaeologist Eugene Boesch, who has evaluated prehistoric archaeological sensitivity based on both environmental factors and inventoried archaeological sites, has given this part of the project site a general no sensitivity rating for hosting buried cultural resources from the prehistoric era (Boesch 1997). Based on the discussion in the previous paragraph and Boesch's no sensitivity rating, this section of the APE is not considered sensitive for prehistoric archaeology.

There are no recorded historical structures on this block, therefore it is not considered to have historical archaeological potential.

Former Rapelje Avenue (no modern equivalent)

This portion of the APE encompasses all of Rapelje Avenue between former Skillman Avenue on the south, and the LIRR roadbed on the north.

Pre-yard elevations along the former Rapelje Avenue generally range from 2.75 to 7.75 feet (Figure 6), with the marsh in the western half of the 60-foot wide streetbed, and dry ground along the eastern side. At the northern and southern edges of the APE, elevations rose above 12.75 feet. Although the 1873 map shows Dutch Kills running through the project area, the 1891 and 1903 atlases show the creek bed to the northwest, on old Block 209, discussed above (Figures 9, 11 and 13)

Current elevations on the APE within Yard A are between 14 and 15 feet, indicating the addition of between 12 feet and 13 feet of fill (TAMS 1989).

Soil Boring logs QB-9 and QB-12 record a sudden rise in the elevation of the "glacial outwash" level, and the absence of a marsh deposits between this layer and the fill layer above it. This supports the historical maps which indicate that Rapalje Avenue ran along the eastern marsh boundary. Fill layers in this location are recorded between approximately eight and 11 feet, also supporting the above hypothesis of a protective overmantle (See Section 3.7.3 Soil Boring Logs/Profiles).

There is no record of utility lines or any historical construction or resources on Rapelje Avenue. Therefore it is not considered to have historical potential.

The fill overmantle, presumably deposited during Yard A construction, would have protected any potential prehistoric archaeological remains from construction disturbance. Tunnel excavation for this section of the project area would eradicate any potentially surviving buried cultural materials from the prehistoric period. For recommendations and mitigation measures, see Section 3.5.

Former Block 210

Prior to railroad yard development, Block 210 was elevated land sloping up sharply eastward toward Van Dam Street and a large hill to the south and east (Figure 4). The 1907 survey agrees with this, providing elevations in the APE from 7.75 feet along Rapelje Avenue, to above 42.75 feet at the southeast corner of the APE along Van Dam Street (Figure 6).

Current elevations range between 19 and 21 feet - on a raised, paved platform (TAMS 1989;MTA/LIRR 1999), indicating the addition of up to 11.25 feet of fill on the northwestern side of the APE, to the removal of 20 or more feet of the pre-yard surface on the southeastern side of the site.

Soil borings confirm this scenario of a protective fill layer on the northwestern side of Block 210. Borings QB-12 and QB-13 record between eight and ten feet of fill deposited there (See Section 3.7.3, Soil Boring Logs/Profiles).

The northwestern part of this block includes the site of the Battery Repair and Supply buildings, which are in the path of the project area. There is no evidence that these structures have basements, and a foundation depth of greater than four feet below current grade is not expected.

Lot 8, the site of the Second Ward School, was in an area with an elevation of approximately 37.75 feet, all buried remains would have been destroyed when this site was regraded to an elevation of approximately 20 feet (TAMS 1989; MTA/LIRR 1999).

Prehistoric archaeological remains could only have survived disturbance in the western 50 feet of the block, along Rapelje Avenue, where the protective fill layer was greater than four feet thick. Tunnel excavation for this section of the APE, and other subsurface disturbance may eradicate any potentially surviving buried cultural materials from the prehistoric period. For recommendations and mitigation measures, see Section 3.5.

Former Van Dam Street

The northern part of the APE on former Van Dam Street begins 147 feet north of former Skillman Avenue and extends to approximately 765 feet north of former Skillman Avenue along the east side of Block 210, and ranges from 95 to 765 feet north of former Skillman Avenue along the west side of Block 185, to the intersection of Van Dam Street and former Rapelje Street.

Van Dam Street was straightened and the roadbed moved westward toward the end of the 19th century (Figures 11, 14). The 1874 topographic map shows this new location sloping upward toward the southeast, and the 1907 contour map gives elevations from

12.75 feet in the northwest corner of the APEs, near Rapelje Street, to more than 47.75 feet at the southeastern edge, adjacent to Block 185 (Figure 6).

Current elevations in the Van Dam Street section of the APE range from 20 and 22 feet in the location of the present buildings between Sunnyside Yard and Yard A and to the south (TAMS 1989). Excavation/regrading during construction of the railroad yard reduced the 1907 grade by between approximately five and 26 feet, effectively destroying any potential prehistoric archaeological resources in this southern section of former Van Dam Street.

Current elevations in the Van Dam Street section of the APE in Yard A, north of the present yard buildings, declines from 12 feet in the north to below 16 feet on the south (TAMS 1989), where formerly elevations declined from 12.75 feet to between 17.75 and 22.75 feet. This indicates that yard construction eliminated between 0.75 feet to more than six feet of the pre-yard surface. Since prehistoric remains are generally within three to four feet of the pre-development ground surface, and several feet of additional soil were most likely replaced to provide a bed for the tracks which already cover this part of the project site, it is unlikely that potential prehistoric archaeological deposits here would have survived the regrading and construction associated with the building of Yard A. No potential historical archaeological sites were documented in this area.

The southern part of the APE on Van Dam Street, begins at the former Foster Avenue intersection on the south, and extends to about 305 feet north of Foster along the west side of Van Dam, and 330 feet north along the east side of Van Dam Street.

No historical archaeological resources have been recorded in this part of the APE.

Prior to yard construction, this section of the APE on Van Dam Street lay on the western slopes of a large hill, the summit of which was formerly on Honeywell Street, about 1,010 feet to the east. Elevations in 1907 ranged from 47.75 feet in the northeastern half of the APE, to below 37.75 feet in the southwestern corner, along Foster Avenue (Figure 6).

Currently, elevations in this part of the APE are between 13 feet and 37 feet (MTA/LIRR 1999). Railroad yard-related regrading has removed between 5.75 feet to more than 23 feet of the pre-yard surface in all sections of the southern part of the APE on Van Dam Street. Such disturbance would have been sufficient to destroy all potential prehistoric archaeological resources in this area.

Former Block 185

The northern section of the APE on Block 185 sections includes an area south of the old LIRR roadbed, roughly the northern 300 feet of the block along Van Dam Street on the west, and 270 feet along Hill Street on the east. It was part of the location of the original

north/south road along the eastern edge of the marsh, which met Middleburg Avenue about 100 feet north of this part of the APE. No historical structures are recorded in this section of the APE (Figures 9, 11 and 14).

Prior to railroad yard construction, the northern Block 185 section of the APE was part of an elevated area adjacent to the Dutch Kills marsh about 200 feet to the west (Figure 4). According to the 1907 map, elevations sloped steeply upward toward the east, from 22.75 feet along Van Dam Street to above 42.75 feet along Hill Street (Figure 6).

Presently the northern section of the Block 185 part of the project area has elevations ranging from 13 feet in the north to below 16 feet in the southernmost sections of the block (TAMS 1989). This indicates that construction and regrading since 1907 has removed 6.75 feet or more of the pre-yard surface. This regrading would have destroyed any potential archaeological deposits from the prehistoric period, as well as any potential shallowly-buried Revolutionary War period cultural deposits.

The southern section of the APE on Block 185 extends from 95 feet to 247 feet north of former Skillman Avenue along Van Dam Street, and from former Skillman Avenue to 188 feet north of it along Hill Street. At the time of the railroad yard construction, Lots 1, 5, 80 and 83 contained dwellings (Figures 11, 14).

The southern part of the Block 185 section of the project area had elevations between 37.75 feet, and greater than 52.75 feet in 1907 (Figure 5). At present, elevations at this location range between 21 and 23 feet (TAMS 1989), indicating a removal of no less than 16 feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Hill Street (32nd Place)

The northern section of the Queens Boulevard Bridge to Honeywell Street Bridge APE along former Hill Street extends about 188 north of former Skillman Avenue along the east side of Block 185, and 177 feet north of former Skillman Avenue along the west side of Block 170. This section of Hill Street does not appear to have been opened or paved as late as 1903, and the streetbed was part of the adjacent lots on what became Block 185 to the west. Two of the lots, Lots 80 and 83, hosted structures prior to the construction of the railroad yard.

This section of Hill Street was formerly part of a fairly level, elevated area sloping upward toward the east. It had elevations between 52.75 feet and 57.75 feet in 1907 (Figure 6). At present, elevations at this location range between 22 and 23 feet (TAMS 1989), indicating a removal of no less than 29 feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

The southern part of the APE on Hill Street begins 235 feet north of Foster Avenue on the west side of Hill Street, and extends from between about 260 feet to 412 feet north of Foster along the east side of Hill Street. No structures are recorded within the APE (Figures 11, 14).

Prior to yard construction, the southerly part of the project area on Hill Street lay on the western slopes of a large hill, the summit of which was formerly on Honeywell Street, about 750 feet to the east. Elevations in 1907 ranged between 52.75 feet and 57.75 feet, sloping downward toward the west (Figure 6).

Present elevations are between 14 and 45 feet (MTA/LIRR 1999), indicating that more than seven feet of the pre-yard surface has been removed. Such regrading would have been sufficient to destroy all prehistoric archaeological potential.

Former Block 170

The northern part of the Block 170 sections of the APE include an area south of the old LIRR roadbed within Yard A, roughly the northern 235 feet of Block 170 along Hill Street on the west, declining to zero feet (the corner of Rawson Street and Middleburg Avenue) on the east. Block 170 was formerly about 60 feet east of the original north/south road along the eastern edge of the marsh, which met Middleburg Avenue about 60 feet west of this part of the APE.

Two dwellings and associated outbuildings were constructed in this section of Block 170 during the 19th century.

Prior to railroad yard construction, the northern section of Block 170 in the APE was part of an elevated area about 60 feet east of the north/south road skirting the eastern edges of the Dutch Kills marsh (Figure 4). According to the 1907 map, elevations sloped steeply upward toward the south, rising from 22.75 feet along the Middleburg Avenue/old LIRR Roadbed to above 52.75 feet in the southwest corner of this part of the project area (Figure 6).

Presently the northern Block 170 section of the APE has elevations ranging from 13 feet in the north to below 16 feet in the south (TAMS 1989). This indicates that construction and regrading since 1907 has removed 6.75 feet or more of the pre-yard surface. This regrading would have destroyed any potential archaeological deposits from the prehistoric period as well as any shallowly-buried Revolutionary War period cultural deposits.

The locations of the two 19th-century homelots, Lots 33 and 48, were subjected to a more severe regrading. Lot 48 had 1907 elevations between 47.75 and 57.75 feet, and at the time was also the location of a [cement?] "Mixing Plant." Lot 33 had 1907 elevations between 27.75 feet and 32.75 feet. With a current elevation of under 16 feet,

these homelots would have suffered the removal of no less than 11.75 feet and as much as 46 feet of the pre-yard surface. Such regrading would have destroyed even deep historical shaft features such as wells, cisterns and privies.

The southern section of the Block 170 part of this APE extends from former Skillman Avenue to about 177 feet north of former Skillman Avenue along the east side of Hill Street, and to approximately 112 feet north of former Skillman Avenue along the west side of Rawson Street. Prior to yard construction a number of dwellings and outbuilding were built here (Figure 11).

The southern Block 170 section of the APE was formerly part of a fairly level, elevated area sloping upward toward the east. It had elevations between 52.75 feet and 62.75 feet in 1907 (Figure 6). At present, elevations at this location range between 21 and 23 feet (TAMS 1989), indicating a removal of no less than 29 feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Rawson Street (33rd Street)

The Rawson Street segment of the APE extends from 117 feet south to 112 feet north of former Skillman Avenue along the west side of Rawson Street, and from 130 feet south to 95 feet north along the east side of Rawson.

The Rawson Street section of the project area was formerly part of a fairly level, elevated area sloping upward toward the east. In 1907 it had elevations between 57.75 feet and 62.75 feet (Figure 6). At present, elevations at this location range between 21 and 45 feet (TAMS 1989), indicating a removal of no less than 12 feet of the pre-yard surface. This regrading would have effectively destroyed any archaeological deposits from the historical or prehistoric periods.

Former Block 167

The APE on Block 167 extends from former Skillman Avenue to 95 feet north of former Skillman Avenue along the east side of Rawson Street, and to 71 feet north of former Skillman Avenue along the west side of Moore Street. By the time of yard construction a number of buildings were present within the APE (Figures 11, 15; Sanborn 1898).

The Block 167 section of the project area was formerly part of a fairly level, elevated area sloping upward toward the southeast. This part of the APE had elevations between 57.75 feet and below 67.75 feet in 1907 (Figure 7). At present, elevations at this location range between 22 and 45 feet (TAMS 1989), indicating a removal of no less than 12 feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Skillman Avenue (between LIRR trackbed and Rapelje Avenue)

The westernmost part of the former Skillman Avenue section of the APE extends through Yard A, from former School Street to the old 1861 Long Island Railroad trackbed on the west, and Rapelje Avenue on the east, a distance of approximately 350 feet.

Formerly surrounded by marsh, no historical structures have been recorded on or adjacent to the APE sections of Skillman Avenue in Yard A, until the construction of the LIRR trackbed abutting its western boundary in 1861.

Prior to railroad yard construction, the 1907 topographic map recorded general elevations between 2.75 feet and 7.75 feet in the Skillman Avenue section of Yard A, although the elevations rose to between 7.75 feet and 12.75 feet adjacent to the LIRR trackbed (Figure 6).

At present, the elevations of the westernmost Skillman Avenue section of the APE range from 11 feet to 15 feet. Elevations near the LIRR track bed are between 12 and 13 feet. This indicates that regrading has changed the pre-yard contours by between -0.75 feet (removal of early surface) to the addition of 12 feet of fill or more in other areas. It is likely that much of the old surface of Skillman Avenue is still preserved beneath this fill overmantle.

However, as a former road, with reconstructions probably dating from the end of the 19th century, and with no adjacent structures, the Skillman Avenue section of the APE in Yard A does not have historical archaeological potential.

Although the marshes which once existed on the project area section of Skillman Avenue in Yard A would have been attractive hunting and gathering locations for prehistoric Americans, it is unlikely that any sort of pre- or proto-historic campsite or processing area would have been located within the marsh, rather than on nearby dry, elevated land. As a result, this section of the APE is considered to have a very low potential for hosting prehistoric archaeological remains, and is not considered sensitive.

Former Skillman Avenue (between Van Dam and Honeywell Streets)

The western section of this part of the APE, between former Van Dam and Moore Streets, begins about 177 feet east of Van Dam Street along the north side of Skillman Avenue, and along the east side of Hill Street on the south side of Skillman Avenue. It extends eastward to the intersection of Van Dam and Moore Streets. No potential historical archaeological resources were recorded in this location.

This part of Skillman Avenue formerly sloped gradually upward toward the east southeast. In 1907 the roadbed section of Skillman Avenue, between old Van Dam and

Moore Streets (34th Avenue) had elevations from 47.75 feet near Van Dam Street, and reaching 67.75 feet at Moore Street (Figure 7).

At present, elevations in this part of the project area range between 21 and 46 feet (TAMS 1989). Elevations above 22 feet are confined to the section between Rawson (33rd Avenue) and Moore (34th Avenue) Streets, which had 1907 elevations between 57.75 and 67.75 feet, indicating the removal of no less than 11 feet of the pre-yard surface along the entire stretch of the Skillman Avenue roadbed. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

This eastern section of the Skillman Avenue part of the APE extends from Moore to Honeywell Streets. No potential historical archaeological resources were recorded in this location.

This part of the project site was approximately 100 feet north of the summit of a hill which reached a height of over 77.75 feet. Skillman Avenue in this section of the APE sloped downward toward the northeast. In 1907 elevations ranged from above 57.75 feet to just below 77.75 feet (Figure 7). At present, elevations at this location range between 22 and 47 feet (TAMS 1989; Amtrak 1994), indicating the removal of no less than ten feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Block 207; Former Hunerbein Street; Former Block 208

The Block 207, Hunerbein Street and Block 208 sections of the APE lie in present Yard A, south of the old 1861 LIRR trackbed, extending from former Dutch Kills Street on the west to the former Skillman Avenue on the east.

No potential historical archaeological sites have been documented in this area (Figures 11, 14).

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the south and east of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4). The 1907 topographic map, drawn prior to Sunnyside Yard and Yard A construction, but subsequent to road building and filling activities in this area, records elevations ranging between 7.75 feet and below 2.75 feet (Figure 6).

Although the marshes which once existed on this part of the project area would have been attractive hunting and gathering locations for prehistoric Americans, it is unlikely that any sort of pre- or proto-historic campsite or processing area would have been

located within the marsh, rather than on nearby dry, elevated land. As a result, this section of the APE is considered to have a very low potential for hosting prehistoric archaeological remains, and is not considered sensitive.

No potential historical archaeological sites were documented in this area of the APE (Figures 11, 14 and 17).

Former Block 222

The Block 222 sections of the APE extends from Foster (43rd) Avenue to about 50 feet north of Foster along Rapelje Avenue, and 153 feet along the School Street. Outbuildings on Lot 12 (relating to a dwelling in the School Street roadbed) lie along the proposed impact area boundary.

Prior to yard construction, the section of the APE on Block 222 lay half in the Dutch Kills Marsh on the west, and half on the steep bank sloping upward to the east. Elevations in 1907 ranged from 17.75 feet in the northeastern corner of this part of the APE, to below 7.75 feet in its western half, which was part of the marsh (Figure 6).

At present, elevations in the APE section of Block 222 range from 20 to 32 feet (MTA/LIRR 1999), indicating the addition of between 2.25 feet to more than 14 feet of fill in this part of the APE. The addition of this substantial fill overmantle would have protected any potential prehistoric or historical archaeological resources present.

Construction excavation for this section of the APE may eradicate any potentially surviving buried cultural materials from the prehistoric and historical periods. For recommendations and mitigation measures, see Section 3.5.

Former School Street

The School Street section of the APE ranges from 95 feet south to 153 feet north of Foster Avenue along the west side of School Street, and 60 feet south to 190 feet north of Foster Avenue along the east side of the street.

School Street was widened and straightened at the end of the 19th century, and as a result, a dwelling related to outbuildings on Block 222, Lot 12 stood 50 feet north of the APE until after 1903 (Figure 14).

Prior to yard construction, the section of the project area on School Street lay along the steep bank sloping upward to the east along the edge of Dutch Kills marsh. Elevations in 1907 ranged from above 32.75 feet in the northeastern corner of the APE, to below 7.75 feet in the southwestern corner, where the marshes began in the intersection with Foster Avenue (Figure 6).

At present, elevations in the School Street section of the APE range between 33 and 22 feet (MTA/LIRR 1999), indicating the addition of between 0.25 to more than 25 feet of fill. The addition of this substantial fill overmantle would have protected the potential prehistoric and/or historical archaeological resources present from subsequent yard construction disturbance.

Construction excavation for this section of the project area may eradicate any potentially surviving buried cultural materials from the prehistoric and historical periods. For recommendations and mitigation measures, see Section 3.5.

Former Block 211

The APE sections of Block 211 begin at Foster Avenue on the south, extending about 190 feet north of Foster along School Street, and 305 feet north along Van Dam Street. A number of structures were built in this part of the project area prior to yard construction.

Prior to yard construction, the Block 211 part of the APE lay on western slope of a large hill, the summit of which was formerly on Honeywell Street, about 1,100 feet to the east. Elevations in 1907 ranged from above 42.75 feet in the northeastern quarter of this part of the APE, to 17.75 feet in the southwestern corner, where the block sloped steeply down to the edge of the Dutch Kills marshes (Figure 6).

Currently, elevations in the southern 100 feet of the Block 211 section of the APE range from 13 feet to 33 feet (MTA/LIRR 1999).

Regarding prehistoric resources, regrading for yard construction has caused elevations on the Block 211 section of the project area to decline between 0.0 and 21 feet. Because trackbed preparation would have caused several additional feet of subsurface disturbance in these areas, shallowly-buried potential prehistoric cultural resources would have been destroyed.

The location of the Van Pelt house, at the center of the Block 211 section of the APE, would have been situated on one of the fairly level rises above the marsh, now the present track terrace. Only the northeastern third (approximately 80 feet) of the embankment, the northern 20 feet and the southeastern corner (40 feet) of the APE section have experienced sufficient subsurface disturbance (an elevation decline of eight feet or more) to eliminate historical shaft features on the old Van Pelt homelot.

Construction excavation for this section of the APE may eradicate any potentially surviving buried cultural materials from the historical period. For recommendations and mitigation measures, see Section 3.5.

Block 184

The APE section on Block 184 begins at Foster Avenue on the west side of the block along Van Dam Street, and extends about 305 feet north of Foster along Van Dam. On the east side of the block, the APE begins about 118 feet north of Foster Avenue and continues to about 400 feet north of Foster along Hill Street. Several structures were erected within this part of the project area before yard construction (Figure 14).

Prior to yard construction, the APE on Block 184 lay along the western slopes of a large hill, the summit of which was formerly on Honeywell Street, about 800 feet to the east. Elevations in 1907 ranged from above 42.75 to below 57.75 feet, sloping downward toward the west (Figure 6).

At present, elevations in this section of the project area range from 13 to 40 feet (MTA/LIRR 1999). However, these areas of highest elevation correspond to the most elevated areas in 1907. Regrading has removed more than four feet of the pre-yard surface in all areas of the Block 184 section of the APE. Such regrading would have been sufficient to destroy all prehistoric archaeological potential.

The historical homelots on the Block 184 section (Lots 13 and 18) of this APE were located 200 feet north of Foster Avenue, and in western 60 feet of the block, along Van Dam Street. This area has experienced a reduction in grade since 1907 of greater than ten feet. This regrading would have destroyed all buried cultural remains from the historical period, including shaft features.

Former Block 171

The APE on Block 171 extends between approximately 260 feet and 412 feet north of Foster Avenue on the west side of the block along Hill Street, and from about 400 feet north of Foster Avenue to former Skillman Avenue. By the time of yard construction a number of dwellings had been built within this part of the APE (Sanborn 1898; Figures 14, 15).

The Block 171 section of the APE was formerly part of a fairly level, elevated area sloping upward toward the east. It had elevations between 52.75 feet and 62.75 feet in 1907 (Figure 6). At present, elevations at this location range between 21 and 44 feet (TAMS 1989). Current elevations above 22 feet are confined to sections of the project area with 1907 elevations greater than 57.75 feet, indicating the removal of 13.75 feet or more of the pre-yard surface over this entire section of the APE. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Block 166

The APE section of former Block 166 extends from former Skillman Avenue to 130 feet south of the avenue along the east side of Rawson Street, and along the west side of Moore Street it extends to about 160 feet south of former Skillman Avenue. By the time of yard construction a number of buildings had been erected within this part of the APE (Figures 11, 15; Sanborn 1898).

The Block 166 section of the project area had elevations between 57.75 feet and 72.75 feet in 1907 (Figure 7). At present, elevations at this location range between 22 and 46 feet (TAMS 1989), indicating a removal of no less than 11 feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Moore Street (34th Street)

The Moore Street section of the APE extends from 159 feet south to 71 feet north of former Skillman Avenue along the west side of Moore Street, and from 153 feet south to 71 feet north of former Skillman Avenue along the east side of Moore Street. Maps record no historical structures on this part of the APE.

The Moore Street section of the project area sloped gradually to the summit of a hill on adjacent Block 156, about 170 feet to the southeast, and had elevations between 62.75 feet and 72.75 feet in 1907 (Figure 7). At present, elevations at this location range between 22 and 46 feet (TAMS 1989), indicating a removal of no less than 16 feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Block 156

The Block 156 section of the APE comprises the northern end of the former block, extending approximately 153 feet south of former Skillman Avenue along Moore Street, and 118 feet south of former Skillman Avenue at Honeywell Street. By the time of yard construction a number of buildings had been constructed within the APE (Figures 11, 15; Sanborn 1898).

This section of the project area was approximately 100 feet north of the summit of a hill which reached a height of over 77.75 feet. Here the APE sloped downward toward the northeast. The Block 156 section of the APE had elevations ranging from above 57.75 feet to just below 77.75 feet in 1907 (Figure 7). At present, elevations at this location range between 22 and 47 feet (TAMS 1989; Amtrak 1994), indicating a removal of no less than ten feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Foster Avenue (Former Rapelje to Van Dam Streets)

The Foster Avenue sections of the Queens Boulevard Bridge to Honeywell Street Bridge APE extends from Rapelje Street on the west to Van Dam Street on the east.

No historical structures have been recorded there, although three wood frame buildings, apparently Van Pelt farm outbuildings, once stood along the eastern side of the Foster Avenue/Van Dam Street intersection. These were located approximately 80 feet southeast of the Foster Avenue section of the APE (Conner 1852; Figure 4; Figure 11).

Prior to yard construction, the Foster Avenue sections of this APE lay on the western slopes of a large hill, the summit of which was formerly on Honeywell Street, about 1,010 feet to the east northeast. To the west of the School Street/Foster Avenue intersection in the APE, the avenue was part of the Dutch Kills marshes, with elevations below 2.75 feet in 1907. Present elevations in the former marsh areas are between 14 and 30 feet, indicating the deposition of between 11 and as much as 27 feet of fill.

Although the marshes which once existed on this part of the project area would have been attractive hunting and gathering locations for prehistoric Americans, it is unlikely that any sort of pre- or proto-historic campsite or processing area would have been located within the marsh, rather than on nearby dry, elevated land. As a result, this section of the APE is considered to have a very low potential for hosting prehistoric archaeological remains, and is not considered sensitive.

At the School Street intersection the Foster Avenue section of this APE emerged from the marsh, sloping steeply upward between School and Van Dam Streets. Elevations in 1907 rose sharply from below 7.75 feet at School Street to above 37.75 feet at the eastern side of the Van Dam Street intersection. (Figure 6). Present elevations on this part of Foster Avenue range from 14 to 30 feet (MTA/LIRR 1999).

On the eastern half of this part of the APE, elevations were formerly above 32.75 feet, and have suffered a removal of 2.75 feet or more of the pre-yard surface there. Such disturbance, along with trackbed preparation which would have impacted several more feet below the pre-yard surface, would have destroyed any potential prehistoric archaeological resources present.

On the western half of this part of the Foster Avenue section of the APE, only the southwestern most corner (60 feet) adjacent to the northwest corner of Block 212 appears to have not experienced subsurface disturbance greater than three feet, due to yard regrading and trackbed preparation. This area has risen in elevation, between three and ten feet, indicating the presence of a protective fill overmantle, which would have preserved any potential prehistoric archaeological resources from construction disturbance.

Construction excavation for this section of the Foster Avenue APE may eradicate any potentially surviving buried cultural materials from the prehistoric period. For recommendations and mitigation measures, see Section 3.5.

Block 212

The APE section of Block 212 is confined to a small triangle along Foster Avenue in the northwest corner of the block. The project area extends approximately 60 feet south of Foster Avenue along the east side of School Street, and has a 115-foot frontage along the south side of Foster Avenue.

No potential historical archaeological sites were documented in this area (Figure 11; Figure 14).

Prior to yard construction, the APE on Block 212 lay along the steep bank sloping upward to the east along the edge of Dutch Kills marsh. Elevations in 1907 ranged from above 32.75 feet in the eastern side of the APE, to below 7.75 feet along the western side, where the marshes began (Figure 6). Current elevations in this section of the APE are between 14 and 29 feet, declining toward the northwest corner of the block (MTA/LIRR 1999).

Except in the northeastern half of Block 212, where current elevations have declined four feet or more from 1907, and would have thus destroyed any prehistoric archaeological potential, the western half of the block has seen a general rise in elevation with yard construction.

The rise in elevation of between 0.0 feet and to as much as 19 feet in the western half of the Block 212 section of the project area indicates the addition of a substantial layer of fill, which would have protected any potential prehistoric archaeological resources present.

Construction excavation for this section of the APE may eradicate any potentially surviving buried cultural materials from the prehistoric period. For recommendations and mitigation measures, see Section 3.5.

- **APE Between the Honeywell Street and 39th Street Bridges**

Old LIRR Trackbed – Former Rawson (33rd) Street at Former Middleburg Avenue to Harold Avenue (39th Street)

The former Rawson Street to Harold Avenue section of the old LIRR trackbed within this APE was completed by 1861. Maps predating the construction of the roadbed show no historic structures in this section of the APE (Figure 3; Sidney 1849; Walling 1859).

The 1844-45 topographic map depicts this APE section of the old LIRR trackbed as elevated ground, and suggests rising elevations from west to east (Figure 3). The 1907 contour map shows the grade rising from approximately 17.75 feet near Rawson Street to above 37.5 feet at former Harold Avenue. The contour lines do not seem to show an embankment, but the track at approximately the same elevations as the surrounding land to the north and south, with probable at-grade crossings at street intersections (Figure 6).

Current elevations in this area along the edge of Yard A range from 13 feet at former Rawson Street, rising to no more than 22 feet at Harold Avenue (TAMS 1989; MTA LIRR 1999). Adjacent elevations outside the yard are presently seven to eight feet above the LIRR roadbed. This indicates a grade reduction at the time of yard construction that ranges from as little as 4.75 feet to as much as 15 feet. Such regrading would have destroyed any potential archaeological deposits from the prehistoric period, as well as any shallowly-buried Revolutionary War period cultural deposits.

Former Middleburg Avenue (between Hill and Rawson Streets)

The Middleburg Avenue sections of the APE between the Honeywell Street and 39th Street Bridges extends eastward from the old LIRR roadbed (east of Hill Street), to the east side of Rawson Street, a distance of roughly 100 feet. Historical maps record no buildings in the vicinity of this part of the APE, before or after the construction of the LIRR roadbed in 1861 (Sidney 1849; Figure 11; Figure 15).

Prior to railroad yard construction, elevations on the Middleburg Avenue section of this APE were between 22.75 and 27.75 feet (Figure 6). At present, elevations in this area are between nine feet and 15 feet (TAMS 1989), indicating the removal of more than seven feet of the pre-yard surface. Regrading of this severity would have destroyed any potential archaeological deposits from the prehistoric period, as well as any shallowly-buried Revolutionary War period cultural deposits.

Former Block 155

The APE sections of Block 155 lie along the north side of former Skillman Avenue, extending approximately 75 feet north of the avenue along Moore Street, to 130 feet north along former Honeywell Street. By the time of yard construction a number of buildings had been constructed within this part of the APE (Figures 11, 15; Sanborn 1898).

Approximately 300 feet north of the summit of a hill, the Block 155 section of the APE slopes downward toward the northeast. Recorded elevations in 1907 were from 52.75 feet to below 67.75 feet. The lowest elevations (between 52.75 and 57.75 feet) were in the southeastern 50 feet of the block, along former Honeywell Street (Figure 7).

At present, elevations in this southeastern section of Block 155 are between 46 and 47 feet (TAMS 1989), suggesting that between 5.75 and 11 feet of the pre-yard surface have been removed. This would have been sufficient to destroy any buried prehistoric cultural remains as well as all historical remains aside from deep privies and wells.

Two homelots, Lots 1 and 73, both established during the period 1891-1898, lie in this area of potential sensitivity for wells and privies. Water service was available from lines along adjacent former Honeywell Street before 1903, making wells unnecessary, and the presence of running water also suggests the possible use of flush toilets with cesspools (Figure 15).

Also, for Lot 73, only a very small portion of the front 50 feet of the lot falls within the APE, and most of this area was occupied by the dwelling. Since privies were generally located near the rear lot lines of city lots, it seems unlikely that a privy would have been constructed in the APE section of Lot 73.

Although it is possible that privy remains existed in the abutting rearyards of Lots 1 and 73, these rearyards are now the location of the yard substation complex, the construction of whose foundations, extending substantially more than four feet below the current surface (extending subsurface disturbance to ten or more feet below the pre-yard surface), would have destroyed any shaft features which had survived the original yard construction regrading.

Current elevations on the remainder of the block (whose pre-yard elevations were between 57.75 and below 67.75 feet) range between 28 and 47 feet (Amtrak 1994), indicating the removal of no less than ten feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Honeywell Street (35th) Street (not the current viaduct)

The APE on former Honeywell Street extends from about 118 feet south of former Skillman Avenue to 130 feet north of former Skillman Avenue along the west side of Honeywell Street, and from 106 feet south to 147 feet north of former Skillman Avenue along the east side.

No potential historical archaeological sites were documented in this area.

In 1907, the Honeywell Street section of the APE had elevations between more than 47.75 feet to just below 67.75 feet (Figure 7). At present, elevations at this location range between 24 and 47 feet (Amtrak 1994).

The greatest subsurface impact on Honeywell Street occurred during grading south of its intersection with former Skillman Avenue, where elevations dropped from between

52.75 and 62.75 feet in 1907 (Figure 6), to between 24 and 41 feet at present (Amtrak 1994), indicating a removal of more than 11 feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods on Honeywell Street south of former Skillman Avenue.

The intersection of Honeywell Street and former Skillman Avenue had elevations between 52.75 and 57.75 feet in 1907 (Figure 6), and currently has elevations between 41 and 47 feet (Amtrak 1994). This suggests that at least the uppermost five feet of the pre-yard surface was removed by regrading. This section of the project area contains no documented historical resources, and five feet of subsurface disturbance would have been sufficient to destroy any potential buried cultural deposits from the prehistoric era.

On Honeywell Street north of former Skillman Avenue, 1907 elevations ranged between 47.75 and 57.75 feet. Current elevations in this area lie between 45 and 47 feet (Amtrak 1994), indicating that disturbance from regrading could be as little as 0.75 feet. This section of the project area contains no documented historical resources. Shallowly-buried potential prehistoric resources would have been destroyed by the excavation for the water main shown running beneath Honeywell Street in 1903 (Figure 15). The main would have been buried below the frost line, at least four feet below the pre-yard surface.

Former Block 149

The APE on former Block 149 ranges from former Skillman Avenue to about 150 feet north of former Skillman Avenue at Honeywell Street, and as much as 220 feet north of former Skillman Avenue at Buckley Street. By the time the yard was created, a number of buildings had been constructed within the APE (Sanborn 1898; Figure 15).

Prior to railroad yard construction, the Block 149 sections of the APE sloped downward toward the north. The 1907 elevations within the APE segment were between 37.75 and 42.75 feet in the northeast corner, sloping up to above 47.75 feet in the majority of the segment to the south and west. Current elevations range from 46 feet in the southwest corner to below 48 feet in the northeast (Amtrak 1994), suggesting a downward regrading of less than two feet, and the addition of more than three feet of fill in the northeastern section of this part of the project area.

A single boring (SY-10) in the more northerly section of the Block 149 section of the project area supports this interpretation, recording nine feet of fill over an "outwash" layer, presumably the surviving pre-yard construction surface (See Appendix 3.7.3 for soil boring logs/profiles).

Privies relating to the recorded homelot occupations on Lots 1, 5, and 72 beginning between 1891 and 1898, and Lot 4, prior to 1891, would have certainly survived this shallow regrading and would have been protected by the addition of a fill overmantle.

Water service was available from lines along adjacent former Honeywell Street and Buckley Streets, and former Skillman Avenue before 1903, making wells unnecessary by that time, but it is not clear how many years previous to 1903 this service was available. The presence of running water also may suggest the possible use of flush toilets with cesspools (Figure 15). However, it is highly probable that the Lot 4 dwelling, which predates 1891 would have required privies and wells for its inhabitants.

Potential prehistoric remains may also have survived beneath the fill present in the northeastern section of this part of the project area. For recommendations and mitigation measures, see Section 3.5.

Former Buckley Street (36th Street)

The APE on former Buckley Street extends from about 35 feet south of former Skillman Avenue to 218 feet north of former Skillman Avenue along the west side of Buckley Street, and from 12 feet south to 235 feet north of former Skillman Avenue along the east side of Buckley Street.

No potential historical archaeological sites were documented in this area.

Prior to railroad yard construction, the Buckley Street section of the APE was situated in a elevated hollow between two hills, and sloped gradually downward toward the north. Presently, the southern section of this part of the project area, extending to fifty feet north of former Skillman Avenue, has elevations between 30 and 40 feet (Amtrak 1994), compared with 47.75 and 52.75 feet in 1907 (Figure 7). Regrading would have removed more than seven feet of the pre-yard surface in this location, destroying any potential prehistoric archaeological remains.

North of this, elevations of the project area sections of Buckley Street rise toward the north from 45 to 49 feet (Amtrak 1994), in areas that in 1907, prior to regrading, had declined in elevation toward the north from 47.75 to 42.75 feet. This suggests that regrading may have removed approximately two to three feet of the pre-yard surface on parts of Buckley Street, but may have added more than six feet of fill in the northern part of the street bed, possibly protecting potential prehistoric archaeological remains there.

However, shallowly-buried prehistoric resources would have been destroyed by the excavation for the water main shown running beneath Buckley Street in 1903 (Figure 15). The main would have been buried below the frost line, at least four feet below the pre-yard surface.

No potential historical archaeological sites were documented in this area.

Former Block 137

The former Block 137 sections of this APE extend from former Skillman Avenue to about 240 feet north of former Skillman Avenue along the east side of Buckley Street, and to as much as 325 feet north of former Skillman Avenue along the west side of Hulst Street. By the time of yard construction a number of buildings had been built within this part of the APE (Sanborn 1898; Figure 15).

Prior to railroad yard construction, this area of the APE was part of an elevated hollow between hills to the east and southwest. The 1907 elevations within the Block 137 section of the project area ranged from above 37.75 to below 52.75 feet, generally increasing in elevation toward the southeast (Figure 7). Current elevations in this location lie between 39 feet in the south to 50 feet in the north, but are generally between 48 and 49 feet (Amtrak 1994). These elevation changes suggest a layer of fill which varies from approximately 12 feet thick in the northern parts of the block to about one foot in the south. Such a fill overmantle would have protected both potential prehistoric and historical archaeological resources from subsequent construction disturbances.

A single boring (SY-148) in the northern edge of the Block 137 APE supports this interpretation, recording over 16 feet of fill over a glacial till layer, presumably representing the pre-yard construction surface (See Appendix 3.7.3 for soil boring logs/profiles).

At least seven dwellings and one store building were present in this section of the APE by 1898, and four homelots had been established prior to 1891 (Sanborn 1898). Although water mains were in place on all the surrounding streets by 1903, no sewer lines are recorded (Figures 11, 15), indicating that privies would likely have been in use. Furthermore, with the protection of a one- to 12-foot fill overmantle, foundations, fence lines, paths and other features of the historical homelots would have survived regrading.

Proposed tunnel excavation for this section of the APE would eradicate any potentially surviving buried cultural materials from the prehistoric and historical periods. For recommendations and mitigation measures, see Section 3.5.

Former Hulst Street (37th Street)

The APE sections of former Hulst Street extend from former Skillman Avenue to 325 feet north of former Skillman Avenue along the west side of Hulst Street, and to 347 feet north of former Skillman Avenue along the east side of Hulst.

No potential historical archaeological sites were documented in this area of the APE.

The Hulst Street section of the APE was formerly on the slopes of a large hill or ridge, sloping upward toward the east and southeast. The 1907 elevations on Hulst Street range from 42.75 to 47.75 feet (Figure 7). Current elevations in this area range from 45 to 51

feet, with an area of about 40 feet in elevation at the extreme southern edge (Amtrak 1994).

Although surviving archaeological resources in these areas would have been protected by up to nine feet of fill in some areas, the area of low elevation would have had almost three feet of the pre-yard surface removed during regrading. In addition, the 1903 map also shows a water main beneath Hulst Street, which would have been buried below the frost line, at least four feet below the street surface. Excavation for this water main would have severely disturbed any potential prehistoric archaeological remains present in the Hulst Street section of the APE.

Former Block 131

The southern section of the Block 131 section of the APE extends northward from former Skillman Avenue, approximately 112 feet along the east side of Hulst Street, and roughly 129 feet along the west side of Van Pelt Street. By the time of yard construction a number of buildings had been constructed within this part of the project area (Sanborn 1898; Figure 15).

Prior to railroad yard construction, the southern half of this part of the Block 131 section of APE was on the lower slopes of a hill whose summit lay to the southeast. The area sloped steeply upward toward the east. This location crosses an area with former elevations rising from 47.75 feet on the west to below 67.75 on the east (Figure 7). Current elevations range from 40.3 feet in the west (along Hulst Street) to 29 feet in the east.

During yard regrading, more than seven feet of the pre-yard surface was removed, and on the eastern half of the block more than 17 feet was removed. This subsurface disturbance would have been sufficient to destroy any potential prehistoric archaeological deposits, and all potential historical archaeological deposits on the eastern half of the block, including those from a homelot on Lot 60. No potential historical archaeological sites were documented on the *western* half of this part of the APE on Block 131 (Figure 15).

The northern section of this part of Block 131 formerly sloped upward from 52.75 feet on the west to below 67.75 on the east (Figure 7). Current elevations on this section of the project area are approximately 35 feet, indicating that more than 17 feet of the pre-yard surface was removed during the regrading associated with the construction of the railyard (a gravel pathway leading to the street has elevations higher than this, but was apparently constructed after the original regrading). This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

To the north of these two areas, the northern part of the Block 131 section of the APE extends between 153 feet and 347 feet north of former Skillman Avenue along the east side of Hulst Street, and 235 feet to 441 feet north of former Skillman Avenue along the west side of Van Pelt Street. By the time of yard construction a number of buildings had been constructed within this part of the APE.

Prior to railroad yard construction, the APE section of northern Block 131 was on the lower slopes of a hill whose summit lay to the southeast. The area sloped strongly upward toward the east. The elevations were between 47.75 and 67.75, rising from west to east, in 1907 (Figure 7). Current elevations range from approximately 40 feet along the southern 20 feet of this area to between 48 and 51 feet north of this (Amtrak 1994).

A comparison of the 1907 elevations and current elevations suggests that the southern 20 feet of this part of the APE had more than seven feet and as much as 27.75 feet of its pre-yard surface removed during railyard construction. Such disturbance would have been sufficient to destroy all potential prehistoric and historical archaeological remains in this part of the project area.

The northern section of this part of the APE has current elevations greater than 45 feet and generally between 48 and 52 feet. Comparing these numbers with the 1907 elevations, the eastern part of the block appears to have suffered most severely from the regrading episode, dropping from over 62 feet to about 50 feet, with a removal of at least 12 feet of the 1907 surface. Such disturbance would have been sufficient to destroy all potential prehistoric and historical archaeological remains in this part of the APE.

The western half of this part of the APE had 1907 elevations of less than 47.75 feet to 57.75 feet, and has current elevations between 48 and 50 feet. This area would have experienced disturbance to a depth of approximately two to three feet along Hulst Street to more than eight feet at the center of the block. Such disturbance would have been sufficient to destroy all potential prehistoric and most historical archaeological remains in this part of the APE, except for deep wells and privies.

Although five dwellings (Lots 11, 12, 13, 14 and 15) were present on this part of the western half of Block 131 from before 1898, and some before 1891 (Figures 11, 15), it is unlikely that any shaft features have survived from this occupation. Water service was available on Hulst Street before 1903, making wells unnecessary for part of the period of occupation. Privies are generally located along or near the rear lot lines of properties, where they would have been destroyed or severely truncated by the approximately eight feet of subsurface disturbance which occurred at the center of the block.

Former Van Pelt Street (38th Street)

The Van Pelt section of this part of the APE is divided into two separate areas, the northern, which extends from 235 feet north of ***present*** Skillman Avenue to 441 feet

north of present Skillman Avenue along the west side of Van Pelt Street, and from 258 to 470 feet north of present Skillman Avenue along the east side of Van Pelt. No potential historical archaeological sites were documented in this area.

Prior to railroad yard construction, this section of the APE was on the slope of a hill whose summit was to the southeast. The APE sloped steeply upward toward the east, and downward toward the north and west.

The location of the APE on the northern part of Van Pelt Street had elevations ranging between 62.75 and 72.75 feet in 1907 (Figure 7). Current elevations are between 49 and 52 feet (Amtrak 1994), indicating that more than ten feet of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

The southern part of the APE on Van Pelt Street extends from 70 to 129 feet north of present Skillman Avenue on the west side of Van Pelt Street, and 88 to 141 feet north of present Skillman Avenue on the east side of Van Pelt Street. No potential historical archaeological sites were documented in this area.

Prior to railroad yard construction, this section of the APE was on the slope of a hill whose summit was to the southeast. The APE sloped steeply upward toward the east, and downward toward the north and west.

The southern section of the APE on Van Pelt Street had elevations between 62.75 and 72.75 in 1907 (Figure 7). Current elevations in this section of the project area range from 29 to 45 feet (Amtrak 1994), indicating that more than 17 feet of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Block 116

The northern section of the Block 116 part of the project area extends from approximately 258 feet to 471 feet north of present Skillman Avenue along the east side of Van Pelt Street and along former Harold Avenue from approximately 335 feet to 540 feet north of present Skillman Avenue.

No potential historical archaeological sites are documented on Block 116.

This part of the APE on Block 116 had elevations ranging between 57.75 and 72.75 feet in 1907 (Figure 7). Current elevations in this area lie between 50 and 52 feet (Amtrak 1994), indicating that more than 5.75 feet of the pre-1907 surface were removed during regrading for the construction of the railyard. This regrading would have effectively destroyed any potential archaeological deposits from the prehistoric period.

The southern section of the APE on Block 116 extends from 88 feet to 141 feet north of present Skillman Avenue along the east side of Van Pelt Street, and from 129 to 159 feet north of present Skillman Avenue along the west side of former Harold Avenue.

No potential historical archaeological sites are documented on Block 116

This APE location on Block 116 had elevations ranging between 72.75 and 77.75 feet in 1907 (Figure 7). Current elevations in this section of the project area range from 30 to 45 feet (Amtrak 1994), indicating that more than 27 feet of the pre-1907 surface were removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Harold Avenue (beneath present viaduct)

The northern section of the APE on Harold Avenue extends from approximately 335 feet to 540 feet north of present Skillman Avenue along the west side of Harold Avenue, and from 364 to 557 feet north of present Skillman Avenue along the west side of Harold Avenue. No buildings were constructed on the block prior to the establishment of the railroad yard, and no potential historical archaeological sites are documented on Harold Avenue (Figure 16).

The APE on this part of former Harold Avenue was formerly on the northern downslope of a hill centered on the area just south of present Skillman Avenue. Elevations on Harold Avenue ranged between 57.75 and below 67.75 feet in 1907, sloping downward towards the north (Figure 7). Current elevations in this area lie between 51 and 53 feet (Amtrak 1994), indicating that more than 4.75 feet of the pre-1907 surface were removed during regrading for the construction of the railyard. This regrading would have effectively destroyed any potential archaeological deposits from the prehistoric period.

The southern section of the APE on Harold Avenue extends from approximately 130 feet north of present Skillman Avenue to 160 feet along the western side of Harold Avenue, and between about 140 and 190 feet along the eastern side of Harold. No potential historical archaeological sites are documented on Harold Avenue (Figure 16).

The APE sections of the southern part of Harold Avenue had elevations between 67.75 and 77.75 feet in 1907 (Figure 7). Current elevations in this section of the project area range from 30 to 31 feet (Amtrak 1994), indicating that more than 36 feet of the pre-1907 surface were removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Skillman Avenue (between Honeywell Street and Hulst Streets)

No potential historical archaeological sites were documented in this area of the APE on Skillman Avenue extending from the former Honeywell Street (not the current bridge) to the intersection with Hulst (37th) Street.

The section of the APE between Honeywell Street and Buckley Streets was a relatively level area, sloping gradually downward toward the north. The 1907 elevations in this part of the APE ranged between 47.75 and 52.75 feet (Figure 7), while current elevations run from 47 feet to below 44 feet in the southeastern half of the street (Amtrak 1994).

In the southeastern part of the APE these elevations indicate the removal of no less than three feet of the pre-yard surface. This regrading would have effectively destroyed any potential prehistoric archaeological deposits. No historical sites were documented in this section of Skillman Avenue.

The elevation changes in the northwestern part of the project area along Skillman Avenue between Honeywell Street and Buckley Streets suggest that regrading may have removed between approximately two and as much as five feet of the pre-yard ground surface. This would have impacted any potential prehistoric archaeological remains severely, and combined with the disturbance from the pre-yard water main beneath this section of Skillman Avenue (depth greater than four feet below grade - Figure 15) would have effectively destroyed any potential prehistoric archaeological deposits. No historical sites were documented in this section of Skillman Avenue.

The eastern part of the APE on the former Skillman Avenue extends from Buckley (36th) to Hulst (37th) Streets. No potential historical archaeological sites were documented in this area.

This part of the APE was a fairly level area on the northward-heading downslope sandwiched between hills to the west and east. The APE section had elevations between 47.75 feet and 57.75 feet in 1907 (Figure 7). At present, elevations in this area range between 28 and 36 feet (Amtrak 1994), indicating a removal of no less than 11 feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Block 148

The APE section of former Block 148 ranges from former Skillman Avenue to about 106 feet south of former Skillman Avenue along Honeywell Street, and as little as 35 feet south of former Skillman Avenue at Buckley Street. By the time of yard construction a number of buildings had been constructed within the APE (Sanborn 1898; Figure 15).

Prior to railroad yard construction, the Block 148 section of the APE was situated on the slopes of a hill whose summit lay about 150 feet to the south. The APE segment sloped

downward toward the northeast, and had elevations between 47.75 feet and 62.75 feet in 1907 (Figure 7). At present, elevations in this location range between 25 and 28 feet (Amtrak 1994), indicating a removal of no less than 19 feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Block 138

The APE section of former Block 138 is a small triangle at the northwestern corner of the block (Lot 23), with a frontage of approximately ten feet on both former Skillman Avenue and Buckley Street.

No potential historical archaeological sites were documented in this area.

This part of the APE was a fairly level area on the northward-heading downslope sandwiched between hills to the west and east. This area had elevations between 47.75 feet and 57.75 feet in 1907 (Figure 7). At present, elevations in this area range between 28 and 36 feet (Amtrak 1994), indicating a removal of no less than 11 feet of the pre-yard surface. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

- **APE Between the 39th Street Bridge and 43rd Street (Laurel Hill Avenue)**

Former Block 113

The Block 113 section of this APE extends from the old LIRR roadbed on the south to approximately 12 feet north of the roadbed along the west side of Bragaw Street, and approximately 30 feet north of the LIRR roadbed on the east side of former Harold Avenue. No historical structures are recorded in the Block 113 section of the project area.

In 1907, the Block 113 section of the APE was along the southern slope and near the summit of a small hill centered on Block 113. Elevations lay between 32.75 feet and 42.75 feet, sloping steeply upward toward the north (Figure 7).

Current elevations in this part of the APE decline from under 24 feet on the east side of the block to below 21 feet along former Harold Avenue (MTA/LIRR 1999). This change in elevation indicates that more than eight feet of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the prehistoric period.

No potential historical archaeological resources are recorded in the Block 113 section of the APE.

Former Bragaw Street (39th Place – North of Middleburg Avenue)

The Bragaw Street section of the APE north of Middleburg (39th) Avenue is a narrow strip of land which extends no more than 12 feet north from the old LIRR right-of-way. No historical structures are recorded in the Bragaw Street section of this part of the APE.

In 1907, this part of the APE was on the southeastern slopes of a small hill whose summit lay to the northwest, centered on former Block 113. Elevations lay between 32.75 feet and 42.75 feet, sloping strongly upward toward the northwest (Figure 7).

At present, elevations in this part of the project area are between 23 and 24 feet (MTA/LIRR 1999). This change in elevation indicates that more than eight feet of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the prehistoric period.

No potential historical archaeological resources are recorded in the Bragaw Street section (north of Middleburg Avenue) of the APE.

Old Long Island Rail Road Trackbed – Harold Avenue (39th Street) to Van Buren Street (41st Street)

The old Long Island Rail Road trackbed sections of the APE extend from approximately Harold Avenue on the west to the east side of Van Buren Street on the east. Historical maps record no structures pre- or postdating track construction (Sidney 1849; Conner 1852; Beers 1873; Figures 11, 16). The LIRR tracks themselves, which would have been replace numerous times between 1861 and the present, are not considered an archaeological resource.

The Long Island Rail Road trackbed sections of the APE were constructed in an area which 19th-century maps depict as heavily wooded. The roadbed appears to thread its way between, rather than over, the various small and large hills in the vicinity (Figure 3; Figure 4). The 1907 topographic map shows a fairly level, graded roadbed lying between the slopes of hills to the north and south. The roadbed sloped very gradually downward toward the west. Elevations lay between 32.75 and below 42.75 feet (Figure 7).

Current elevations in this section of the APE decline gradually from 28 feet at the eastern end, to approximately 21 feet at the western edge of the APE, at former Harold Avenue (MTA/LIRR 1999). This change in elevation indicates that more than four feet of the pre-1907 surface was removed during regrading for later construction or reconstruction. This regrading would have effectively destroyed any potential archaeological deposits from the prehistoric period.

No potential historical archaeological resources are recorded in the old Long Island Rail Road trackbed section of the APE between former Harold Avenue and Van Buren Street.

Former Lowery (40th) Street (North of Middleburg Avenue)

The Lowery Street section of the APE extends from roughly 505 feet north of former Middleburg Avenue northward to the old LIRR roadbed. No historical structures were recorded in this part of the project area.

Prior to the construction of the railyard, this section of the APE was part of the northern slope of a large hill or ridge whose summit lay approximately 1,500 feet to the southeast, south of present Skillman Avenue. In 1907, elevations in this part of the APE were between 37.75 and 47.75 feet, sloping downward toward the north northeast (Figure 7).

Current elevations in this section of the APE range from 25 to 29 feet, sloping generally downward toward the west (MTA/LIRR 1999). This change in elevation indicates that more than eight feet of the pre-1907 surface was removed during regrading for later construction. This regrading would have effectively destroyed any potential archaeological deposits from the prehistoric period.

No potential historical archaeological resources are recorded in the Lowery Street section (north of Middleburg Avenue) of the APE.

Former Block 91

The Block 91 section of the APE is the northern end of the block, which borders the Long Island Rail Road right-of-way. It extends from Van Buren Street on the east to Lowery Street on the west. Never more than 50 feet wide north/south, this irregularly-shaped section of the APE begins at roughly 512 feet north of former Middleburg Avenue along the west side of Van Buren Street, and approximately 505 feet north of Middleburg Avenue on the east side of Lowery Street. No historical structures are recorded in the Block 91 section of the APE.

Prior to the construction of the railyard, the Block 91 section of the APE was part of the northern slopes of a large hill or ridge whose summit lay approximately 1,000 feet to the south, south of present Skillman Avenue. In 1907, elevations in the APE range from 42.75 feet at the extreme southwestern edge, along Lowery Street, to 37.75 feet and below in the eastern two-thirds of the APE (Figure 7).

Current elevations in this section of the APE are generally between 26 and 31 feet, with the highest elevations in the northeastern corner of the block, at the intersection of Van Buren Street and the old LIRR roadbed (MTA/LIRR 1999). This change in elevation indicates that more than six feet of the pre-1907 surface was removed during regrading for later construction or reconstruction. This regrading would have effectively destroyed any potential archaeological deposits from the prehistoric period.

No potential historical archaeological resources are recorded in the Block 91 section of the APE.

Former Van Buren Street (North of Middleburg Avenue)

The Van Buren Street section of the APE extends between approximately 475 feet and 565 feet north of Middleburg Avenue on the east side of Van Buren Street, and between 512 feet and 582 feet north of Middleburg along the west side of Van Buren Street. No historical structures are recorded in the Van Buren Street section of the APE.

Prior to the construction of the railyard, the Van Buren Street section of the APE was part of the northern slopes of a large hill or ridge whose summit lay approximately 1,200 feet to the south, south of present Skillman Avenue. In 1907, elevations in the APE were above 32.75 and below 37.75 feet, sloping gradually downward toward the northeast (Figure 7).

Currently, elevations in the Van Buren Street section of the APE, north of the existing Loop Track, are between 30 and 31 feet (MTA/LIRR 1999). With 1907 elevations above 32.75 feet, this data indicates that *at least* 1.75 feet of the pre-yard surface had been removed, and it is probable that the figure is somewhat higher. Since prehistoric remains are generally within three to four feet of the pre-development ground surface, it is unlikely that such disturbed or partially-disturbed remains would be of any archaeological value.

The present elevations in the Van Buren Street section of the APE at the location of the existing Loop Track are generally between 29 and 31 feet (MTA/LIRR 1999), indicating a removal of no less than 1.75 feet of the pre-yard surface. Since prehistoric remains are generally within three to four feet of the pre-development ground surface, and several feet of additional soil was most likely replaced and compacted to prepare a bed for the Loop Tracks which presently cover this part of the APE, it is unlikely that prehistoric archaeological deposits here would have survived the regrading and construction associated with the building of the railyard.

South of the existing Loop Track, elevations decline from 30 feet to approximately 27 feet (MTA/LIRR 1999), indicating that yard construction has removed between 2.75 feet and 10.75 feet of the pre-yard surface. Because this part of the APE on Van Buren Street was formerly closer to the 37.75-foot contour line than the 32.75-foot line, the lower limit for regrading was probably nearer to four feet. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

No potential historical archaeological resources are recorded in the Van Buren Street section (north of Middleburg) of the APE.

Former Block 74

The Block 74 section of the APE extends between approximately 475 feet and 565 feet north of Middleburg Avenue on the east side of Van Buren Street, and roughly between 363 feet and 460 feet north of Middleburg Avenue along the west side of Madden Street. No historical structures are recorded in the Block 74 section of the APE.

Prior to the construction of the railyard, the Block 74 section of the APE was part of the northern slope of a large hill or ridge whose summit lay approximately 1,000 feet to the south, south of present Skillman Avenue. In 1907, elevations in the APE were generally above 32.75 feet and below 37.75 feet. The elevations of the northern and northeastern edge of the APE will be discussed in a separate paragraph below (Figure 7).

Current elevations in this section of the APE are generally between 30 and 31 feet, which represents the area of the current Loop Track. South of the existing Loop Track, elevations decline from below 31 feet to approximately 26 feet (MTA/LIRR 1999).

The change in elevations from 1907 to the present in this part of the Block 74 section of the APE indicates that at least 1.75 feet and as much as 11.75 feet of the predevelopment surface was removed at the time of yard construction. Since prehistoric remains are generally within three to four feet of the pre-development ground surface, and several feet of additional soil was most likely replaced to prepare a bed for the tracks which presently cover this part of the APE, it is unlikely that prehistoric archaeological deposits here would have survived the regrading and construction associated with the building of the railyard.

North and northeast of the existing Loop Track, a 20-foot-wide section of the APE slopes downward from 32.75 feet along the track to between 32.75 and 27.75 feet (Figure 7). Current elevations in this same location slope in the opposite direction, with elevations rising from 31 feet to 32 feet along the northeast edge of this part of the APE (MTA/LIRR 1999).

A comparison of 1907 and current elevations suggests that between 0.75 and 4.25 feet of fill were added to this section of the APE, providing a protective overmantle which may have shielded potential prehistoric archaeological deposits from adverse construction impacts. Although some of this prehistoric potential may have already been disturbed by trackbed preparation, construction disturbance for the northeastern 20 feet of the Block 74 section of the APE may eradicate any potentially surviving buried cultural materials from the prehistoric period.

No historical resources were identified for this area of the APE. Excavation for this section of the project area would eradicate any potentially surviving buried cultural materials from the prehistoric period. For recommendations and mitigation measures concerning Block 74, see Section 3.5.

Former Madden Street (42nd) Street – North of Middleburg Avenue)

The Madden Street section of the APE extends roughly between 363 feet and 460 feet north of Middleburg Avenue along the west side of Madden Street, and approximately between 280 feet and 401 feet north of Middleburg Avenue on the east side of Madden Street.

No potential historical archaeological resources are recorded in the Madden Street (north of Middleburg Avenue) section of the project area.

Prior to the construction of the railyard, the Madden Street (north of Middleburg) section of the APE was part of the northern slope of a large hill or ridge whose summit lay approximately 1,000 feet to the south, south of present Skillman Avenue. For the purposes of this discussion, the APE will be divided into three parts, i.e., the area of the current Loop Tracks, and the areas to the north and south of the Loop Tracks.

In 1907, the area north of the existing Loop Tracks sloped downward toward the north northeast, with elevations between 32.75 feet and 27.75 feet (Figure 7). Current surveys show elevations in this area sloping *upward* toward the north northeast, with elevations between 30 and 34 feet. A comparison of these figures indicates a change in elevation between 1907 and the present ranging from -2.75 feet near the existing Loop Tracks to as much as +6.25 along the northern edge of this part of the APE.

The removal of as much as 2.75 feet of pre-development surface would have severely impacted any potential prehistoric archaeological deposits in this area, and coupled with surface preparation for the adjacent tracks, this disturbance would have destroyed any prehistoric potential in this area. However, much of the northern 20 feet of this part of the APE has increased in elevation since yard construction, and would have had a fill layer of as great as 6.25 feet added to the surface. This fill may have protected potential prehistoric archaeological deposits from adverse construction impacts. Proposed construction disturbance for the northeastern 20 feet of the Madden Street section of the APE may eradicate any potentially surviving buried cultural materials from the prehistoric period.

In 1907, prior to yard construction, elevations in the Madden Street section of the APE in the location of the current Loop Track clustered around 32.75 feet. The 32.75-foot contour line divides the tracks in half, roughly from northwest to southeast. Elevations on the northern half of the trackbed were below 32.75 feet, and those to the south were above 32.75 feet (Figure 7). Presently, elevations in this section of the APE are generally between 31 and 32 feet (MTA/LIRR 1999), indicating a removal of between less than 0.75 and more than 1.75 feet of the pre-development surface. Since prehistoric remains are generally within three to four feet of the pre-development ground surface, and several feet of additional soil was most likely replaced to prepare a bed for the Loop Tracks which presently cover this part of the APE, it is unlikely that prehistoric archaeological

deposits here would have survived the regrading and construction associated with the building of the railyard.

In the part of the Madden Street section of the APE south of the existing Loop Track, the 1907 topographic map shows elevations greater than 32.75 feet (Figure 7). At present, elevations south of the current Loop Track are below 30 feet, and decline to below 27 feet at the southern edge of the area (MTA/LIRR 1999). This indicates that regrading in this location has removed no less than 2.75 feet to more than 5.75 feet of the pre-yard surface. The areas with the least amount of regrading lie closest to the current Loop Track, where they would have been further impacted by the preparation of the present roadbed. It is unlikely that prehistoric archaeological deposits here would have survived the regrading and construction associated with the building of railyard.

No historical resources were identified for this area of the APE.

Excavation for this section of the project area would eradicate any potentially surviving buried cultural materials from the prehistoric period in specific areas. For recommendations and mitigation measures, see Section 3.5.

Former Block 71

The Block 71 section of the APE begins along the south side of the block, along former Middleburg Avenue, from approximately 80 feet to 166 feet east of former Madden Street (42nd) Street, and curves northwesterly though the block to Madden Street between approximately 280 feet and 401 feet north of Middleburg Avenue. No historical structures are recorded in the Block 71 section of the project area.

Prior to the construction of the railyard, the Block 71 section of the APE was part of the northern slope of a large hill or ridge whose summit lay approximately 1,000 feet to the southwest, south of Skillman Avenue. In 1907, elevations in the APE ranged from above 52.75 near Middleburg Avenue on the south, sloping strongly downward to below 32.75 feet along Madden Street in the northernmost corner of the APE (Figure 8).

At present the southern 210 feet of the APE on Block 71, which had elevations above 37.75 feet in 1907, shows evidence of the extensive regrading with the removal of four feet or more of the pre-yard surface. Today these locations have elevations generally between 32 and 33 feet, declining to as low as 29.2 feet along the western edge of the area. Although areas east and southwest of the present Loop Track display current elevations of above 33 feet to as high as 38 feet, 1907 elevations in these areas had been higher also, greater than 42 feet to above 52.75. Such subsurface disturbance would have eliminated any potential prehistoric archaeological remains there.

The remaining, northern section of the APE on Block 71, with elevations declining from 37.75 feet northward to less than 32.75 in 1907, now has elevations generally between

31 and 32 feet. Much of this area experienced regrading with greater than four feet of the pre-yard surface removed. In the northern 100 feet of the area, where there is little or no evidence of regrading, roadbed preparation for the present Loop Track would have necessitated the replacement of several feet of the pre-yard surface. Both of these activities would have eliminated any potential prehistoric archaeological remains in this section of the APE.

No potential historical archaeological resources are recorded in the Block 71 section of the APE.

An additional section of the APE on Block 71 is a triangular area which begins about 105 feet east of Madden Street along the north side of Middleburg Avenue, and extends eastward to about 60 feet north of Middleburg Avenue along the west side of Laurel Hill Avenue (present 43rd Street). There are no recorded historical structures in this part of the APE.

This part of the project area was formerly situated on a steeply sloping part of a hill or ridge which reached its summit near present Skillman Avenue, approximately 1,300 feet to the south southwest. Elevations ranged from 42.75 to <57.75 feet in 1907 (Figure 7). Current elevations in this area lie between 32 and 34 feet on the western half, and rise abruptly to 38 feet in the eastern half. (Amtrak 1994). The elevations suggest that at least 4.75 feet of the pre-1907 surface was removed during regrading for railyard construction.

The eastern 30 feet of the Laurel Hill Avenue frontage, the area with the smallest regrading change, is occupied by a two-story brick building, whose construction would have caused additional subsurface disturbance of at least four feet below the ***regraded*** surface (totaling approximately eight feet or more below the pre-yard surface). These regrading and construction episodes would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Middleburg Avenue (between Van Buren Street and Laurel Hill Avenue)

This part of the APE covers an irregularly-shaped area whose westernmost boundaries are 50 feet west of the Madden Street intersection on the south side of Middleburg Avenue, and 105 feet east of the same intersection on the north side of Middleburg Avenue. The eastern boundary is Laurel Hill Avenue. There are no recorded historical structures in this part of the APE.

The Middleburg Avenue section of the APE was formerly along the northern and eastern downslope of a hill or ridge which reached it summit near present Skillman Avenue and Madden Street, approximately 1,200 feet to the south. This section of the APE sloped strongly downward toward the northeast, declining from about 62.75 feet to above 42.75 feet, according to the 1907 topographic map (Figure 7).

The eastern section of the APE, extending approximately 90 feet west of Laurel Hill Avenue (43rd Street) is elevated over the Loop Tracks, where current elevations lie between 33 and 34 feet (Amtrak 1994). This indicates that more than 13 feet of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

The western segment of the Middleburg Avenue section of the project area has current elevations between 61 and 62 feet (Amtrak 1994), indicating a grade change since 1907 of between +14.25 feet and -1.75 feet. It is probable that fill was added in this area, and that the fill overmantle protected potential prehistoric and historical archaeological resources which may have been buried here. These buried resources include potential deposits from British troops who camped in this vicinity during the Revolutionary War. Without data from soil borings identifying fill layers, it is not possible to discount the survival of shallowly buried prehistoric and historical cultural resources at this location

Excavation for this section of the APE would eradicate any potentially surviving buried cultural materials from the prehistoric period. For recommendations and mitigation measures, see Section 3.5.

Former Block 111

The northern section of the APE on Block 111 extends from approximately 361 feet to 576 feet north of ***present*** Skillman Avenue along Harold Avenue, and from 541 feet to 635 feet north of present Skillman Avenue along the western side of old Bragaw Street (39th Place). No buildings were constructed on the block prior to the establishment of the railroad yard. No potential historical archaeological sites were documented on Block 111.

Prior to the construction of the railroad yard, the Block 111 section of the APE was on the downslope of a hill whose summit was approximately 1000 feet to the south. This part of the project area sloped downward toward the north.

The northeastern half of the APE on Block 111 had former elevations ranging between 52.75 and 57.75 feet (Figure 7). Current elevations there range from 52 to 55.5 feet (Amtrak 1994), suggesting that yard regrading removed between one to five feet of the pre-1907 ground surface. Since prehistoric remains are generally within three to four feet of the pre-development ground surface, and several feet of additional soil was most likely replaced to provide a bed for the tracks which already cover this part of the project site, it is unlikely that potential prehistoric archaeological deposits here would have survived the regrading and construction associated with the building of the railyard.

The southwestern half of the APE on Block 111 had elevations between 57.75 and 62.75 feet in 1907 (Figure 7). Current elevations in this area lie between 51 and 54 feet

(Amtrak 1994), indicating that 3.75 feet or more of the pre-1907 ground surface were removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the prehistoric period.

The southern part of the APE on Block 111 extends from approximately 141 feet to 188 feet north of ***present*** Skillman Avenue along Harold Avenue, and from about 163 to 236 feet north of present Skillman Avenue along the western side of old Bragaw Street (39th Place). No buildings were constructed on the block prior to the establishment of the railroad yard. Therefore, no potential historical archaeological sites are anticipated from Block 111.

Prior to the construction of the railroad yard, this part of the APE was on the downslope of a hill whose summit was approximately 1000 feet to the south. The area sloped downward toward the north.

The southern APE locations on Block 111 had elevations between 62.75 and 72.75 feet in 1907 (Figure 7). Current elevations in this section of the project area range from 30 to 32 feet (Amtrak 1994), indicating that more than 30 feet of the pre-1907 surface was removed during regrading for railyard construction. This extensive regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Bragaw Street (39th Place – South of Former Middleburg Avenue)

The northern section of the APE on Bragaw Street runs from 541 to 635 feet north of present Skillman Avenue along the west side of Bragaw Street, and 565 to 659 feet north of present Skillman Avenue along the east side of Bragaw Street.

This section of the project area was formerly in a fairly level area between two fingers of a hill which sloped gradually upward toward the southwest and east. Elevations ranged between 52.75 and 57.75 feet in 1907 (Figure 7). Current elevations in this area lie between 54 and 56 feet (Amtrak 1994), suggesting that between 1.25 and 3.75 feet of the original ground surface was removed during grading for Yard construction.

Since prehistoric remains are generally within three to four feet of the pre-development ground surface, and several feet of additional soil was most likely replaced to provide a bed for the tracks which already cover this part of the project site, it is unlikely that potential prehistoric archaeological deposits here would have survived the regrading and construction associated with the building of the railyard.

The southern part of the Bragaw Street section of the APE extends from 163 feet to 230 feet north of ***present*** Skillman Avenue along the west side of former Bragaw Street, and from 187 feet to 237 feet north of present Skillman Avenue along the east side of Bragaw Street. No structures are recorded within this part of the APE (Figures 11, 16).

Prior to the construction of the railyard, this part of Bragaw Street was near the summit of a large hill or ridge, whose apex was south of present Skillman Avenue, approximately 200 feet south of the project area. This part of the APE sloped generally downward to the north, with 1907 elevations of above 62.75 feet, rising to as much as 67.75 feet (Figure 7).

Current elevations in the same areas of the APE range between 31 feet and 41 feet, (Amtrak 1994; MTA/LIRR 1999), indicating that 21 feet or more of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

No potential historical archaeological sites have been documented on Bragaw Street.

Former Block 95

The northern section of the APE on former Block 95 extends 565 to 659 feet north of present Skillman Avenue along the east side of Bragaw Street, and from 660 to 741 feet north of present Skillman Avenue on the west side of Lowery Street.

This part of the project area lay in a hollow between two fingers of a hill or ridge, and sloped upward toward the east.

The eastern half of this area on Block 95 had elevations ranging between 62.75 and below 67.75 feet in 1907 (Figure 7). Current elevations in this area lie between 55 and 58 feet (Amtrak 1994), indicating that more than four feet of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the prehistoric period.

The western half of this area on Block 95 had elevations between 57.75 and 62.75 feet in 1907 (Figure 7). Current elevations in this area lie between 54 and 55 feet (Amtrak 1994), indicating at least 2.75 feet of the original pre-yard ground surface has been removed in this section of the block.

Since prehistoric remains are generally within three to four feet of the pre-development ground surface, and several feet of additional soil was most likely replaced to provide a bed for the tracks which already cover this part of the project site, it is unlikely that prehistoric archaeological deposits here would have survived the regrading and construction associated with the building of the railyard.

The southern part of the Block 95 section of the APE extends from 187 feet to 237 feet north of ***present*** Skillman Avenue along the east side of Bragaw Street, and from 192 feet to 260 feet north of present Skillman Avenue along the west side of Lowery Street. No structures were recorded within this part of the APE (Figures 11, 16).

Prior to the construction of the railyard, this section of the project area was near the summit of a large hill or ridge, whose apex was south of present Skillman Avenue approximately 200 feet south of the project area. This part of the APE sloped generally downward to the north, with 1907 elevations ranging from above 57.75 feet to below 67.75 feet (Figure 7).

Current elevations in the same areas of the APE range between 31 feet and 41 feet, (Amtrak 1994; MTA/LIRR 1999), indicating that 16.75 feet or more of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

No potential historical archaeological sites have been documented on Block 95.

Former Lowery (40th) Street (South of Former Middleburg Avenue)

The northern part of the Lowery Street section APE runs from 660 to 741 feet north of present Skillman Avenue along the west side of Lowery Street, and 687 to 765 feet north of present Skillman Avenue along the east side of Lowery. Before yard construction, a number of structures were erected within the APE.

This section of the project area was part of an extensive area of fairly level ground along an elevated finger of a ridge or hill. The slope ran upward toward the south and east. In 1907 this part of the APE had elevations ranging between 62.75 and 67.75 feet (Figure 7). Current elevations in this area lie between 56 and 58 feet (Amtrak 1994), indicating that more than four feet of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the prehistoric period.

The Bragaw homestead, pre-dating 1849, once straddled the northern edge of this part of the APE. Documented structures in the former Lowery Street roadbed include the main dwelling (outside the APE) and a greenhouse (partially within this segment of the APE, and also former Block 90). Both were just south of former Middleburg Avenue. The current elevations at the edge of the APE in this area drop abruptly to 53 feet and below, indicating that at least nine feet of the ground surface was removed during railyard regrading. This would have destroyed any shaft features, such as privies, cisterns and wells, abutting the project area in Lowery Street.

The southern part of the Lowery Street section of the APE extends from 192 feet to 260 feet north of ***present*** Skillman Avenue along the west side of Lowery Street, and from 198 feet to 272 feet north of present Skillman Avenue along the east side of Lowery Street. No structures were recorded within this part of the APE (Figures 11, 16).

Prior to the construction of the railyard, this section of the project area was near the summit of a large hill or ridge, whose apex was south of Skillman Avenue approximately 200 feet south of the project area. This part of the APE sloped generally downward to the northwest, with 1907 elevations of above 57.75 feet, rising to under 67.75 feet (Figure 7).

Current elevations in the same areas of the APE range from 31 feet to 41 feet (Amtrak 1994; MTA/LIRR 1999), indicating that 16.75 feet or more of the pre-1907 surface was removed during regrading for railyard construction. This extensive regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

Former Block 90

The northern part of the Block 90 section of the APE runs from 687 to 765 feet north of present Skillman Avenue along the east side of Lowery Street, and 765 to 847 feet north of present Skillman Avenue along the west side of Van Buren Street. Before railyard construction, a number of structures were erected within the APE.

This part of the project area was part of an extensive area of fairly level ground along an elevated finger of a ridge or hill. Elevations increased toward the south, and ranged between 62.75 and 72.75 feet in 1907 (Figure 7). Current elevations in this area lie between 56 and 60 feet (Amtrak 1994), indicating a removal of between 2.75 and 12.75 feet of the pre-1907 surface. This regrading for railyard construction would have effectively destroyed any potential archaeological deposits from the prehistoric period.

The former site of a dwelling and outbuildings (identified in Section 4 as predating 1849) lies adjacent to and within the north end of this part of the APE (see also Lowery Street above, and Van Buren Street below). Current elevations in this area are generally between 57 and 58 feet, a difference of between five and ten feet from the pre-yard elevations. Given the great distance of the APE from the dwelling (approximately 90 feet), and the fact that the outbuildings blocked direct access to much of the Block 90 part of the project area from the house, it is unlikely that this location would be the site of domestic shaft features such as privies, wells and cisterns. However, it is possible that foundations or other shallow deposits relating to this outbuilding may have survived this depth of regrading.

Excavation in this section of the APE would eradicate any potentially surviving buried cultural materials from the historical period. For recommendations and mitigation measures, see Section 3.5.

This southern part of the Block 90 section of the APE extends from approximately 198 feet to 272 feet north of present Skillman Avenue along the west side of Block 90, and from 228 feet to 310 feet north of present Skillman Avenue along the east side of Block

90. According to historical maps, no structures were built within this part of the APE (Figures 11, 16).

Prior to the construction of the railyard, this section of the project area was near the summit of a large hill or ridge whose apex was south of present Skillman Avenue centered near Madden Street, about 400 feet southeast of the APE. This part of the APE sloped generally downward to the north and west, with 1907 elevations ranging from above 62.75 feet to just under 72.75 feet (Figure 7).

Current elevations in the same area of the APE range between 32 feet and 44 feet (Amtrak 1994; MTA/LIRR 1999), indicating that about 18 feet or more of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

No potential historical archaeological resources have been recorded in this part of the APE.

Former Van Buren Street (41st) Street (South of Former Middleburg Avenue)

The northern part of the Van Buren Street section of the APE runs from 765 to 847 feet north of present Skillman Avenue along the west side of Van Buren Street, and between 788 and 870 feet north of present Skillman Avenue along the east side of Van Buren Street. Before railyard construction, a number of buildings were erected within the APE. This area was also identified as potentially sensitive for British/Hessian military camp deposits.

This part of the project area was part of an extensive area of fairly level ground along an elevated finger of a ridge or hill. Elevations increased toward the south and ranged between 62.75 and 67.75 feet in 1907 (Figure 7). Current elevations in this area lie between 57 and 59 feet (Amtrak 1994), indicating a removal of 4.75 feet or more of the 1907 ground surface during regrading for railyard construction. This regrading would have destroyed any potential archaeological deposits from the prehistoric period.

Also, given the temporary nature of the British/Hessian military camps, and the local accounts of related remains being visible both above the natural surface and discovered in plowzones, it is unlikely that cultural materials from these Revolutionary War period camps would have survived the yard regrading of at least 4.75 feet.

This northern part of the Van Buren Street section of the project area was also the site of a large outbuilding, probably a barn, relating to the pre-1849 dwelling which stood on Block 90 at the corner of Middleburg Avenue and Lowery Street (see above). The barn, which formerly lay wholly within the northern edge of the project area, predates 1891, and earlier outbuildings at this location may date to before 1852. Foundations or other

shallow deposits relating to this barn are unlikely to have survived this depth of disturbance (no less than 4.75 feet). Given the great distance of the Van Buren Street location from the related dwelling, which stood approximately 160 feet to the west, and the fact that the barn and adjacent outbuildings blocked direct access to this area from the house, it is unlikely that this location would be the site of domestic shaft features related to the dwelling.

This southern part of the Van Buren Street section of the APE extends from approximately 228 feet to 310 feet north of present Skillman Avenue along the west side of Van Buren Street, and from 228 feet to 319 feet north of present Skillman Avenue along the east side of Van Buren Street. According to historical maps, no structures were built within this part of the APE (Figures 11, 16).

Prior to the construction of the railyard, this section of the project area was near the summit of a large hill or ridge, whose apex was south of present Skillman Avenue near Madden Street about 400 feet southeast of the APE. This part of the APE sloped generally downward to the north and west, with 1907 elevations ranging from above 67.75 feet to over 72.75 feet (Figure 7).

Current elevations in the same area of the APE range between 32 feet and 44 feet, (Amtrak 1994; MTA/LIRR 1999), indicating that 23 feet or more of the pre-1907 surface was removed during regrading for railyard construction. This extensive regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

No potential historical archaeological resources have been recorded in this part of the APE.

Former Block 75

The northern section of the APE on Block 75 runs from 788 to 870 feet north of present Skillman Avenue along the east side of Van Buren Street, and 870 north of present Skillman Avenue to Middleburg Avenue along the west side of Madden Street.

This part of the APE was formerly in a relatively level area on the northern downslope of a hill or ridge which reached it summit near present Skillman Avenue, approximately 1,200 feet to the south.

The southwestern half of this section of the project area had elevations ranging between 62.75 and below 67.75 feet in 1907 (Figure 7). Current elevations here lie between 57 and 60 feet (Amtrak 1994), indicating a grade reduction between 2.75 and greater than ten feet. Combined with railyard surface preparation to provide a sound track bed, this regrading would have effectively destroyed any shallowly-buried potential archaeological deposits from the historical and prehistoric periods.

The northeastern half of this part of the APE had elevations ranging between 57.75 and 62.75 feet in 1907 (Figure 7). Current elevations in this area lie between 59 and 60 feet (Amtrak 1994), indicating a grade change of between +2.25 feet and -3.75 feet. It is probable that fill was added in this area, and that this fill overmantle protected potential prehistoric and historical archaeological resources buried here. These buried resources include potential deposits from British troops who camped in this vicinity during the Revolutionary War. Without data from soil borings identifying fill layers, it is not possible to discount the survival of shallowly buried prehistoric and historical cultural resources at this location

Excavation for this section of the APE would eradicate any potentially surviving buried cultural materials from the prehistoric and historical periods. For recommendations and mitigation measures, see Section 3.5.

This southern part of the Block 75 section of the APE extends from approximately 228 feet to 319 feet north of present Skillman Avenue along the west side of Block 75, and from 345 feet to 437 feet north of present Skillman Avenue along the east side of Block 75. According to historical maps, no structures were built within this part of the APE (Figures 11, 16).

Prior to the construction of the railyard, this section of the project area was near the summit of a large hill or ridge, whose apex was south of present Skillman Avenue near Madden Street about 400 feet southeast of the APE. This part of the APE sloped generally downward to the north and west, with 1907 elevations ranging from above 72.75 feet to as much as 77.75 feet (Figure 7).

Current elevations in the same area of the APE range between 32 feet and 44 feet, (Amtrak 1994; MTA/LIRR 1999), indicating that 28 feet or more of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

No potential historical archaeological resources have been recorded in this part of the APE.

Former Madden Street (42nd) Street (South of Former Middleburg Avenue)

The northern section of the Madden Street portion of the APE extends along the west side of Madden Street from 870 feet north of present Skillman Avenue to former Middleburg Avenue, and along the east side of Madden Street, from 894 feet north of present Skillman Avenue to Middleburg.

This was formerly in a relatively level area on the northern downslope of a hill or ridge which reached it summit near present Skillman Avenue, approximately 1,200 feet to the south.

In 1907, this part of the project area had elevations ranging from more than 57.75 to greater than 62.75 feet (Figure 7). Current elevations in this area lie between 59 and 61 feet (Amtrak 1994), indicating a grade change between approximately +3.25 feet and -3.75 feet. It is probable that fill was added in this area, and that the fill overmantle protected potential prehistoric and historical archaeological resources which may have been buried here. These buried resources include potential deposits from British troops who camped in this vicinity during the Revolutionary War. Without data from soil borings identifying fill layers, it is not possible to discount the survival of shallowly-buried potential prehistoric and historical cultural resources at this location.

Excavation for this section of the project area would eradicate any potentially surviving buried cultural materials from the prehistoric and historical periods. For recommendations and mitigation measures, see Section 3.5.

This southern part of the Madden Street section of the APE extends from approximately 345 feet to 437 feet north of present Skillman Avenue along the west side of Madden Street, and from 404 feet to 507 feet north of present Skillman Avenue along the east side of Madden Street. According to historical maps, no structures were built within this part of the APE (Figures 11, 16).

Prior to the construction of the railyard, this section of the project area was near the summit of a large hill or ridge, whose apex was south of present Skillman Avenue near Madden Street about 400 feet south of the APE. This part of the APE sloped generally downward to the north, with 1907 elevations ranging from above 72.75 feet to under 77.75 feet (Figure 7).

Current elevations in the same area of the APE range from 32 feet to 44 feet (Amtrak 1994; MTA/LIRR 1999), indicating that 28 feet or more of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

No potential historical archaeological resources have been recorded in this part of the APE.

Former Block 70

The northwestern section of the APE on Block 70 is a small triangular area which begins 894 feet north of present Skillman Avenue and extends to Middleburg Avenue along the east side of Madden Street, and extends eastward approximately 120 feet east of Madden Street. There are no recorded historical structures in this part of the APE.

This part of the project area was formerly on the slope of a hill or ridge which reached its summit near present Skillman Avenue, approximately 1,200 feet to the south. The APE here sloped downward toward the north and northeast. In 1907, elevations prior to railroad yard construction ranged from greater than 57.75 feet to just less than 67.75 feet (Figure 7).

Presently, elevations in this part of the APE lie between 61 and 62 feet, indicating a grade change of between -6.75 feet and +4.25 feet. It is probable that fill was added in this area, and that the fill overmantle protected potential prehistoric and historical archaeological resources buried here. Potential historical resources may include deposits from British troops who camped in this vicinity during the Revolutionary War. Without data from soil borings identifying fill layers, it is not possible to discount the survival of shallowly buried prehistoric and historical cultural resources at this location.

Excavation for this section of the project area would eradicate any potentially surviving buried cultural materials from the prehistoric and historical periods. For recommendations and mitigation measures, see Section 3.5.

The southern and eastern sections of the APE on Block 70 begin from 404 feet to 507 feet north of present Skillman Avenue on the west side of the block along former Madden Street (42nd) Street. From there the project area curves northward and ends on the northern side of the block, along former Middleburg Avenue, from 104 feet to 190 feet east of Madden Street. Before yard construction, a number of structures were built on this part of the APE (Figure 11).

Prior to the construction of the railyard, this section of the APE was near the summit of a large hill or ridge whose apex was south of present Skillman Avenue, centered approximately on Madden Street about 500 feet to the south southwest. This part of the APE sloped generally downward toward the north and east, with 1907 elevations ranging from 57.75 feet at the northeast corner of the block along Laurel Hill Avenue, to just under 72.75 feet along Madden Street (Figure 7).

Current elevations in the same areas of the APE range generally from 33 feet to 45 feet, including the area of historical period potential, Lot 20 (Amtrak 1994; MTA/LIRR 1999). This change in elevation indicates that 12 feet or more of the pre-1907 surface was removed during regrading for railyard construction. This regrading would have

effectively destroyed any potential archaeological deposits from the historical or prehistoric periods.

However, current elevations in the northern 90 feet of Block 70, along the south side of former Middleburg Avenue, immediately west of the ***existing*** eastern track loop, range from 45 feet on the south to 62 feet on the north. Since the area with elevations between 61 and 62 feet is also the section of Block 70 with the lowest 1907 elevations (between 57.75 and 62.75 feet), regrading has either added up to 4.25 feet of fill, or removed up to 0.75 feet of the pre-yard surface.

A fill overmantle up to 4.25 feet thick may have protected any potential prehistoric and historical archaeological resources. Construction disturbance for the northern 90 feet of Block 70 in this section of the APE may eradicate any potentially surviving buried cultural materials from the prehistoric period and Revolutionary War remains from the historical period. For recommendations and mitigation measures, see Section 3.5.

- **APE Between 43rd Street (Laurel Hill Avenue) and 48th (Gosman Street)**

Former Laurel Hill Avenue (43rd Street); Former Block 54; Locust (44th) Street; Former Block 51; Grove (45th) Street; Former Block 37; Bliss (46th) Street; Former Block 34; Caroline (47th) Street; Former Block 22; Gosman (48th) Street

This section of the APE begins at the northwest corner of Laurel Hill Avenue (now 43rd Street) and Barnett Avenue. It extends north to 37th Avenue, a distance of about 330 feet. From the west side of 43rd Street the APE continues northeasterly, approximately 1,510 feet to the east side of Gosman Avenue, now 48th Street, where it lies between approximately 500 feet and 575 feet north of 39th Avenue. No historical structures have been recorded within this section of the APE.

Prior to yard construction, the section of the APE between Laurel Hill Avenue (43rd Street) and Gosman Avenue (48th Street), which is a strip of land approximately 330 feet wide and 1,510 feet long, extended northwest from the downslope of one hill and then proceeded across a hill or finger of a ridge centered about 900 feet to the southwest. In 1907 elevations at Laurel Hill Avenue were as high as 57.75 feet, declining to below 37.75 feet on Block 51, and rising again to above 62.75 feet on Block 34. East of Block 34, elevations declined again, to below 37.75 feet on Gosman Avenue (48th Street).

Presently maps show a track embankment with bridges over the cross streets. Current elevations in the section of the APE between Laurel Hill Avenue (43rd Street) and Gosman Avenue (48th Street) range from 40 feet and higher along the north side of Barnett and south side of 37th, to 60 feet and higher at the crown of the embankment. Although some sections of the APE may have been adversely impacted by trackbed construction and 20th-century building construction along the north side of Barnett Avenue, a comparison of modern and historical elevations suggests that large segments

of the pre-trackbed surface have been preserved beneath a substantial fill overmantle, with a thickness as great as 20 feet or more. The fill overmantle would have protected potential prehistoric and historical archaeological resources which may have been buried here. These buried resources include potential historical deposits from British troops who camped in this vicinity during the Revolutionary War.

Excavation for this section of the project area may eradicate any potentially surviving buried cultural materials from the prehistoric and historical periods. For recommendations and mitigation measures, see Section 3.5.

3.3.1 Prehistoric Archaeological Potential

As outlined in the prehistoric overview discussion (Section 3.2.1), our knowledge of prehistoric and contact period settlement patterns indicates a marked preference for sheltered, elevated sites close to wetland features and sources of fresh water. Such locations are likely to have been exploited by pre- and proto-historic Native Americans for their processing sites, camps and more permanent settlements which are highly visible archaeologically. Smaller, temporary habitation and procurement sites tend to produce scant archaeological deposits.

Evidence of Indian exploitation of natural resources within the Queens Alignment project area, and occupation in its vicinity, is well-documented through archaeological and historical research. The nearest inventoried sites are NYSM#4538 (ACP Queens No #) a prehistoric village site and NYSM#4537 (ACP Queens 14) a burial site, both in Long Island City. The boundaries of these sites, which are currently unknown, may overlap the western edge of Queens Alignment project area.

The existence of an Indian place name for Dutch Kills, Canapaukah, is also an indication that Native Americans were aware of the stream and the surrounding marshes which once covered much of the western third of the project area.

In addition to previously identified archaeological resources, there are many places within and near the project area which may have the potential to host prehistoric cultural resources. Some of these areas possessed land forms which would have been desirable for long and short term habitation, hunting or fishing stations, burial sites, planting fields, or a number of other specific uses. Identifying these areas depends on a reconstruction of the prehistoric topography.

For this evaluation of prehistoric archaeological potential, maps providing information on historical topography were reviewed to determine what western Queens looked like when European settlers first arrived on the island. These include Taylor and Skinner's 1781 British army survey, the 1844-45 USC&GS and 1874 USGS Coast Surveys, Sidney's Map of 1849, et al. These maps were largely created before intensive development had impacted much of the project area.

The Queens Alignment project area was originally part of a much larger tract of hilly, forested land stretching from the East River as far as Flushing Bay, known to the natives as Wandowenock, usually translated as meaning "the fine land between the long streams," referring to the East River and Flushing Bay (Bolton 1922). The topography would have surely been conducive for Native American use, and comparable locations, at the confluence of two streams, have often possessed prehistoric cultural resources. The chief resource in the project site vicinity was Dutch Kills and its surrounding marshes, which would have provided a rich source of food and raw materials for Native Americans. In fact, almost the entire project area west of former School and Rapelje Streets, or roughly west of the line of present Van Dam Street (Figures 6, 14), was occupied by the creek and its marshes. However, historical maps are somewhat unclear about the original length of Dutch Kills itself. Many seem to have the creek wind northward through Yard A, ending north of Yard A around present Northern Boulevard (Sidney 1849; Conner 1852; Walling 1859; Figure 4).

Surprisingly, there is strong agreement between the earliest and latest maps that this was not the case. Taylor and Skinner's 1781 survey shows the marsh extending eastward, north of former Middleburg Avenue (39th Avenue), about 100 feet north of the project site along its entire length and beyond. Sanborn and Hyde real estate atlases are somewhat more conservative, yet they record the creek's termination between Moore (34th) and Honeywell Street (35th) Streets, about 100 feet north of the LIRR trackbed, which forms the northern boundary of the Sunnyside Yard and Yard A complex (Sanborn 1898; Figures 9, 15).

Historical maps record no fresh water source closer to the project site than Dutch Kills. Although the 1907 topographic map depicts a pond in the project site, on former Block 51, this appears on no other map, and was presumably an artificial body of water created by the "CITY PUMPING STATION" on the adjacent block (Figure 8).

Several archaeological surveys of prehistoric sites completed in Westchester County, New York and Fairfield County, Connecticut, demonstrate that the probability that a land form was occupied by prehistoric peoples drops off sharply as travel time to a source of fresh water increases. The majority of prehistoric sites tend to be within 50 meters of a fresh water source, which, depending on local topography, could translate into a travel time of as great as 15 minutes (Wiegand 1998). Such a consideration is applicable to many sections of the project site, an area of hills, ridges and small valleys or ravines, which would increase travel time between points.

Based on the above discussion, it is clear that prehistoric archaeological potential declines as the distance to a fresh water sources increases. For practical purposes, this suggests a ranking of the Queens Alignment project area in terms of high, medium and low prehistoric archaeological potential, based on distance from Dutch Kills and its marshes. The selection of categories is somewhat arbitrary, although conservative estimates would give a rating of high potential to those dry, elevated areas within 200

feet of the marsh or creek edge, a rating of moderate potential to locations between 200 and 1,000 feet distant, and low potential rating to locations beyond 1,000 feet of the edge of the marsh or creek.

Some places within the project site were determined to have virtually no sensitivity for prehistoric cultural resources. Archaeologist Eugene Boesch, who has evaluated Queens overall prehistoric archaeological sensitivity based on both environmental factors and inventoried archaeological sites, has given former marshland within the project site a no-sensitivity rating for hosting buried cultural resources from the prehistoric era (Boesch 1997). His research identified uplands in proximity to fresh water as more likely to possess cultural deposits.

The following locations within the APEs have been identified as having potential prehistoric sensitivity, based on the documentary and archaeological data indicating that Native Americans have inhabited the vicinity of the project area during the pre- and proto-historic periods. Sensitivity is also determined by a locations' lack of deep subsurface disturbance, which would have eliminated this potential. Areas with moderate and high sensitivity rating are considered to have the potential for archaeological sensitivity; in those locations, disturbance by project-related work could result in significant impacts. None of the areas fell into the "Moderate Sensitivity" category, due to their distance from fresh water sources. Therefore, only areas with high sensitivity ratings are mapped in Figure 19, "Map of Potential Archaeological Sensitivity." Areas with no or low sensitivity ratings are not considered to have the archaeological potential to be impacted, and are not mapped. It should be noted that some of these locations are also considered potentially sensitive for historical archaeological resources, and are discussed under that heading (3.3.2). Utilizing the criteria described in the previous paragraphs, the potential prehistoric sensitivity of these APE sections is ranked:

High Potential Sensitivity

- Location #1: Area between Northern Boulevard and Yard A (Block 239 Lot 36)

- Between Thomson Avenue and Queens Boulevard Bridges:
  Location #2: Old LIRR Embankment (Thomson Avenue Bridge to Queens Boulevard Bridge);

- Between Queens Boulevard and Honeywell Street Bridges:
  Location #3: Old LIRR Embankment (Queens Boulevard Bridge to 41st Avenue);
  Location #4: Former Rapelje Avenue (Former Skillman Avenue to old LIRR trackbed);
  Location #5: Former Block 210 (50-foot frontage on former Rapelje Avenue);

Location #6: Former Foster Avenue (former School to Van Dam Streets, western 60 feet along Block 212), Block 212 (northwest corner); Block 222, School Street (Foster to former Skillman).

For orientation, please refer to the pre-yard street grid as found on the 1907 Contour Map of Sunnyside Yard (Figures 5-8).

Low Potential Sensitivity

Block 137;
Block 149;
Block 74 (Northeast 20 feet in impact area for loop track);
Madden Street (Northeast 20 feet in impact area for loop track, north of Middleburg Avenue);
Block 75 (Northeastern half);
Madden Street (42nd Street, south side of Middleburg Avenue);
Middleburg Avenue (Van Buren Street to Laurel Hill Avenue);
Block 70 (Northern 90 feet in impact area for loop track and Harold Interlocking work).

The remainder of the APEs not listed above were determined to lack sensitivity either because of prehistoric topography, inundation, or extensive historic disturbance.

3.3.2 Historical Archaeological Potential

Locations of potential historical archaeological sensitivity are mapped on Figure 19.

A range of shallowly- and deeply-buried archaeological remains may be expected within the project area APEs, due to the large number of farmhouses and other domestic homelots that once occupied it. As described in the historical section of the contextual overview (3.2.2), former Middleburg Avenue, which once ran through the northern sections of the Sunnyside Yard and Yard A project site, was the main traffic artery of the area beginning in the colonial period, and along it 19th- and even 18th-century farm houses were clustered. Large numbers of dwellings were erected within the project site by 1891, and all of these homelots would be characterized by shaft features, as well as foundations, surface scatter, etc. Therefore, the following locations within the APEs have been identified as potentially sensitive for historical resources relating to the above listed occupation periods and uses:

- Location #1: Area between Northern Boulevard and Yard A, Block 239 Lot 36 (homelot, dwelling, and outbuilding, pre-1844 to ca. 1905);

- Between Thomson Avenue and Queens Boulevard Bridges:
  Location #7: Former Block 200 (dwelling and homelot, post-1891 to ca.1905);
  Location #8: Former Block 201 (DeBevoise Land Office, pre-1873 to pre-1891, unidentified buildings pre-1898 to ca.1905);

- Between Queens Boulevard and Honeywell Street Bridges:
  Portions of Location #6: Former Block 222 and former School Street (former Foster to Skillman Avenues) that include a homelot, dwelling and outbuildings, post-1873 to ca.1905; Former Block 211 (Van Pelt family house and homelot, pre-1844 to ca. 1905; Payntar family homelot and outbuildings, pre-1852 to pre-1873; H. Preston house and homelot, pre-1873 to ca. 1905);

- Between the 39th Street Bridge and edge of Sunnyside Yard at 43rd Street:
  Location #9: Former Block 90 (Bragaw family homelot and outbuildings, pre-1849 to ca. 1905).

A potential site from the earliest period of the area's historical settlement, the location of Burger Jorissen's grist mill, dating to the period ca.1650 to ca.1861 also lies within the project area:

- Between Queens Boulevard and Honeywell Street Bridges:
  Location #10: Old LIRR Embankment, 41st Avenue to the Honeywell Street Bridge

The remaining APE locations are considered potentially sensitive for archaeological resources related to the British and Hessian troops who occupied the area during the Revolutionary War (1776-1783) (Figures 19, 20). Soldiers' huts were visible for decades after the Revolution, and the discovery of related artifacts in the plow zones of area farms was common into the late 19th century (Seyfried 1984b). Because these resources would be shallowly-buried, i.e., in the first four feet of the pre-development surface, they have been and will be particularly vulnerable to subsurface disturbance.

- Between the 39th Street Bridge and edge of Sunnyside Yard at 43rd Street:
  Location #11: Former Block 75 (Northeastern half),
  Former Madden Street (42nd Street, south side of Middleburg Avenue),
  Former Middleburg Avenue (Van Buren Street to Laurel Hill Avenue),
  Former Block 70 (northern 90 feet);

- Between the edge of Sunnyside Yard at 43rd Street and 48th Street:
  Location #12: Area north of the LIRR embankment to 37th Avenue,
  Area south of LIRR embankment to Barnett Avenue.

For orientation concerning the above listed locations, please refer to the pre-yard street grid as found on the 1907 Contour map of Sunnyside Yard (Figures 5-8).

3.4 Impact Assessment

Proposed work for the Queens Alignment will cause varying levels of subsurface disturbance. The deepest and most extensive areas of impact proposed at this time are those related to the construction of tunnel, which will utilize cut-and-cover tunneling techniques through the potentially sensitive sections of Yard A (Blocks 239, former 210, former Rapelje Avenue north of former Skillman Avenue, and the old LIRR Embankment between 41st Avenue and the Honeywell Street Bridge). According to soil boring logs, these locations have ten feet of fill or less (13, QB-9, QB-12, 30) protecting potential archaeologically sensitive locations, all of which would be impacted by the proposed excavation.

Other areas of deep disturbance include the proposed location of the new Sunnyside station and the proposed Harold Interlocking tunnels/retaining walls, which will potentially impact through and below fill layers in areas of archaeological sensitivity on former Blocks 211, 212, 222, former School Street from former Foster to former Skillman Avenues, and former Foster Avenue from former School to Van Dam Streets.

For several of the APEs, plans have not been finalized. It is not clear which areas will be deeply-impacted by foundations for new structures, or in what locations trenching will extend beneath the present surface, and depths of construction for the areas of the proposed Harold Interlocking trackwork. The areas of potential sensitivity that fall under this category are Blocks 74, 90, 200, 201, former Madden Street and the old LIRR Embankment from 41st Avenue to the Thomson Avenue Bridge.

3.5 Mitigation Recommendations

As described above, a number of areas within the APEs have been identified as retaining archaeological sensitivity despite documented construction and grading episodes. Any buried cultural resources from both the prehistoric and historical periods could be severely impacted or destroyed by the proposed construction related to the project. For a more precise location of sensitive areas requiring further consideration see the Sensitivity Maps (Figure 19), and for a more detailed description see sections 3.3.1 Prehistoric Archaeological Potential and 3.3.2 Historic Archaeological Potential. For areas determined to have a Low Potential Sensitivity rating for prehistoric resources, further consideration, research, testing or other mitigation of these locations for buried cultural remains from the prehistoric period is not recommended. The remainder of the APEs not listed above were determined to lack sensitivity either because of prehistoric topography, inundation, or extensive historical disturbance.

Mitigation measures for locations determined to have a high sensitivity rating for prehistoric resources and/or potential sensitivity for historical resources are discussed below.

The conclusions concerning both sensitivity and impact are based primarily on a comparison of topographic maps which detail land contours on the APEs both before (1907) and after Sunnyside Yard construction. Although earlier topographic maps were reviewed, they provided only crude descriptions of topography due to their lack of elevation numbers. Disturbance and filling episodes prior to 1907 can only be generally documented, if at all.

Louis Barker's paper on Sunnyside Yard construction was examined for construction data, particularly evidence of regrading and deep excavation. Although Barker provides descriptions of filling and excavation within the Yard area, these episodes are too generally located to support theoretical disturbance derived from cartographic comparisons. His discussion of construction does not include descriptions of how the main track embankments were created (ASCE 1910).

Soil boring logs were available for some areas of the site (the tunnel alignment as far east as the 39th Street Bridge). However, for the remainder of the APEs, although soil borings have been planned and many have been completed, at the time this report was completed the logs had not reached their finalized state and the depth of fill was unavailable. Finalized soil borings from the project area could help to more clearly define the depth and nature of the disturbance layers. A more detailed understanding of on-site conditions could enable the investigators to eliminate, narrow down, or at least better define all areas of prehistoric and historical sensitivity. Since boring data can be used to chart undocumented disturbance and filling episodes - such as track bed preparation, embankment construction, and thickness of fill layers which each effect the state of subsurface resources - it is a crucial tool towards understanding subsurface conditions. Therefore some of the evaluations in this report are limited because they are not supported by subsurface data.

Since a program of soil borings for project design purposes is scheduled and is being carried out, it is recommended that large diameter core, continuous-tube soil samples (affording a minimum of compaction or distortion) be taken on all of the sensitive sites described above, where soil borings have not yet been completed. When these soil borings are conducted, depth and thickness of fill layers must be recorded.

As noted above, some of the soil borings have already been carried out for the tunnel alignment, but their logs are not yet completed. When the formal boring logs are available, they may also be useful in helping to determine the sensitivity of the APEs. However, this is not always the case, since the data recorded by engineers is not always relevant towards addressing archaeological concerns.

The finalized soil boring data for all borings should be examined by an archaeologist. Upon the completion of this task, mitigation would include reevaluating potential impacts based on finalized construction plans. The locations of potential prehistoric resources and historic resources should be compared to proposed disturbance areas to

assess which resource types, if any, may be impacted. The depths of proposed impacts will be compared with the anticipated depths of specific resources. If avoidance of potentially significant archaeological resources is not possible and they are to be impacted, then mitigation would take the form of topic intensive research on each specific resource type and possibly data recovery.

Because design plans have not been finalized, in a number of the APEs it is possible that proposed construction disturbance, such as track relocation, will be too shallow to impact any potential archaeological sensitivity. It is also possible that disturbance in the potentially sensitive areas could be avoided if designs were altered to avoid potential archeological sensitivity. If avoidance of potential resources is possible, then additional mitigation measures may not be necessary.

If the proposed designs, i.e., the APEs, are amended, or if additional tunneling or other excavation is planned which may cause impacts to areas outside the current APEs, the final design information should be evaluated by an archaeologist, and this report should be amended.

3.6 Figures and Photographs

1. Project Site Location: *U.S.G.S., Central Park and Brooklyn Quads*, 1979

2. Project Site *APE Locations*

3. *Coast Survey*, U.S.C.& G. S., 1844-1845

4. *Coast Survey*, U.S.G.S., 1874

5. *Contour Map Of Sunnyside Yard*, 1907

6. *Contour Map Of Sunnyside Yard*, 1907

7. *Contour Map Of Sunnyside Yard*, 1907

8. *Contour Map Of Sunnyside Yard*, 1907

9. *Atlas Of Long Island*, Beers, 1873

10. *Atlas Of Queens County*, Wolverton, 1891

11. *Atlas Of Queens County*, Wolverton, 1891

12. *Atlas Of Queens County*, Wolverton, 1891

13. *Atlas Of The Borough Of Queens*, Hyde, 1903

14. *Atlas Of The Borough Of Queens*, Hyde, 1903

15. *Atlas Of The Borough Of Queens*, Hyde, 1903

16. *Atlas Of The Borough Of Queens*, Hyde, 1903

17. *Atlas Of The Borough Of Queens*, Hyde, 1903

18. *Atlas Of The Borough Of Queens*, Hyde, 1903

19. Map Of Potential Archaeological Sensitivity

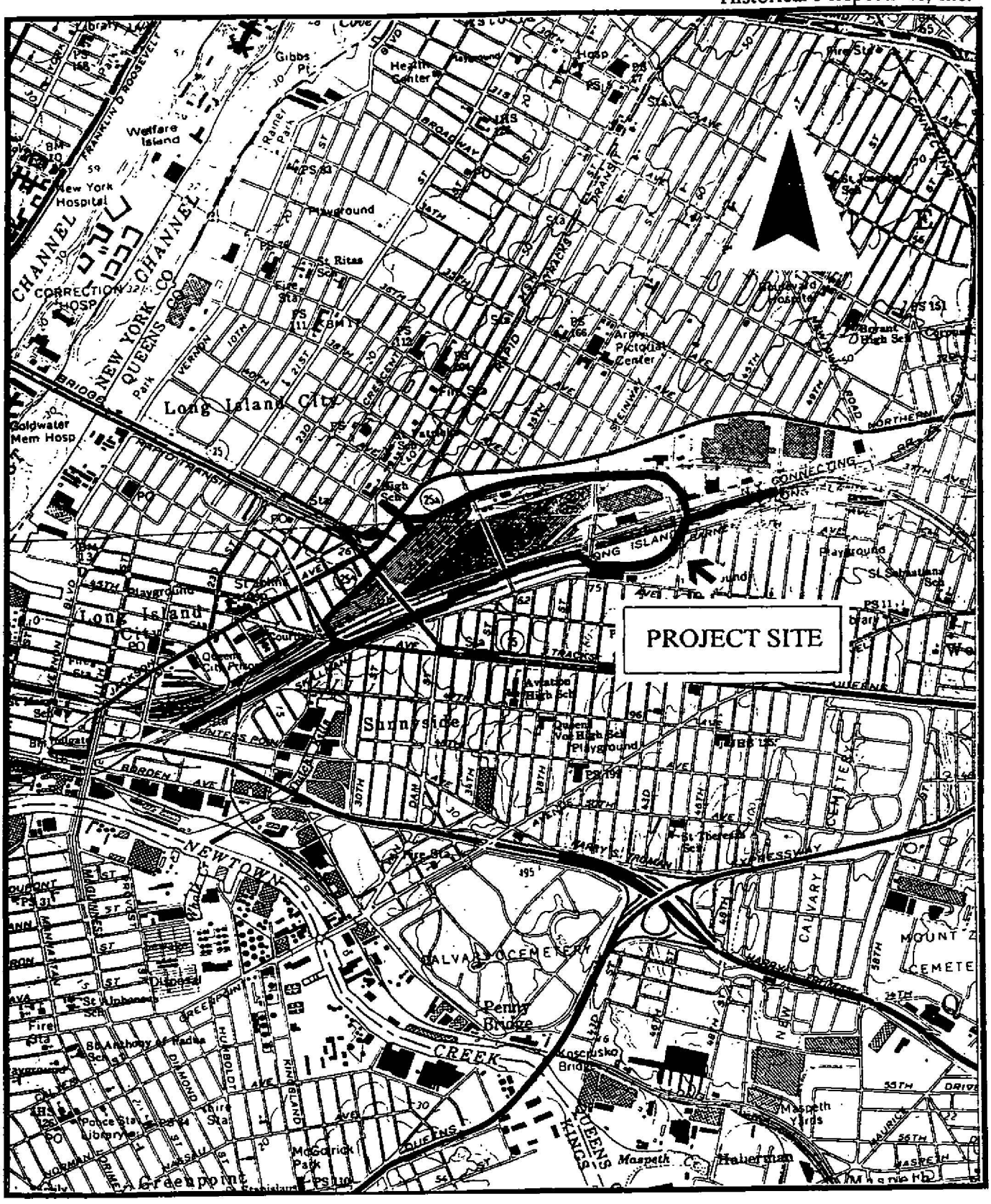


FIGURE 1
Project Site Location: *U.S.G.S., Central Park and Brooklyn Quads*, 1979
Scale 1:24,000

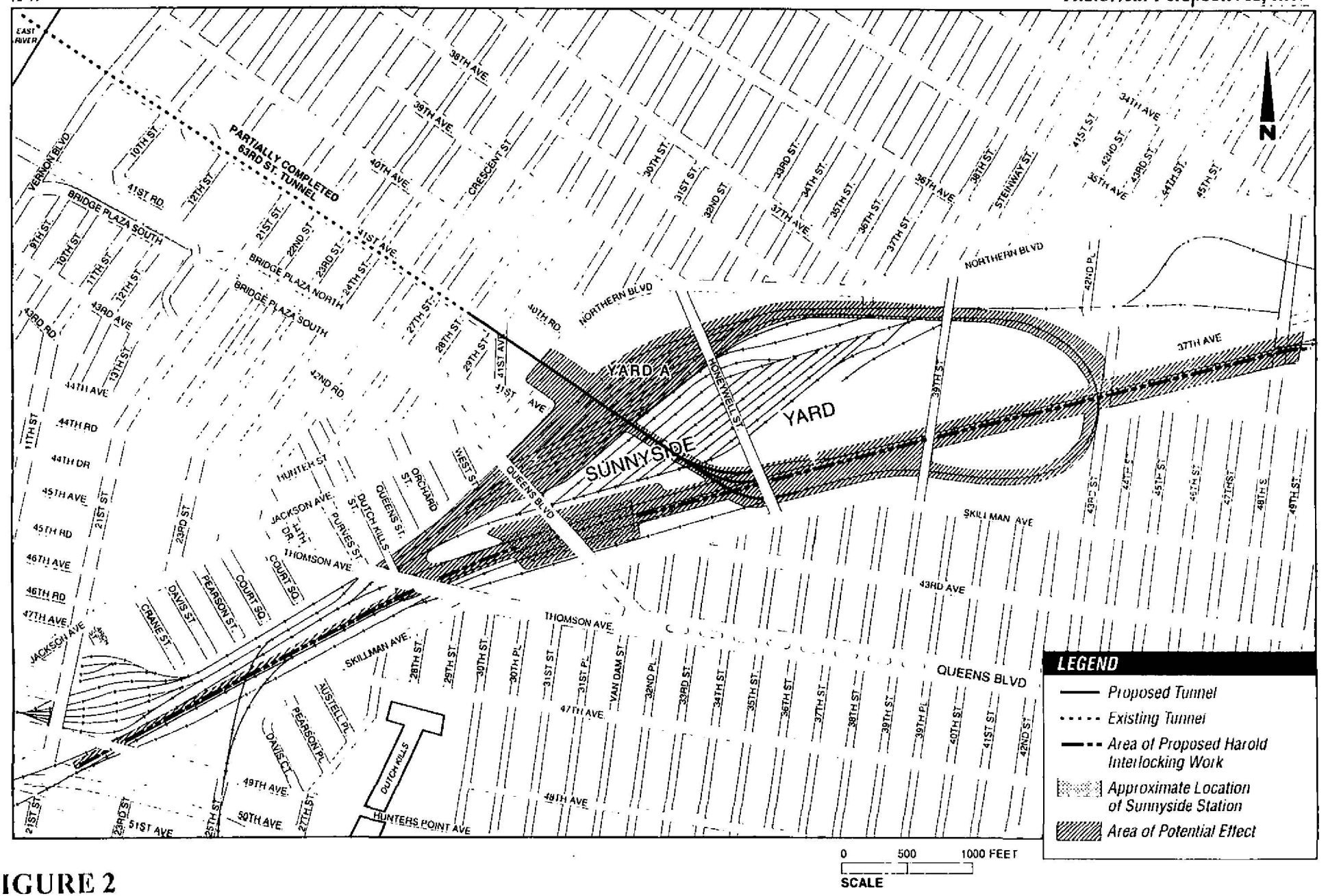


FIGURE 2
Project Site Boundaries.

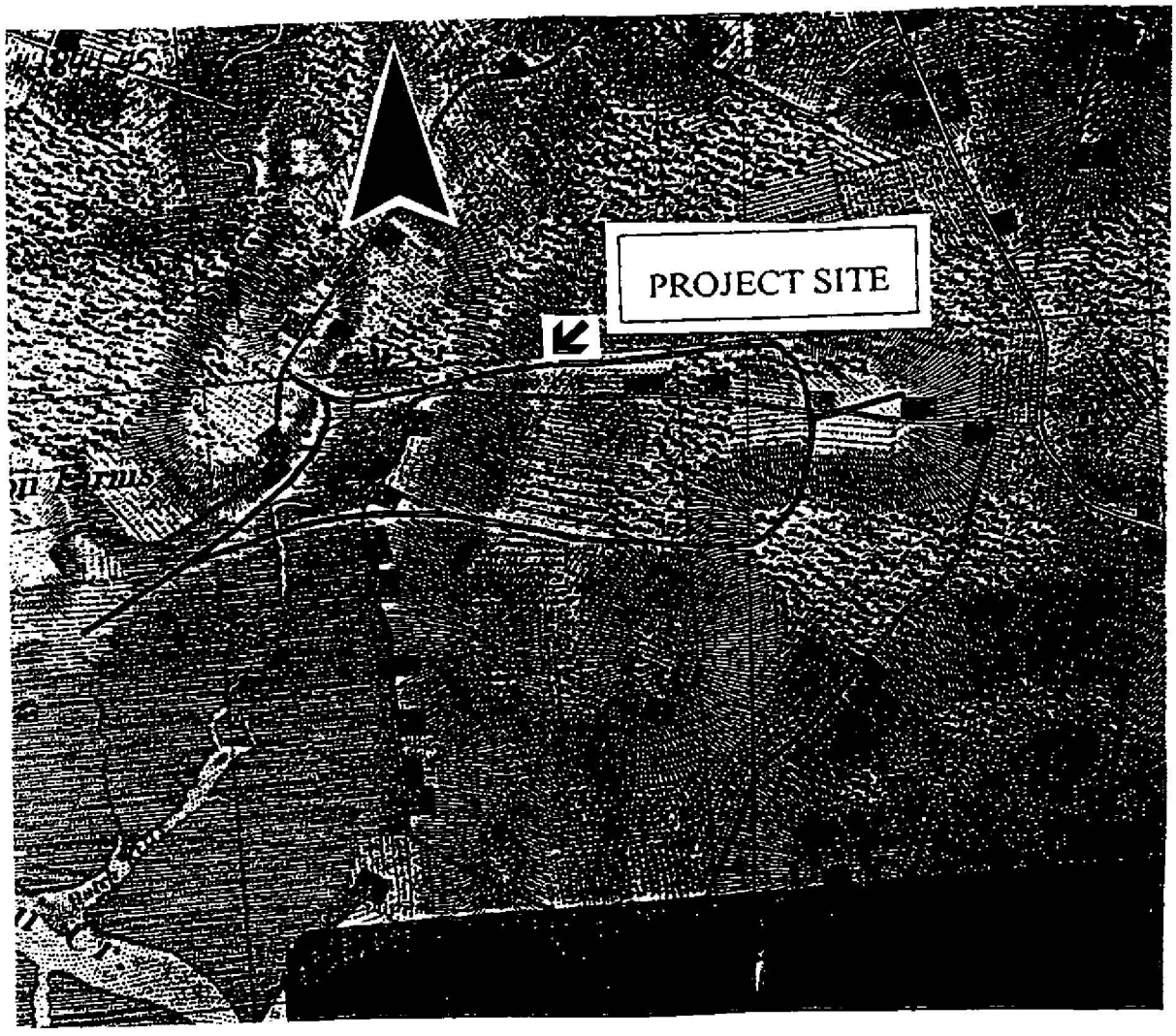


FIGURE 3
Coast Survey, U.S.C.& G.S., 1844-1845
Original scale: 1/30,000

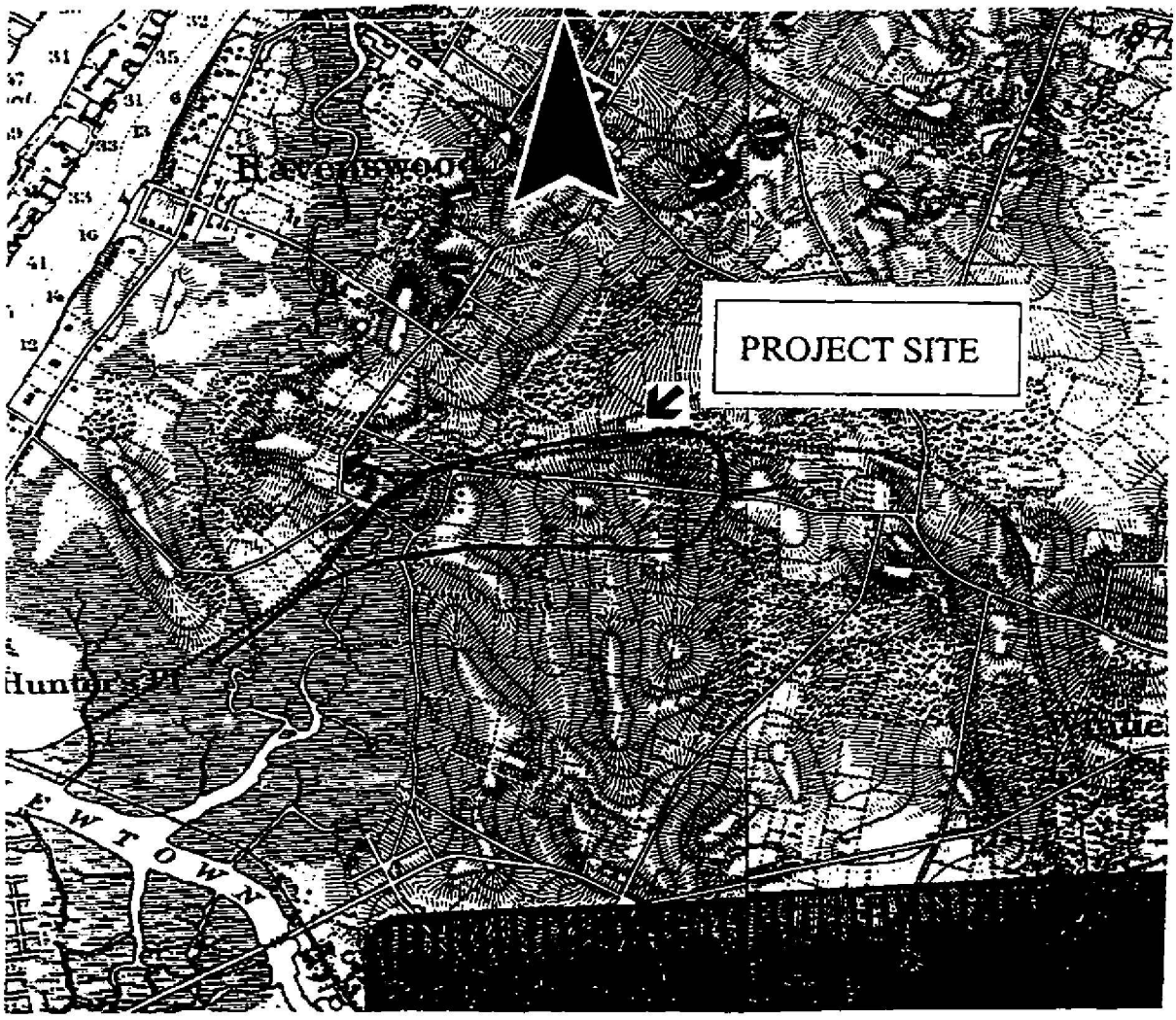


FIGURE 4
Coast Survey, U.S.G.S., 1874
Original scale: 1/40,000

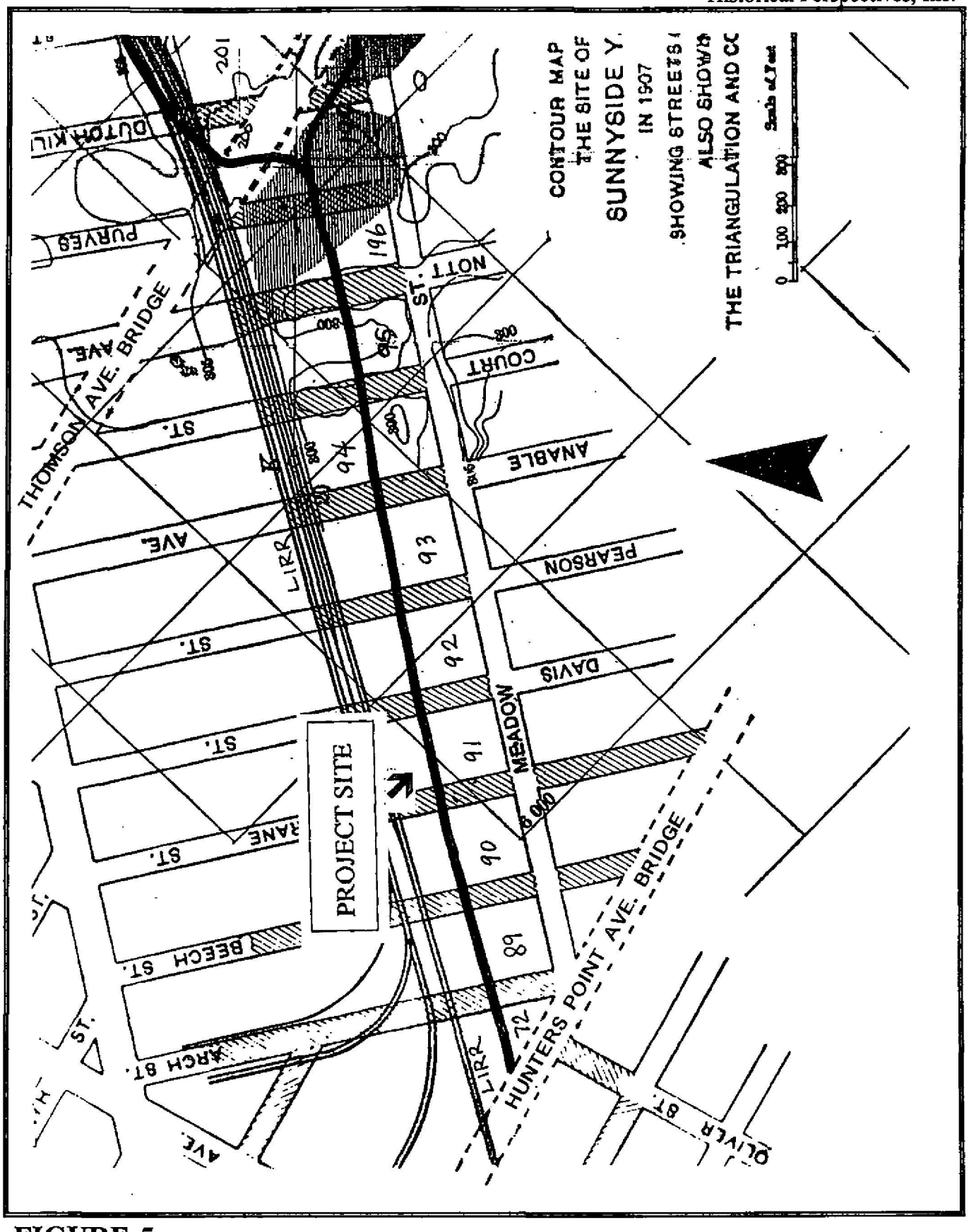


FIGURE 5

Contour Map of Sunnyside Yard, 1907

Scale: 1cm = c. 107.1 feet; Penn. RR el. - 300 + 2.75 = USGS el. (in feet)

---- Current Street

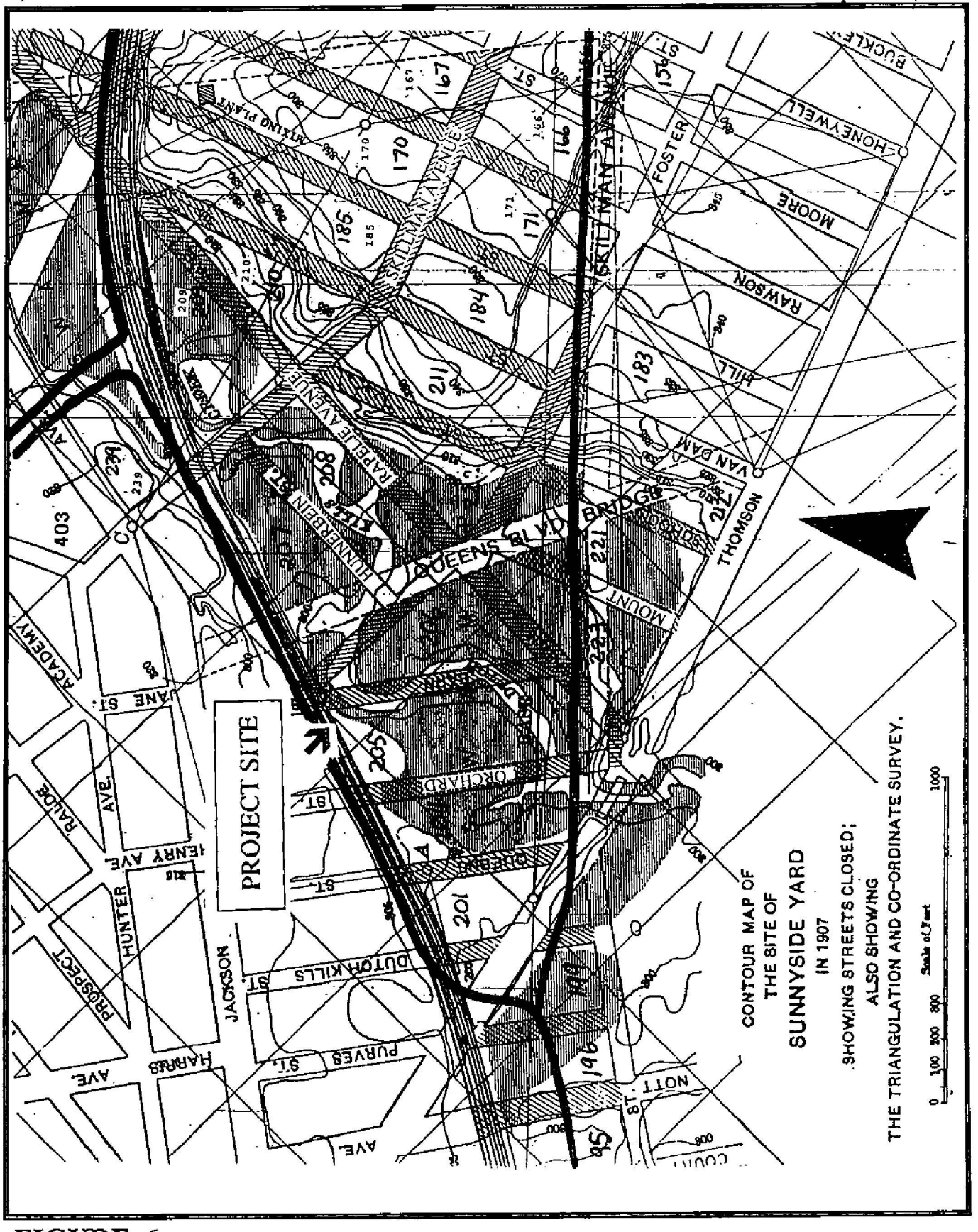


FIGURE 6

Contour Map of Sunnyside Yard, 1907

Scale: 1cm = c. 166.7 feet; Penn. RR el. - 300 + 2.75 = USGS el. (in feet)

---- Current Street

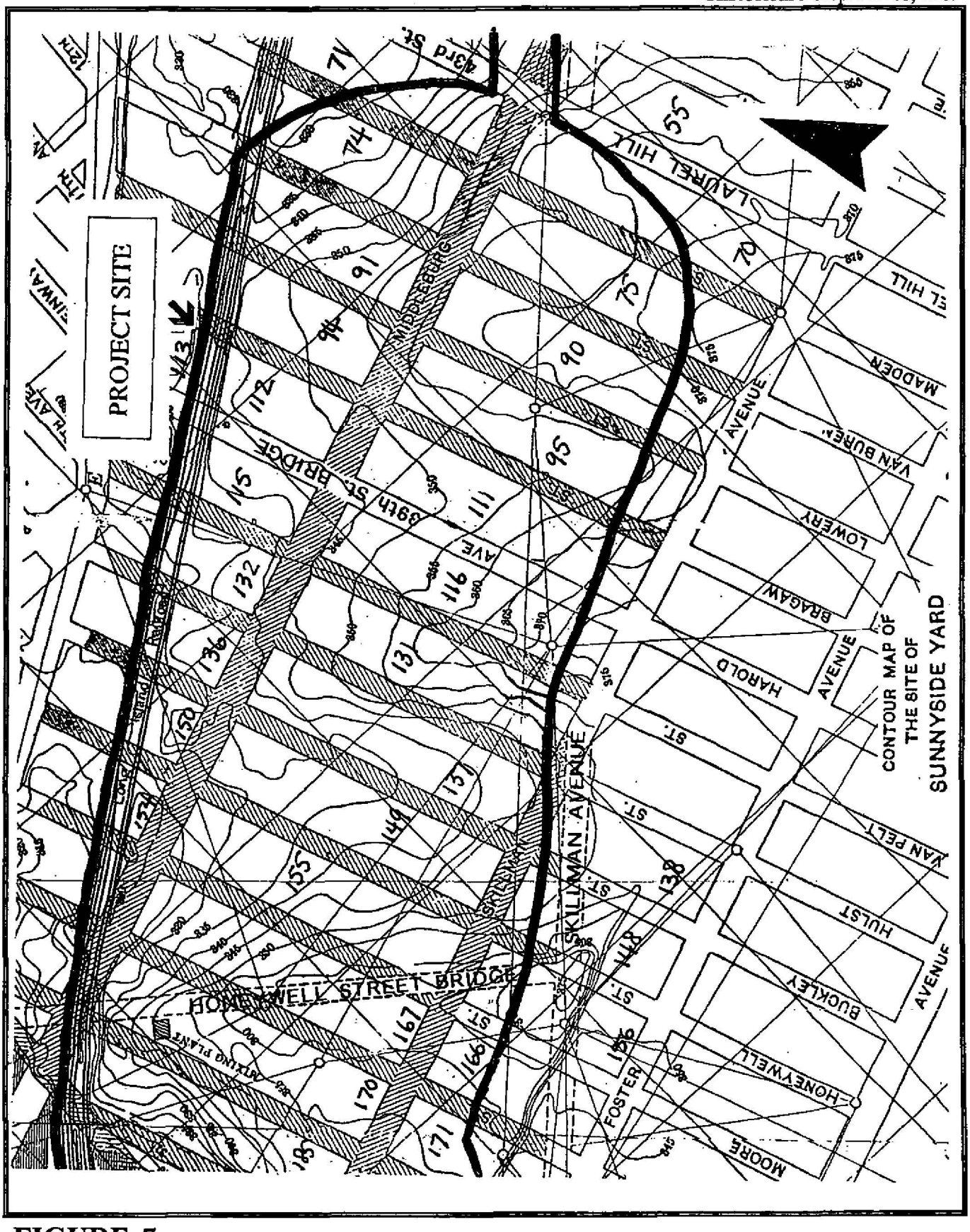


FIGURE 7

Contour Map of Sunnyside Yard, 1907

Scale: 1cm = c. 166.7 feet; Penn. RR el. - 300 + 2.75 = USGS el. (in feet)

---- Current Street

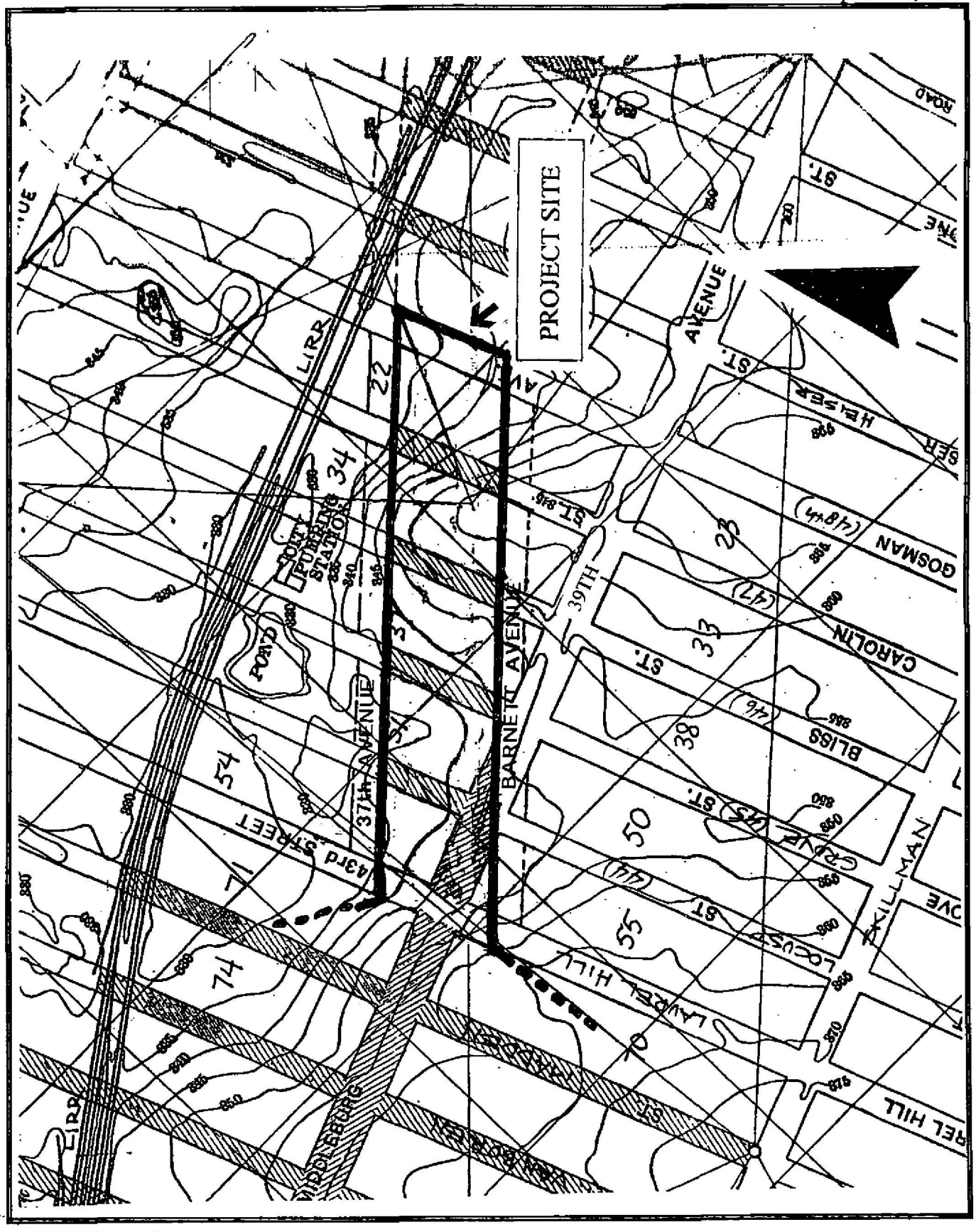


FIGURE 8

Contour Map of Sunnyside Yard, 1907

Scale: 1cm = c. 136.8 feet; Penn. RR el. - 300 + 2.75 = USGS el. (in feet)

---- Current Street

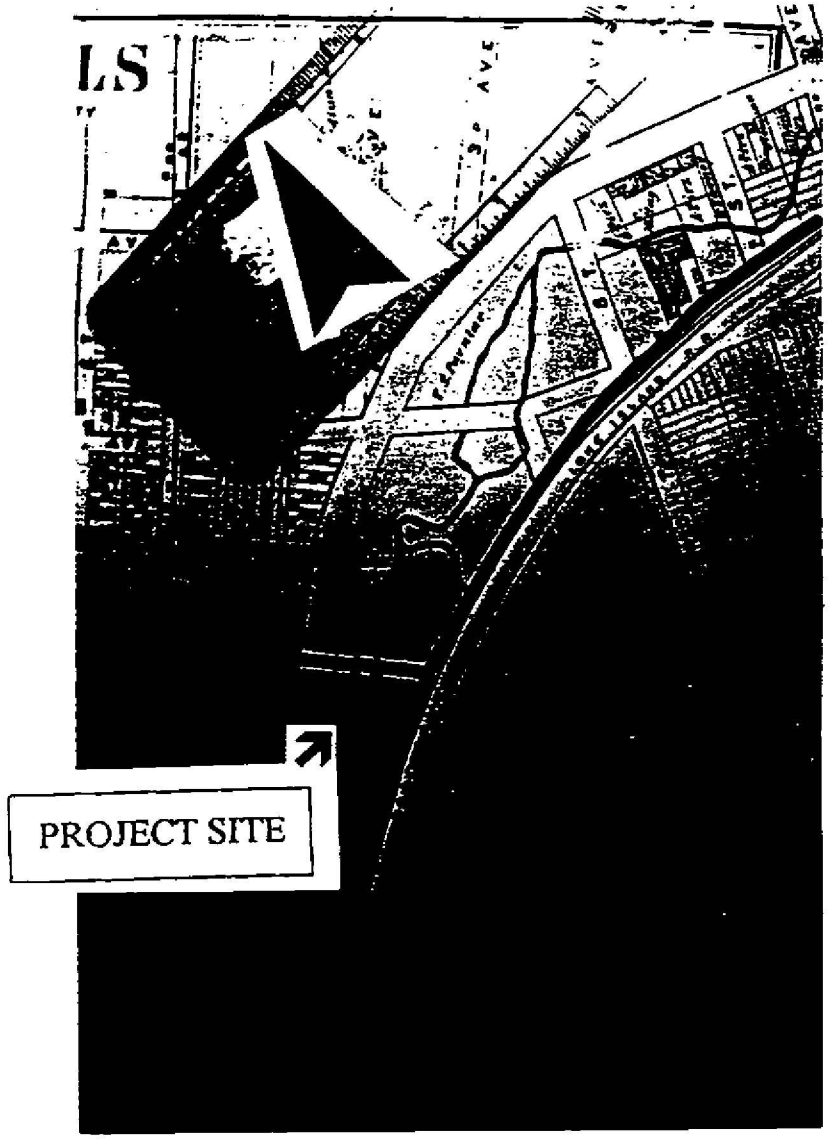


FIGURE 9
Atlas of Long Island, Beers, 1873
No Scale

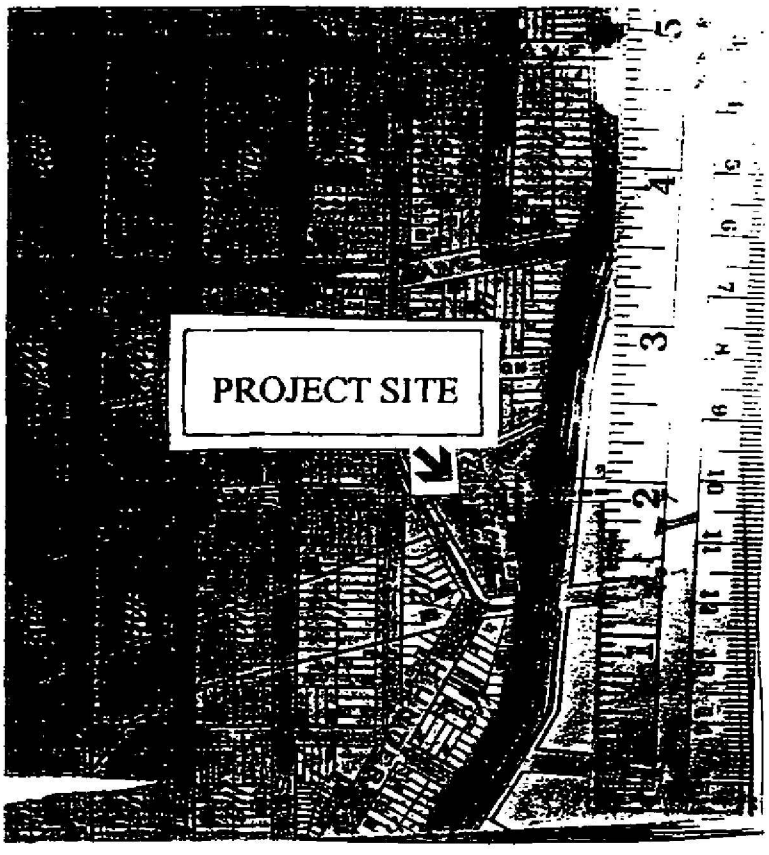


FIGURE 10
Atlas of Queens County, Wolverton, 1891
Scale: 1cm = c. 193 feet

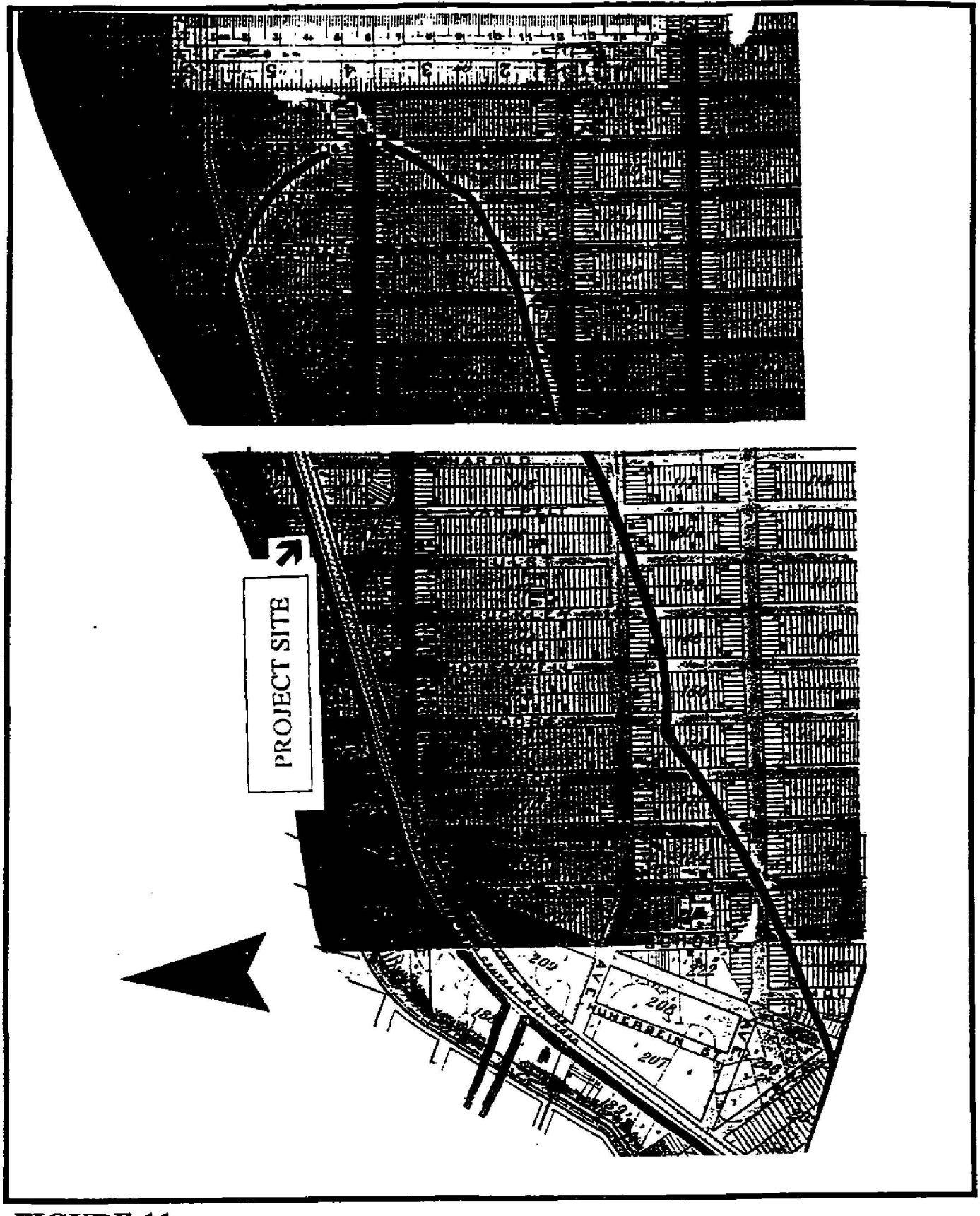


FIGURE 11
Atlas of Queens County, Wolverton, 1891
Scale: 1cm = c. 216 feet

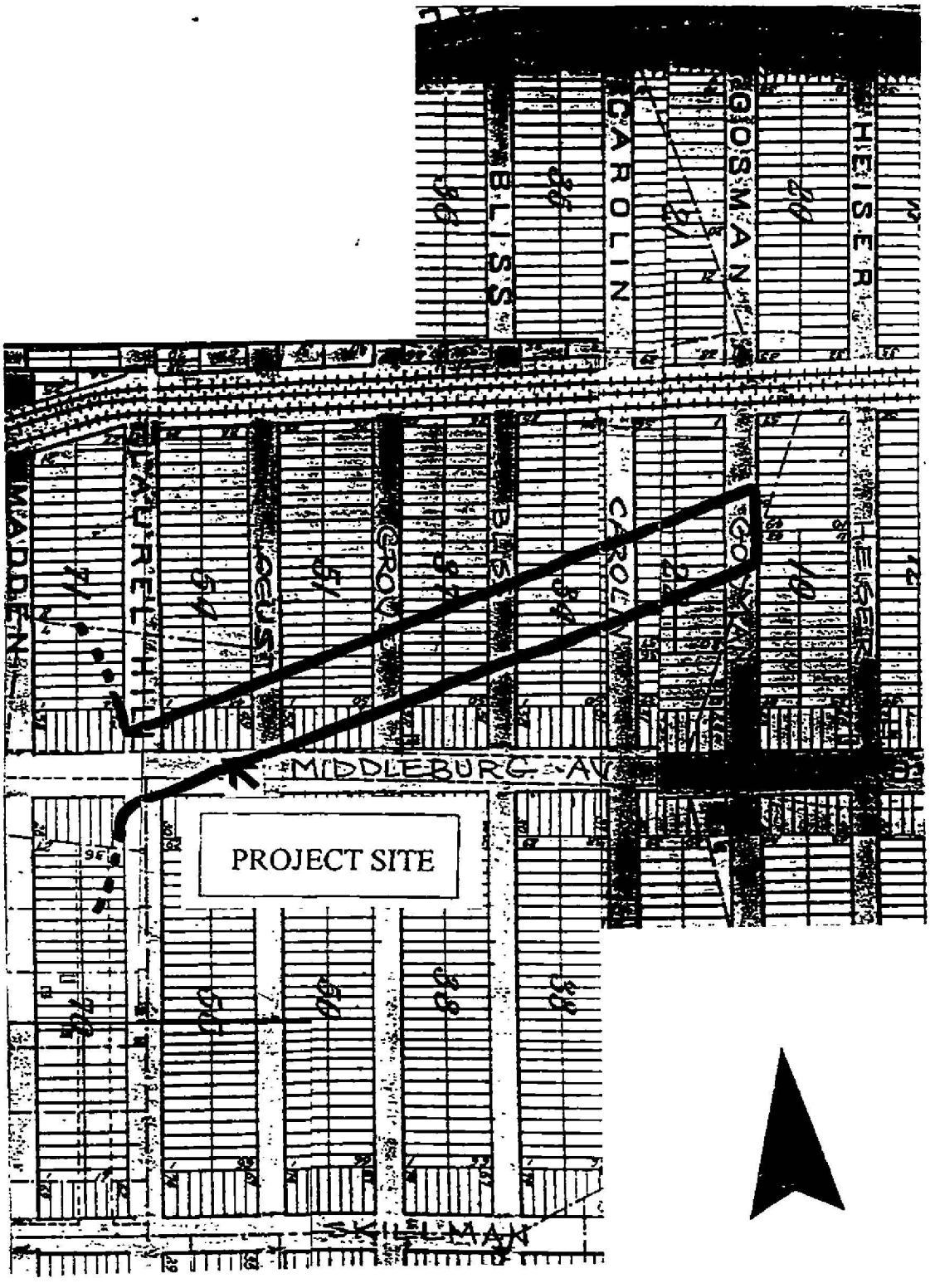


FIGURE 12
Atlas of Queens County, Wolverton, 1891
Scale: 1cm = c. 143 feet

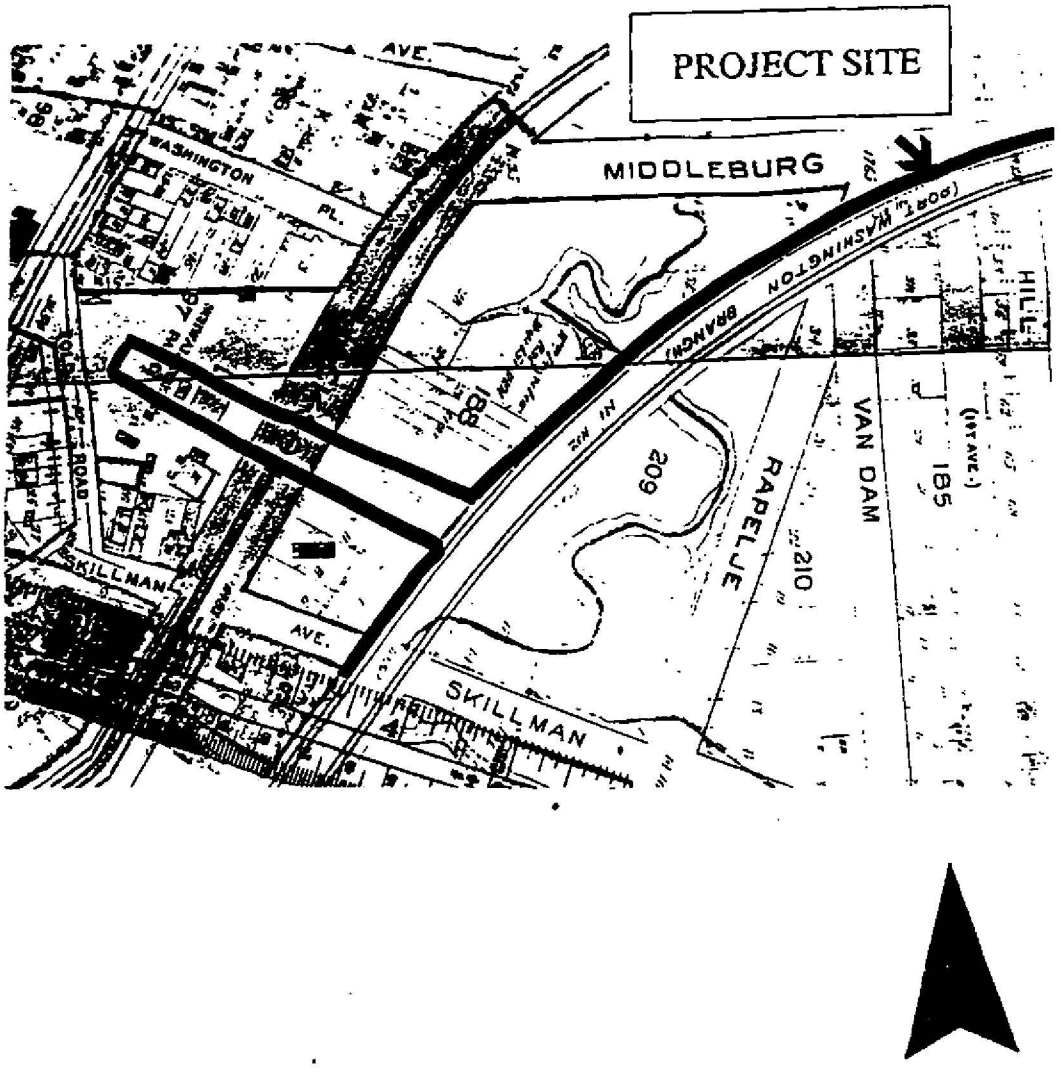


FIGURE 13
Atlas of the Borough of Queens, Hyde, 1903
Scale: 1cm = c. 110.3 feet

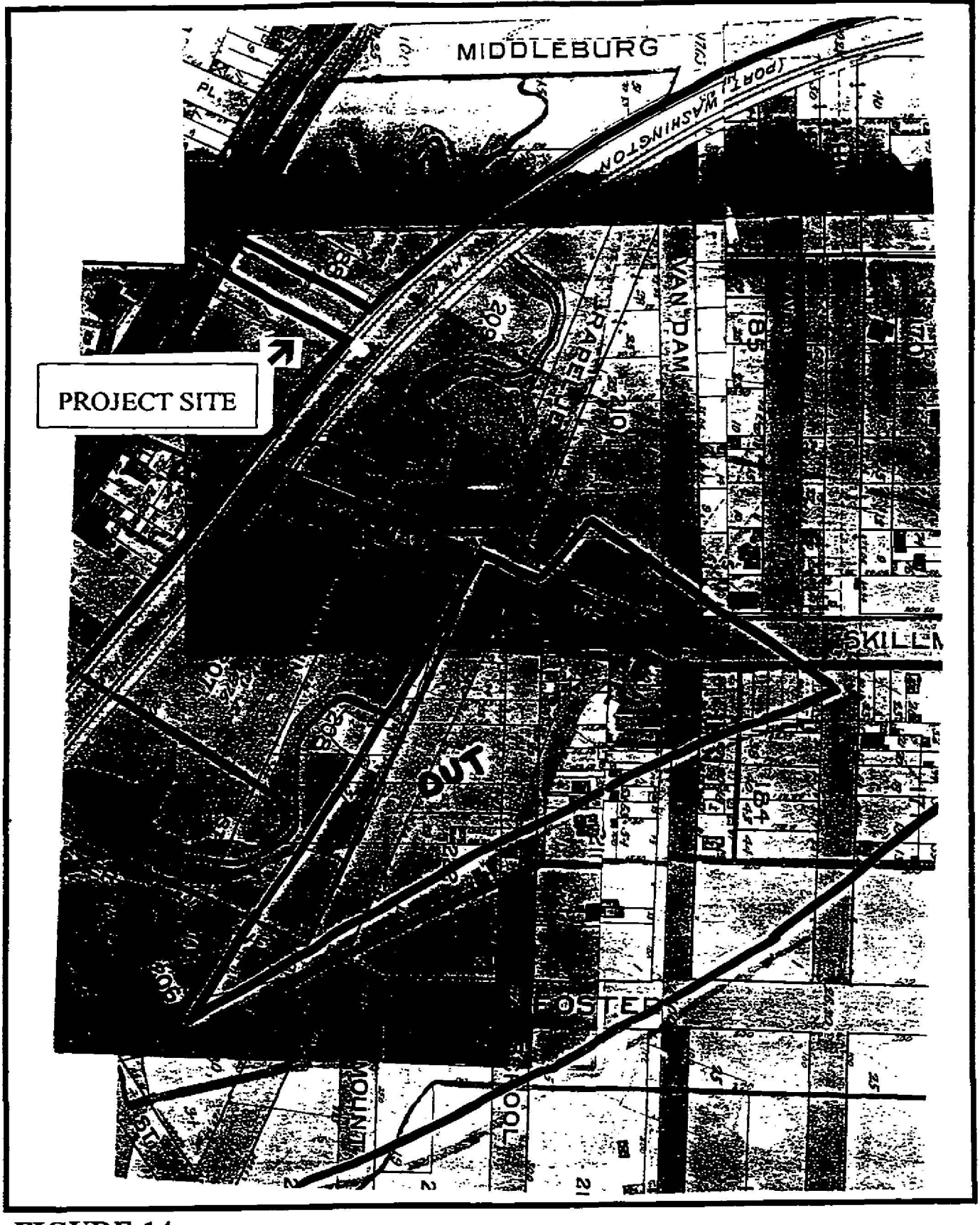


FIGURE 14
Atlas of the Borough of Queens, Hyde, 1903
Scale: 1cm = c. 94 feet

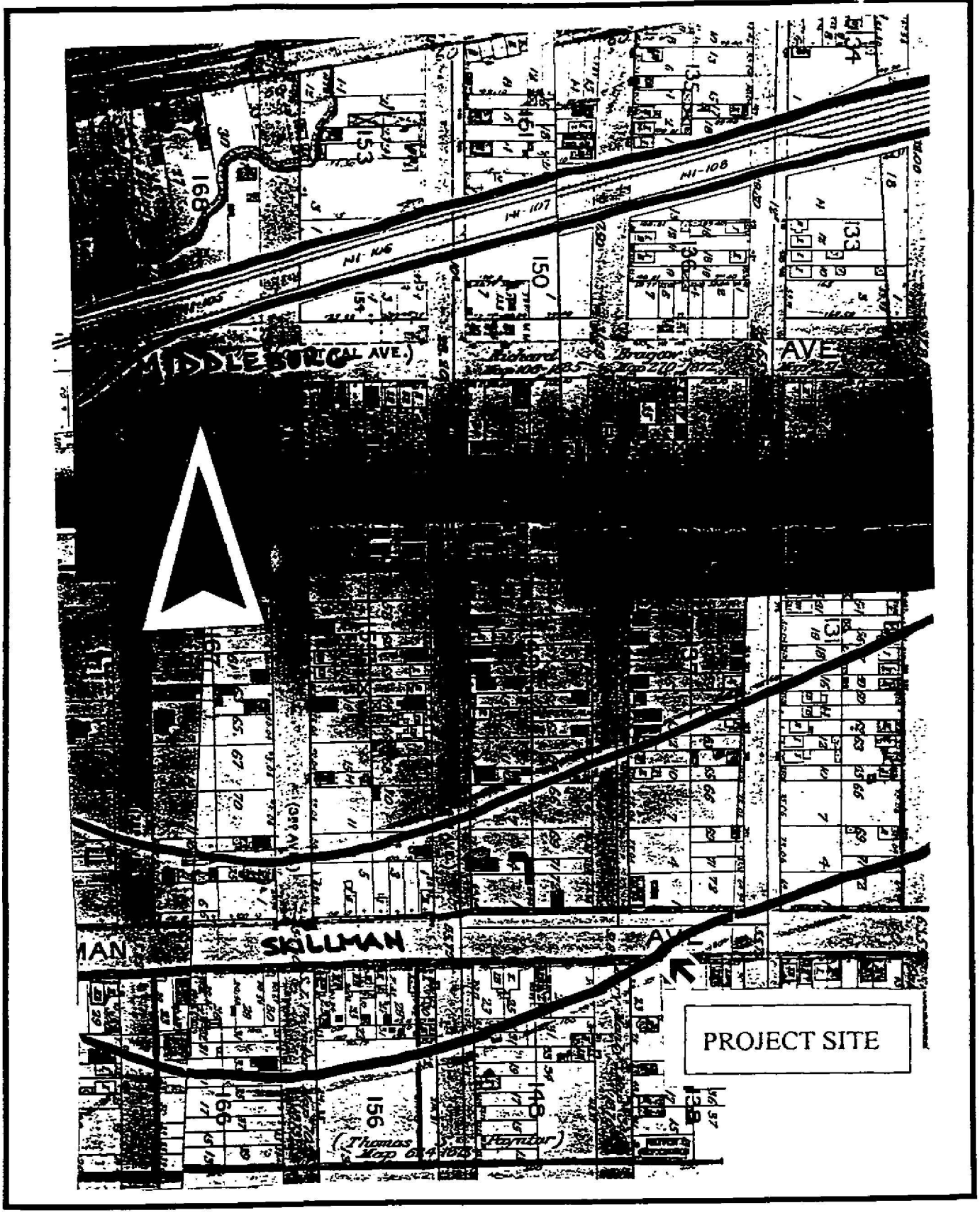


FIGURE 15
Atlas of the Borough of Queens, Hyde, 1903
Scale: 1cm = c. 94 feet

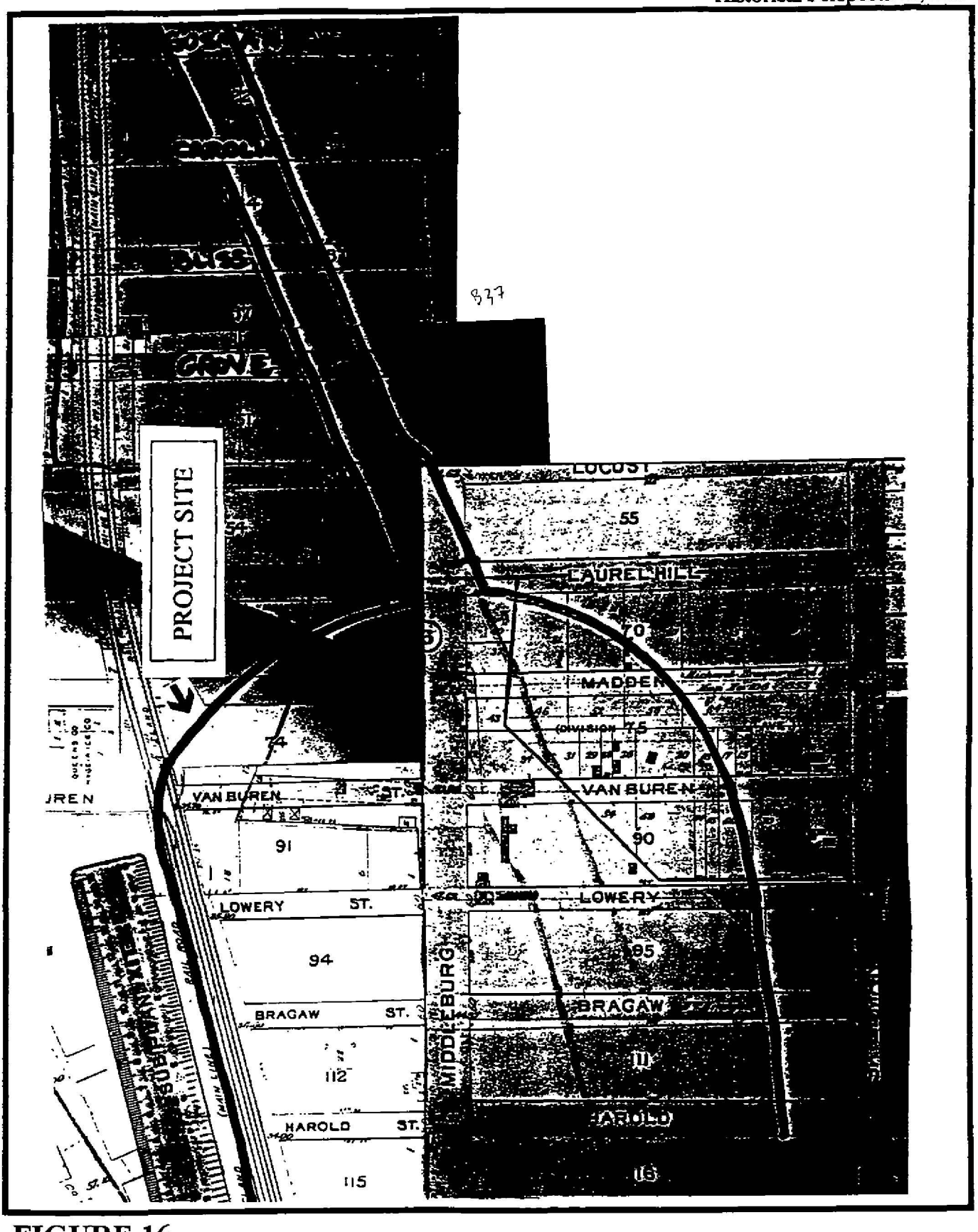


FIGURE 16
Atlas of the Borough of Queens, Hyde, 1903
Scale: 1cm = c. 129 feet

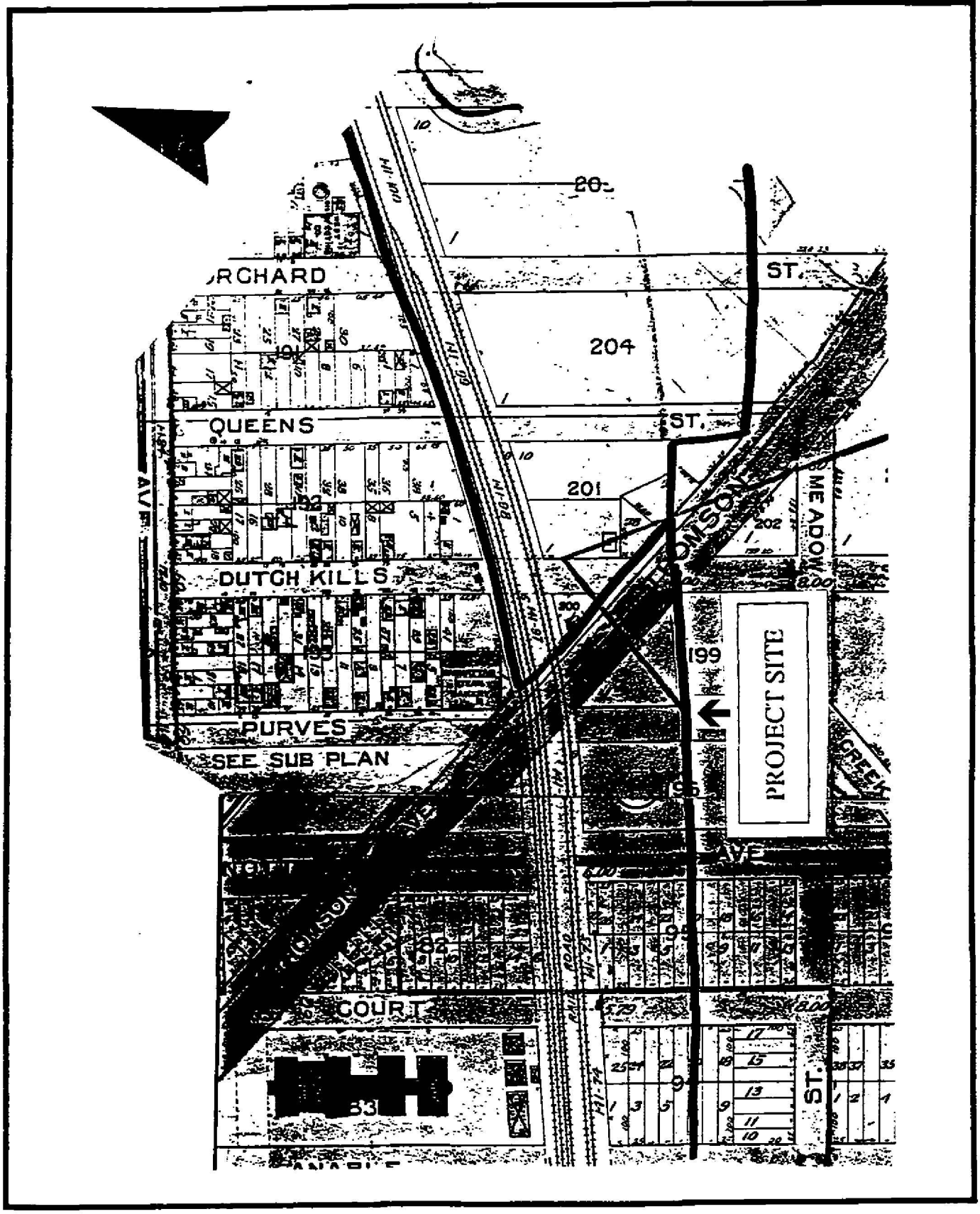
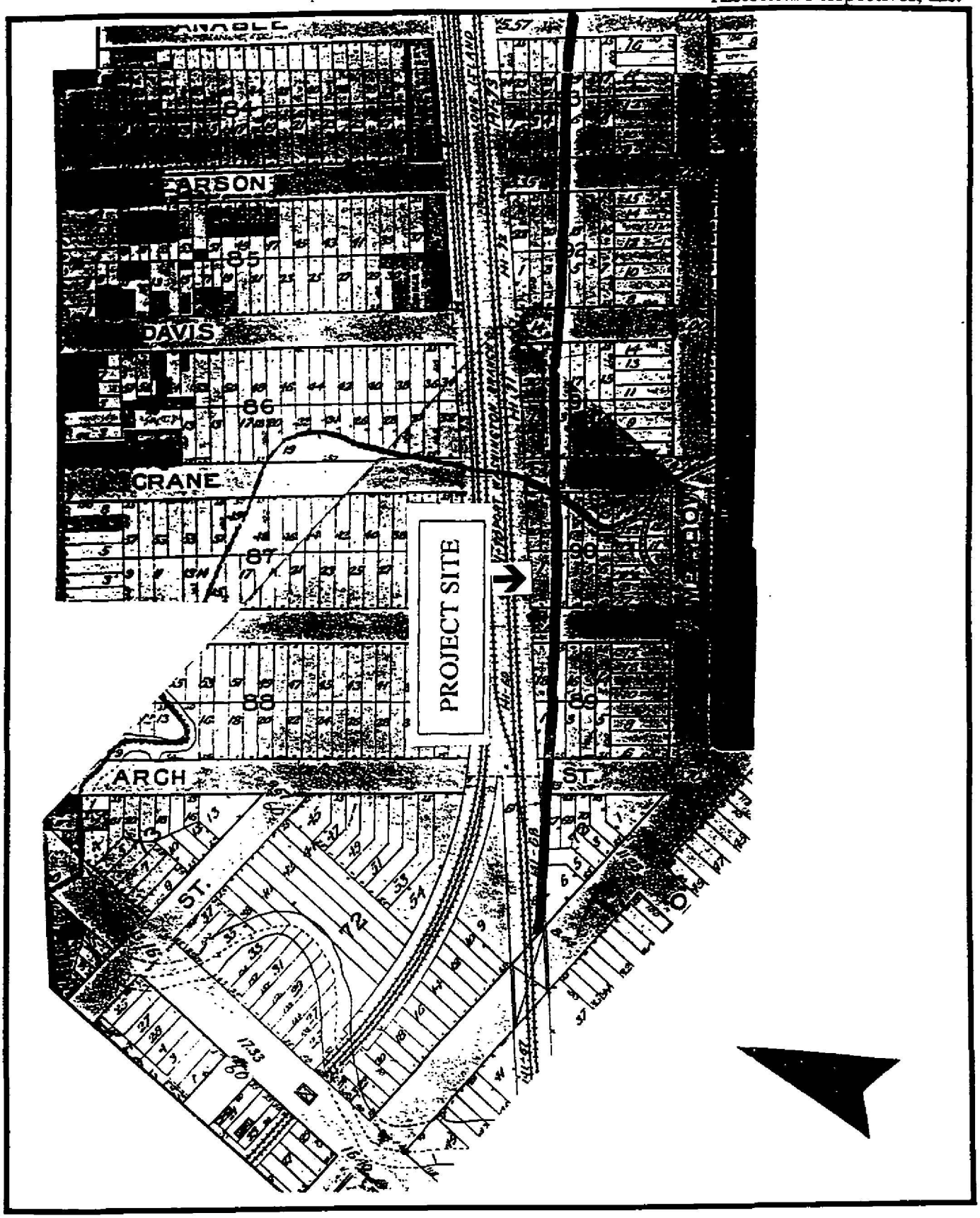


FIGURE 17

Atlas of the Borough of Queens, Hyde, 1903

Scale: 1cm = c. 91.4 feet


ARSON
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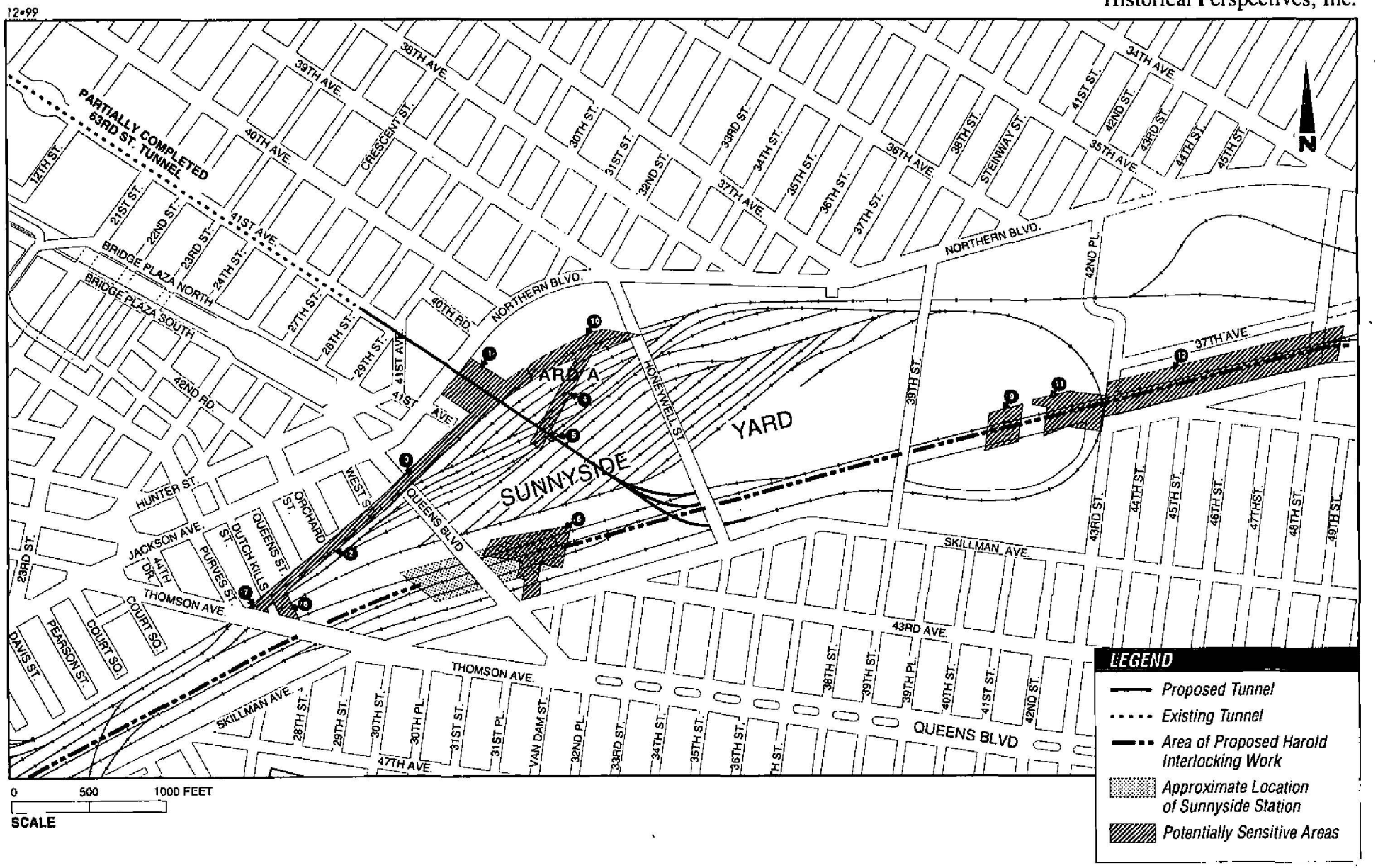
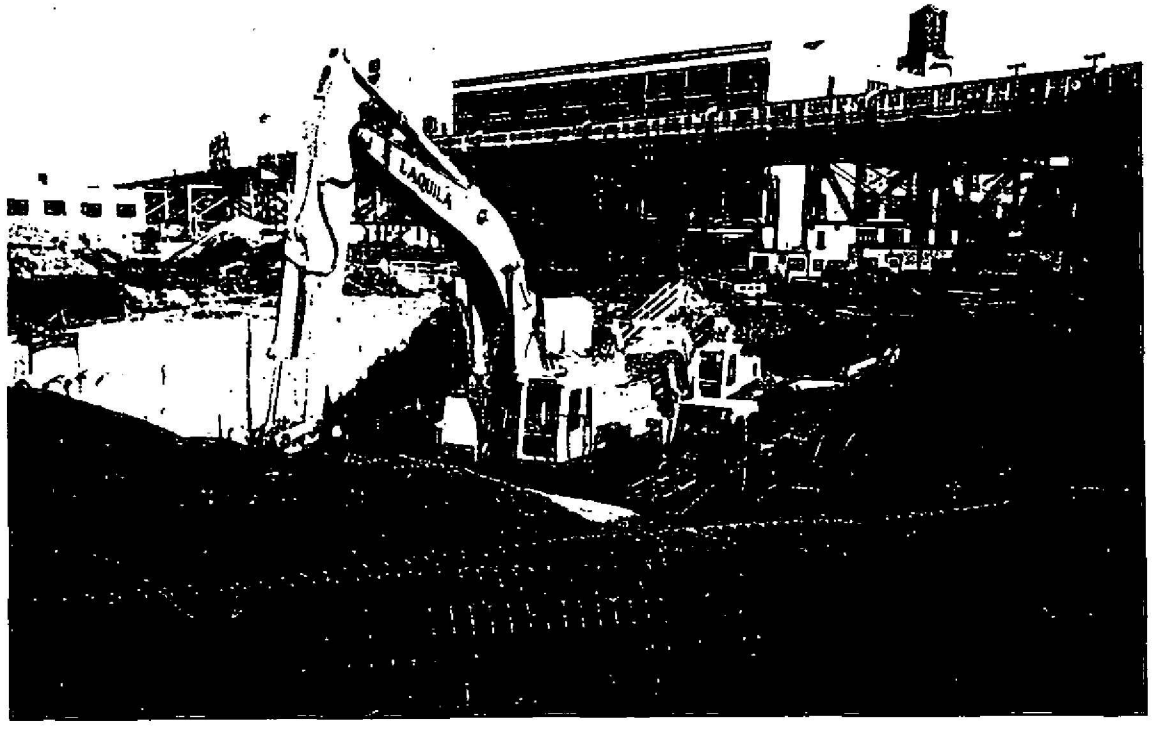


FIGURE 19

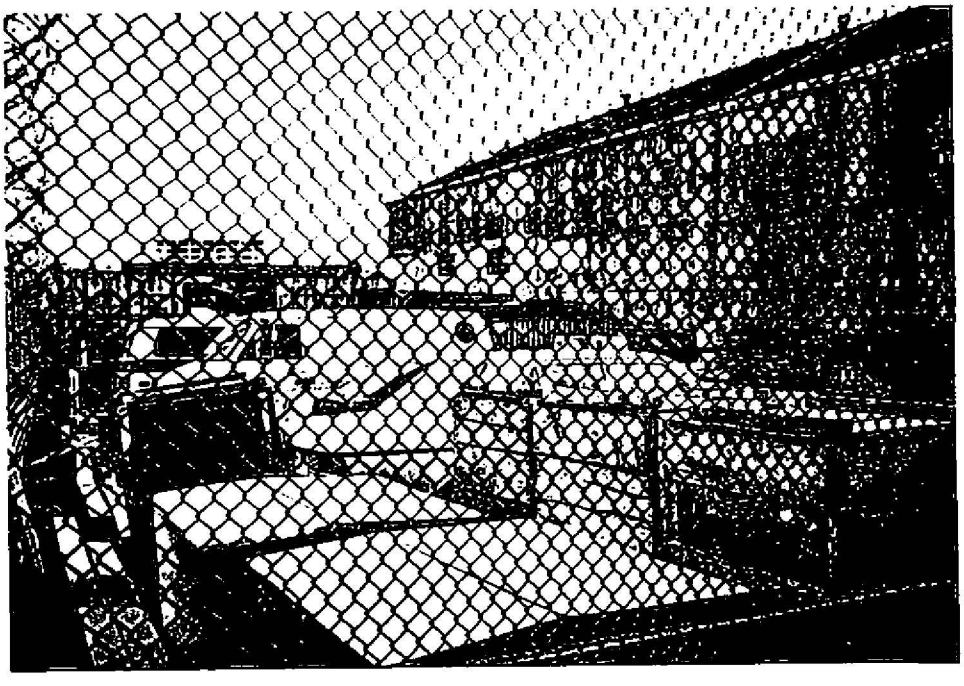
Map of Potential Archaeological Sensitivity

Photograph 1: Block 403, Lot 1. Looking southeast from southwest side of 41st Avenue at 29th Street. NYCTA excavation includes project site.

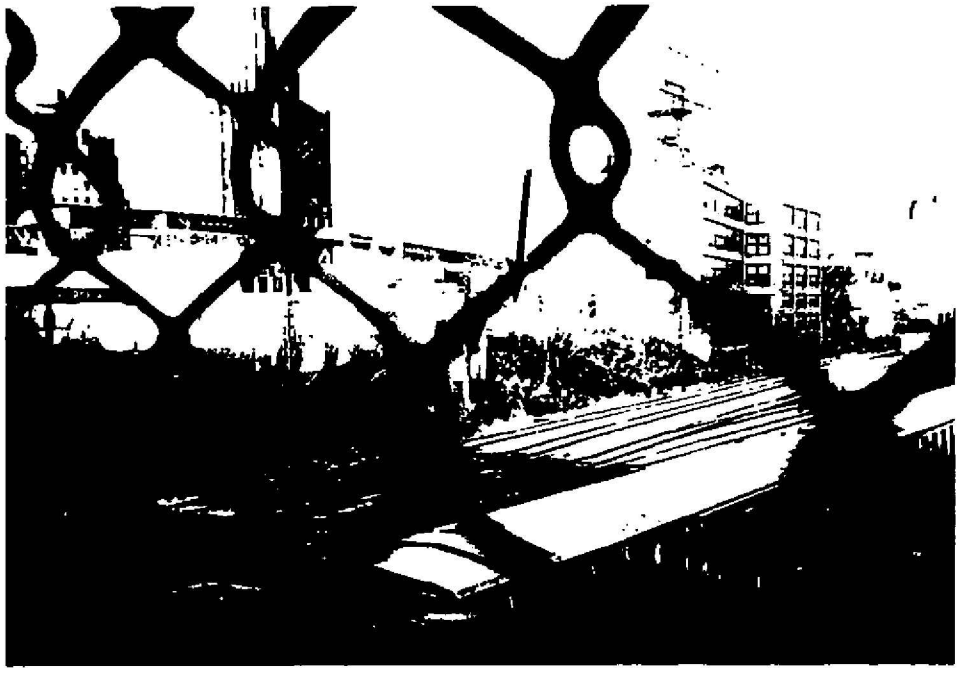


Photograph 2: Block 403, Lot 1. Facing southeast from south of 41st Avenue, southeast of 29th Street. Warehouse on Block 239, Lot 36 at extreme right.

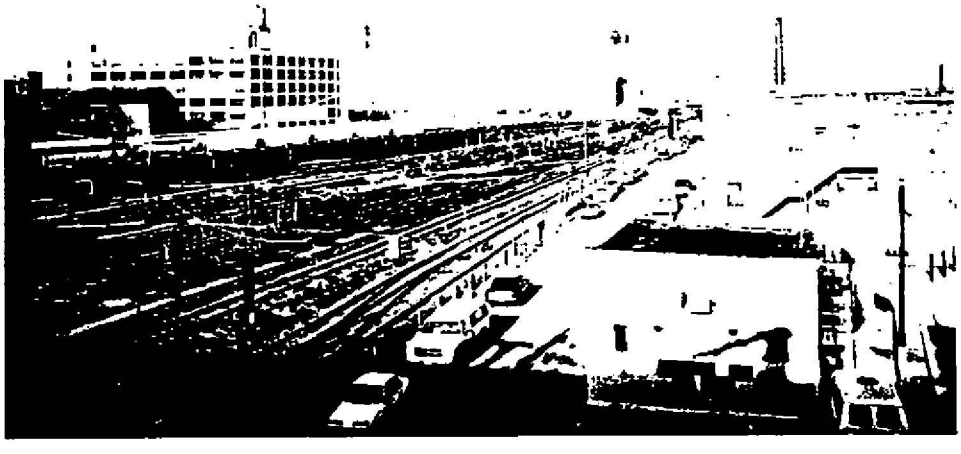
Photograph 3: View of a warehouse building on Block 239, Lot 36. Facing southeast from northwest side of Northern Boulevard.



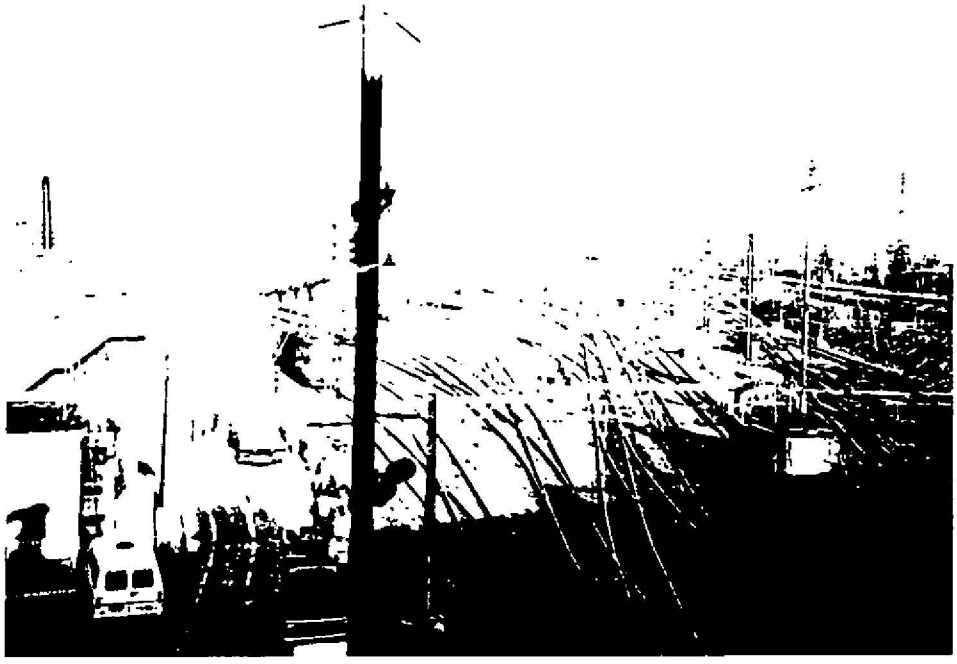
Photograph 4: Warehouse property on Block 239, Lot 36. Facing south from Northern Boulevard.



Photograph 5: Northwest edge of Yard A in foreground. Arrow indicates rear of Block 239, Lot 36. Note slope down to Yard A. Facing north from Queens Boulevard viaduct.



Photograph 6: Sunnyside Yard A, with Amtrak yard buildings at right. Facing north from Queens Boulevard viaduct.

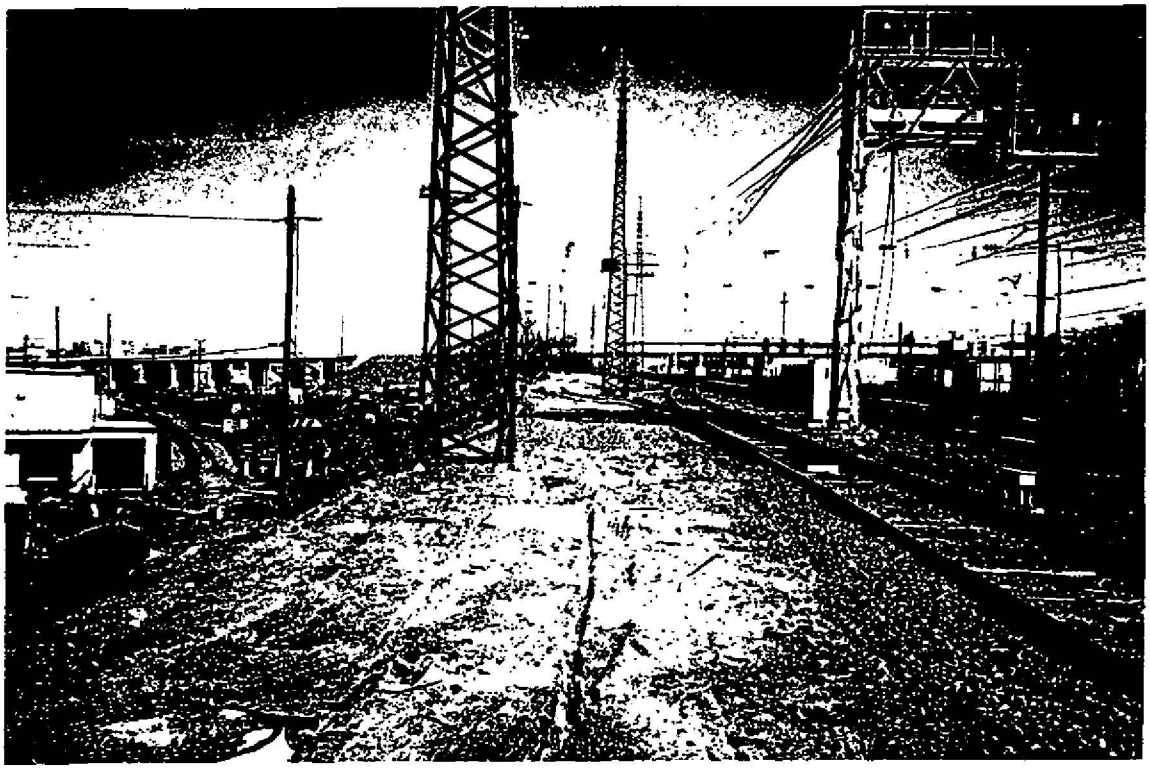


Photograph 7 - Amtrak yard, with Yard buildings at left, and Amtrak mainline embankment at right. Honeywell Street viaduct in distance. Facing northeast from Queens Boulevard Viaduct.

Photograph 8 - View east toward Honeywell Street viaduct. Note elevation of embankment over Amtrak Yard at left (north).

Photograph 9: View downward along drainage channel on north side of Amtrak main line embankment (also site of A, B/C, and D track alignment). Honeywell Street viaduct to east and north.

Photograph 10: Looking west toward car wash along Loop tracks (outbound lead alignment). Honeywell Street viaduct in distance. A, B/C and D alignment embankment to right (north).



Photograph 11: View eastward along Amtrak Main Line, A, B/C and D track alignment. Amtrak Yard with new commissary at left (north), Harold (39th) Street viaduct in distance. Note slope down to yard level.

Photograph 12: View eastward along Amtrak Main Line embankment, A, B/C and D track alignment site. Wooded area along north side of embankment, east of Harold (39th) Street viaduct with path recently cut through for construction access.

Photograph 13: Looking down and south at Loop tracks (lead tracks alignment site) from A, B/C and D track alignment site. 43rd Street is at left (east).

Photograph 14: Looking east from car wash along Loop tracks cut (lead tracks alignment site). A, B/C and D alignment embankment to left (north), Skillman Avenue up hill to right (south), and Harold (39th) Street viaduct in distance.

Photograph 15: Looking east along Main Line, with bridge over 43rd Avenue at right (south). Loop tracks below, in foreground, with 43rd Street at middle.

3.7 Appendix

3.7.1 Block Histories

- APE of Tunnel Alignment West of Northern Boulevard, Northern Boulevard, and Area of Warehouse Buildings between Northern Boulevard and Yard A;
- APE between the Hunters Point and Thomson Avenue bridges;
- APE between the Thomson Avenue and Queens Boulevard bridges;
- APE between the Queens Boulevard and Honeywell Street bridges;
- APE between the Honeywell Street and 39th Street bridges;
- APE between the 39th Street bridge and edge of Sunnyside Yard at 43rd Street; and;
- APE between the edge of Sunnyside Yard at 43rd Street and 48th Street.

West of Northern Boulevard (Block 403, Lot 1)

Block 403 was numbered Block 97 on historical maps as late as 1903. The existing tunnel has been completed to within 160 feet of Northern Boulevard/Queens Plaza East. Project construction will commence on this lot, which traverses the block, extending from the intersection of 29th Street and 41st Avenue on the west to Northern Boulevard on the east.

Lot 1 was part of Jackson Avenue, or Schwalenburg Park, established some time before 1873, between Northern Boulevard, then Jackson Avenue, and 41st Avenue. The park contained a number of recreational buildings, including a shooting gallery (Figure 9), a dancing platform and the Jackson Avenue Hotel at its southern corner, along Northern Boulevard. The dancing platform, or "pavilion," as is it labeled in 1898, was a covered wood frame structure without walls, which stood in the Block 403 section of the APE (Figure 10; Sanborn 1898). By 1915 it had been replaced by a larger, one-story, wood frame building directly attached to the hotel (Sanborn 1915). Between 1915 and 1936, the park was replaced by parking lot and gas station. The one-story gas station building straddled the APE from north to south, along the Northern Boulevard frontage, and included a number of gas tanks. The western side of the former park, including the westernmost section of the APE on Block 403, was occupied by a boxing arena, which fronted on 41st Avenue (Sanborn 1936). By the 1990s these structures had been removed, and according to the real estate maps, the APE was utilized as a parking lot (Sanborn 1996).

Northern Boulevard

This section of the APE on Northern Boulevard, formerly Jackson Avenue, extended from approximately 223 feet to 260 feet northeast of present 41st Avenue, formerly Skillman Avenue. Maps record no historical archaeological resources on this block.

Area between Northern Boulevard and Yard A (Block 239, Lot 36)

Block 239 was numbered Block 188 as late as 1903. This section of the APE begins about 40 feet northeast of present 41st Avenue along the east side of Northern Boulevard, and extends to approximately 313 feet northeast of 41st Avenue. Along the southeastern side of the block, adjacent to the old LIRR roadbed, the APE ranges from about 35 to 290 feet northeast of 41st Avenue.

The 1844-45 USC&GS map shows a building in the approximate location of the APE, adjacent to present Northern Boulevard, on the high ground just west of the marsh. A dwelling and an outbuilding, a Payntar family house and property, are depicted within the southern section of this APE on the 1852 map as well as on the 1874 topographic map, between the Boulevard and the railroad tracks (Figure 3; Conner 1852; Figure 4). The dwelling was still present in 1903, a two-story stone building on former Lot 8, approximately 60 feet north of 41st Avenue, within the APE, and the exact location of the outbuilding is unclear (Figure 14).

- **Area of Potential Effect (APE) between the Hunters Point and Thomson Avenue bridges**

Former 49th/Hunters Point Avenue; Former Block 72; Former Arch Street; Former Block 89; Former Beech Street; Former Block 90; Former Crane Street; Former Block 91; Former Davis Street; Former Block 92; Former Pearson Street; Former Block 93; Former Anable Avenue/Amstel Place; Former Block 94; Former Court Street; Former Block 95; Former Nott Avenue; Former Block 196; Former Purves Street; Former Block 199

The section of the APE ranges between approximately 165 and 215 feet north of the line of current Skillman Avenue, formerly Meadow Street.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the southeast of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area (Wolverton 1891; Figures 17, 18).

- **APE Between the Thomson Avenue and Queens Boulevard bridges**

Former Block 200

The section of the APE on Block 200 extends between approximately 350 feet and 530 feet north of present Skillman Avenue, and lies along the south side of the old 1861 LIRR trackbed.

Prior to filling at the turn of the century, this part of the project area was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). Historical maps record two structures on these blocks, apparently constructed after filling operations.

Block 200 hosted a single dwelling on Lot 1, a 100- by approximately 150-foot lot along the east side of Dutch Kills Street. The one-story, wood frame dwelling first appeared between 1898 and 1903. In 1898 there were two small outbuildings at the southeast end of the lot (Sanborn 1898; Figure 17).

Former Dutch Kills Street

The section of the APE ranges from approximately 165 feet north of the line of current Skillman Avenue, formerly Meadow Street, to the old LIRR trackbed.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the southeast of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area (Wolverton 1891; Figures 17, 18).

Former Block 201

The section of the APE on Block 201 extends between approximately 350 feet and 530 feet north of present Skillman Avenue, and lies along the south side of the old 1861 LIRR trackbed.

Prior to filling at the turn of the century, this part of the project area was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). Historical maps record two structures on these blocks, apparently constructed after filling operations.

Block 201 was occupied by the "Land Office," either owned or operated by H. D. De Bevoise. This building was erected prior to 1873 (Beers 1873). In 1891 and 1898, the site is empty, suggesting a temporary office for land sales (Wolverton 1891; Sanborn

1898). By 1903 a one-story, wood frame building in the same location along Thomson Street (Figure 17).

Former Queens Street

The section of the APE ranges from approximately 165 feet north of the line of current Skillman Avenue, formerly Meadow Street, to the old LIRR trackbed.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the southeast of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area (Wolverton 1891; Figures 17, 18).

Former Block 204

The Block 204 section of the APE begins 35 feet north of present Thomson Avenue and extends to the old LIRR roadbed, along the line of former Queens Street. On the east side of the block, the APE begins 223 feet north of current Thomson Avenue, and ends at the old trackbed, along the line of former Orchard Street.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the southeast of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area (Wolverton 1891; Figure 17).

Former Orchard Street

The southern part of the Orchard Street section of the APE begins 223 feet north of current Skillman Avenue, and extends to about 390 feet north of current Skillman Avenue. The northern part extends from about 565 feet north of current Skillman Avenue to the old LIRR roadbed.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land

to the southeast of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area (Wolverton 1891; Figure 17).

Former Block 205

The southern part of the Block 205 section of the APE begins 223 feet north of present Thomson Avenue and extends to about 482 feet north of Thomson, along the east side of former Orchard Street. On the east side of the block, the project area begins at former Rapelje Avenue and extends about 225 feet to the north along the former West Street. The northern part of the project area on Block 205 begins about 500 feet north of present Skillman Avenue, and extends northward to the old LIRR trackbed.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the southeast of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area (Wolverton 1891; Figure 17).

Former West (earlier Barn) Street

The southern part of the West Street section of the APE extends from former Rapelje Avenue to about 225 feet north of Rapelje. The northern section extends from about 490 feet north of current Skillman Avenue north to the old LIRR trackbed.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the southeast of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area (Wolverton 1891; Hyde 1903).

Former Block 206

The southern section of the APE on triangular Block 206 extends from former Rapelje Avenue, about 225 feet northwest along West Street, and approximately 25 feet west of Rapelje along the route of former Foster (43rd) Avenue. The northern section of this

APE on Block 206 extends from about 500 feet north of present Skillman Avenue, to the old LIRR roadbed.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the southeast of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area (Figures 11, 14).

Foster Avenue (LIRR Trackbed to Rapelje Street)

The Foster Avenue section of the APE lies in present Yard A, south of the old 1861 LIRR trackbed, extending from the former LIRR trackbed on the north to the intersection with Rapelje Street to the southeast.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the south and east of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area of the APE (Figures 11, 14).

Block 223

The project area on triangular Block 223 extends from Foster (43rd) Avenue, to about 317 feet south of Foster along Rapelje Avenue, and about 235 feet south along the former Mount Street.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the southeast of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area (Figures 11, 14).

Former Mount Street

The Mount Street section of the APE begins at the intersection of Mount and Foster Avenue, and extends southward from about 235 feet along the west side of Mount Street, to 200 feet along the east side of Mount.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the southeast of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area (Figures 11, 14).

Block 221

The Block 221 section of the project area begins at Foster Avenue on the north, and extends 200 feet south of Foster along Mount Street on the west and 95 feet south of Foster along School Street on the east.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the southeast of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area (Figures 11, 14).

- **APE Between the Queens Boulevard and Honeywell Street bridges**

Old Long Island Rail Road Trackbed (Thomson Avenue to Middleburg Avenue)

The Thomson Avenue to Middleburg Avenue section of the old LIRR trackbed in this part of the APE was completed by 1861.

The 1844-45 topographic map depicts the Thomson Avenue to former Skillman Avenue section of the old LIRR trackbed as elevated ground adjacent to the western edge of the Dutch Kills marshes, and suggests rising elevations toward the west (Figure 3). The 1874 map, with railroad tracks in place, seems to show this part of the APE as an embankment along the edge of the marsh, with elevated ground to the west, and marsh to the east (Figure 4). Elevations from the 1907 topographical map are difficult to read, but appear to be above 7.75 feet (Figure 6).

Current elevations in this area along the edge of Yard A range from 11 to 15 feet (TAMS 1989), indicating the deposit of a protective fill overmantle of between four and eight feet thick, possibly deposited at the time the LIRR trackbed was first constructed. This indicates that the embankment fill has protected the pre-development surface, and any potential buried prehistoric cultural materials, from subsequent railroad yard construction impacts.

No historical structures were recorded in the Thomson Avenue to former Skillman Avenue section of the old LIRR trackbed in this APE.

In addition to prehistoric archaeological potential, the section of the LIRR embankment in the APE north of former Skillman Avenue was also on the site of the pre-1650 Burger Jorissen grist mill, which stood in the line of 32nd Avenue between 40th Road and 41st Avenue (Seyfried 1984b).

As discussed in Section 3.2.2, in 1643 Burger Jorissen received a land grant to the area around the headwaters of Dutch Kills, the vicinity of present Bridge Plaza, and extending eastward along Jackson Avenue. By 1650 he had built a dam and water-powered grist mill on Dutch Kills, which stood in this APE, south of Northern Boulevard in the line of 32nd Avenue, between 40th Road and 41st Avenue. The farm and mill were purchased in 1690 by Burgon Brocard or Bragaw, a French Huguenot refugee, whose family built a house on the site of Burger Jorissen's dwelling and a second house nearby in ca.1790. After 1818 this house came into the hands of the Payntar family (Munsell 1882; Seyfried 1984b).

A comparison of the 1844-45 and 1874 topographic maps show that north of former Skillman Avenue, the old 1861 LIRR embankment was constructed through the Dutch Kills marsh (Figures 3, 4), suggesting a low pre-construction elevation. The 1907 contour map shows the elevated embankment, approximately 80 feet wide, with still-existing marsh on each side. Adjacent marsh elevations are below 7.75 feet to the west and 2.75 feet to the east (where the creek widens to form a pond), while the embankment elevations within the impact area range from 7.75 feet at the base of its slopes, to as much as 22.75 feet at its crown (Figure 6).

Current elevations in this area along the edge of Yard A are 8.75 feet (TAMS 1989), indicating that the embankment has protected the pre-development surface from yard construction impacts. This is supported by soil borings QB-5 and QB-123, which record approximately 15 feet of fill in this section of the APE. Beneath the fill are marsh deposits, more than five feet thick in the case of QB-123 (See Section 3.7.3 for soil boring logs/profiles).

Former Block 209

In 1874, Block 209 was part of the western edge of the much larger Bragaw property, but historical maps show marsh and creekbed here through 1903. They record no buildings on the block before the advent of the railroad yard (Figures 11, 14). Therefore, no historical archaeological resources were noted on this block.

Former Rapelje Avenue

The Rapelje Avenue section of the APE includes all of Rapelje Avenue between former Skillman Avenue on the south, and the old LIRR roadbed on the north. The land was part of the Bragaw farm in 1874 (Dripps 1874).

Historical maps record no structures on this APE before the advent of the railroad yard (Figures 11, 14). Therefore, no historical archaeological resources were noted in this section of the APE.

Former Block 210

Only one historical structure was recorded in the Block 210 section of the project area. Lot 8 (as the block is lotted on the 1903 map, Figure 14) was the site of the Second Ward School, along the southeastern edge of the APE. The building itself, a wood frame, two- and one-story structure with a basement, faced Van Dam Street, approximately 80 feet north of former Skillman Avenue. The school appeared on maps at least by 1844 (Figure 3, Conner 1852; Figure 9; Dripps 1874), and seems to be in approximately the same location as a building predating 1781 (Taylor and Skinner 1781).

Former Van Dam Street

The northern part of the Van Dam Street section of the APE begins 147 feet north of former Skillman Avenue along the east side of Block 210, and 95 feet north of former Skillman Avenue along the west side of Block 185, extending northward to the intersection of Van Dam Street with former Rapelje Street, approximately 765 feet north of former Skillman Avenue. The land was part of the Bragaw farm through the 1870s (Dripps 1874), but no potential historical archaeological resources were recorded in this location.

Van Dam Street was straightened and the roadbed moved westward toward the end of the 19th century (Figures 11, 14).

The southernmost part of the Van Dam Street section of the APE begins at the Foster Avenue intersection on the south, and extends to about 305 feet north of Foster along the west side of Van Dam, and 330 feet north along the east side of Van Dam Street.

Although part of the 19th-century Van Pelt and Payntar farms, no historical archaeological resources have been recorded in this part of the APE.

Former Block 185

The southern Block 185 section of the APE extends from 95 feet to 247 feet north of former Skillman Avenue along Van Dam Street, and from former Skillman Avenue to 188 feet north of former Skillman Avenue along Hill Street. At the time of the railroad yard construction, Lots 1, 5, 80 and 83 contained dwellings. These will be described in more detail below (Figures 11, 14).

Block 185 was officially laid out by the 1890s (Figure 11). Apparently it was the intentions of the planners to close First Avenue/Front Street which ran north/south through the center of proposed Block 185, and to open Hill Street parallel to both Front and Van Dam streets 40 feet to the east. A winding road which connected School Street with Front Street was also eliminated. However, only the latter was accomplished, and Hill Street does not appear to have been opened north of former Skillman Avenue by the time the railroad yard was constructed (Figure 14).

Lot 1 occupied a 100-foot frontage along former Skillman Avenue, and 65 feet along both Van Dam and Front Streets (First Avenue). A two-story, wood frame house with a basement was constructed on the Front Street (First Avenue) side of the lot, facing Front Street, between 1852 and 1873, which the 1873 atlas labels with the name Green (Conner 1852; Figure 9). This house stood through 1903. Only the northeastern half of Lot 1, is within the proposed impact area, and the house itself straddles the roughly configured impact area boundary line.

A small outbuilding was along the rear (western) lot line, partly in Van Dam Street, by 1903. However, this structure was outside the impact area.

Lot 5 began 65 feet north of former Skillman Avenue, with 75-foot frontages on both Van Dam Street and Front Street/First Avenue. A two- and one-story, wood frame house, along the Front Street frontage, facing Front Street, was erected between 1852 and 1873. The 1873 atlas labels the house with the name J. Droll (Conner 1852; Beers 1873). A small outbuilding, in the northeast corner of the lot along Front Street, appears on the maps by 1903 (Figure 14).

Lot 80's boundaries extended 70 feet eastward from the east side of Front Street into the center of never-completed section of Hill Street. The 50-foot frontage along Front Street began 100 feet north of former Skillman Avenue. A two-story, wood frame dwelling was built at the northwestern corner of the lot, along Front Street, between 1873 and 1891. No other structures are recorded.

Lot 83 was a 25- by 70-foot lot, with a 25-foot frontage along Front Street, beginning 40 feet north of former Skillman Avenue. A one-story, wood frame dwelling with a basement was built along Front Street, between 1873 and 1891. A small outbuilding, apparently associated with the house, was erected in the roadbed along the east side of Hill Street, outside the block boundaries.

The northern sections of Block 185 in the APE include an area south of the old LIRR roadbed, roughly the northern 300 feet of the block along Van Dam Street on the west, and 270 feet along Hill Street on the east. It was part of the location of the original north/south road along the eastern edge of the marsh, which met Middleburg Avenue about 100 feet north of this part of the APE. The adjacent areas of the APE were formerly part of the Bragaw farm as late as the 1870s (Dripps 1874). No historical structures are recorded in this section of the APE (Beers 1873; Figure 11; Figure 14).

Although there are no recorded historical structures in this part of the APE, sections of the railroad yard along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation of 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

Former Hill Street (32nd Place)

The northern Hill Street sections of the APE include an area south of the old LIRR roadbed, roughly the northern 270 feet of Hill Street between former Blocks 170 and 185. No historical structures are recorded in this section of the APE (Figures 9, 11 and 14).

The APE portion of Hill Street was immediately east of the original north/south road along the eastern edge of the marsh, which met Middleburg Avenue about 100 feet north of this part of the APE. When streets were being laid out at the end of the 19th century, this section of Hill Street was laid out on paper, superseding the northern end of the old road. The land was formerly part of the Bragaw farm as late as the 1870s (Dripps 1874). No historical structures are recorded in this section of the APE (Beers 1873; Figure 11; Figure 14).

Although there are no recorded historical structures in this part of the APE, sections of railroad yard along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation of 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

The central Hill Street section of the APE extends to about 188 north of former Skillman Avenue along the east side of Block 185, and 177 feet north of former Skillman along the west side of Block 170. This section of Hill Street does not appear to have been opened or paved as late as 1903, and the streetbed was part of the adjacent lots on what became Block 185 to the west. Two of the lots, Lot 80 and 83 hosted structures prior to the construction of the railroad yard.

Lot 80 occupied a 50-foot section of Hill Street as its backyard, an area between 100 and 150 feet north of former Skillman Avenue. A two-story, wood frame dwelling was on the Block 185 section of the lot, along Front Street, between 1873 and 1891.

Lot 83 occupied a 25-foot section of Hill Street as its backyard, an area between 40 and 65 feet north of former Skillman Avenue. A one-story, wood frame dwelling with a basement was built in the Block 185 section of the lot, along Front Street, between 1873 and 1891. The Hill Street section was part of the rear yard, and a small outbuilding, apparently associated with the house, was erected in the roadbed along the east side of Hill Street.

The southern part of the Hill Street section of the APE begins approximately 235 feet north of Foster Avenue and extends to 400 feet north of Foster on the west side of Hill Street, and runs from between about 260 feet and 412 feet north of Foster Avenue along the east side of Hill Street.

No potential historical archaeological resources have been recorded in this part of the APE.

Former Block 170

The northern part of the Block 170 section of the APE includes an area south of the LIRR roadbed, roughly the northern 235 feet of the block along Hill Street on the west, declining to zero feet (the corner of Rawson Street and Middleburg Avenue) on the east. Block 170 was formerly about 60 feet east of the original north/south road along the eastern edge of the marsh, which met Middleburg Avenue about 60 feet west of this part of the APE. The adjacent areas of the APE were formerly part of the Bragaw farm as late as the 1870s (Dripps 1874; Beers 1873; Figures 11, 14).

Two dwellings and associated outbuildings were constructed in this section of the APE during the 19th century.

Lot 33, a 50- by 50-foot lot along the west side of the block, hosted a one-and-a-half story dwelling, about 225 feet south of Middleburg Avenue, before 1891 (Figures 11, 14 and 15; Sanborn 1898). It is probable that this is also the same structure that appears on the 1874 map in this area, although maps before 1859 map show the location without a structure (Figure 4; Walling 1859; Sidney 1849).

Lot 48, a 25- by 100-foot lot facing Rawson Street, contained a one-and-a-half story wood frame dwelling, on a lot beginning approximately 100 feet south of Middleburg Avenue. This house was erected between 1891 and 1898 (Figure 11; Sanborn 1898).

In addition to the recorded historical structures in this part of the APE, sections of the railroad yard along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation of 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

The southern section of the APE on Block 170 extends from former Skillman Avenue to about 177 feet north of former Skillman along the east side of Hill Street, and to approximately 112 feet north of former Skillman along the west side of Rawson Street. The entire block was part of the larger Bragaw estate in 1874 (Dripps 1874). By 1891 the estate had been subdivided and lotted and a brick building constructed on Lot 4 (Figure 11). This structure and subsequent buildings are described below (Sanborn 1898; Figures 14, 15).

The two-and a half-story John Bragaw house, built between 1781 and 1844, and with four outbuildings appearing to the north on the 1852 map, lies approximately 325 feet north of the proposed track/tunnel alignment. Outbuildings related to this dwelling depicted on the 1852 map lie to the northeast of the house, even further from the proposed alignment location (Taylor and Skinner 1781; Figure 3; Conner 1852). The house was still extant in 1903, when the Hyde atlas shows it on Lot 24, along the east side of Hill Street, about 440 feet north of former Skillman Avenue (Figures 14, 15).

Lots 74, 75 and 76 (named north to south), each 25- by 150-foot lots each with a 25-foot frontage on Rawson Street, contained the only recorded historical dwellings within this part of the APE. They appear to have formed a single 75' by 150' homelot, beginning about 65 feet north of former Skillman Avenue, along Rawson Street (Beers 1873; Figures 11, 14 and 15; Sanborn 1898).

A two- and one-story wood frame house was erected at the western end of Lots 74 and 75 before 1891. A related 2-story barn appears on the 1898 and 1903 maps straddling the Lot 75 and 76 boundary (about 90 feet north of former Skillman Avenue and 75 feet west of Rawson).

In addition, the 1903 atlas records a brick foundation in ruins along Lots 74 and 75's Rawson Street frontage. It straddles the impact area boundary, about 112 feet north of former Skillman Avenue. The ruined state suggests somewhat greater antiquity for that dwelling, although it does not even appear on the maps from 1891 or earlier.

Lot 9, a 50- by 75-foot lot with a 75-foot frontage on Hill Street, beginning 65 feet north of former Skillman Avenue, was part of the rear lot of Block 185 Lot 80, discussed above. The homelot hosted a two-story, wood frame dwelling along Front Street on Block 185, erected between 1873 and 1891.

Former Rawson Street (33rd Street)

The Rawson Street segment of the APE extends from 117 feet south to 112 feet north of former Skillman Avenue along the west side of Rawson Street, and from 130 feet south to 95 feet north along the east side of Rawson. The land north of the center of former Skillman Avenue was part of the Bragaw farm in the 1870s, while the to the south was the Payntar farm, divided among a number of family members by the same decade (Dripps 1874).

Historical maps record no buildings on this part of the APE (Figures 11, 14). Therefore, no historical archaeological resources were noted in this section of the APE.

Former Block 167

The APE section of former Block 167 extends from former Skillman Avenue to 95 feet north of former Skillman along the east side of Rawson Street, and to 71 feet north of former Skillman along the west side Moore Street. Block 167 was part of the much larger Bragaw property in 1874. By 1891 there were three buildings along the northern edge of the APE, on what became Lots 8 and 75. The 1898 and 1903 maps record greenhouses, but shift them geographically so that it is not clear to which lot/occupation they are related (Figures 11, 15; Sanborn 1898).

Lot 8, was combined with Lot 9 to the north to form a 50- by 100-foot lot, with a 50-foot frontage along the east side of Rawson Street, beginning 65 feet north of former Skillman Avenue. However, only the Lot 8 (southern) sections of the lot fall within the impact zone. This area contained a two-story, wood frame dwelling along the Rawson Street frontage by 1891, and an L-shaped rear yard outbuilding as well. The 1903 atlas indicates that the dwelling had a basement.

Lot 75 was a 25- by 100-foot lot, with a 25-foot frontage on Moore Street, beginning 65 feet north of former Skillman Avenue. The pre-1891 building on the lot is later described as a two- and 1-story wood frame store, along the Moore Street frontage. No outbuildings appear in the yard.

Former Moore Street (34th Street)

The Moore Street section of the APE extends from 159 feet south to 71 feet north of former Skillman Avenue along the west side of Moore, and from 153 feet south to 71 feet north of former Skillman along the east side of Moore. The land north of the center

of former Skillman Avenue was part of the Bragaw farm in the 1870s, while that to the south of former Skillman's centerline was the Payntar farm, part of the S. Payntar estate in the same decade (Dripps 1874). Maps record no historical structures on this part of the APE.

Former Skillman Avenue

The western Skillman Avenue section of this APE extends through Yard A, from the old 1861 Long Island Railroad trackbed to former School Street on the east, a distance of approximately 350 feet. By the 18th century, this section of later Skillman Avenue was the only route across Dutch Kills and its surrounding marshes, and remained the chief, if not the only crossing until early 20th-century filling and railroad yard construction eliminated it (Taylor and Skinner 1781; Conner 1852; Figure 14). This passage is not recorded as a Native American trail (Grumet 1981), and may have simply been the narrowest section of the marsh.

Formerly surrounded by marsh, no historical structures have been recorded on or adjacent to the APE sections of Skillman Avenue, until the construction of the LIRR trackbed abutting its western boundary in 1861.

The eastern side of the Skillman Avenue section of the APE, begins about 177 feet east of Van Dam Street along the north side of Skillman Avenue, and along the east side of Hill Street on the south side of Skillman. It extends eastward to the intersection with Honeywell Street. The northern half of this section of the APE was part of the Bragaw farm in the 1870s, and the southern half belonged to members of the Payntar family (Dripps 1874). Cartographic sources show that no potential historical archaeological resources were recorded in this location.

Former Block 207; Former Hunerbein Street; Former Block 208;

The APE on these blocks and streets lies in present Yard A, south of the old 1861 LIRR trackbed, extending from the old LIRR trackbed on the west to the former Rapelje Street on the east.

Prior to filling at the turn of the century, this area of the APE was part of the extensive marshes surrounding Dutch Kills and its tributaries (Figure 3; Conner 1852). The edge of the swamp is demarcated most clearly on the 1874 topographic map, where all land to the south and east of the Long Island Rail Road trackbed, including this section of the APE, is marsh and/or creekbed (Figure 4).

No potential historical archaeological sites were documented in this area of the APE (Figures 11, 14).

Former Block 222

The section of the APE on Block 222 extends from Foster (43rd) Avenue to about 50 feet north of Foster along Rapelje Avenue, and 153 feet along School Street. Most of this area, labeled Lot 1 in 1903, was part of the Maria Van Pelt farm during the 19th century, and lotted by 1891 (Figures 11, 14; Sanborn 1898). There is no record of structures built within the impact area, although outbuildings on neighboring Lot 12 (relating to a dwelling in the School Street roadbed) lie approximately ten feet north of the proposed impact area boundary, close enough so that potential historical resources might be affected by project construction.

Lot 12 was an irregularly shaped lot, and extended at least 60 feet north of Foster (43rd) Avenue. Three wood frame outbuildings are first recorded on the 1898 map, but because they were related to the house in the former School Street roadbed, which dates to the period between 1873 and 1891, they are likely older than 1898 (Figures 9, 11). The largest structure, a one-and-a-half-story barn, abutted the Lot 1 lot line about 25 feet west of School Street, approximately ten feet north of the proposed station platform location.

Former School Street

The section of the APE in the School Street roadbed ranges from 95 feet south to 153 feet north of Foster Avenue along the west side of School Street, and 60 feet south to 190 feet north of Foster Avenue along the east side of the street.

School Street was widened and straightened at the end of the 19th century, and as a result, a two-story dwelling with a basement appears on the west side of School Street, abutting the east side of Block 222 between 1873 and 1891 (Figures 9, 11). Related to the two barns on Block 222, Lot 12, the house was outside the impact area (about 50 feet to the north) approximately 200 feet north of Foster Avenue (Figure 14).

Block 211

The section of the APE on Block 211 begins at Foster Avenue on the south, extending about 190 feet north of Foster along School Street, and 305 feet north along Van Dam Street. Mid-19th-century maps record the Block 211 sections of the APE as divided between two families, the Payntars in the north, and the Van Pelts in the south.

The Van Pelt property included Lots 1, 9 and 10 on Block 211, basically the southern 200 feet of the block, all part of the APE. In 1903, a two-story wood frame dwelling stood at the approximate center of this area, straddling the Lot 9/10 lot line, about 125 feet north of Foster Avenue. Maps show a house in this location by the 1840s (Sidney 1849; Figure 3), when the property was already associated with the name Van Pelt. The farm appears to have remained in the Van Pelt family until Maria Van Pelt sold it to James Thomson in ca.1874. Thomson subdivided the property, and possibly razed the

Van Pelt house, since no building is there on the 1891 atlas, but a structure reappears in 1898 (Dripps 1874; Figure 11; Sanborn 1898; Figure 14).

The Payntar property included Lots 14, 53 and 54 within the Block 211 APE. The Payntar residence itself, built some time between 1781 and 1844-45 stood approximately 150 feet north of the APE, at the northeast corner of Block 211, near the intersection of Skillman Avenue and Van Dam Street (Taylor and Skinner 1781; Figure 3). Nineteenth-century maps record a number of outbuildings south of the house, as on the 1852 map, which shows two buildings near the farm's southern boundary, placing them in the APE (Conner 1852). By the 1870s, the farm had been subdivided, and lotted, and additional dwellings constructed.

Lot 14 in 1903 was a 100- by 125-foot lot with a 100-foot frontage on the east side of the old, curving path of School Street. A large, two-story wood frame dwelling stood at the center of the plot, approximately 250 feet north of Foster Avenue, and approximately 70 feet east of the later straightened path of School Street. The dwelling appeared on maps by 1873, when Beers labeled it the residence of H. Preston Jr., and the homelot appears to have also included the area to the east, which fronted on Van Dam Street, later called Lots 53 and 54 (Figure 9). Most of the rear yard as well as a small outbuilding along the rear Lot 14 line falls within the APE. The house itself straddled the northern boundary of the project area.

Former Block 184

The Block 184 section of the APE begins at Foster Avenue on the west side of the block along Van Dam Street, and extends about 305 feet north of Foster along Van Dam. On the east side of the block, the impact area begins about 118 feet north of Foster Avenue and continues to about 400 feet north of Foster along Hill Street. Mid-19th-century maps record the APE divided between two family farms, the Payntars in the north, and the Van Pelts in the south (Dripps 1874; Figure 14).

Lot 13, part of the Payntar farm, was by 1903 an 81- by 62-foot lot with an 81-foot frontage along the east side of Van Dam Street, beginning approximately 200 feet north of the former Foster (43rd) Avenue. Before 1891 a one-story, wood frame dwelling had been erected on the homelot, which prior to 1898 also included Lot 18 to the north (see following paragraph). The 1898 atlas shows the dwelling on the truncated Lot 13, with a wood frame outbuilding at the northwest corner of the lot (Figures 11, 14; Sanborn 1898).

Lot 18 was a 47- by 61-foot lot with a 47-foot frontage along the east side of Van Dam Street, beginning about 281 feet north of Foster Avenue. Until the period between 1891 and 1898, it was part of the Lot 13 homelot, which had already hosted a dwelling before 1891. By 1898 the lot had been split from Lot 13, and a one-story dwelling with two outbuildings had been constructed on the lot.

Former Block 171

The Block 171 section of the project area begins approximately 260 feet north of Foster Avenue on the west side of the block along Hill Street, and from about 400 feet north of Foster Avenue, along Rawson Street, on the east side of the block, extending north to former Skillman Avenue. The APE on Block 171 was part of the W. H. Payntar farm during most of the 19th century, until the block was lotted by the 1890s. Payntar's residence was to the west on the northern end of Block 211, completely outside the APE (Dripps 1874). By 1891 the estate had been subdivided, and the APE contained four wood frame structures by 1891 (Figures 11, 14 and 15; Sanborn 1898).

Lot 21, a 25- by 100-foot lot, had a 25-foot frontage along the east side of Hill Street, beginning about 390 feet north of former Foster Avenue. The first recorded building constructed here appears on maps between 1891 and 1898, a one-story, basemented, brick dwelling, along the Hill Street frontage. A small, wood frame outbuilding or ell is depicted at the southeastern corner of the house by 1903.

Lot 26 was a 75- by 90-foot lot with a 75-foot frontage on the south side of Skillman Avenue, beginning 50 feet west of Rawson Street. Prior to 1891, a two-story, wood frame, basemented dwelling was constructed near the front of the lot along western lot line, approximately 100 feet west of Rawson Street. A wood frame outbuilding at the southwest corner, appears for the first time in 1898, when it is labeled a coop.

Lot 29, a 25- by 90-foot lot, its 25-foot frontage along former Skillman Avenue, beginning 25 feet west of Rawson Street, contained a dwelling constructed before 1891. The house, at the northern end of the lot, had two stores and a basement. Maps show no outbuildings on the lot.

Lot 30, a 25- by 90-foot lot, its 25-foot frontage along former Skillman Avenue, beginning at the southwest corner of former Skillman and Rawson Street, contained a dwelling constructed before 1891. The house, at the northern end of the lot, had two stores and a two-story outbuilding occupied the southern end of the lot. By 1903 the house also contained a store.

Lot 32 was an irregularly shaped lot, with a 50-foot wide frontage on the west side of Rawson Street, beginning 90 feet south of former Skillman Avenue. A two-story, brick dwelling was built on this lot between 1891 and 1898, and two wood frame outbuildings appear on maps between 1898 and 1903.

Lot 33, a 25- by 100-foot lot, had a 25-foot frontage along the west side of Rawson Street, beginning about 365 feet north of former Foster Avenue. The first recorded building constructed here appears on maps between 1891 and 1898, a one-story dwelling, along the Rawson Street frontage. A small, wood frame outbuilding is depicted near the southwestern corner of the lot by 1903.

Lot 34, a 25- by 100-foot lot, had a 25-foot frontage along the west side of Rawson Street, beginning about 340 feet north of former Foster Avenue. The first recorded building constructed here appears on maps between 1891 and 1898, a one-story dwelling, along the Rawson Street frontage. A small, wood frame outbuilding is depicted immediately behind the house along the southern lot line by 1903.

Former Block 166

The APE section of former Block 166 extends from former Skillman Avenue to 130 feet south of the avenue along the east side of Rawson Street, and along the west side of Moore Street extends to about 160 feet south of former Skillman Avenue. The land was part of the larger S. L. Payntar property in 1874. Divided into homelots, buildings were constructed there prior to 1891 (Figures 11, 15; Sanborn 1898;).

Lot 22, a 25- by 100-foot lot, had a 25-foot frontage on the east side of Rawson Street, beginning 90 feet south of former Skillman Avenue. A one-story, basemented, wood frame dwelling was built along the Rawson Street frontage between 1891 and 1898.

Lot 24, a 25- by 90-foot lot, had a 25-foot frontage on the south side of former Skillman Avenue, beginning 25 feet east of Rawson Street. A one-story, wood frame dwelling was built along the former Skillman Avenue frontage before 1891. Prior to 1903, a small outbuilding was added at the southwestern corner of the lot.

Lot 25 was a 25- by 90-foot lot, with a 25-foot frontage on the south side of former Skillman Avenue, beginning 50 feet east of Rawson Street. A two-story, wood frame dwelling was built along the former Skillman Avenue frontage between 1891 and 1898. In 1903, four small outbuildings were first depicted the rear yard.

Lot 26, a 50- by 90-foot lot, had a 50-foot frontage on the south side of Skillman Avenue, beginning 75 feet east of Rawson Street. A greenhouse at the southwest corner of the lot, and a small outbuilding along the eastern lot line are first shown on maps in 1903. These structures appear to be related to the dwelling on neighboring Lot 25 to the west.

Former Block 156

The Block 156 section of the APE includes the northern end of former Block 156, extending approximately 153 feet south of former Skillman Avenue along Moore Street, and 118 feet south of former Skillman at Honeywell Street. This area was owned by the estate of S. L. Payntar in the 1870s (Dripps 1874). Between the 1870s and before 1891, the properties were subdivided and lotted. (Figure 11; Sanborn 1898; Figure 15).

Lot 23 was a 25- by 90-foot lot at the southeast corner of Moore Street and former Skillman Avenue, with a 25-foot frontage on former Skillman. A two-story, wood

frame, basemented dwelling was erected at the front of the lot, at the corner of former Skillman and Moore, before 1891. The 1898 and 1903 maps also record a wood frame outbuilding along the rear (southern) lot line.

Lot 24 was a 25- by 90-foot lot with a 25-foot frontage on former Skillman, beginning 25 feet east of Moore Street. A two-story, wood frame dwelling along former Skillman, and a small outbuilding near the rear lot line were erected before 1898. Unfortunately, the 1891 atlas is unclear in its depiction of this lot, and the structures may predate 1891.

Lot 25 was a 25- by 90-foot lot with a 25-foot frontage on former Skillman, beginning 50 feet east of Moore Street. A two-story, basemented building, identified as a store in 1898, but as a dwelling in 1903, was erected along the former Skillman Avenue frontage before 1898. A small outbuilding immediately south of the rear lot line (in Lot 22), is shown on the 1898 atlas, and appears to be associated with the store. Unfortunately, the 1891 atlas is unclear in its depiction of this lot, and the structures may predate 1891.

Lot 26 was a 25- by 90-foot lot with a 25-foot frontage on former Skillman, beginning 75 feet east of Moore Street. A two- and one-story, wood frame store was erected along former Skillman Avenue between 1891 and 1898. A small, wooden, rear yard outbuilding along the south lot line appeared for the first time in the 1903 atlas.

Lot 27 was a 25- by 90-foot lot with a 25-foot frontage on former Skillman, beginning 100 feet east of Moore Street. A two- and one-story, wood frame dwelling was erected along former Skillman Avenue between 1891 and 1898. A small, wooden, rear yard outbuilding, standing along the south lot line appeared for the first time in the 1903 atlas.

Lot 28, a 45- by 90-foot lot had a 45-foot frontage on former Skillman, beginning 30 feet west of Honeywell Street. A one-story structure was erected at the northeast corner of the lot (30 feet west of Honeywell Street) between 1891 and 1898. It was identified as a store in 1898, but as a dwelling in 1903.

Lot 30, a 30- by 92-foot lot at the corner of former Skillman and Honeywell Street, had a 30-foot frontage on former Skillman, and a 90-foot boundary with Honeywell Street. A one-story, wood frame store was erected along former Skillman before 1898, and a small, rear outbuilding along the rear lot line also appeared in that period. The outbuilding is not shown on the 1903 map.

Lot 31 was a 25- by 100-foot lot with a 25-foot frontage on Honeywell Street, beginning 92 feet south of former Skillman Avenue. A two-story, wood frame dwelling was built along Honeywell Street, and two small outbuildings stood in the rear yard, between about 55 and 80 feet west of Honeywell Street. All three were constructed between 1898 and 1903.

Former Foster Avenue

The Foster Avenue section of the APE extends from Rapelje Avenue on the west to Van Dam Street on the east.

This part of the APE is completely within the former Van Pelt farm. No historical structures have been recorded there, although three wood frame buildings, apparently Van Pelt farm outbuildings appear along the eastern side of the Foster Avenue/Van Dam Street intersection, approximately 80 feet southeast of the Foster Avenue impact area. They are depicted in the 1891 atlas, and maps as early as 1852 (Conner 1852; Figures 4, 11).

Block 212

The section of the APE on Block 212 is confined to a small triangle along Foster Avenue in the northwest corner of the block. The area extends approximately 60 feet south of Foster Avenue along the east side of School Street, and has a 115-foot frontage along the south side of Foster.

No potential historical archaeological sites were documented in this area (Figures 11, 14).

- **APE Between the Honeywell Street and 39th Street bridges**

Old LIRR Trackbed (Middleburg Avenue to Moore Streets)

The Middleburg Avenue (at Rawson Street) to Moore Street section of the old LIRR trackbed within the APE was completed by 1861. Maps predating the construction of the roadbed show no structures in this section of the APE (Figure 3; Sidney 1849; Walling 1859).

However, sections of the project area along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation of 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

Former Middleburg Avenue

The Middleburg Avenue sections of this APE extends eastward from the LIRR roadbed (east of Hill Street), to the east side of Rawson Street, a distance of roughly 100 feet. Although Middleburg Avenue was area's major east/west route during the 18th century, no structures are recorded actually within the roadbed itself. Despite 19th-century street widenings, no adjacent homelots were added to this section of the APE, and historical maps record no buildings in the vicinity, before or after the construction of the LIRR roadbed in 1861 (Sidney 1849; Figure 11; Figure 15).

Although there are no recorded historical structures in this part of the APE, sections of the railroad yard along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation of 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

Former Block 155

The APE sections of Block 155 lie along the north side of former Skillman Avenue, extending approximately 75 feet north of the avenue along Moore Street, to 130 feet north along former Honeywell Street. This area was part of the much larger Bragaw estate during the 1870s (Dripps 1874). One brick and three wood frame buildings were erected on this part of Block 155 during the 1890s (Figure 11; Figure 15; Sanborn 1898).

Lot 1, a 25- by 90-foot lot at the northwest corner of former Skillman Avenue and Honeywell Street, had a 25-foot frontage on former Skillman, and a 90-foot frontage along Honeywell Street. A two-story, wood frame store was constructed at the corner of Honeywell Street and Skillman between 1891 and 1898.

Lot 4 was a 25- by 90-foot lot along the north side of former Skillman Avenue. The 25-foot frontage on former Skillman began 75 feet west of Honeywell Street. A one-story, wood frame house was erected at the southern lot line, along former Skillman, between 1891 and 1898.

Lot 5 was a 100- by 90-foot lot, at the northeast corner of Moore Street and former Skillman Avenue. Street frontages were 100 feet along former Skillman Avenue, and 90 feet along Moore Street. Between 1891 and 1898, a two- and one-story, wood frame house was built along former Skillman Avenue, about 50 feet east of Moore Street.

Lot 73 was a 50- by 100-foot lot, with a 50-foot frontage on Honeywell Street, beginning 90 feet north of former Skillman Avenue. The northwestern half of the lot is outside the project area. Within the proposed APE was a 2-story brick dwelling built at the southern

lot line along Honeywell Street between 1891 and 1898. Outside the impact area, an associated wood frame outbuilding dating from the same period, stood in the rear half of the lot, more than 115 feet north of former Skillman Avenue.

Former Honeywell Street (35th Street - not the current viaduct)

The section of the APE on former Honeywell Street extends from about 118 feet south of former Skillman Avenue to 130 feet north of former Skillman along the west side of Honeywell Street, and from 106 feet south to 147 feet north of former Skillman along the east side. Through the 1870s the section north of former Skillman was part of the Bragaw farm, and to the south, the estate of Mary Manly (Dripps 1874).

The cartographic record showed no potential historical archaeological sites in this area.

Former Block 149

The APE sections of former Block 149 range from Skillman Avenue to about 150 feet north of former Skillman at Honeywell Street, and as much as 220 feet north of former Skillman at Buckley Street. The entire block was part of the larger Bragaw estate in 1874 (Dripps 1874). By 1891 the estate had been subdivided and lotted and a brick building constructed on Lot 4 (Figure 11). This structure and subsequent buildings will be described below (Sanborn 1898; Figure 15).

Lot 1, was a 65- by 100-foot lot at the northeast corner of Honeywell Street and former Skillman Avenue, with a 100-foot frontage on former Skillman. A small, wood frame outbuilding was built in the northeast corner of this lot, approximately 100 feet east of Honeywell Street and 65 feet north of former Skillman Avenue. Erected between 1891 and 1898, it was apparently related to the building on Lot 4. It was described as a coop in 1898.

Lot 4, a 35- by 100-foot lot along the east side of Honeywell Street, had a 35-foot frontage on Honeywell Street, beginning 65 feet north of former Skillman. A two-story brick store, probably with a dwelling in the upper story stood on this lot along the Honeywell Street frontage, before 1891. A two-story, wood frame outbuilding was first recorded on the lot in 1898. It stands at the rear (eastern side) of the lot.

Lot 5, a 75- by 100-foot lot with a 75-foot frontage on Honeywell Street, was adjacent to Lot 4 on the north. Two one-story outbuildings were constructed on the south side of the lot, abutting the Lot 4 line, first depicted on the maps between 1891 and 1898. They were apparently related to the buildings on Lot 4.

Lot 72, was a 55- by 100-foot lot at the corner of former Skillman Avenue and Buckley Street. The lot had a 100-foot frontage on former Skillman. A one-story, wood frame

dwelling stood along former Skillman, 50 feet west of Buckley Street, erected between 1891 and 1898. No outbuildings are recorded.

Former Buckley Street (36th Street)

The APE sections of former Buckley Street extend from about 35 feet south of former Skillman Avenue to 218 feet north of former Skillman along the west side of Buckley Street, and from 12 feet south to 235 feet north of former Skillman along the east side of Buckley. Through the 1870s the section north of Skillman was part of the Bragaw farm, and to the south, the estate of Mary Manly (Dripps 1874).

The cartographic record showed no potential historical archaeological sites in this area.

Former Block 137

The section of the APE on former Block 137 extends from former Skillman Avenue to about 240 feet north of former Skillman along the east side of Buckley Street, and to as much as 325 feet north of former Skillman along the west side of Hulst Street. The entire block was part of the larger Bragaw property in 1874 (Dripps 1874). By 1891 the estate had been subdivided and lotted and dwellings constructed on Lots 11, 12, 61 and 62 (Figure 11). These and subsequent buildings will be described below (Sanborn 1898; Figure 15).

Lot 1, at the corner of Buckley Street and former Skillman Avenue, had a 65-foot frontage on Buckley, and a 100-foot frontage on former Skillman. Between 1891 and 1898 a two-story wood frame store was constructed at the corner, with a one-story overhang or open porch extending into Buckley and former Skillman. A large outbuilding was also built at the center of the lot during the 1890s.

Lot 10, with a 25-foot frontage on Buckley Street, began 215 feet north of former Skillman Avenue. The entire 25- by 100-foot lot lies within the impact area. A two- and one-story wood frame house was built along Buckley Street between 1891 and 1898.

Lot 11, with a 25-foot frontage on Buckley Street, began 240 feet north of former Skillman Avenue. A small, wood frame house was built on the lot before 1891, abutting the impact area on the west. Only the rear yard (roughly the eastern two-thirds of the 25- by 100-foot lot) is within the proposed project area, and no structures were recorded on this part of the lot.

Lot 12, with a 25-foot frontage on Buckley Street, began 265 feet north of former Skillman Avenue. A two-story wood frame house was built on the Buckley Street frontage before 1891, abutting the impact area on the west. Only the rear yard (roughly the eastern fifth of the 25- by 100-foot lot) is within the APE. This area contained a wooden outbuilding also predating 1891, but not recorded on subsequent maps.

Lot 61, with a 25-foot frontage on Hulst Street, began 300 feet north of former Skillman Avenue. A small, one-and-a-half-story wood frame house and a small outbuilding were built on the lot before 1891, straddling the western edge of the proposed impact area. Only the eastern third of the 25- by 100-foot lot (the front yard) is within the APE.

Lot 62, with a 25-foot frontage on Hulst Street, began 275 feet north of former Skillman Avenue. A small, one-and-a-half-story wood frame house was built on the 25- by 100-foot lot before 1891. A small section of the northwest corner of the rear lot is outside the APE.

Lot 64 had a 25-foot frontage on Hulst Street, which began 240 feet north of former Skillman Avenue. A two-story wood frame house with a brick first floor was built at the front of the 25- by 100-foot lot between 1891 and 1898, and a one-story outbuilding was constructed at the rear lot line in the same period. The 1903 atlas records the dwelling as one story with a basement, and adds another outbuilding at the center of the northern lot line, bordering Lot 63.

Lot 69 had a 50-foot frontage on Hulst Street, beginning 90 feet north of former Skillman Avenue. A two-story brick house was built at the front of the lot between 1891 and 1898, and by 1903 an outbuilding was added near the northeast corner of the lot.

Former Hulst Street (37th Street)

The section of the APE on former Hulst Street extends from former Skillman Avenue to 325 feet north of former Skillman along the west side of Hulst Street, and to 347 feet north of former Skillman along the east side of Hulst. This area was part of the old Bragaw farm through the 1870s.

No potential historical archaeological sites were documented in this area of the APE.

Former Block 131

The southern section of the APE on Block 131 extends northward from former Skillman Avenue, approximately 112 feet along the east side of Hulst Street, and roughly 129 feet along the west side of Van Pelt Street.

Part of the much larger Bragaw property, in 1874 this area was subdivided and lotted after that date (Figure 11). The first structure was erected on Lot 69 after 1891 (Sanborn 1898; Figure 15).

Lot 69 was a 50- by 100-foot lot with a 50-foot frontage on Van Pelt Street, 90 feet north of former Skillman Avenue. In 1898 it had been divided into two 25- by 100-foot lots, numbered 69 and 70. Between 1891 and 1898 a two-story wood frame house had been erected along the Van Pelt Street frontage, in the northern 25 feet of the lot. An

outbuilding was erected at the rear of the lot, along the northern lot line during the same period.

The northern Block 131 section of the APE extends between 153 feet and 347 feet north of former Skillman Avenue along the east side of Hulst Street, and 235 feet to 441 feet north of former Skillman along the west side of Van Pelt Street.

Part of the much larger Bragaw property in 1874, this area was subdivided and lotted after that date, and structures were built on Lots 13, 14, 15 and 62 before 1891 (Figure 11). These and subsequent buildings will be described below (Sanborn 1898; Figure 15).

Lot 11 was a 25- by 100-foot lot with a 25-foot frontage on Hulst Street, beginning 240 feet north of former Skillman Avenue. A one-story wood frame dwelling was built at the front (western) end of the lot between 1891 and 1898, along with an outbuilding along the rear lot line.

Lot 12 Hulst Street, beginning 265 feet north of former Skillman Avenue. A one-story wood frame dwelling was built at the front (western) end of the lot between 1891 and 1898, along with an outbuilding along the rear lot line.

Lot 13 was a 25- by 100-foot lot with a 25-foot frontage on Hulst Street, beginning 290 feet north of former Skillman Avenue. A two- and one-story wood frame dwelling was built at the front (western) end of the lot before 1891. An outbuilding is shown along the rear lot line at the northeast corner of the lot, only on the 1898 map.

Lot 14 was a 25- by 100-foot lot with a 25-foot frontage on Hulst Street, 315 feet north of former Skillman Avenue. A one-story wood frame dwelling with a basement was built at the center of the lot along the northern lot line, before 1891.

Lot 15 was a 25- by 100-foot lot with a 25-foot frontage on Hulst Street, 340 feet north of former Skillman Avenue. A one-story wood frame dwelling with a basement was built at the center of the lot, near the northern lot line, before 1891.

Lot 57 was a 50- by 100-foot lot with a 50-foot frontage on Van Pelt Street, 365 feet north of former Skillman Avenue. It combined lots 57 and 58 which in 1898 had been two separate, 25- by 100-foot lots. Two one-story, wood frame houses each with a backyard outbuilding along the rear (western) lot lines, and of seemingly identical footprints, were built at the front of each half of the combined lot, between 1891 and 1898.

Lot 59 Van Pelt Street, 340 feet north of former Skillman Avenue. A one-story frame dwelling was constructed at the front of the lot between 1891 and 1898. An outbuilding was built along the rear (western) lot line during the same period.

Lot 62 was a 25- by 100-foot lot with a 25-foot frontage on Van Pelt Street, 290 feet north of former Skillman Avenue. The two-story frame house at the front (eastern end) of the lot was built there before 1891.

Lot 63 was a 50- by 100-foot lot with a 50-foot frontage on Van Pelt Street, 240 feet north of former Skillman Avenue. It combined lots 63 and 64 which in 1898 had been two separate, 25- by 100-foot lots. Between 1891 and 1898 a one-story wood frame dwelling was built at the front of the lot in the northern 25 feet of the Van Pelt Street frontage. The house stood along the northern lot line, with a small outbuilding just south of the house. Also at the same time the house appeared, between 1891 and 1898, a two-story frame store building was erected along Van Pelt Street in the southern 25 feet of the Lot 63 frontage. The building is labeled a store in 1898, but not on the 1903 map.

Lot 65 was a 25- by 100-foot lot with a 25-foot frontage on Van Pelt Street, 215 feet north of former Skillman Avenue. A one-story frame dwelling was constructed at the front of the lot between 1891 and 1898. An outbuilding was built at the center of the lot, along the southern lot line during the same period.

Former Van Pelt Street (38th Street)

The northern section of the APE on former Van Pelt Street extends from 235 feet north of ***present*** Skillman Avenue to 441 feet north of present Skillman along the west side of Van Pelt Street, and from 258 to 470 feet north of present Skillman along the east side of Van Pelt. The southern section of the same APE extends from 70 to 129 feet north of present Skillman Avenue on the west side of Van Pelt Street, and 88 to 141 feet north of present Skillman on the east side of Van Pelt.

Part of the old Bragaw farm through the 1870s, no potential historical archaeological sites were documented in this area.

Former Block 116

The northern sections of the APE extend from approximately 258 feet to 471 feet north of present Skillman Avenue along the east side of Van Pelt Street and along former Harold Avenue from approximately 335 feet to 540 feet north of present Skillman Avenue.

The southern sections of the APE extend from 88 feet to 141 feet north of present Skillman Avenue along the east side of Van Pelt Street, and from 129 to 159 feet north of present Skillman along the west side of former Harold Avenue.

Both sections of the APE were part of the much larger Bragaw property in 1874 (Dripps 1874), however, no buildings were constructed on the block prior to the establishment of the railroad yard (Figures 11, 16; Sanborn 1898).

The cartographic record found no potential historical archaeological sites documented on Block 116.

Former Harold Avenue (beneath present viaduct)

This section of the APE extends from approximately 335 feet to 540 feet north of present Skillman Avenue along the west side of Harold Avenue, and from 364 to 557 feet north of present Skillman along the west side of Harold. It was part of the much larger Bragaw property in 1874 (Dripps 1874), however, no buildings were constructed on the block prior to the establishment of the railroad yard.

No potential historical archaeological sites were portrayed in the cartographic record for Harold Avenue (Figure 16).

Former Skillman Avenue

This section of the APE includes Skillman Avenue from Honeywell Street to Hulst Streets. Through the 1870s the north half of Skillman Avenue was part of the Bragaw farm, and the south side, the estate of M[ary]. Manly (Dripps 1874).

The cartographic record reported no potential historical archaeological sites in this area.

Former Block 148

The section of the APE on former Block 148 ranges from former Skillman Avenue to about 106 feet south of former Skillman along Honeywell Street, and as little as 35 feet south of former Skillman at Buckley Street. This property was part of the estate of M[ary]. Manly in 1874 (Dripps 1874). By 1891 the estate had been subdivided and lotted and dwellings constructed on Lots 21, 22 and 27 (Figure 11). These and subsequent buildings will be described below (Sanborn 1898; Figure 15).

Lot 21, with a 25-foot frontage on the east side of Honeywell Street, began 90 feet south of former Skillman Avenue, and was 100 feet deep. Before 1891 a one-story frame dwelling was constructed at the rear of the lot. The western 75 feet of the lot appears to have remained empty.

Lot 22, with a 25-foot frontage on the east side of Honeywell Street, began 115 feet south of former Skillman Avenue, and was 100 feet deep. Before 1891 a one-story frame dwelling was constructed at the rear of the lot. Between 1891 and 1898 a one-story wood frame outbuilding was added along the north lot line, about 50 feet east of Honeywell Street.

Lot 23, at the northeast corner of former Block 148, had a 50-foot frontage on former Skillman and a 90-frontage on Honeywell Street. Between 1891 and 1898 a one-story

basemented dwelling was built at the northeastern corner of the lot, about 25 feet east of Honeywell Street.

Lot 25, a 25- by 100-foot lot 50 feet east of Honeywell Street, had a 25-foot frontage on former Skillman Avenue. Between 1891 and 1898, a two-story, wood frame building with a storefront was built at the front of the lot. It is likely that the upper story was residential.

Lot 27 had a 25-foot frontage on former Skillman Avenue, beginning 100 feet east of Honeywell Street, and extended 92 feet south of former Skillman. A one-story, wood frame dwelling with a basement appears at the front of the lot before 1891. By 1898 it is joined by two one-story, wooden outbuildings in the rear yard, one along each side of the lot.

Former Block 138

The section of the APE on former Block 138 is a small triangle at the northwestern corner of the block (Lot 23), with a frontage of approximately ten feet on both former Skillman Avenue and Buckley Street. It was part of the larger estate of M[ary]. Manly in 1874 (Dripps 1874).

No buildings were constructed on or within 30 feet of Lot 23 (Sanborn 1898; Figure 15). The cartographic record reported no potential historical archaeological sites in this area.

- **APE Between the 39th Street Bridge and Laurel Hill Avenue (43rd Street)**

Former Block 113

The Block 113 section of the APE extends from the LIRR roadbed on the south to approximately 12 feet north of the roadbed along the west side of Bragaw Street, and approximately 30 feet north of the LIRR roadbed on the east side of Harold Avenue. This area was owned by T. B. Van Buren Street in the 1870s, and although lotted before 1891, there is no evidence of any dwellings or other structures built within the APE. The nearest structures were a gas station built between 1915 and 1936, no closer than 100 feet north of the APE (Beers 1873; Dripps 1874; Sanborn 1898; 1915; 1936).

Therefore, no potential historical archaeological resources are recorded in the Block 113 section of the APE.

Old Long Island Rail Road Trackbed (Harold Avenue to Van Buren Street)

The Long Island Rail Road right-of-way sections of the APE extend from approximately Harold Street on the west to the east side of Van Buren Street on the east. The old LIRR tracks and roadbed were originally completed by 1861, and the route is still used by the LIRR.

Historical maps record no structures predating track construction (Figures 11, 16; Sidney 1849; Conner 1852; Beers 1873). The LIRR tracks themselves, which would have been replace numerous times between 1861 and the present, are not considered a historical resource.

Therefore, no potential historical archaeological resources are recorded in the LIRR roadbed section of this APE.

Former Bragaw Street (39th Place) (north of Middleburg)

The northern Bragaw Street section of the APE is a narrow strip of land which extends no more than 12 feet north from the LIRR right-of-way. This area was owned by T. B. Van Buren Street in the 1870s, and it is not clear whether the planned street was ever constructed (Beers 1873; Dripps 1874).

No potential historical archaeological resources are recorded in the northern Bragaw Street section of the APE.

Former Lowery (40th) Street

The northern Lowery Street section of the APE extends from roughly 505 feet north of Middleburg Avenue northward to the LIRR roadbed. No potential historical archaeological resources are recorded in this section of the APE.

Former Block 91

The Block 91 section of the APE is the northern end of the block, which borders the Long Island Rail Road right-of-way. It extends from Van Buren Street on the east to Lowery Street on the west. Never more than 50 feet wide north/south, this irregularly-shaped section of the APE begins at roughly 512 feet north of Middleburg Avenue along the west side of Van Buren Street, and approximately 505 feet north of Middleburg Avenue on the east side of Lowery Street.

No potential historical archaeological resources are recorded in the Block 91 section of this APE.

Former Van Buren Street (north of Middleburg)

The northern Van Buren Street section of the APE extends between approximately 475 feet and 565 feet north of Middleburg Avenue on the east side of Van Buren Street, and between 512 feet and 582 feet north of Middleburg along the west side of Van Buren Street.

No potential historical archaeological resources are recorded in the northern Van Buren Street section of this APE.

Former Block 74

The Block 74 section of the APE extends between approximately 475 feet and 565 feet north of Middleburg Avenue on the east side of Van Buren Street, and roughly between 363 feet and 460 feet north of Middleburg Avenue along the west side of Madden Street,

No potential historical archaeological resources are recorded in the Block 74 section of the APE.

Former Madden Street (42nd) Street (North of Former Middleburg Avenue)

The northern Madden Street section of the APE extends roughly between 363 feet and 460 feet north of Middleburg Avenue along the west side of Madden Street, and approximately between 280 feet and 401 feet north of Middleburg Avenue on the east side of Madden Street.

No potential historical archaeological resources are recorded in the Madden Street (north of Middleburg Avenue) section of the APE.

Former Block 71

The northern and western parts of the Block 71 section of the APE begin along the south side of the block, along former Middleburg Avenue, from approximately 80 feet to 166 feet east of former Madden Street (42nd) Street, and curve northwesterly though the block to Madden Street between approximately 280 feet and 401 feet north of Middleburg Avenue.

No potential historical archaeological resources are recorded in this section of the APE.

The southeastern section of the APE on Block 71 is a triangular area which begins about 105 feet east of Madden Street along the north side of Middleburg Avenue, and extends eastward to about 60 feet north of Middleburg along the west side of Laurel Hill Street (present 43rd Street). The listed owner of the property in 1874 was a person named "West" (Dripps 1874).

Although there are no recorded historical structures in this part of the APE, the eastern sections of the railyard along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation of 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

Former Block 111

The section of the APE on former Block 111 extends from approximately 361 feet to 576 feet north of ***present*** Skillman Avenue along Harold Avenue, and from 541 feet to 635 feet north of Skillman along the western side of old Bragaw Street (39th Place). The APE was part of the much larger Bragaw property in 1874 (Dripps 1874), however, no buildings were constructed on the block prior to the establishment of the railroad yard.

The cartographic record reported no potential historical archaeological sites on Block 111.

Former Bragaw Street (39th Place – South of Former Middleburg Avenue)

The northern section of the APE on Bragaw Street runs from 541 to 635 feet north of present Skillman Avenue along the west side of Bragaw Street, and 565 to 659 feet north of Skillman along the east side of Bragaw.

The southern part of the Bragaw Street section of the APE extends from 163 feet to 230 feet north of ***present*** Skillman Avenue along the west side of former Bragaw Street, and from 187 feet to 237 feet north of Skillman Avenue along the east side of Bragaw Street.

Part of the old Bragaw farm, these areas were divided into lots by the 1890s, but no structures are recorded within the APE (Dripps 1874; Figures 11, 16).

No potential historical archaeological resources have been recorded in this part of the APE.

Former Block 95

The northern section of the APE on former Block 95 extends 565 to 659 feet north of present Skillman Avenue along the east side of Bragaw Street, and from 660 to 741 feet north of Skillman Avenue on the west side of Lowery Street.

The eastern half of this area on Block 95 had elevations ranging between 62.75 and below 67.75 feet in 1907 (Figure 7). Current elevations in this area lie between 55 and 58 feet (Amtrak 1994), indicating that more than four feet of the pre-1907 surface was

removed during regrading for railyard construction. This regrading would have effectively destroyed any potential archaeological deposits from the prehistoric period.

The western half of this area on Block 95 had elevations between 57.75 and 62.75 feet in 1907 (Figure 7). Current elevations in this area lie between 54 and 55 feet (Amtrak 1994), indicating at least 2.75 feet of the original pre-yard ground surface has been removed in this section of the block.

The southern part of the Block 95 section of the APE extends from 187 feet to 237 feet north of ***present*** Skillman Avenue along the east side of Bragaw Street, and from 192 feet to 260 feet north of Skillman Avenue along the west side of Lowery Street. No structures are recorded within this part of the APE (Figures 11, 16).

Part of the old Bragaw farm, these areas were divided into lots by the 1890s, but no structures are recorded within the APE (Dripps 1874; Figures 11, 16).

No potential historical archaeological resources have been recorded in this part of the APE.

Former Lowery (40th) Street (South of Former Middleburg Avenue)

The northern part of the Lowery Street section APE runs from 660 to 741 feet north of present Skillman Avenue along the west side of Lowery Street, and 687 to 765 feet north of Skillman along the east side of Lowery.

A group of buildings, identified as a Bragaw homestead, lay along the northern boundary of this part of the APE (as well as occupying sections of the APE on neighboring Block 90 and Van Buren Street). The owner or chief occupant is identified on various maps as D. Bragaw (Sidney 1849), "R. Brogaw" (Beers 1873) and William Bragaw (Figure 16).

The 1903 atlas shows a large, wood frame, three-, two- and one-story house on the south side of Middleburg Avenue, about 80 feet north of the APE. The house appears on maps as early as 1849, but is not drawn on the 1844-45 USC&GS survey (Figure 3; Sidney 1849).

To the south of the dwelling, a 100-foot long greenhouse complex, depicted on maps by 1891, and through 1903, straddles the APE's northern boundary, with approximately the southern or southwestern 30 feet of the building within the APE (Figures 11, 16; Sanborn 1898).

The southern part of the Lowery Street section of the APE extends from 192 feet to 260 feet north of ***present*** Skillman Avenue along the west side of Lowery Street, and from

198 feet to 272 feet north of Skillman Avenue along the east side of Lowery Street. No structures are recorded within this part of the APE (Figures 11, 16).

Part of the old Bragaw farm, this area was divided into lots by the 1890s, but no structures are recorded within the APE (Dripps 1874; Figures 11, 16).

No potential historical archaeological resources have been recorded in the southern part of the APE.

Former Block 90

The northern part of the Block 90 section of the APE runs from 687 to 765 feet north of present Skillman Avenue along the east side of Lowery Street, and 765 to 847 feet north of Skillman along the west side of Van Buren Street. Before yard construction, a number of structures were erected within the APE. This area was part of the Bragaw farm through the 1870s (Dripps 1874).

The APE cuts through a cluster of buildings identified as a Bragaw homestead. The house, first shown on maps by 1849 (Sidney 1849) lay beyond the northwest boundary of this part of the APE (Figure 16). Other buildings from the complex were within the APE on neighboring Lowery and Van Buren Streets. The owner or chief occupant of the house is identified on various maps as D. Bragaw (Sidney 1849), "R. Brogaw" (Beers 1873) and William Bragaw (Figure 16).

Three buildings from the Bragaw homestead can be identified as within, or partially within, this part of the APE. A pair of outbuildings is shown on this part of the APE as early as 1852, and in the same location in 1874 (Conner 1852; Figure 4).

To the south of the Bragaw dwelling (outside the APE), a 100-foot long greenhouse complex, was depicted on maps by 1891, and through 1903. The southern 30 feet of the greenhouse lies partially within the Block 90 and the Lowery Street segments of the APE (Figure 11; Sanborn 1898; Figure 16).

At the center of the block, straddling the northern boundary of this segment of the APE, approximately 100 feet south of Middleburg Avenue, was a one-story wood frame shed or barn, depicted on maps by 1891. This building, shown as L-shaped (Figure 11; Sanborn 1898) or as a lopsided T-shape (Sanborn 1903), was approximately 110 feet long. Another, small one-story structure, probably a shed, stood about 20 feet to the east of this building, and only appears on the 1898 map (Sanborn 1898). The small shed was wholly within the APE.

A second barn/shed structure was erected east of these buildings, straddling the edge of Block 90/Van Buren Street, although the bulk of the structure was in Van Buren Street. This two- and one-story building, reached the approximate dimensions of 85 feet by 75

feet between 1891 and 1898. In 1891, the location was occupied by two smaller outbuildings (Figure 11; Sanborn 1898).

This southern part of the Block 90 section of the APE extends from approximately 198 feet to 272 feet north of present Skillman Avenue along the west side of Block 90, and from 228 feet to 310 feet north of Skillman Avenue along the east side of Block 90 Street. According to historical maps, no structures were built within this part of the APE (Figures 11, 16).

Part of the old Bragaw farm, this section of the APE was divided into smaller plots by 1874, and subdivided into smaller homelots by the 1890s. However, according to historical maps, no potential historical archaeological resources have been recorded in this part of the APE (Dripps 1874; Figures 11, 16).

Former Van Buren Street (41st) Street (South of Former Middleburg Avenue)

The northern part of the Van Buren Street section of the APE runs from 765 to 847 feet north of present Skillman Avenue along the west side of Van Buren Street, and between 788 and 870 feet north of Skillman along the east side of Van Buren Street. Before railyard construction, a number of buildings were erected within the APE. This area was part of the Bragaw farm through the 1870s (Dripps 1874).

The Van Buren Street section of this APE once hosted a large barn/shed structure identified as part of a Bragaw family homestead. The dwelling house, first shown on maps by 1849, and in existence through 1903 (Sidney 1849; Figure 16), lay outside, to the northwest of the Lowery Street section of the APE, approximately 180 feet west of Van Buren Street The owner or chief occupant of the house is identified on various maps as D. Bragaw (Sidney 1849), "R. Brogaw" (Beers 1873) and William Bragaw (Figure 16).

The barn/shed structure stood to the east of the other buildings of the complex, straddling the edge of Block 90/Van Buren Street, although the bulk of the structure was in Van Buren Street, and occupied almost the entire Van Buren Street section of the APE. A two- and one-story building, it was built to the approximate dimensions of 85 feet by 75 feet between 1891 and 1898. In 1891 and earlier, the same location was occupied by two smaller outbuildings, which may date to as early as 1852 (Figure 11; Sanborn 1898; Conner 1852; Figure 4).

In addition to the historical structures in this part of the APE, the eastern sections of Sunnyside Yard along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation of 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts

were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

This southern part of the Van Buren Street section of the APE extends from approximately 228 feet to 310 feet north of present Skillman Avenue along the west side of Van Buren Street, and from 228 feet to 319 feet north of Skillman Avenue along the east side of Van Buren Street. According to historical maps, no structures were built within this part of the APE (Figures 11, 16).

Part of the old Bragaw farm, this section of the APE was divided into smaller plots by 1874, and subdivided into smaller homelots by the 1890s. However, according to historical maps, no potential historical archaeological resources have been recorded in this part of the APE (Dripps 1874; Figures 11, 16).

Former Block 75

The northern section of the APE on Block 75 runs from 788 to 870 feet north of present Skillman Avenue along the east side of Van Buren Street, and 870 north of Skillman to Middleburg Avenue along the west side of Madden Street.

Most of this area was part of the Bragaw farm through the 1870s, when it was split between various family members (Dripps 1874).

Although there are no recorded historical structures in this part of the APE, the eastern sections of Sunnyside Yard along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation of 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

The southern part of the Block 75 section of the APE extends from approximately 228 feet to 319 feet north of present Skillman Avenue along the west side of Block 75, and from 345 feet to 437 feet north of Skillman Avenue along the east side of Block 75. According to historical maps, no structures were built within this part of the APE (Figures 11, 16).

Part of the old Bragaw farm, this section of the APE was divided into smaller plots by 1874, and subdivided into smaller homelots by the 1890s. However, according to historical maps, no potential historical archaeological resources have been recorded in this part of the APE (Dripps 1874; Figures 11, 16).

Former Madden Street (42nd) Street (South of Former Middleburg Avenue)

The northern section of the Madden Street part of the APE extends along the west side of Madden Street from 870 feet north of present Skillman Avenue to former Middleburg Avenue, and along the east side of Madden Street, from 894 feet north of Skillman to Middleburg. Most of this area was part of the Bragaw farm through the 1870s, when it was split between various family members (Dripps 1874).

Although no historical structures have been recorded in this part of the APE, the eastern sections of Sunnyside Yard along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation, from 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

This southern part of the Madden Street section of the APE extends from approximately 345 feet to 437 feet north of present Skillman Avenue along the west side of Madden Street, and from 404 feet to 507 feet north of Skillman Avenue along the east side of Madden Street. According to historical maps, no structures were built within this part of the APE (Figures 11, 16).

Part of the old Bragaw farm, this section of the APE was divided into smaller plots by 1874, and subdivided into smaller homelots by the 1890s. However, according to historical maps, no potential historical archaeological resources have been recorded in this part of the APE (Dripps 1874; Figures 11, 16).

Former Middleburg Avenue (Van Buren Street to Laurel Hill Avenue)

This part of the APE covers an irregularly-shaped area whose westernmost boundaries are 50 feet west of the Madden Street intersection on the south side of Middleburg Avenue, and 105 feet east of the same intersection on the north side of Middleburg. The eastern boundary is Laurel Hill Avenue. Earlier known as Middelburgh or Dutch Kills Road, the road was in existence during the 18th century (Taylor and Skinner 1781). By the 1890s it had been widened, straightened and regulated, until it was recorded as 100 feet wide in 1898, certainly absorbing parts of the farmlands and homelots that bordered it (Sanborn 1898).

Although there are no recorded historical structures in this part of the APE, the eastern sections of Sunnyside Yard along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation of 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

Former Block 70

The northwestern section of the APE on Block 70 is a small triangular area which begins 894 feet north of present Skillman Avenue and extends to Middleburg Avenue along the east side of Madden Street, and extends eastward approximately 120 feet east of Madden Street. It was part of the Bragaw farm through the 1870s (Dripps 1874).

Although there are no recorded historical structures in this part of the APE, the eastern sections of Sunnyside Yard along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation of 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

The southern and eastern sections of the APE on Block 70 begin from 404 feet to 507 feet north of present Skillman Avenue on the west side of the block, along former Madden Street (42nd) Street. From there they curve northward and end on the northern side of the block, along former Middleburg Avenue, from 104 feet to 190 feet east of Madden Street. Part of the old Bragaw farm, this section of the APE was divided into smaller plots by 1874, and subdivided into even smaller homelots by the 1890s (Dripps 1874; Figure 11)

Lot 20, a 140- by 190-foot lot, with a 140-foot frontage on both Madden Street (42nd) Street (and Laurel Hill Avenue (43rd Street) was formerly part of a larger lot extending further westward, owned by J. Heeney (Dripps 1874). The southern side of the lot was approximately 400 feet north of Skillman Avenue. Three structures are depicted on the Block 70 section of the lot by 1891. These included a one-and-one-half story, wood frame dwelling constructed along the lot's northern line, about 50 feet east of Madden Street, and 440 feet north of Skillman. It straddled the eastern edge of this section of the APE. A wood frame outbuilding along the Madden Street frontage was wholly within the APE (Sanborn 1898; Figure 16).

In addition to the recorded historical structures in this part of the APE, the eastern sections of Sunnyside Yard along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation of 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

- **APE Between 43rd Street (Laurel Hill Avenue) and 48th (Gosman) Street**

Former Laurel Hill Avenue (43rd Street); Former Block 54; Locust (44th) Street;

Former Block 51; Grove (45th) Street; Former Block 37; Bliss (46th) Street; Former Block 34; Caroline (47th) Street; Former Block 22; Gosman (48th) Street

This section of the APE begins at the northwest corner of Laurel Hill Avenue (now 43rd Street) and Middleburg Avenue (now 39th Avenue). It extends to about 50 feet north of 39th Avenue. From the west side of 43rd Street the APE continues northeasterly, approximately 1,510 feet to the east side of Gosman Avenue, now 48th Street, where it lies between approximately 500 feet and 575 feet north of 39th Avenue. In 1873, this area was part of the D. T. Bragaw farm, but by 1874 it had been sold to J. P. G. Foster property (Beers 1873; Dripps 1874).

No historical structures predating the 20th century have been recorded within this section of the APE. However, the buildings of one notable farmstead are on Block 37, approximately 120 feet south of the APE, formerly at the corner of Grove Street and Middleburg Avenue, but now in the intersection of present Barnett Avenue and 39th Avenue. Here there was a dwelling, identified as the Wm. Gosman house in 1849 and 1852, D. T. Brogaw in 1873 (Sidney 1849; Conner 1852; Beers 1873). A house appears at this location in 1844 and in 1781 (Figure 3; Taylor and Skinner 1781). The entire farm encompassed 60 acres in 1852, and the property included this section of the APE. The one-and-a-half story house and an outbuilding were still extant in 1903 (Figure 16).

In addition, the eastern sections of Sunnyside Yard along Middelburgh Road/Middleburg Avenue were heavily manned by British troops during the Revolutionary War occupation of 1776 to 1783. Soldiers were bivouacked in the farmhouses, and others built their huts and pitched their tents on the farms all along the road and in the fields. Into the 1880s and 1890s some of the huts were still visible, and there were regular reports of farmers plowing up Revolutionary War relics (Munsell 1882; Seyfried 1984b).

3.7.2 Site File Search

SITE FILE SEARCH RESULTS

Project Name: MTA/LIRR Eastside Access HAA Project Number: 1302 Client: HPI

Topo: _____ Town: NYCity County: Queens

Quadrangle: Brooklyn + Central Pk

NEW YORK STATE MUSEUM conducted by: Kim Crosher Date: 8.5.99 Site Sensitivity requested: _____ # Sites: 5

NYSM#	Other#	Name	Period	Type	Comments
1557	ACP QUNS 14	—	—	BURIAL SITE	ACP... in LI city on cresent St. NYSM Locat. cresent St. in vicinity of LI city Reporter: A.C. Parker/1922
03	ACP KNS	—	—	TRACES OF OCCUPATION	Reporter: A.C. Parker 1922
330	ACP QUNS 13	—	—	VILLAGE	ACP... on Maspeth Hills at Head of Newton Creek. Reporter: A.C. Parker/1922
376 plotted on map	ACP KNGS	Sites General	—	—	Kings Co. was "... without doubt occupied in nearly every part..." ACP part 2, p. 582. Reporter: AC Parker/1922
536	ACP QUNS NO #			VILLAGE	Reporter: A.C. Parker/1922

conducted by: LCC Date 8.5.99 # archeological sites 2

Project Site #	Form Copied	If not fill in → Site Name	Site Description
9 081.01.0101			
? 081.01.0108	#		
	081.01.0113		
	081.01.0110 (*)		
No form → Location 9 →	081.01.0064 (*)		
	081.01.0063 (*)		
	081.01.0091 (*)		

Status	NRE Listings	Form Copied	Description
NRE	Emergency Medical Squad	✓	38-18 Northern Blv.
NRE	Engine Co 258 Hook + Ladder 118	✓	10-40 47th Ave - 9 location no plotted on SFS map
NRE	89-02 32nd Ave PS 148	no form	
NRE	77-02/37th Ave Jackson Heights School (Primary School 69)	no form	
NRE	167-02 45th Ave. PS. 107	no form	

(*) = No location - just keep in mind these locations if they are adjacent to your Project Area - Public Schools and Fire Stations seem to be NRE as well

TIONAL REGISTER ELIGIBLE and LISTED At least 1 Eligible 5 Listed

perty Name	NR Status (L/E/N)	Form Copied	Description
	NRL	✓	Long Island City Courthouse Complex
	NRL District	✓	Ridgewood Multiple Resource Area - include -
	NRL District	✓	Hunters Pt Hist. District or Domino's (Hook Bennett's)
	NRL District	✓	Sunnyside Gardens Historic District
	NRL	✓	Long Island City Post office 46-02 21st St

- Fresh Pond Traffic Hist. Dist.
- 68th Ave + 64th Place Hist. Dist.
- Central Ave. Hist. Dist

VIOUS SURVEYS

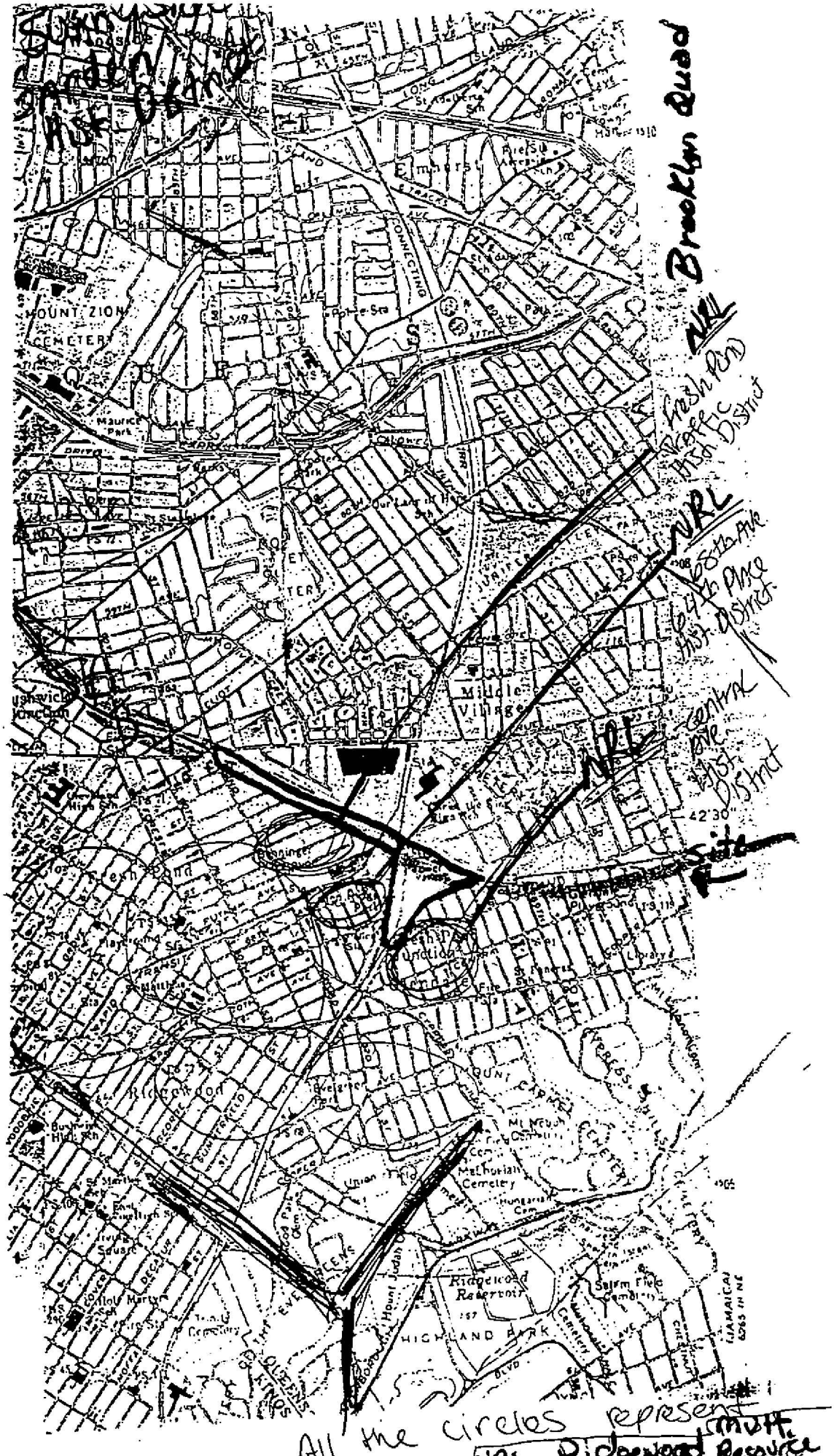
1 (2 Reports) - Onderdonk House - Greater Ridgewood Historical Society - 1983 - + 1975

8 (3 Reports - 2 are yours) West Queens High School - 2 Reports HPI (1992 + 1988) - the other: (Greenhouse Consultants - 1992)

5* - PIN 0227.75 Long Island Expressway - written by Arnold Pickman - 1983 -

5 previous surveys

Long Island City Complex
Hunters Point
Sunnyside
Newtown Creek
Penny Bridge
Calvary Cemetery
Queens Co
Kings Co
Queens
Greenpoint
Bushwick Inlet
McCarren Park
Cooper Park
Williamsburg
Dept of Pub Works
Radio Towers (WNYC)
Fireboat Sta
Hospital
Grand Street
Island
Long Island
Brooklyn
Queens
East River


Brooklyn Quad
NRL
Fresh Pond Traffic Hist. District
NRL
Central Ave. Hist. District
NRL
Site
All the circles represent different parts of the NRL Ridgewood Resource Area

Bowery Bay
Astoria
Hallets Point
Mill Rock
Light
Riker's Island
Penitentiary
Rikers Island
Hell Gate
Bridge
Triborough
Bridge
Queensboro
Bridge
Roosevelt
Island
Subway
Ferry
Hospital
Cemetery
Park
Pier
Light
Tower
Tank
Dock
Yard
Station
Center
Museum
Church
Library
Police
Fire
Water
Tunnel
Bridge
Ramp
Road
Street
Avenue
Boulevard
Drive
Place
Lane
Terrace
Court
Square
Plaza
Circle
Island
Point
Creek
Channel
Harbor
Bay
Sound
River
Island
Point
Creek
Channel
Harbor
Bay
Sound
River

ARCHEOLOGICAL SITE INVENTORY FORM

DIVISION FOR HISTORIC PRESERVATION
NEW YORK STATE PARKS AND RECREATION
ALBANY, NEW YORK
518 474-0479

FOR OFFICE USE ONLY
UNIQUE SITE NO. Anst-01-0101
QUAD.
SERIES
NEG. NO.

REPORTED BY: Susan Karlsen

YOUR ADDRESS: _____ TELEPHONE: _____

ORGANIZATION (if any): NYC

DATE: 1/1/77

1. SITE NAME: Parker #14

2. COUNTY: Queens TOWN/CITY: Long Island City VILLAGE: _____

3. LOCATION: Crescent St

4. PRESENT OWNER: _____

5. OWNER'S ADDRESS: _____

6. DESCRIPTION, CONDITION, EVIDENCE OF SITE:

- ☐ STANDING RUINS
- ☐ CELLAR HOLE WITH WALLS
- ☐ SURFACE TRACES VISIBLE
- ☐ WALLS WITHOUT CELLAR HOLE
- ☐ UNDER CULTIVATION
- ☐ EROSION
- ☐ UNDERWATER
- ☐ NO VISIBLE EVIDENCE
- ☐ OTHER _____

7. COLLECTION OF MATERIAL FROM SITE:

- ☐ SURFACE HUNTING BY WHOM _____ DATE _____
- ☐ TESTING BY WHOM _____ DATE _____
- ☐ EXCAVATION BY WHOM _____ DATE _____
- ☐ NONE

PRESENT REPOSITORY OF MATERIALS: _____

8. PREHISTORIC CULTURAL AFFILIATION OR DATE: Unknown

9. HISTORICAL DOCUMENTATION OF SITE:

Parkin 1922 : [illegible]

10. POSSIBILITY OF SITE DESTRUCTION OR DISTURBANCE:

11. REMARKS:

12. MAP LOCATION

7 ½ MINUTE SERIES QUAD. NAME: Central Park

15 MINUTE SERIES QUAD. NAME: Harlem (SW/4)

U.S.G.S. COORDINATES: 15T E9045 N13250

D.O.T. COORDINATES: (if known) ____

ATTACH SKETCH, TRACING OR COPY OF MAP

SOURCE OF MAP:

13. PHOTOGRAPHS (optional)

(ATTACH)

STORICAL DOCUMENTATION OF SITE:
Parker, Arthur C. 1922. The Archaeological History of New York, New York State Museum Bulletin, Nos. 235-236, pp. 37-1228. Albany.

10. POSSIBILITY OF SITE DESTRUCTION OR DISTURBANCE:

SITE TYPE

11. REMARKS:

OTHER

LOCATION

12. MAP LOCATION

7 ½ MINUTE SERIES QUAD. NAME: Central Park

15 MINUTE SERIES QUAD. NAME: [illegible] SW

U.S.G.S. COORDINATES: 18T E 73450 N13 [illegible]

D.O.T. COORDINATES: (if known) _____

ATTACH SKETCH, TRACING OR COPY OF MAP

SOURCE OF MAP:

13. PHOTOGRAPHS (optional)

(ATTACH)

INSTRUCTIONS. Write on hard surface with 2H Pencil. Fill in or circle where appropriate. Keep top two copies (white and yellow) and send third copy (pink) to the NYAC Central Office. Coding space is provided on the right margin. Take pad apart at top first.

NEW YORK ARCHAEOLOGICAL COUNCIL

SITE SURVEY FORM

Page

NYAC SITE NO:

Location Classification: Unrestricted / Restricted

SITE NAME

Official	Institution
	NYSAA
Other: Calvary St. Site	Collector

PERIOD

Paleo. / Archaic: E M L / Transitional / Woodland E M L / Historic

Unknown Prehistoric

CULTURE(S)

SITE TYPE

Stray Find	Pictograph	Kill Site	Cemetery	Camp	Commercial/Factory
Cave	Quarry	Shell Midden	Ossuary	Cabin/House	Government
Rockshelter	Workshop	Mound	Family Plot	Village	Military

OTHER:

LOCATION

State: NEW YORK	Township
County: [illegible]	Lot
Town	Range

MAP

U.S.G.S. 7½ Quad Name	No.	Quarter	Coordinates
CENTRAL PARK	20	NW NE SW SE	[illegible]

PROPERTY

	Owner	Tenant	Previous Owner/Tenant
Name:			
Address:	[illegible]		
Phone:	( )	( )	( )

SITE INVESTIGATION

	Surface Collection	Testing	Excavation
Who:			
Project			"BURIAL SITE in Long Island City along Crescent St.
Dates			

COLLECTIONS

Who:

Cat. Nos.

PHOTOS

Who

B & W

Color

Slides

I-R

REFERENCES

Pub: PARKER [illegible]

Unpub: STATE ED. DEPT [illegible]

Original Reports | Date

...K STATE HISTORIC ARCHAEOLOGICAL SITE INVENTORY FORM

...ice Use Only--Site Identifier A081-01-0108

Project Identifier _____ Date 11/21/79
Your Name _____ Tel. Phone ( ) _____
Address _____
_____
Zip _____

NOV 21 1979

Organization (if any) _____

1. Site Identifier(s) Vander Ende-Onderdonk House Site
2. County Queens One of following: City _____
Township _____
...of Original, Incorporated Village _____
Unincorporated Village or
Hamlet Ridgewood
3. Present Owner Greater Ridgewood Historical Society
Address 803 Cypress Avenue
Ridgewood, NY
Zip
4. Site Description (check all appropriate categories):
Structure/site
Superstructure: complete__ partialxx collapsed__ not evident__
Foundation: above__ below__ (ground level) not evident __
xx Structural subdivisions apparent __Only surface traces visible
xx Buried traces detected
List construction materials (be as specific as possible):
The site has been listed on the National Register, and is being restored with a DHP A&D grant (HP79-10035). Details on the site can be found in the documentation assembled for the above actions.
Grounds:
__Under cultivation __Sustaining erosion __Woodland __Upland
__Never cultivated __Previously cultivated __Floodplain __Pastureland
Soil Drainage: excellent __ good __ fair __ poor __
Slope: flat__ gentle__ moderate__ steep__
Distance to nearest water from structure (approx.) _____
Elevation: _____

5. Site Investigation (append additional sheets, if necessary):
Surface--date(s) _____
__Site Map (Submit with form*)
__Collection
Subsurface--date(s) _____
Testing: shovel__coring__ other _____unit size_____
no. of units _____(Submit plan of units with form*)

Excavation: unit size _____ no. of units _____
(Submit plan of units with form*)
* Submission should be 8½"x11", if feasible

Investigator George Happel
Manuscript or published report(s) (reference fully):
Test Trench No. 1: Onderdonk House, Ridgewood, Queens County, New York (1925)

Present repository of materials _____

6. Site inventory:
   a. date constructed or occupation period _____
   b. previous owners, if known

   c. modifications, if known

   (append additional sheets, if necessary)

7. Site documentation (append additional sheets, if necessary):
   a. Historic map references
      1) Name _____ Date _____ Source _____
         Present location of original, if known _____

      2) Name _____ Date _____ Source _____
         Present location of original, if known _____

   b. Representation in existing photography.
      1) Photo date _____ Where located _____
      2) Photo date _____ Where located _____

   c. Primary and secondary source documentation (reference fully)

   d. Persons with memory of site:
      1) Name _____ Address _____
      2) Name _____ Address _____

8. List of material remains other than those used in construction (be as specific as possible in identifying object and material):

   If prehistoric materials are evident, check here and fill out prehistoric site form. __

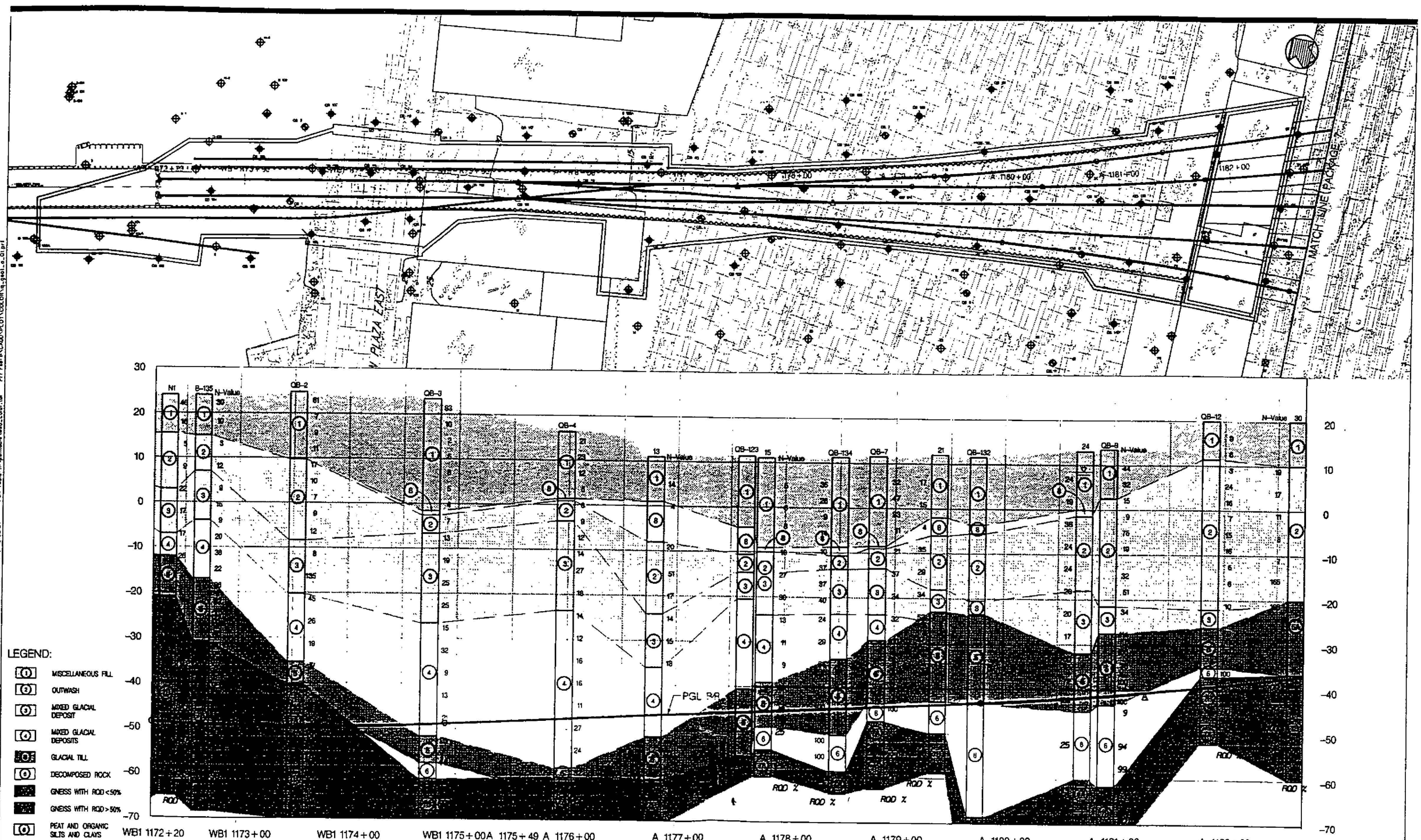
9. Map References: Map or maps showing exact location and extent of site must accompany this form and must be identified by source and date. Keep this submission to 8½"x11", if feasible. See plot on U.S.G.S Topo Sheet

   USGS 7½ Minute Series Quad. Name Brooklyn

   For Office Use Only--UTM Coordinates _____

10. Photography (optional for environmental impact survey):
    Please submit a 5"x7" black and white print(s) showing the current state of the site. Provide a label for the print(s) on a separate sheet.

3.7.3 Soil Boring Logs



TRACK A

DRAFT

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

VERT: SCALE IN FEET 10' 5' 0 10' 20'

EAST SIDE ACCESS
LONG ISLAND RAIL ROAD
GRAND CENTRAL CONNECTION

CUT-AND-COVER TUNNEL GEOLOGICAL PROFILE NORTH SIDE

JULY 30, 1999

2

Parsons Brinckerhoff Quade & Douglas, Inc./STV Incorporated

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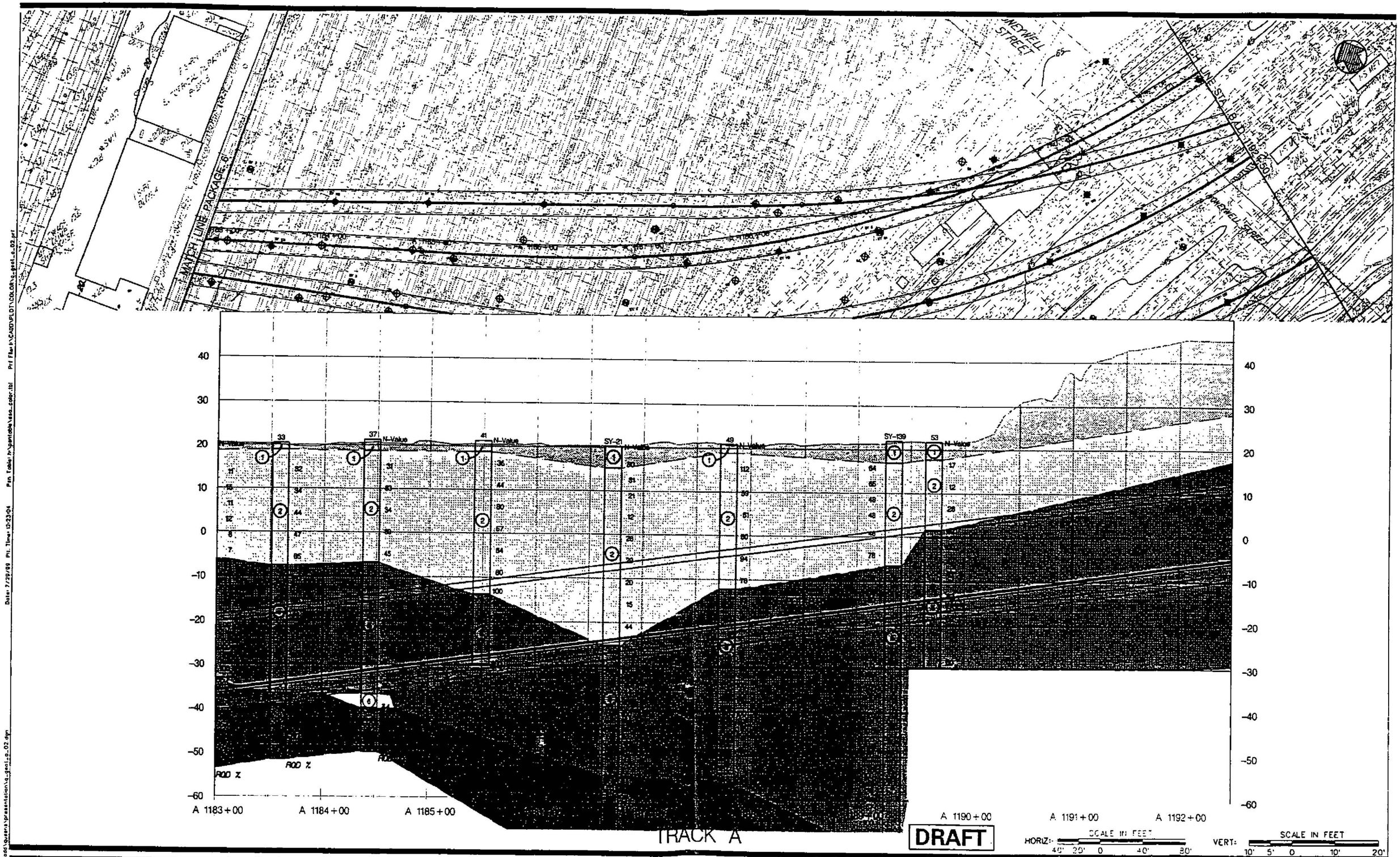

EAST SIDE ACCESS
LONG ISLAND RAIL ROAD
GRAND CENTRAL CONNECTION

BORED TUNNEL GEOLOGICAL PROFILE NORTH SIDE

JULY 30, 1999

Parsons Brinckerhoff Quade & Douglas, Inc./STV Incorporated

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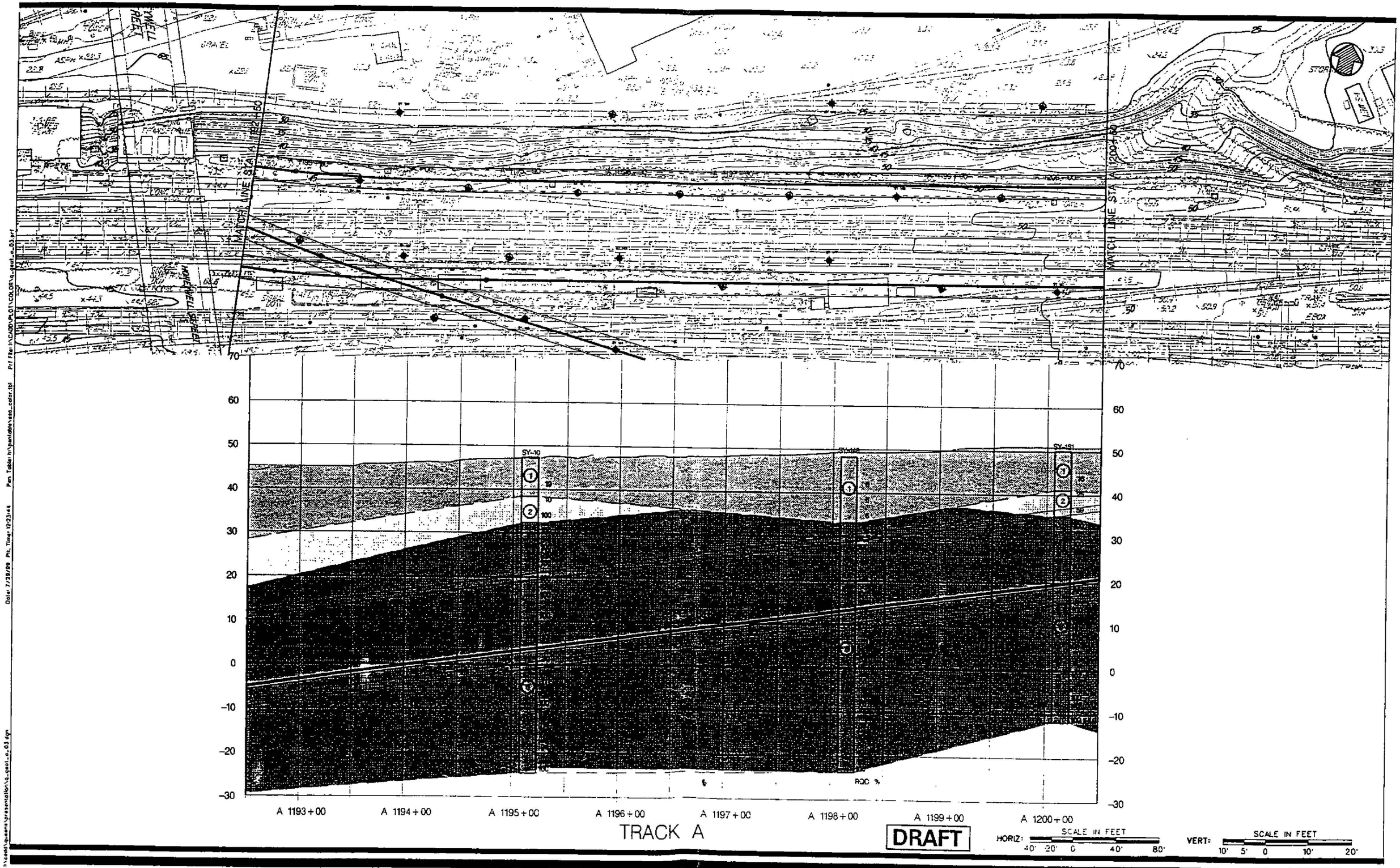


TRACK A

DRAFT

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

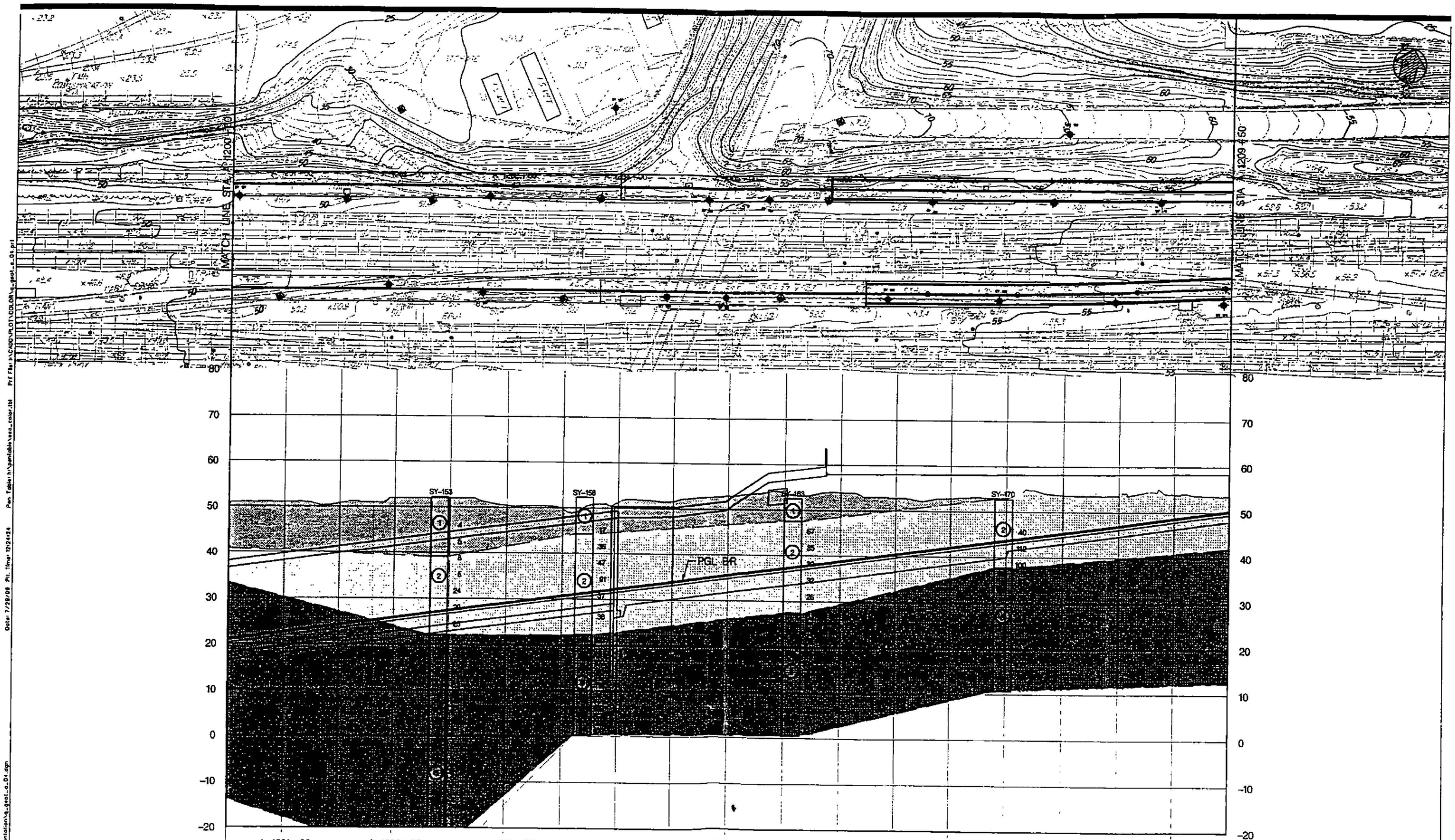
VERT: SCALE IN FEET 10' 5' 0 10' 20'

EAST SIDE ACCESS
LONG ISLAND RAIL ROAD
GRAND CENTRAL CONNECTION

BORED TUNNEL GEOLOGICAL PROFILE NORTH SIDE

JULY 30, 1999 4

Parsons Brinckerhoff Quade & Douglas, Inc./STV Incorporated



TRACK A

DRAFT

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

VERT: SCALE IN FEET 10' 5' 0 10' 20'

EAST SIDE ACCESS
LONG ISLAND RAIL ROAD
GRAND CENTRAL CONNECTION

BORED TUNNEL GEOLOGICAL PROFILE NORTH SIDE

JULY 30, 1999

Parsons Brinckerhoff Quade & Douglas, Inc. /STV Incorporated

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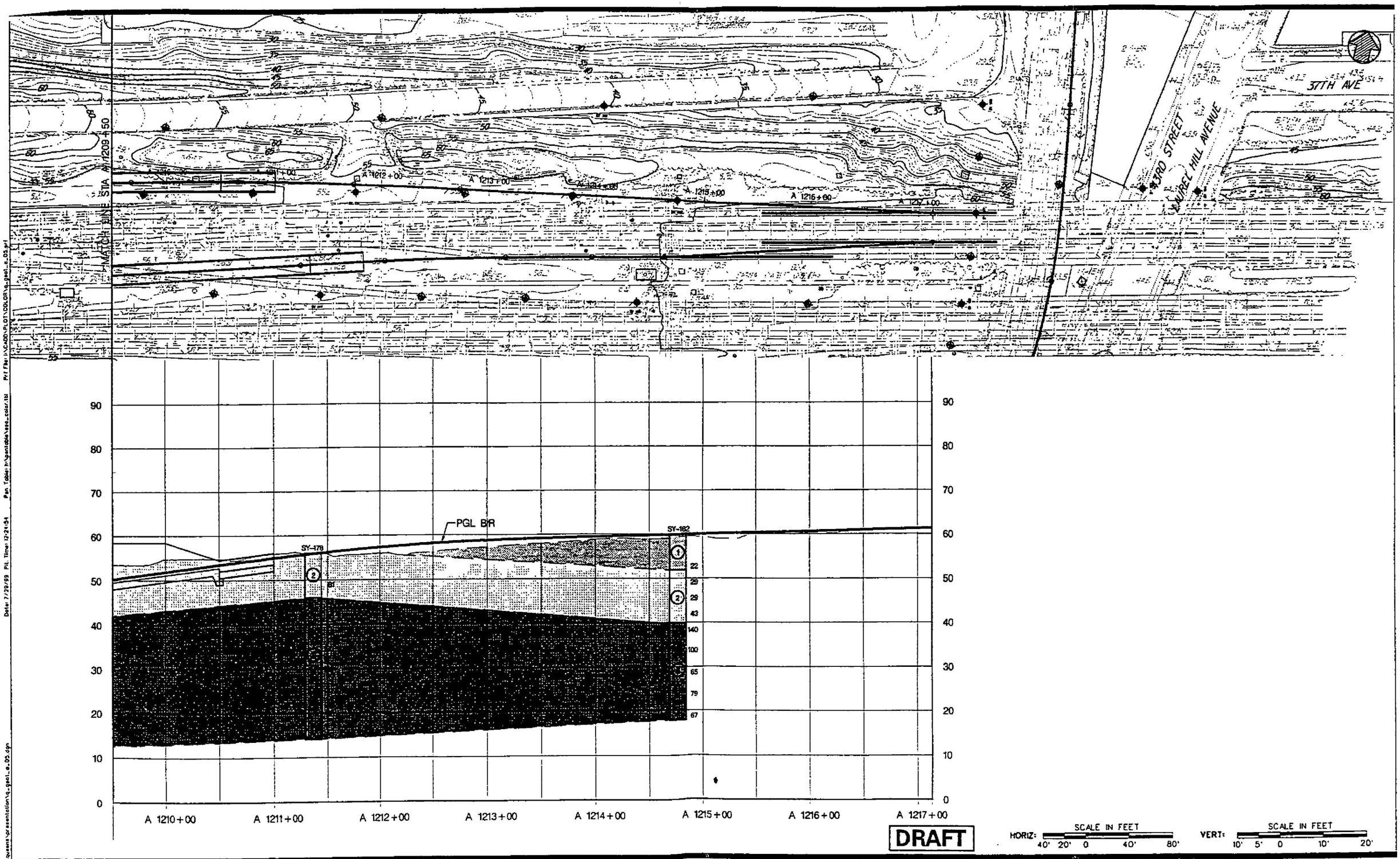

EAST SIDE ACCESS
LONG ISLAND RAIL ROAD
GRAND CENTRAL CONNECTION

BORED TUNNEL GEOLOGICAL PROFILE NORTH SIDE

JULY 30, 1999

Parsons Brinckerhoff Quade & Douglas, Inc. ATU

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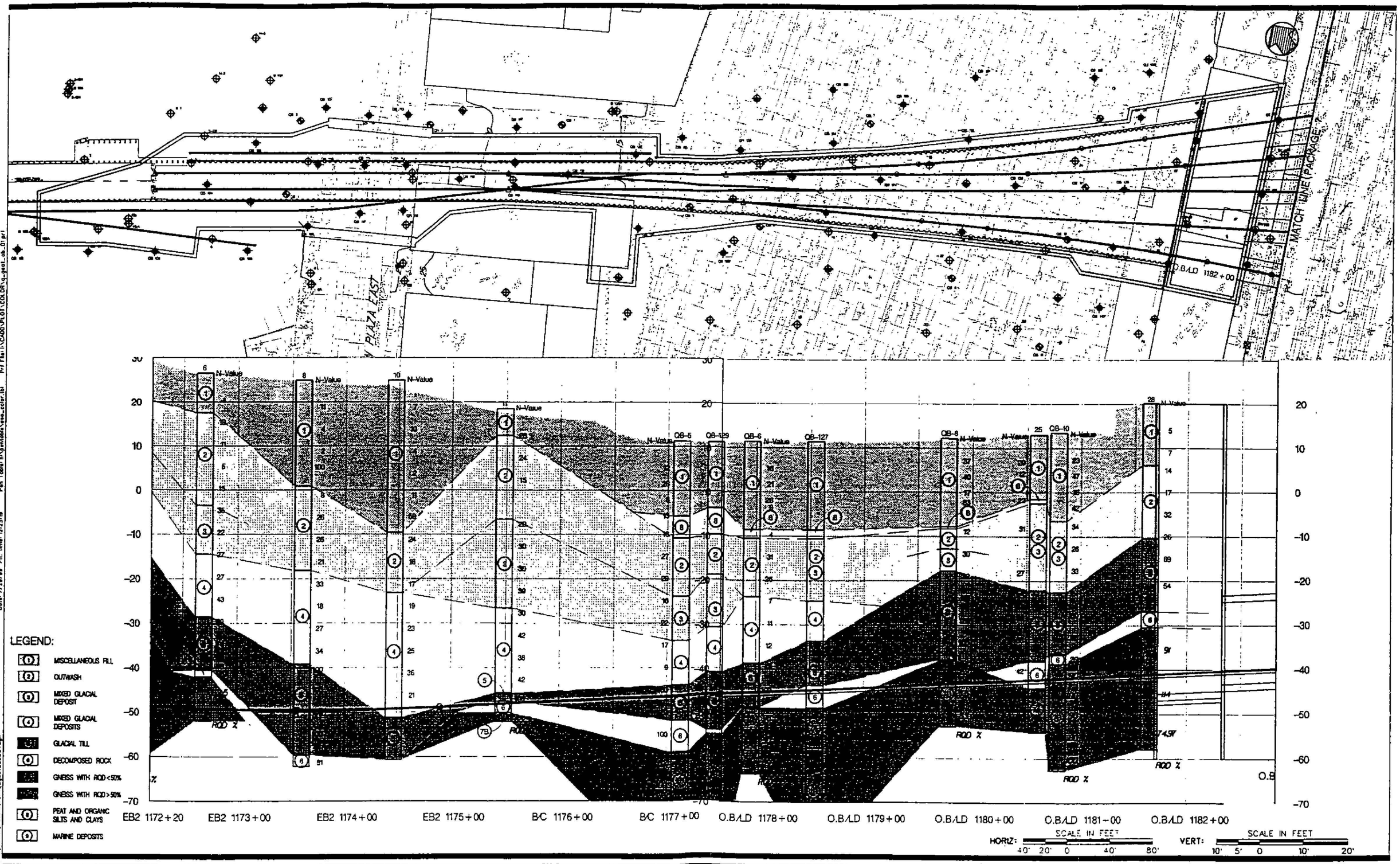

EAST SIDE ACCESS
LONG ISLAND RAIL ROAD
CONNECTION

CUT-AND-COVER TUNNEL GEOLOGICAL PROFILE SOUTH SIDE

Parsons Brinckerhoff Quade & Douglas, Inc./STV Incorporated

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MATCH LINE PACKAGE 6

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HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

VERT: SCALE IN FEET 10' 5' 0 10' 20'

EAST SIDE ACCESS
LONG ISLAND RAIL ROAD
GRAND CENTRAL CONNECTION

BORED TUNNEL GEOLOGICAL PROFILE SOUTH SIDE

Parsons Brinckerhoff Quade & Douglas, Inc./STV Incorporated

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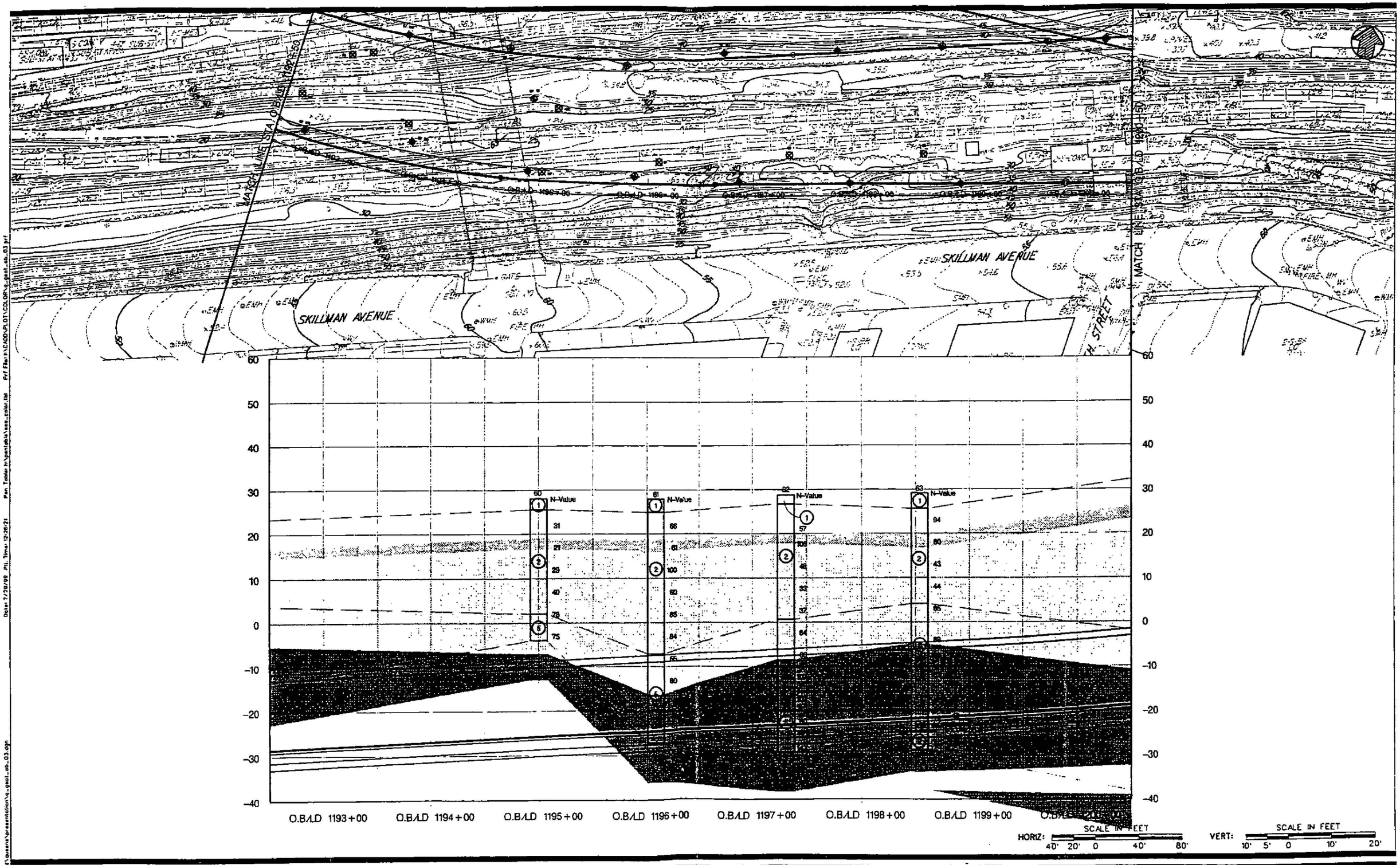

EAST SIDE ACCESS
LONG ISLAND RAIL ROAD
GRAND CENTRAL CONNECTION

BORED TUNNEL GEOLOGICAL PROFILE SOUTH SIDE

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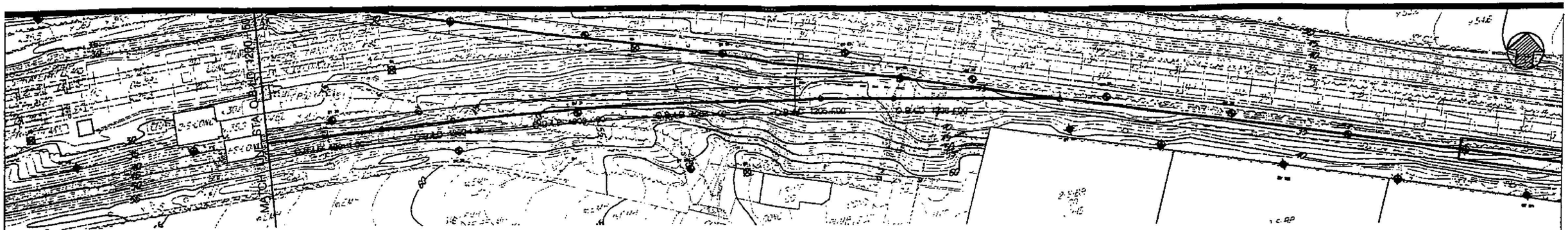

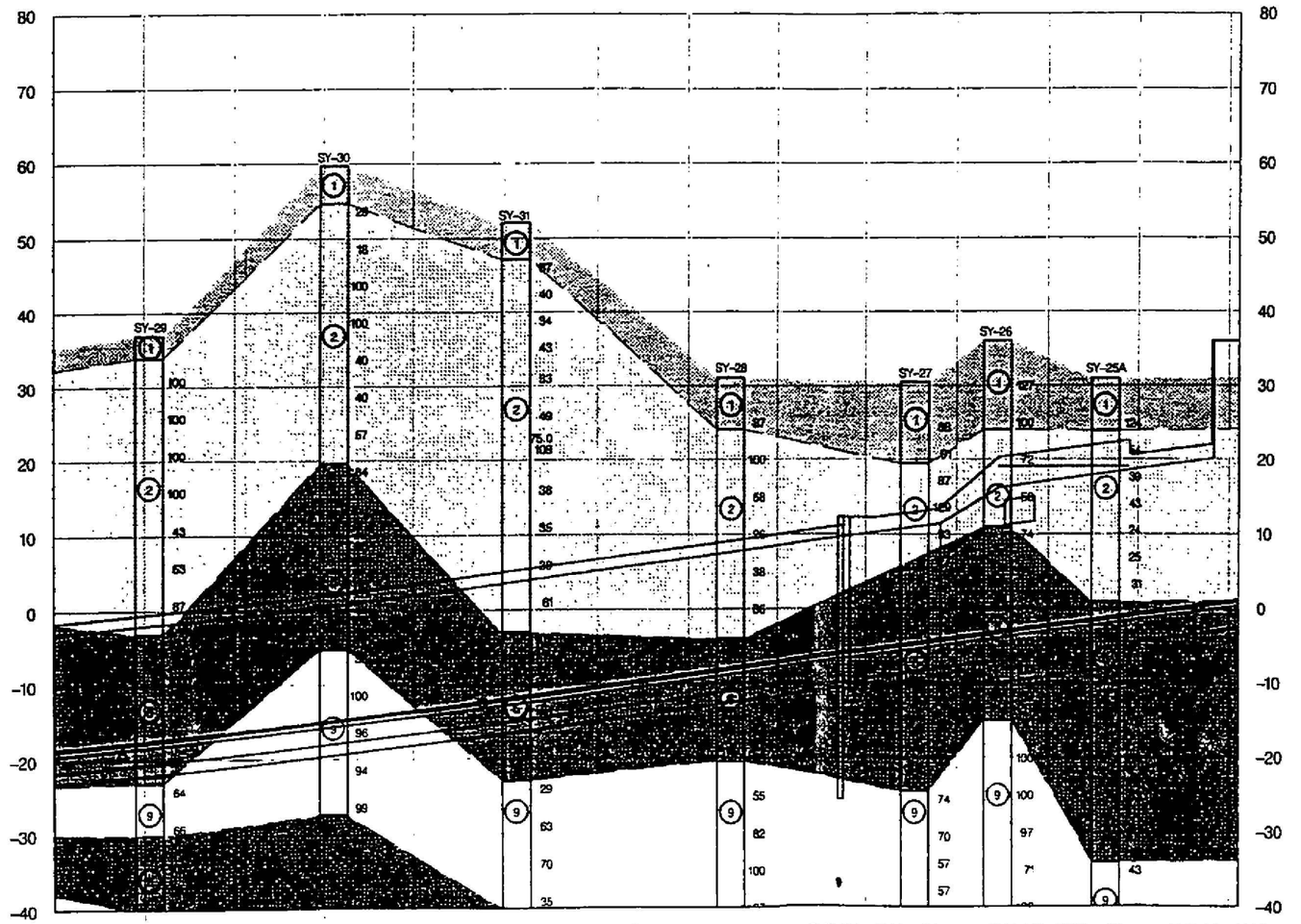

HORIZ: SCALE IN FEET 40' 20' 0 40' 80'

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EAST SIDE ACCESS
LONG ISLAND RAIL ROAD
GRAND CENTRAL CONNECTION

BORED TUNNEL GEOLOGICAL PROFILE SOUTH SIDE

Parsons Brinckerhoff Quade & Douglas, Inc./STV Incorporated

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4.0 HIGHBRIDGE YARD ARCHAEOLOGICAL RESOURCE EVALUATION

4.0 HIGHBRIDGE YARD ARCHAEOLOGICAL RESOURCE EVALUATION

Metro-North currently uses the Madison Yard area in the lower level of Grand Central Terminal for midday rail car storage and maintenance. These operations would be relocated to Highbridge Yard, an existing rail yard along the Harlem River in the Bronx. The yard would be reconfigured to provide the needed facilities, but it would not be expanded beyond its current boundaries.

A comprehensive documentary study of the entire Highbridge Yard was completed in order to determine the archaeological potential of the site, and to assess impacts which may result from the proposed project.

Work at Highbridge Yard for the proposed project which may cause subsurface disturbance may include building new structures, installing utility lines, and laying new tracks. Because the horizontal and vertical extent of impacts are not yet clearly defined, the APE is the entire Highbridge Yard.

4.1 Study Area Description

The Highbridge Yard archaeological study area is bounded on the north by Depot Place, on the east by the Major Deegan Expressway, to the south by a ramp for the Expressway, and to the west by the Harlem River (Figures 1, 2; Photographs 1-9). Prior to historical filling, most of the site was either inundated by the Harlem River or consisted of marsh along its shore.

The borough of the Bronx lies within the Hudson Valley Region and is considered to be part of the New England Upland Physiographic Province, which is a northern extension of the Great Appalachian Valley (Schuberth 1968). Situated within the Manhattan Prong, the region has a landscape of rolling hills and valleys. Underlying bedrock include metamorphic rocks that resist erosion and thus make up the hills (Isachsen et al 1991). Within the Manhattan Prong, the Highbridge Yard site sits atop the Highbridge Prong, and is underlaid mostly by quartz, mica, feldspar, and hornblend (Glenn 1978).

During the most recent period of glacial activity, the Wisconsin episode, the Bronx was covered by ice. Following deglaciation, postglacial Lake Hudson covered much of the Hudson Valley below the Highlands including the project site. When it receded smaller water courses were left, scouring the landscape into what it is today. The adjacent Harlem River, underlain by easily abraded Inwood Marble, was created through these actions. Although many fresh water tributaries feed the Harlem River, it is essentially a tidal strait (Kieran 1959).

4.2 Contextual Overview

4.2.1 Prehistoric Context

In order to determine the likelihood that prehistoric cultural resources were ever present within the Highbridge Yard Site, and to provide a framework in which to interpret potential resources, it is necessary to establish the cultural chronology and prehistoric context of the project area.

The present knowledge and understanding of the Native Americans in the lower Hudson Valley and Greater New York area is derived from four sources: historical accounts, ethnographic reports, Native American artifact collections, and archaeological investigations. The prehistoric period in the northeastern United States is traditionally divided into the Paleo-Indian, Archaic, Transitional, Woodland and Contact stages, the Archaic and Woodland periods being further subdivided into Early, Middle, and Late substages. Settlement, subsistence and cultural systems changed through time, leading to the designation of these distinct periods. At the time of European contact, a Native American group known as the Siwanoy occupied the northern coastline of Long Island Sound from Norwalk, Connecticut to what is now the south Bronx. However the Bronx River, to the east of the project site, may have been the dividing line between the Siwanoy and another Upper Delaware Munsee speaking cultural group who most likely inhabited the project area, the Wiechquaesqueak (Grumet 1981).

The area surrounding the project site was known as "Nausin," which may have been derived from *nai* - meaning point, and *asin* - meaning stone, hence "stony point" (Grumet 1981). The name was given to the land at the southernmost tip of Highbridge Heights, including the project area. The name "Maennepis," thought to translate to "slow moving water," was given to the area just south of the project site where Cromwell's Creek formerly drained into the Harlem River near East 161st Street (Ibid.).

The landscape just north of the project site was generally referred to as "Muscota," a word that may have been related to the Narragansett word *moskehtu,* meaning "a meadow" (Grumet 1981). According to Grumet, both the Harlem River and the adjacent flat land situated in the Harlem section of Manhattan, across the river and north from the project site, were given this name (Ibid.). Further to the north of the project site at University Heights the Native American name "Keskeskick" referred to the salt marshes on the edge of the river. No specific habitation sites were attributed to any of these locales (Ibid.).

It is generally accepted that the proto-historic cultural groups that populated the area practiced a settlement and subsistence pattern of seasonal rounds exploiting a diverse array of resources. The types of sites found in the surrounding area, as reported by archaeologists, ethnographers, and amateur collectors, reflect this pattern and include villages, burials, and small campsites. These sites are often situated on well-drained upland soils in proximity to fresh water, and on tidal inlets. However, shell heaps, or

middens, were frequently generated along rivers where prehistoric peoples discarded their "garbage," away from their living areas (Ritchie and Funk 1973).

Reported Sites in the Region. The earliest cartographic source reviewed depicting aboriginal habitation in the vicinity was the Hendricks Map of 1616, which shows the Wikagyl (Wiechquaesgeek) Indians inhabiting the southern New York mainland just north of the Manhattes Indians on Manhattan Island. The Wiechquaesgeek are identified as the group of Indians living in northern Manhattan, Bronx County, and southern Westchester County in a number of seventeenth century Dutch and English manuscripts, deeds, treaties, and maps (Bolton 1934; Grumet 1981). Documented nearby settlements include:

(1) Shorakapkock: near 230th Street and Broadway, north of the project site in Marble Hill (Tieck 1968; Bolton 1922; Fluhr 1960; Jenkins 1912; McNamara 1984).

(2) Nipinichsen: a palisaded fort variously located in Riverdale near 230th Street (Bolton 1934; Fluhr 1960; Jenkins 1912; Skinner 1915).

(3) Gowahasuasing: near the Harlem River north of the project site on Tibbett's Neck (Grumet 1981; Kearns and Kirkorian 1986).

(4) Saperewack: located on the Harlem River in the Marble Hill area northwest of the project site (Grumet 1981).

More recently published literature supports the ethnohistoric reports of aboriginal occupation in the Bronx near the Harlem River. Some of these more recently discovered sites are probably part of the same camps and/or villages reported in the earlier sources.

(1) Kingsbridge Post Office, 5517 Broadway near 230th Street: north of the project site. The site yielded projectile points, pottery, shell, and a Native American burial. Tieck suggests that this may represent the village of Shorakapkock (Tieck 1968).

(2) 231st Street, Kingsbridge: north of the project site. A prehistoric hearth containing a clay pot was found (Bolton 1934).

(3) Ewen Park at 231st Street: more than two miles north of the project site. Shell and ashes were reported, and near the Henry Hudson monument, a food storage pit was uncovered (Bolton 1934).

(4) Marble Hill, Broadway and 230th Street: north of the project site. Shell and prehistoric artifacts were found at "the Wading Place" (Bolton 1934).

(5) Paparinemin Island: a large site was found on high ground that was originally Paparinemin Island near 231st Street north of the project site.

Smaller prehistoric temporary encampments were also reported for the Island area, but their exact location was not given (Bolton 1934).

(6) Tibbett's Neck: about two miles northwest of the project site. "Very extensive shell middens" were located below the bluffs (Jenkins 1912).

(7) Spuyten Duyvil Hill: about one-and-a-half miles northwest of the project site. Several small shell deposits were found here (Skinner 1915).

(8) Van Cortlandt Park: about two-and-a-half miles north of the project site. Several sites were located including an extensive two to three-foot thick shell midden and several burials covering fourteen acres in the southwestern section of the park, and shell pockets near the mansion. The parade ground had once been used as Indian planting fields. Storage pits, pottery, and stone tools were reported (Bolton 1934; Tieck 1968; Skinner 1915).

(9) Chapel Farm Site: about two miles northwest of the project site in Riverdale. A possible prehistoric quartz quarry site was identified on the highest knoll in the Bronx (Kearns and Kirkorian 1991).

Site File Search Results. The site file search reported numerous prehistoric sites, predominantly dating to the Woodland period, from the Inwood Park section of northern Manhattan. Generally, Washington Heights in Manhattan has had prehistoric sites identified throughout its expanse.

Closest to the project site were New York State Museum (NYSM) Sites #4065 and #4066, village sites found across the river in Harlem, and #7249, "traces" of prehistoric occupation to the south but also across the river in Harlem. No prehistoric sites were reported within or in direct proximity to the project site in the Bronx.

To the west, the closest reported shell middens were at Site #4067 on Manhattan along the banks of the Hudson River near Fort Tryon Park (See Appendix). About two miles south of the project site is another shell midden, NYSM Site #2831. Located between Bruckner Boulevard and a railroad crossing to the north, it was found in West Farms on the eastern shore of the Bronx River (Kearns et al 1994).

4.2.2 Historic Context

The Bronx acquired its name only after the present borough became part of New York City in 1895. Although technically named after the river (hence, ***the*** Bronx) the name indirectly honors the first recorded European settler, Jonas Bronck, a Dane who settled there by 1639. Despite periods of bad relations with the Wiechquaesgeck and other groups described above, the Dutch West India Company, which controlled New Netherland, was usually scrupulous about gaining legal title to the lands which it occupied. Under Governor-General Willem Kieft the company had acquired rights to all

the land of the present borough from the Wiechquaesgeck in 1639. Bronck's land was a 500-acre tract of this territory, lying between the Bronx and Harlem Rivers, and approximately south of present 160th Street. With Kieft's permission, he purchased the area from Indians referred to as Ranachqua and Taekamuck (Scharf 1886).

The director-general and Council passed an ordinance to promote improved relations with the English to the north of New Amsterdam, and to increase communications by establishing ferry services to Harlem which was a growing village. A number of families had settled in Harlem, some of whom were attracted to the mainland and eventually moved to Bronxland and Spuyten Duyvil. In 1666 the English Governor, Nicolls, granted a charter to the residents of Harlem to establish a ferry to the mainland to allow the passage of people, goods, and livestock (Scharf 1886). The following year Nicolls granted a patent to Delaval, Turneur, Verveelen and others from Harlem, giving them four lots on the mainland near Spuyten Duyvil (Ibid.).

Verveelen established a ferry service at Spuyten Duyvil but soon encountered problems with objectors. To circumvent his ferry fees, nearby residents would walk or swim their livestock across the Harlem River at "the fording place" at Spuyten Duyvil near what is now Kingsbridge. Nearby residents tore down fences erected by Verveelen to block river access, and the Mayor's court of the City of New York supported him by exacting payments from the evaders for missed ferry fees (Scharf 1886). In 1669 Verveelen's ferry service ceased. In time, the need for passage over the Harlem River increased, and the rights to build a bridge were granted. A bridge at Williamsburg was eventually completed in 1693. While the Philipse family, landowners in Westchester, collected fees for this bridge, following the Revolution, it was made free.

In 1671Governor Lovelace granted land in what became the manor of Fordham to Jan Archer (Arcer), a Dutchman, who was "so skilled in acquiring land from the Indians that he was nicknamed *Koopall* (Buyall) by his neighbors" (WPA1982). His tract, named for the ford at Spuyten Duyvil Creek, extended north and east from what is now 165th Street at the Harlem River and included the northern half of the project site. Archer leased 20 acre lots to tenants who cleared and cultivated the land. Each tenant had a house and lot in the village of Fordham which he established on his property near the Harlem River. Disputes over Archer's land ownership ensued and he was eventually acknowledged as rightful owner and a formal patent was granted.

Archer's patent, the Manor of Fordham, was ruled by the Governor and his Council who dictated how Archer was to proceed as lord of the manor. Land in dispute between Harlem and Fordham at Spuyten Duyvil was eventually granted to Fordham, however, Archer's rule over Fordham was not without its problems. In 1669-1670 residents of his manor complained to the Mayor's Court in New York that he acted forcefully and generated troubles between the residents. The court, to no avail, essentially told Archer to behave himself. After several more grievances were filed, the court ordered that further complaints be heard by the magistrates of Harlem.

In 1671 Daniel Turneur purchased about 80 acres from local Indians in the Bronx. The tract, south of Archer's patent, was confirmed in a 1676 Indian deed to "Jackeline (sic) Turnier (sic), widow, and Daniel Turnier, the son of Daniel Turnier late of New Harlem, deceased" (Jenkins 1912). A patent for the tract was granted by Governor Nicolls in 1668. The strip of land, now referred to as Devoe's Point after Turneur's descendants, was bounded on the north by Fordham Manor, east by Cromwell's Creek (a.k.a. Maennepis Kill), west by the Harlem River, and south by Bronxland. Crabbe Island, essentially a flooded meadow located at the mouth of a stream near what is now Depot Place, was cited in the land grants as the northwest starting point of Turneur's property bounds. Turneur's tract, which encompassed most of the project site, was referred to by the Indians as Nausin (described above). Apparently his tract was not vacant when Turneur bought it because early accounts of Nausin state that a Frenchman named Marcus Dissiway had formerly lived there (Jenkins 1912). Dissiway had also left Harlem to settle in what is now the Bronx (Ibid.). Turneur was not prominent at his time, but did serve to act as arbitrator for the people of Fordham and others in the vicinity (Scharf 1886). His homestead stood on the ridge which is now traversed by Ogden Avenue, about four blocks east of the project site.

During the war between England and Holland, New York was surrendered to a Dutch squadron in 1673. The Dutch asserted their claim to all of England's land holdings and held possession until February 9, 1674 when it was returned to the English. The actual surrender of land holdings did not occur until the following November. At this point the English government confirmed Col. Morris as owner of Bronxland, and Governor Andros granted him additional lands, until his estate included most of the present Bronx west of the Bronx River, excluding Turneur's and Archer's patents (Scharf 1886; Jenkins 1912). Turneur's patent and Archer's patent were each subsequently confirmed.

During the 18th century, the Revolution was not kind to the area. As General Washington and his troops withdrew from New York City, a division of American soldiers under General Heath was stationed at Morrisania. A picket of 450 men, constantly mounted, was placed one-half gunshot apart, along the East River shore near Randalls Island (3 miles south of the project site), to guard the Continental army from surprise attack. Behind enemy lines, the area was despoiled by British troops (Bolton 1881). A map of British Fortifications in the Bronx placed British Fort Number 5 near the intersection of Kingsbridge Road and Sedgwick Avenue, about two miles north of the project site (Jenkins 1912). Fort Number 8, which stood at the site of Bronx Community College about a mile northeast of the project site, was in the hands of the English from the time it was built in 1776 until it was demolished in 1782 (McNamara 1989). When the Schwab family eventually built their mansion on the site, they were said to turn up cannonballs, musket balls, coins, and buttons from the fort (Ibid.).

A consequence of the Revolution was the abolishment of the manor as a political entity. In 1683 the County of Westchester was formed, extending from Putnam County to the north, south to the Harlem and East Rivers. What is now the Borough of the Bronx, including the project site, was included in this tract (Jenkins 1912). In 1788 Westchester

County was further divided into townships, with the project site falling into the ancient manor of Fordham within the township of Westchester.

The only commercial industry in the area by the late 18th century was market gardening for New York City. Although there were several sloops on Long Island Sound and the Hudson to transport produce to Manhattan, the farmers preferred to go by wagon. A series of bridges built over the Harlem River were subsequently destroyed or abandoned, hindering access to the city.

In 1800 Alexander Macomb received a grant to divert the waters in Spuyten Duyvil Creek near Kingsbridge in order to power a gristmill on the shore. The City of New York provided permission on the condition that Macomb maintain a 15-foot wide passageway for small boats. Macomb neglected to fulfill this stipulation, blocking passage up the creek and causing havoc. Fortunately, his venture proved unprofitable and the mill was sold.

In 1813 Macomb's son, Robert, erected a dam across the Harlem River between Manhattan and Devoe's Point in Westchester, directly south of the project site near what is now Macomb's Dam Bridge. The dam turned a good portion of the Harlem River upstream to Kingsbridge into a large mill pond. Like his father, he was to provide passage to small boats, and, like his father, he ignored this proviso. Over the dam he built a toll bridge, which was not permitted by either the city or state. When this venture also failed, he sold the dam in 1817 to the New York Hydraulic and Bridge Company, which planned a series of mill sites and a nearby manufacturing village (Reier 1977). The dam was eventually dismantled in 1838 by an outraged group of local residents demanding the river remain navigable.

The State of New York decreed that the citizens had the right to remove Macomb's dam as it was an obstacle to safe water transport. They further stated that no one had the right to block the waterway. As a result of these actions, plans for the Croton Aqueduct bridge, intended to cross the Harlem River at grade, had to be altered to allow for ship traffic (Reier 1977). The newly designed High Bridge, a 1450' granite viaduct with 15 circular arches, was a monument to the state-of-the-art aqueduct when it was completed in 1847. The picturesque arches of High Bridge were also wide enough to accommodate small boats on the Harlem River.

During the 1860s further efforts were made to improve navigation on the Harlem River. A survey of depth soundings was completed, and a navigable channel with a uniform depth of ten feet at mean low water was proposed (County of New York 1860). The proposed 150 foot wide channel was thought to be wide enough and deep enough to allow smaller and mid-sized vessels safe passage. The plan called for dredging 19,720 cubic yards of soft mud from the section south of High Bridge within this narrow channel (Ibid.). The irregularly shaped shoreline alone the channel's edge was eventually filled and turned into fast land. Thus began the first major steps toward creating the Harlem River canal.

It was during this time that the character of neighborhoods in this section of the Bronx also began to change. The Archer family, who had owned land north of about Depot Place since the 1670s, had not improved their property nor built on it. In 1857 Gustav Schwab purchased the bluff overlooking the Harlem River north of the project site, and built his mansion there (McNamara 1989). Larger estate houses were dotting the landscape, and farming was slowly being abandoned. The neighborhood around the newly built High Bridge became known as High Bridgeville, and extended along Devoe's Neck as far south as the Central Bridge at West 115th Street (Jenkins 1912).

The area's urbanization began in earnest only after railroads linked the area with New York City. The first and most important was the New York and Harlem Rail Road, which was authorized in 1831, and began service through the County of Westchester in 1842 (Fitzpatrick 1927). This line ran through Melrose, Morrisania, and Fordham on the same route as the present Conrail tracks along Park Avenue (Shonnard and Spooner 1900). By 1851 a branch line was built to Port Morris along the Harlem River, and it extended through the project site by the 1870s (Beers 1876). By cutting the time and expense of travel, the railroad made it possible for people to live full-time in the Bronx and work in New York City. As a result, this section of the Bronx was ripe for development, and the larger land owners were motivated to subdivide their parcels. It was at this time that John Wynne, a realtor from Ireland, purchased much of the land around the High Bridge, lotted it, and sold it to his fellow Irish.

By 1846, population in the western Bronx had increased so much that the Town of West Farms was created. West Farms was originally a village on the Bronx River (about 2 miles northeast of the study area), which had become an important manufacturing center, due to its water-powered mills. The new township consisted of all the present Bronx west of the Bronx River, including the project area (Shonnard and Spooner 1900).

The new residents clamored for improved roads and other municipal amenities, and annexation by New York City was discussed as early as 1864. It is significant that the streets laid out near the Harlem River continued the numbers of Manhattan streets (Shonnard and Spooner 1900). When a referendum on annexation was finally held in 1873, Morrisania, West Farms and Kingsbridge voted overwhelmingly to become part of New York City, and officially became the 23rd and 24th Wards in 1874. Under the New York charter the two wards were officially designated the Borough of the Bronx.

Even as the opening of the railroad in 1842 ushered in a period of village growth, the first elevated trains, or "els," began the Bronx's transition into an urban extension of Manhattan. The Suburban Rapid Transit Company bridged the Harlem River and began service on the Second Avenue Line in 1886. Five cents would take a passenger from downtown Manhattan to 143rd Street. This line was extended along Third Avenue to 169th Street in 1888. The Third Avenue el, followed by the Jerome Avenue Line in 1917 with its spur near Highbridge, began the explosive population growth that characterized the southwestern Bronx during the last decade of the 19th and the first half of the 20th centuries (Wolf and Mantegazza 1970; Olmsted 1989). Crowded Manhattan, with a population of almost 2.3 million in 1913, lost more than 300,000 people from 1920 to

1925, as the new middle class moved to Brooklyn and the Bronx. The population of the Bronx increased 64%, growth which was concentrated in the areas of the transit lines. Moving from Manhattan became the immigrant's badge of success (Patterson 1978; Wolf and Mantegazza 1970).

In 1903 the Board of Estimate approved the plans to grade and pave about 420 miles of streets within the Bronx, east of the Bronx River. Many of these were "paper" streets, which took years to actually create. By 1939 subways, the el, and newly improved roads had caused the population within the Bronx to triple. It was reported in 1939 that 92% of the houses in the Bronx had been built during the 20th century (WPA 1982).

In the early 20th century the U.S. Army Corps of Engineers mandated that the City of New York enlarge the spans of High Bridge, citing them inadequate to allow passage of larger ships. After much deliberation and threats to demolish the structure entirely, the city decided to rehabilitate it despite the fact that it no longer carried water for the aqueduct system. So, in 1927 the aging High Bridge was rebuilt with steel ribbed arches spread at 360' intervals with clearance of at least 100' above high water mark. It remained open to pedestrian passage through the early 1960s when it was declared unfit for passage. The bridge and an associated tower, built in 1872, were listed on the National Register in 1972.

Cartographic Review. A detailed reconstruction of land use and development at the project site throughout the historical period was accomplished by reviewing available maps and atlases. This permitted the identification of archaeologically sensitive areas and any subsequent activities which may have caused subsurface disturbance to potential resources.

Early 17th and 18th century maps reviewed all show the project area as undeveloped marsh land (e.g., Mantus 1639; Tiddeman 1730; British Headquarters Map 1782). Later 19th century maps also show that the project site was undeveloped marsh land or land under the Harlem River (Randel 1821; Colton 1836). Maps dating to the 1850s show the shoreline as a steep embankment, east of the project site (Sydney and Neff 1851; Merry 1858).

An 1860 map of the Harlem River showing its conditions at that time depicts the project site as predominantly inundated, with marsh along the shoreline to the east (Murphy 1860). East of the shoreline the land sloped steeply up to High Bridge Ville. Two small piers were shown extending off the shore through the project site. The southernmost of these was a "small-boat pier, while the northern pier - which was much smaller - was unlabeled. Depth soundings, reduced to mean "low water," show the main channel of the Harlem River at about 10 to 20 feet deep. Near the small boat pier soundings were only one-foot in depth, while near the northern pier they were closer to three feet (Ibid.). No soundings were actually portrayed from within the project site, but the shallow depths reported near the piers suggest that the surface beneath the river along the shoreline was probably not very deep.

In 1864 Egbert Viele completed a map of the City of New York depicting water courses, marsh, and made land. His map portrayed the shoreline between Macomb's Dam Bridge at West 155th Street and High Bridge at West 170th Street as marsh along the Harlem River (Viele 1864). It is safe to assume that until at least the mid-1860s the project site was predominantly land under water or undeveloped marsh.

An undated photograph of Highbridge prior to development shows the Harlem River in its near-pristine state (Bronx County Historical Society nd). While the western shore along the banks of Manhattan gently slopes down to the river, the eastern shore at Highbridge is shown as a steep slope. Dockage was clearly easier on the Manhattan side, and more difficult on the Bronx side. Below the slope, marsh grasses grew up out of the river. The project site would have been situated at the base of this slope where the marsh lay.

In 1868 most of the project site was clearly depicted as either marsh or land under water (Beers 1868; Figure 3). Several small projections from the shoreline may have extended into the project site. At that time there were no roads laid out along the shoreline, which ran approximately along the eastern boundary of the project site. The planned route of "River Avenue" was mapped over the Harlem River presumably where filling was anticipated, although it was never officially created. Lind Avenue, now University Avenue, was the main north-south thoroughfare closest to the project site, and is now located several blocks to the east. According to the 1868 map, there was no development within the project site except for two docks. One narrow dock projected from what later became Devoe Street, into what is now the project site west of West 165th Street. To the north of this a small spit of land and a dock projected west of what is now Union Place into the project site. Most of the community of "High Bridgeville" was located to the east along Central (now Jerome) and High (now Ogden) Avenues.

Between 1868 and 1874 filling had started along the Harlem River and both Sedgwick Avenue east of the project site and the railroad tracks within the project site had been created (Viele 1874; Figure 4). Sedgwick Avenue had been laid out where River Avenue had been placed on the 1868 map. This road now parallels the Major Deegan Expressway, also east of the project site. The two piers were still present, extending off the newly created shoreline west of the railroad tracks into the Harlem River.

By 1876 the large estates in High Bridge had been subdivided into building lots and some of the streets east of the project site were realigned (Beers 1876; Figure 5). Additional filling had occurred along the shoreline essentially creating the project site west of Sedgwick Avenue. Commerce Avenue and Harlem River Avenue were laid out over this new land on either side of the railroad tracks. The project site just south of West 167th Street was vacant except for a small dock which extended into the river off Harlem River Avenue where filling had not yet occurred. North of this where the shoreline had formerly curved inland to the east, filling had allowed the creation of a lotted city block north to Depot Place, with a railroad dock to the west. The location of a private canal just north of West 167th Street, which appeared to be slated for filling as part of the land reclamation, was mapped through the block west to the Harlem River

(Figure 5). The railroad tracks along the Harlem River were part of the Spuyten Duyvil and Port Morris Railroad.

Little had changed within the project site by 1879 although a hotel had been built at the southwest intersection of Depot Place and Sedgwick Avenue just east of the site boundaries (Bromley 1879). Two wooden structures, most likely associated with the railroad, were built east of the tracks and south of Depot Place within the project site (Figure 6). These were probably associated with the new High Bridge Station which had been built north of Depot Place. While the shoreline had been pushed further west, the high water mark was still shown directly along the west side of the railroad tracks where the shoreline existed in 1874.

Between 1879 and 1882 a rectangular engine house with an exterior turntable to its north had been built at the southeast corner of the project site (Bromley 1882). Its location, about 40 to 50 feet west of Sedgwick Avenue, is approximately where the Major Deegan Expressway exit ramp is now located. A second set of railroad tracks belonging to the New York City and Northern Railroad (N.Y.C.& N.R.R.) had been installed between the existing railroad tracks and Sedgwick Avenue to the east. These tracks swung west at West 161st Street, crossing the Harlem River into Manhattan.

By 1885 the northern half of the project site had experienced considerable development (Robinson 1885). Where Wolf Street (a.k.a. Beach Street and now West 167th Street) intersected with Sedgwick Avenue, it turned west toward the river through the project site. To the south within the project site was a large rectangular wooden building. To the east two docks paralleling the shoreline had been built between the railroad tracks and the U.S. Bulkhead Line, and were used for railroad float cars.

Also, by 1885 the private canal north of Wolf Street continued to extend west to the river from the coal yard east of the project site. Just south of Depot Place, two wooden buildings were constructed between the railroad tracks and served as the N.Y.C. & N.R.R. station. Land between these two cross roads, Depot Place to the north and Wolf Street to the south, was largely utilized by the two railroads and by services patronizing them (Robinson 1885). The southern part of the project site remained virtually unchanged from 1882.

By 1891 a long rectangular milk depot had been built between the railroad tracks and Sedgwick Avenue, approximately where the Major Deegan Expressway now runs (Sanborn 1891; Figure 7). To the west of this within the project site was another rectangular building which served as a print shop. West of these the pier parallel to the shoreline continued to serve float cars. To the north of the print shop and milk depot were several buildings fronting Sedgwick Avenue just out of the project site, although one wooden shed near the tracks was probably within the site boundaries. North of Wolf Street the private canal still ran from the coal yard to the river and the depot south of Depot Place had a stable attached to its southern end (Figure 7). The New York Central and Hudson River Railroad had acquired the original train line which ran through the

site, while the eastern most line was still run by the New York and Northern Railroad. The site appeared virtually unchanged in 1893 (Bromley 1893).

A photograph of the site taken in 1905 portrayed the riverfront from south of West 167th Street north to Depot Place (Figure 8; Bronx County Historical Society 1905a). According to the photograph, Depot Place was a "ramp" rather than an actual road, and extended into the river. The area on maps depicted as filled land between West 167th Street and Depot Place west of the tracks was in fact still under water, although it had been portrayed as fast land for some time. The old railroad depot on the south side of Depot Place was visible in the background of the photograph, with its adjacent pedestrian overpass allowing access to southbound trains. In the foreground were several wooden piers, either being dismantled or repaired, which did not appear on maps. Directly north of the eastern end of the middle pier was a small trestle bridge for the tracks. This probably crossed over the private canal which serviced the coal yard to the east - at the right edge of the picture (Figure 8).

A second 1905 photograph of the site looking south from Depot Place clearly showed the extent of activity within the yard (Figure 9). With the Putnam Division of the New York Central Railroad (N.Y.C.R.R.) to the left and the Hudson Division to the right, looking down the tracks several small sheds were visible as were numerous piles of yard supplies (Bronx County Historical Society 1905b). To the west, between the tracks and the river, the former float car pier was being dismantled. Its wooden timber construction probably made it easy to disassemble prior to filling in the berths.

By 1907 the float pier had been completely eliminated and its location filled in (Bromley 1907). A series of rectangular and square buildings had been built west of the railroad tracks and east of the US Pier and Bulkhead Line. Amidst these new structures was a semi-circular railroad roundhouse, serviced by a turntable which stood between it and the tracks to the east. Heading north, the milk depot had been removed and the small wooden shed was still present northwest of the print shop. The westernmost station building had been removed from Depot Place, and the private canal had been filled in.

On the 1909 Sanborn map, a tower had been built at the southern end of the project area. The complex of buildings west of the tracks and north of West 165th Street were labeled as a tool house, office, store house, oil house, electric engine, machine shop and blacksmith shop (Sanborn 1909; Figure 10). The roundhouse was a 30-stall locomotive house with a 4" pipe running through the outside wall of the building presumably to allow drainage or distribute steam heat. The roundhouse may have been built in response to the New York Central's efforts to increase their repair facilities. They were reported to have built over 250 roundhouse pits at the turn of the century, with a network of small machine shops situated at roundhouses for taking care of comparatively larger repairs (Berg 1904).

A coal platform and office stood directly to the east. In the middle of the tracks to the southeast of the roundhouse was a rectangular motor car repair shop. South of this cluster of structures was another turntable just north of West 164th Street. It did not

appear to direct engines to specific structures, but probably allowed them to switchback within the complex. To the north of the turntable were a carpenter shop, a "lounging house," a cement ash pit, and two platforms for loading coal. This entire complex of buildings and tracks was labeled as part of the New York Central and Hudson River Rail Road (N.Y.C. & H.R.R.R.) High Bridge Yard (Figure 10).

To the east, the Putnam Division of the N.Y.C. & H.R.R.R. had built a long rectangular locomotive repair shop between its tracks. Its northern boundary was located near West 165th Street where a pedestrian bridge spanned the tracks connecting Sedgwick Avenue with the High Bridge Yard. Between these two distinct railroad divisions ran a timber crib to retain the slope. North of this the printing shop had been converted to a car repair shop.

By this time all of the buildings had been removed between West 167th Street (formerly Wolf Street) and Depot Place. Both branches of the N.Y. C. & H.R.R.R. converged near West 167th Street and were serviced by a new depot, the High Bridge Station, north of the project site on the north side of Depot Avenue (Sanborn 1909; Figure 10).

The site looked virtually the same in 1912, with only minor changes to small sheds (Hyde 1912). However by 1923 the roundhouse had been removed (Bromley 1923). An aerial photograph taken the following year does not show the roundhouse, but the outline of the turntable is still visible (City of New York 1924).

In 1942 the project site bore little resemblance to its 1912 configuration (Bromley 1942). The roundhouse and cluster of associated structures were gone. At the southern end of the site the Sedgwick Station and a pedestrian platform had been built. West of this was a one and two-story wooden structure owned by the Nassau Boat Club. North of West 164th Street was a new repair shop, two signal towers, an electric cable house, a pedestrian bridge, a new turntable, and several other small sheds and structures. To the north were the remnants of the roundhouse turntable and its associated tracks. The High Bridge Station and its connected platforms remained unaltered.

The 1951 map showed few changes to the site, except that the James P. Norton Conc. Company had constructed two buildings south of Depot Place, west of the tracks (Sanborn 1951). Their facility consisted of an office, boiler room, and sand hopper.

Between 1951 and 1981 the Major Deegan Expressway was constructed between the project site and Sedgwick Avenue (Sanborn 1981). Most of the structures within the project site had been removed, including station platforms, and a new repair shop for the New York Central System and the Flexi-van Loading Yard was constructed. Both turntables and the tracks to the former roundhouse were still depicted on maps.

By 1991 many of the tracks within the site had been removed. The repair shop still stood, as did several small transfer houses. Depot Place had been realigned to swing south, create a connecting viaduct to the newly laid out Exterior Street, in the western

part of the site (Sanborn 1991). Neither of the turntables nor the tracks to the roundhouse were present. The site appeared virtually unchanged in 1996 (Sanborn 1996).

4.3 Existing Conditions

4.3.1 Prehistoric Archaeological Potential

An archaeological sensitivity assessment of the Bronx completed in the 1990s presented the results of previous cultural resource surveys in the immediate area (Boesch 1995). Based on the results of prior surveys, a generalized assessment of archaeological potential for the entire Bronx highlighted the shoreline along the current project site as having low sensitivity for prehistoric resources due to topography and physiography of the area. Uplands to the east were characterized as having moderate sensitivity.

Another study completed along the shoreline south of the project site identified the Harlem River shoreline as having low to moderate sensitivity for prehistoric resources (Energy and Environmental Analysts, Inc. 1981). The report concluded that while prehistoric people may have utilized land beneath the Harlem River during the Archaic period, there was little likelihood of actually recovering intact features due to subsequent disturbance. Extensive dredging in the river to allow larger ships was one of the activities cited as having the most impact (Ibid.).

Historic maps indicate that between the 17th and 19th centuries, most of the Highbridge Yard site was either marsh or completely inundated by the Harlem River. Several small projections from the shoreline may have extended into the site, but these were also at a low elevation. An early photograph of the river at High Bridge shows that the shoreline, which formerly lay east of the project site, rose high above the river (Bronx County Historical Society nd). Rock faces were exposed along this escarpment where the harder metamorphic rocks resisted erosion. The project site itself would have been located at the base of this bank within the river, at least at the time of European Contact.

It is possible that over the centuries the project site experienced periods when it was drained and dry as water levels dropped, probably during the Archaic period as suggested by the earlier report on the Harlem River shoreline's prehistoric sensitivity (Energy & Environmental Analysts, Inc. 1981). During these intervals the site could have been exploited for food resources by prehistoric peoples, but it was probably not inhabited due to its topography. It is more plausible that well-drained uplands to the east were preferred for habitation and that if the project site were easily accessible, it would have been utilized in only a minimal capacity. Its description as a flat meadow suggests that even if it were drained, it would have not been ideal for prehistoric habitation. Although the site probably did not experience extended habitation, it is plausible that shell heaps, like those found several miles south of the project site, were left along the river's edge (Kearns et al 1994). However, these are usually found where access to the river and shellfish beds is easier, not where bluffs impede passage.

The 1860 map of the Harlem River showed depth soundings reduced to mean "low water" as only one and three-feet deep near the project site (County of New York 1860). While this suggests that land beneath the project site but in the river could have easily been exposed prehistorically during dry periods, it also suggests that the prehistoric surface could have been easily disturbed during the 19th and 20th century filling process.

Toward establishing the depth of a current fill at the Highbridge Yard, and thus establishing the depths of potential prehistoric resources, two series of soil borings taken in 1990 and 1999 were reviewed (Appendix 4.7.2). All of the borings taken from the northern half of the site exhibited deep layers of fill. While the 1999 borings exhibited fill between six to eight feet below grade (AKRF 1999, Borings HB/MW-1, HB-2A, HB4 through 9), the earlier 1990 borings revealed fill down to at least 20 feet in some places (TES 1990 Boring MW-2). Some borings encountered layers of sand and silt, usually wet, at about seven feet down. No boring logs mentioned either peat or shell layers, although two borings at the norther end of the site possessed dark gray organic-rich clay and wood down to 15 and 20 feet respectively (TES 1990 Borings MW-1 and MW-2).

Borings taken from the center of the site typically revealed four to six feet of gravel and sandy fill, including traces of creosote-coated railroad ties. Beneath the fill were levels of dark brown poorly sorted coarse to fine sand, pebbles, and a little clay. Mica schist and boulders causing refusals were found anywhere between eight and 12 feet below the surface (TES 1990 Borings MW-3 through MW-6, MW-9, MW-11, and MW-12).

Toward the southern end of the site one boring reported eight feet of sand and silt, but no "fill" (AKRF 1999, Boring HB-10). The remainder of the borings demonstrated that as one progressed south, the depth of fill was reduced. Specifically, heading south from approximately the middle of the site, depths of fill below grade were ten feet, eight feet, seven feet, and finally three feet (TES 1990, Borings MW-7, MW-8, MW-10, and B-1). Almost all of the borings produced wet soils at depths of six to eight feet below surface (Appendix 4.7.2).

Most of the soil borings completed in 1990 extended beneath the depth of fill. Based on their results, it appears that the original surface beneath the river was shallower at the southern end of the site and deeper to the north. Organic levels, suggestive of a prehistorically habitable living surface, were reported in borings at the northern end of the site. Specifically, organic-rich levels were found in Borings MW-1 and MW-2 between eight and 15 feet below grade. The remainder of the borings taken from the middle and the southern end of the project site yielded nothing but sand and gravel layers below the fill. Therefore, only the northern one-third of the project site, roughly the section north of West 166th Street, is considered potentially sensitive for prehistoric resources.

Any remnants of site usage during the prehistoric period within the project site would have first been flooded by the Harlem River and then subsequently covered with landfill during the late 19th and early 20th centuries. Most likely the site was not dredged, since

the main channel of the Harlem River was identified west of the site (Murphy 1860), but it is possible that dredged river-bottom material was redeposited along the shoreline east of the bulkhead line. Furthermore, footings for 20th century piers along the shoreline in the northern part of the project site (e.g., Robinson 1885, Sanborn 1891; Figure 8), would have certainly caused discrete areas of disturbance to the river bed where prehistoric resources could have existed.

Because the project site was probably used only sporadically prehistorically, and because some of the shoreline along the river has been disturbed - especially in the northern section where several docks were built and then dismantled - there is only a low to moderate degree of prehistoric potential within the northern section of the project site. The soil borings taken from the remainder of the project site found layers of sand and gravel, not typically associated with prehistoric habitation. Therefore, undisturbed pockets of the prehistoric surface may lay buried beneath the landfill in the northern one-third of the project site below the fill which extends to depths of about eight feet below grade. If midden deposits do exist, they may have the potential to address issues regarding prehistoric diet, seasonal resource utilization, and settlement trends.

4.3.2 Historic Archaeological Potential

Until the 1860s, the project site was either marsh or land under water. Filling out to the current western boundary of the site was completed in stages starting in the late 1860s, and concluding in the early-to-mid 20th century (see Figures 3-10). Because the fill dates to this late period, it is not considered to have archaeological potential. In order for the fill itself to be considered as a resource, it must be tied to specific dumping episodes or sources. Fill within the project site is neither. No specific industries occurred near or within the site which would have contributed to the fill, nor was it deposited in a single episode or over a short time span.

Historic resources identified on the project site relate to its on-going use as a railroad yard (Figure 11). From the 1860s onward the project site was utilized exclusively by the railroad, with the exception of a private canal which ran beneath the tracks near West 167th Street (Figure 11). The canal, which ran from a coal yard east of the project site out to the Harlem River, remained from about 1876 to 1907 when it was probably filled in. This may have been done in conjunction with New York Central's efforts to reorganize the rail yard, with the goal of improving yard service throughout their system.

It was at this time that a 30-stall roundhouse was built to service New York Central's engines. The structure first appeared on maps between 1891 and 1907 (Sanborn 1891, Bromley 1907), and was razed by 1923 (Bromley 1923), although the tracks to the stalls were depicted on maps for at least another 30 years (Sanborn 1951). The site of the roundhouse is considered potentially archaeologically sensitive although the structure itself stood for less than 30 years.

Piers to service float cars stood parallel to the shoreline from about 1885 to 1907 (Robinson 1885, Bromley 1907), but they were later removed and their location was

filled to create new land. Most likely, there is little left of these structures since photographs document their disassembly and removal (Figure 8).

Directly south of Depot Place, two small stations for the railroad were built on either side of the tracks by 1879. The westernmost structure was removed by 1907, and the easternmost depot stood until about 1909 (Bromley 1879, 1907; Sanborn 1909). The western building was removed and replaced by a platform and tracks when the new High Bridge station was built over its former location.

Extensive trackage crossed over most of the site, and numerous other railroad-related buildings came and went. While many of the structures were wood framed temporary sheds and offices, other more substantial structures dating to the early 20th century include towers and switching stations, a tool house, office, store house, oil house, electric engine, machine shop, car repair shops and a blacksmith shop. While the vertical and horizontal footprint from some of these structures may be minimal due their short existence, others were more substantial and may be considered archaeologically sensitive (Figure 11).

The archaeological investigation of railroad structures has found that these industrial resources may address many issues. In Old Saybrook, Connecticut, the excavation of a late 19th century railroad roundhouse found that the structure provided information on its important contribution to maritime history, transportation mode changes, industrialization, engineering advances, settlement, market and travel patterns, changes in capitalistic economic and business practices, and in the development of government regulation of an industry (Soulsby 1993). Similarly, archaeological research at the Poughkeepsie Train Station provided information on the development of a railroad yard under New York Central's ownership, and how social and economic trends influenced construction episodes (Kearns et al 1999).

Buried railroad resources, which may possess evidence of technological adaptations and the evolution of the railroad complex, may exist *in situ* at the Highbridge Yard (Figure 11). Specifically, structures which once housed working spaces such as the carpenter shop, blacksmith shop, and car repair shop may have left a horizontal and vertical footprint depicting early 20th century railroad technology and how it was adapted at the Highbridge Yard. These historically important resources may hold research potential similar to that found at other railroad complexes which have been archaeologically investigated, and may contribute to the ever-expanding knowledge of railroad technology and adaptations.

Some railroad-related resources which were present on the site were determined to lack archaeological importance. For example, railroad tracks have been updated throughout the history of the yard, and have little research potential since their technological evolution is extensively detailed in the documentary record. Also, switching and signaling boxes and towers were determined to lack archaeological potential since they were also upgraded as technology advanced, and their mechanisms were typically removed when they were abandoned altogether. Only the footprints of the structures

which housed these mechanisms would still be present, and would afford no research opportunities. Therefore, these resource types were not included on the Archaeological Sensitivity Map (Figure 11).

4.4 Impact Assessment

Work at Highbridge Yard for the proposed project may include building new structures, installing utility lines, and laying new tracks. Some of these activities, such as creating new tracks, will have no impact to any potential resources since the site has already been predominantly covered with tracks at one point in time or another, and they cause limited subsurface impacts.

Activities which may cause subsurface impacts, such as installing utility lines which require excavations up to five feet deep and excavations required for footings for new structures, may impact the former sites of late 19th and/or early 20th century railroad-related structures which may address potential research issues related to the development of railroad technology and/or the evolution of the New York Central. The locations of these potentially important resources are depicted on Figure 11. If impacts in the northern one-third of the site are anticipated beneath the depth of fill, which is about eight feet deep, there is the possibility that low to moderately sensitive areas of prehistoric potential will also be impacted.

4.5 Mitigation Recommendations

Excavations in the northern one-third of the project site, which is considered potentially sensitive for prehistoric resources, will only cause a negative impact if they extend below the depth of fill which is approximately eight feet below grade. If avoidance of potential prehistoric resources in this area is possible, then this is considered a viable mitigation alternative. Additionally, if avoidance of potential historic resources which are shallowly buried at locations throughout the yard (Figure 11) is possible, then this is also considered a viable mitigation alternative. However, if the avoidance of impact to potentially National Register eligible archaeological resources is not possible, the appropriate mitigation procedures could take the form of construction monitoring, or topic intensive research on each specific resource type, or exploratory excavations, or finally, data recovery.

4.6 Figures and Photographs

1. Project Site Location

2. Project Site Boundaries

3. *Atlas of New York City and Vicinity*, Beers 1868

4. *Topographical Atlas of the City of New York Including the Annexed Territory,* Viele 1874

5. *Map of the 23rd Ward, New York City.* Volume 1. Beers 1876

6. *Atlas of the City of New York.* Bromley 1879

7. *Insurance Maps,* Sanborn 1891

8. Photograph of Project Site, ca. 1905

9. Photograph of Project Site, ca. 1905

10. *Insurance Maps,* Sanborn 1909

11. Archaeological Sensitivity Map, Highbridge Yard

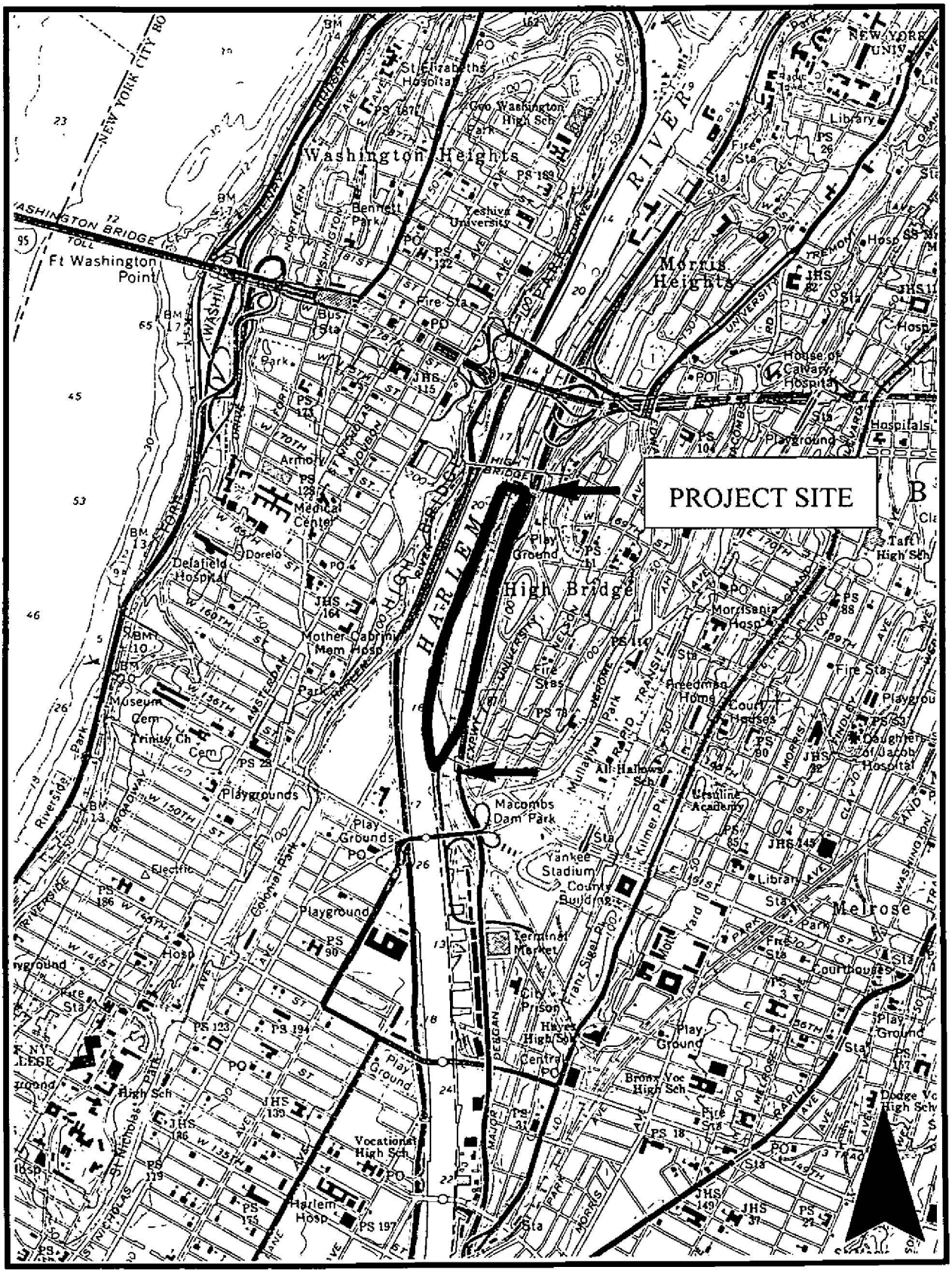

FIGURE 1
Project Site Location: *USGS Central Park, N.Y. - N.J. Quadrangle,* 1979.
Scale 1:24,000

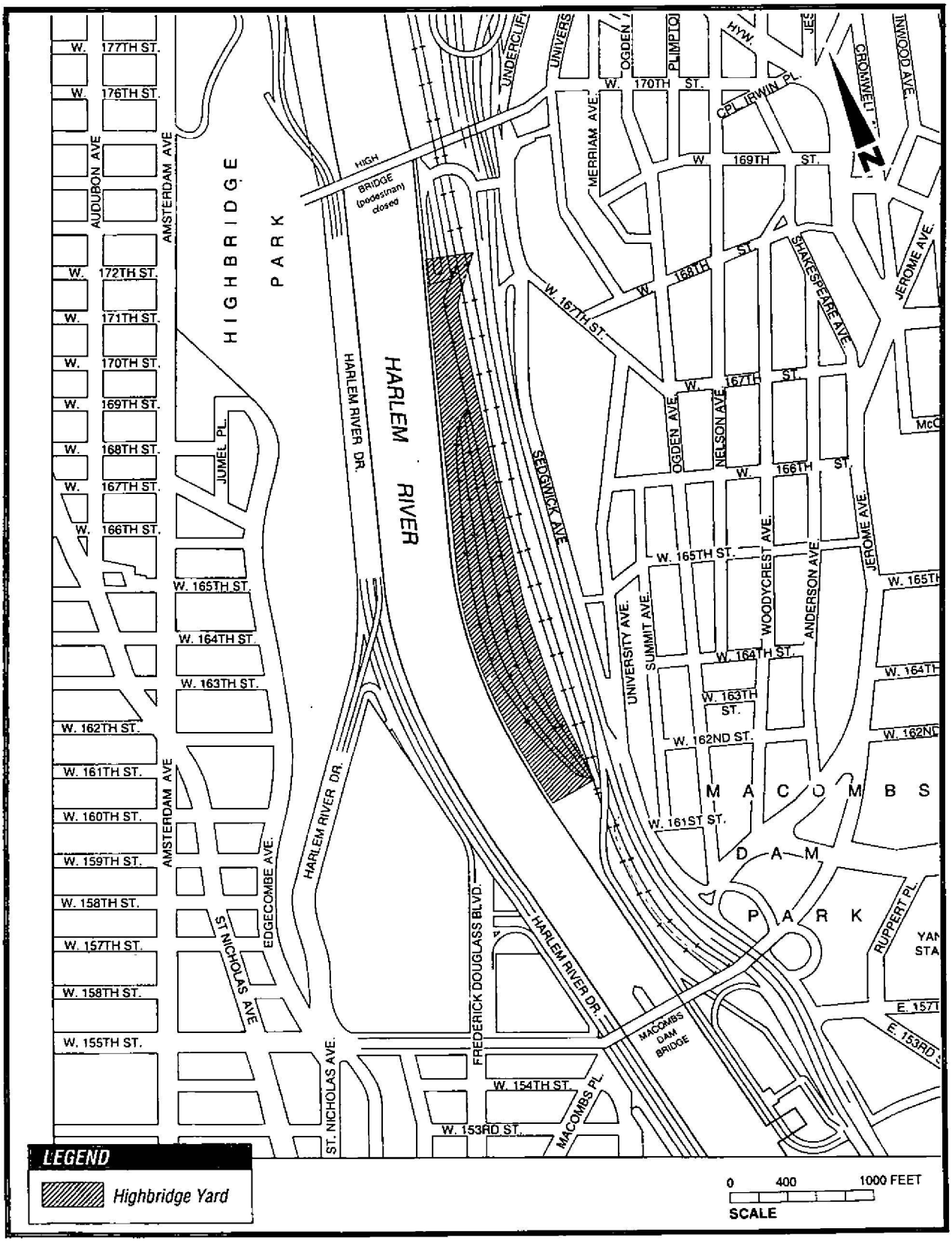

FIGURE 2
Project Site Boundaries

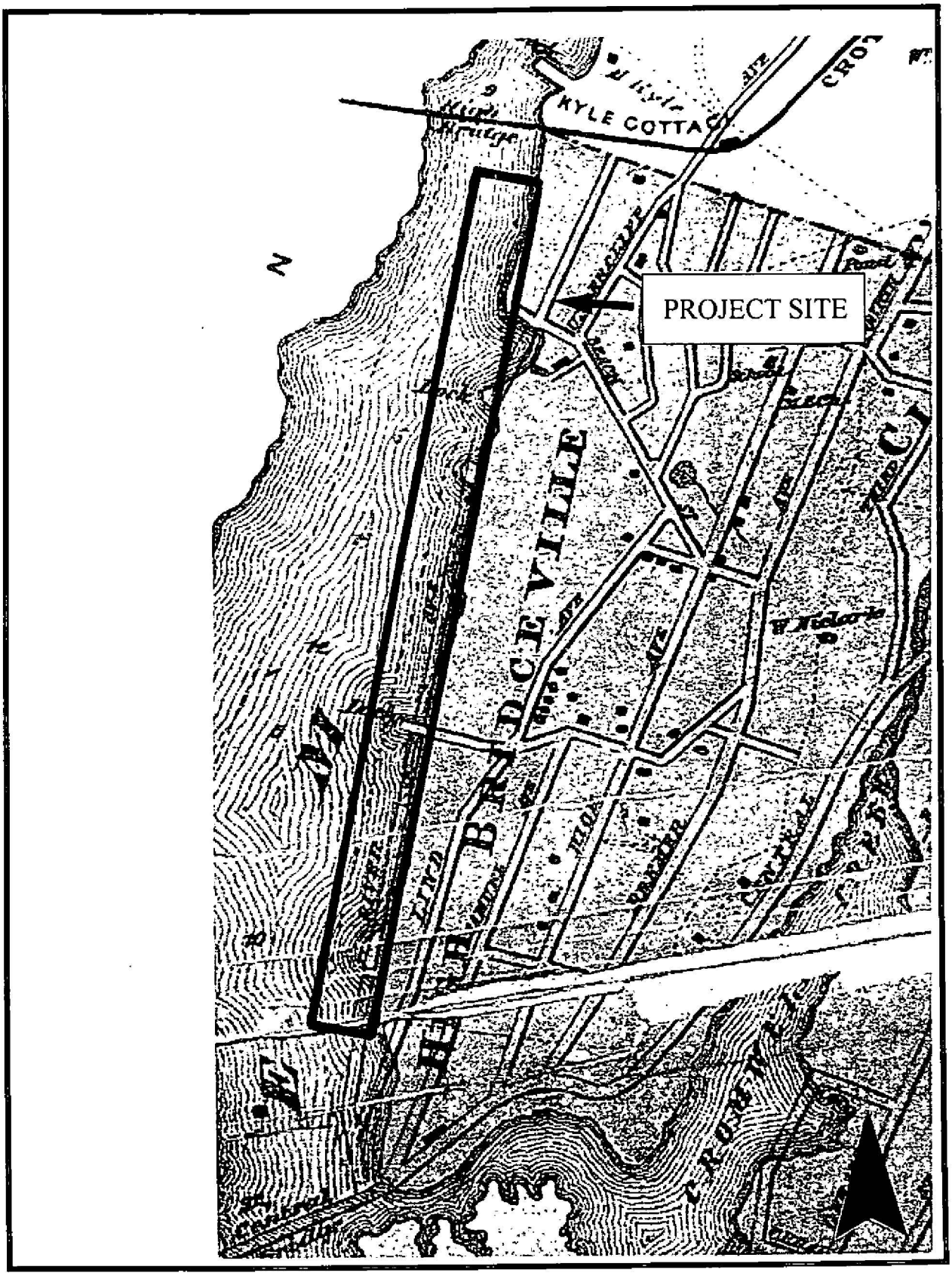

FIGURE 3
Atlas of New York City and Vicinity, Beers 1868. Plate 8.
No Scale

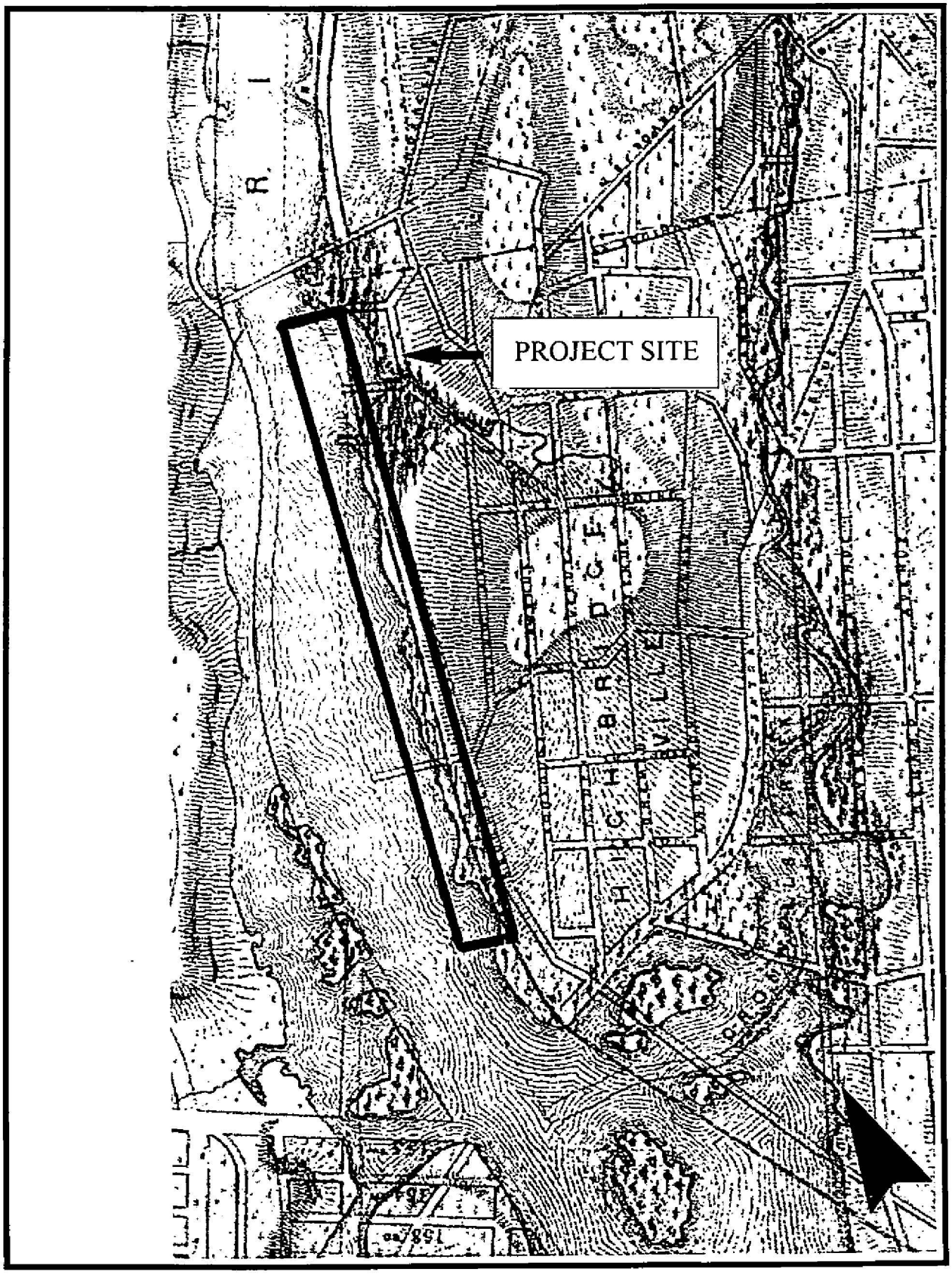

FIGURE 4

Topographical Atlas of the City of New York Including the Annexed Territory.
Viele 1874.
No Scale.

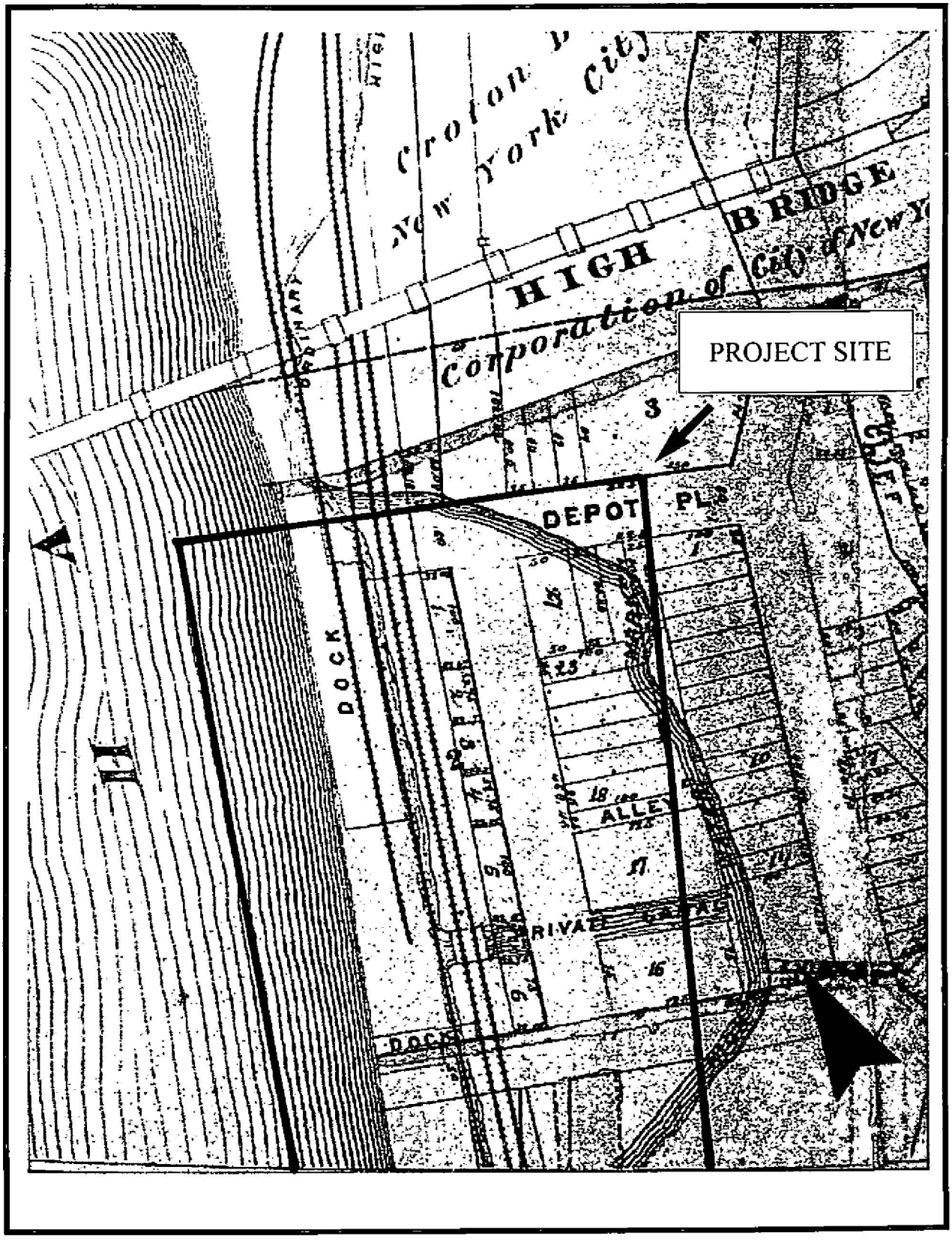

FIGURE 5a

Map of the 23rd Ward, New York City. Vol. 1. Beers, 1876

Northern section of project site, West 167th Street north of Depot Place.

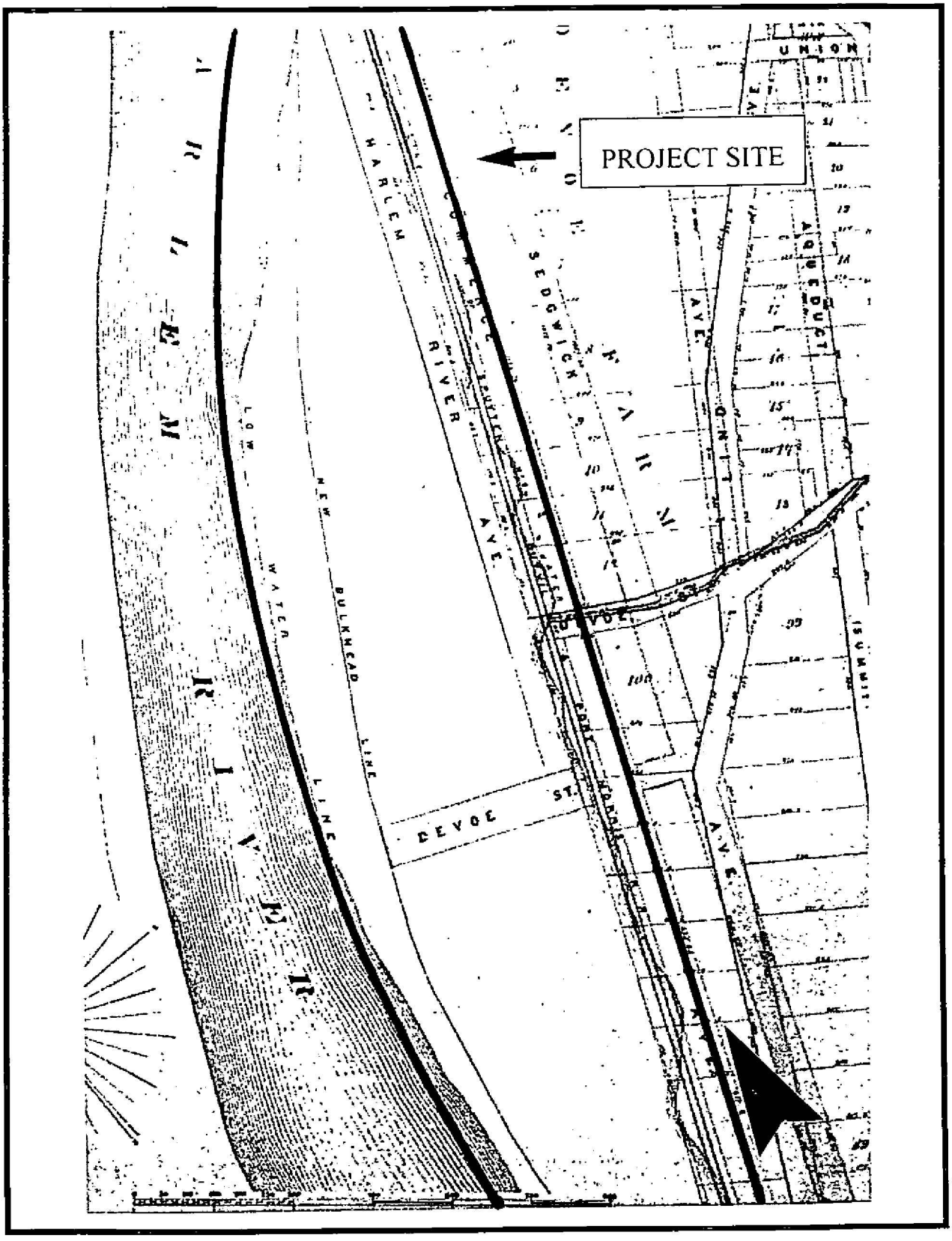

FIGURE 5b

Map of the 23rd Ward, New York City. Vol. 1. Beers, 1876

Southern section of project site, south of Union Place. Note the high water line running beneath the Spuyten Duyvil and Port Morris Railroad tracks.

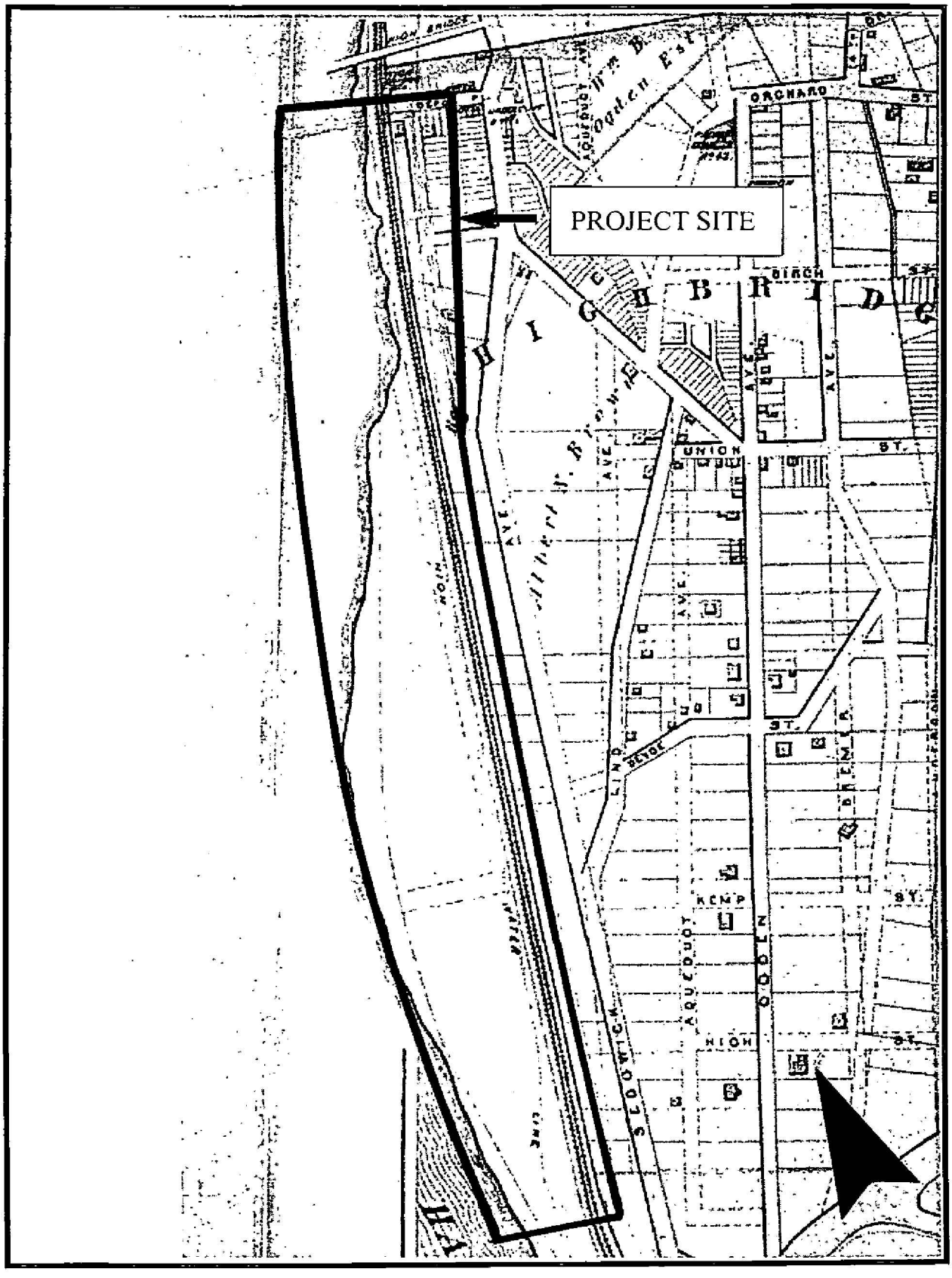

FIGURE 6
Atlas of the City of New York. Bromley, 1879.
No Scale.

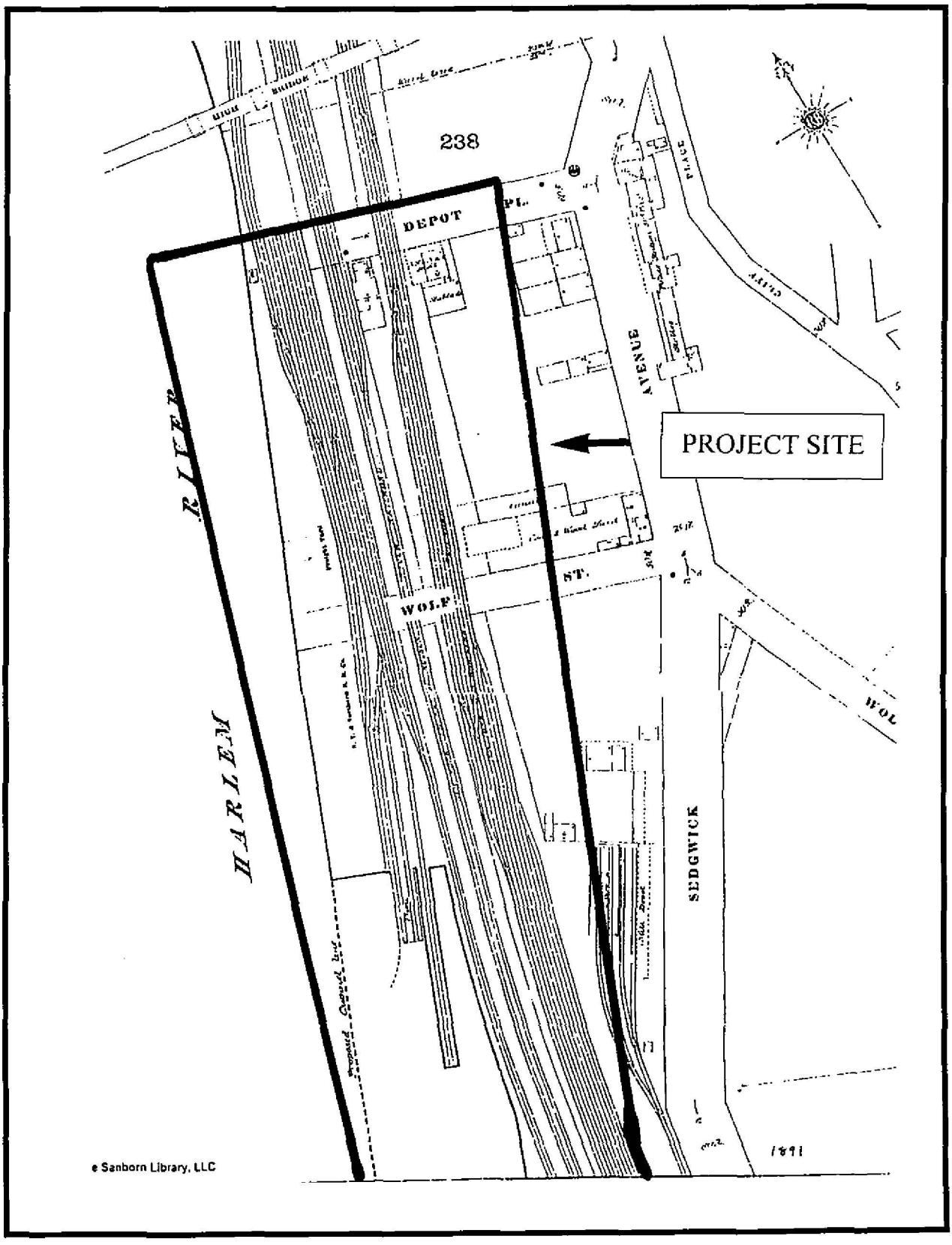

FIGURE 7a
Insurance Maps. Sanborn, 1891.
No Scale.

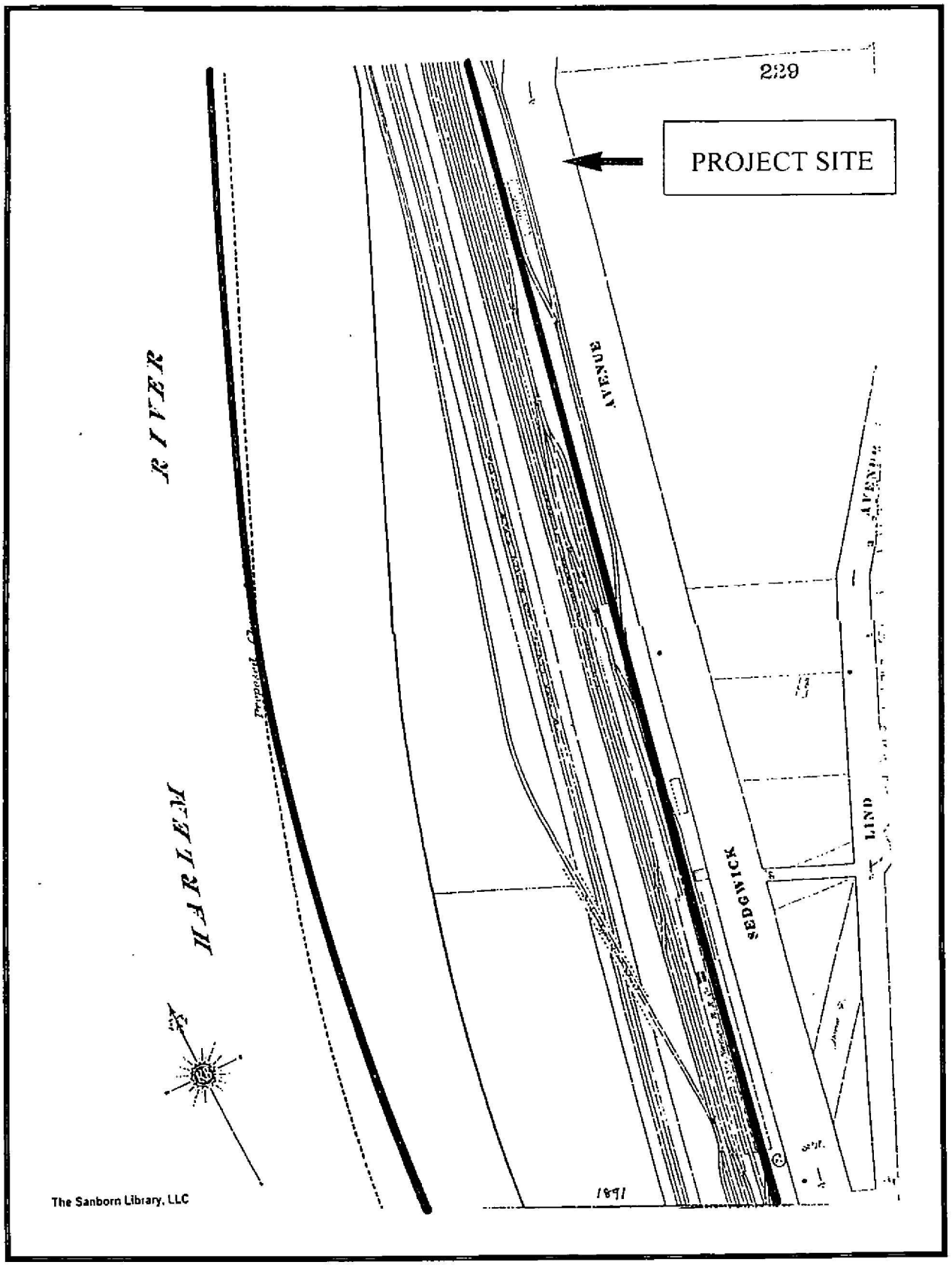

FIGURE 7b
Insurance Maps. Sanborn, 1891
No Scale.

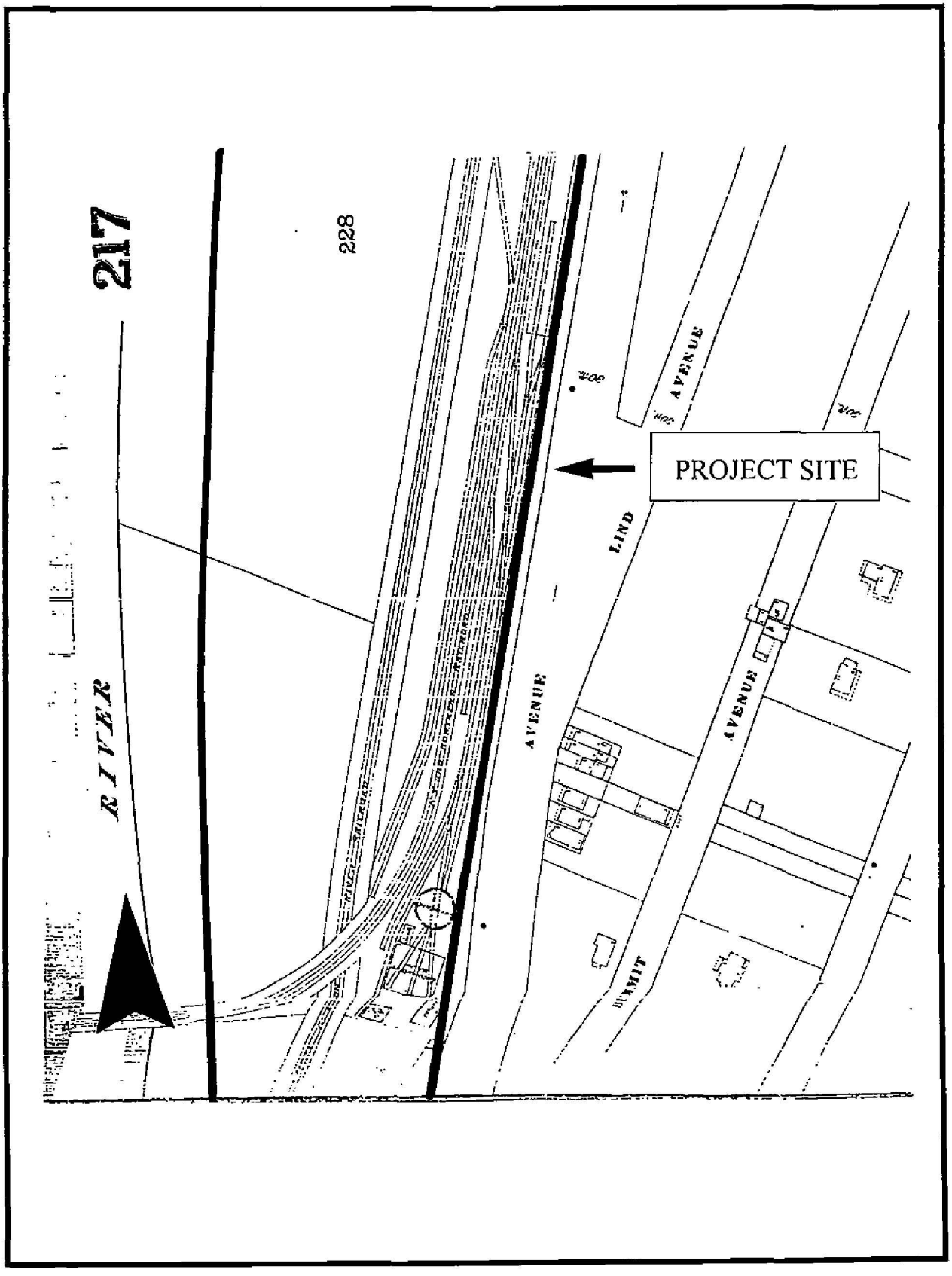

FIGURE 7c
Insurance Maps. Sanborn, 1891
No Scale.

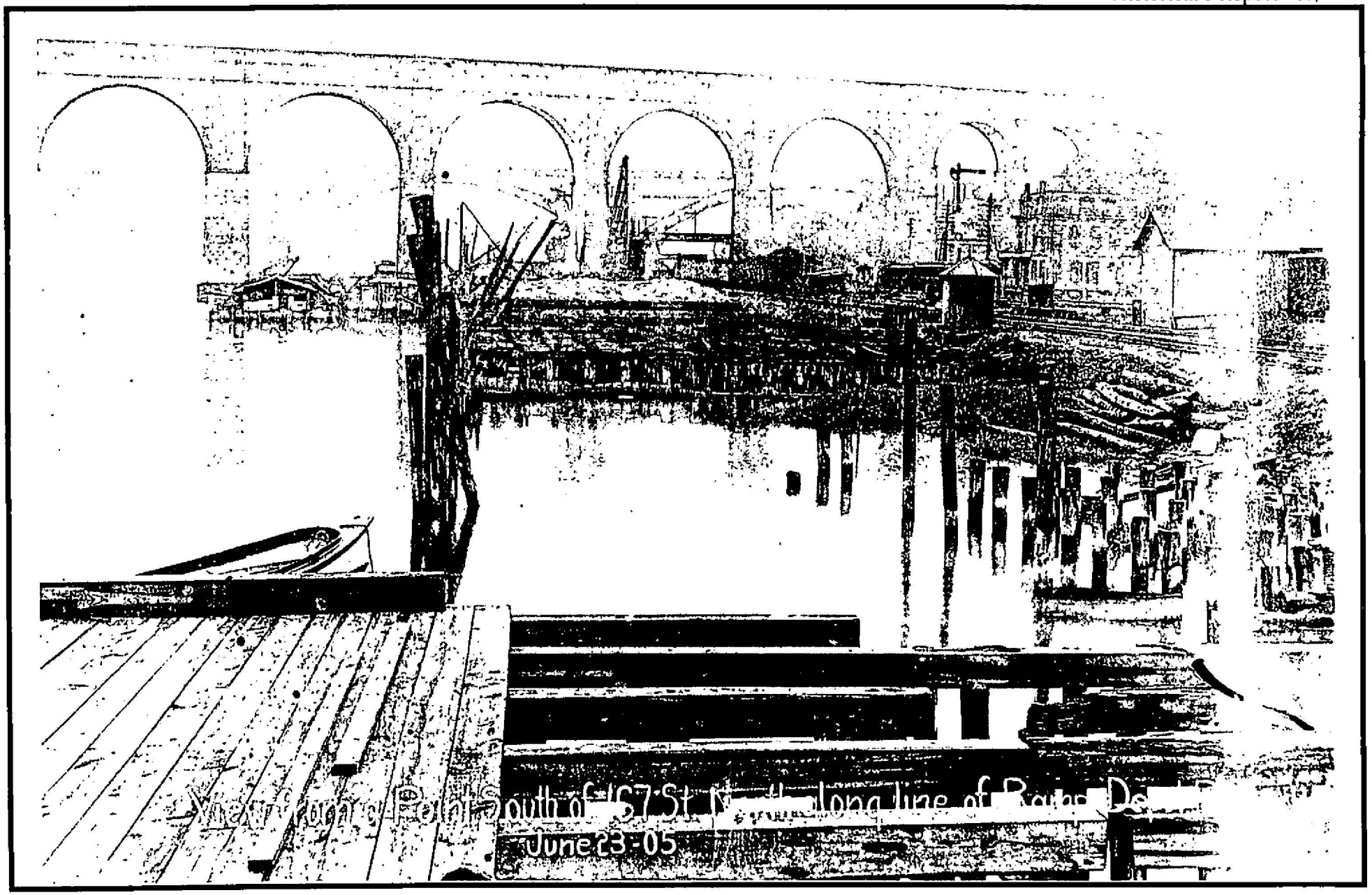

FIGURE 8

Photograph of Project Site, ca 1905, facing north towards Depot Place. Note dock removal in process. Railroad tracks to right run over a small bridge over the private canal which serviced coal yards.

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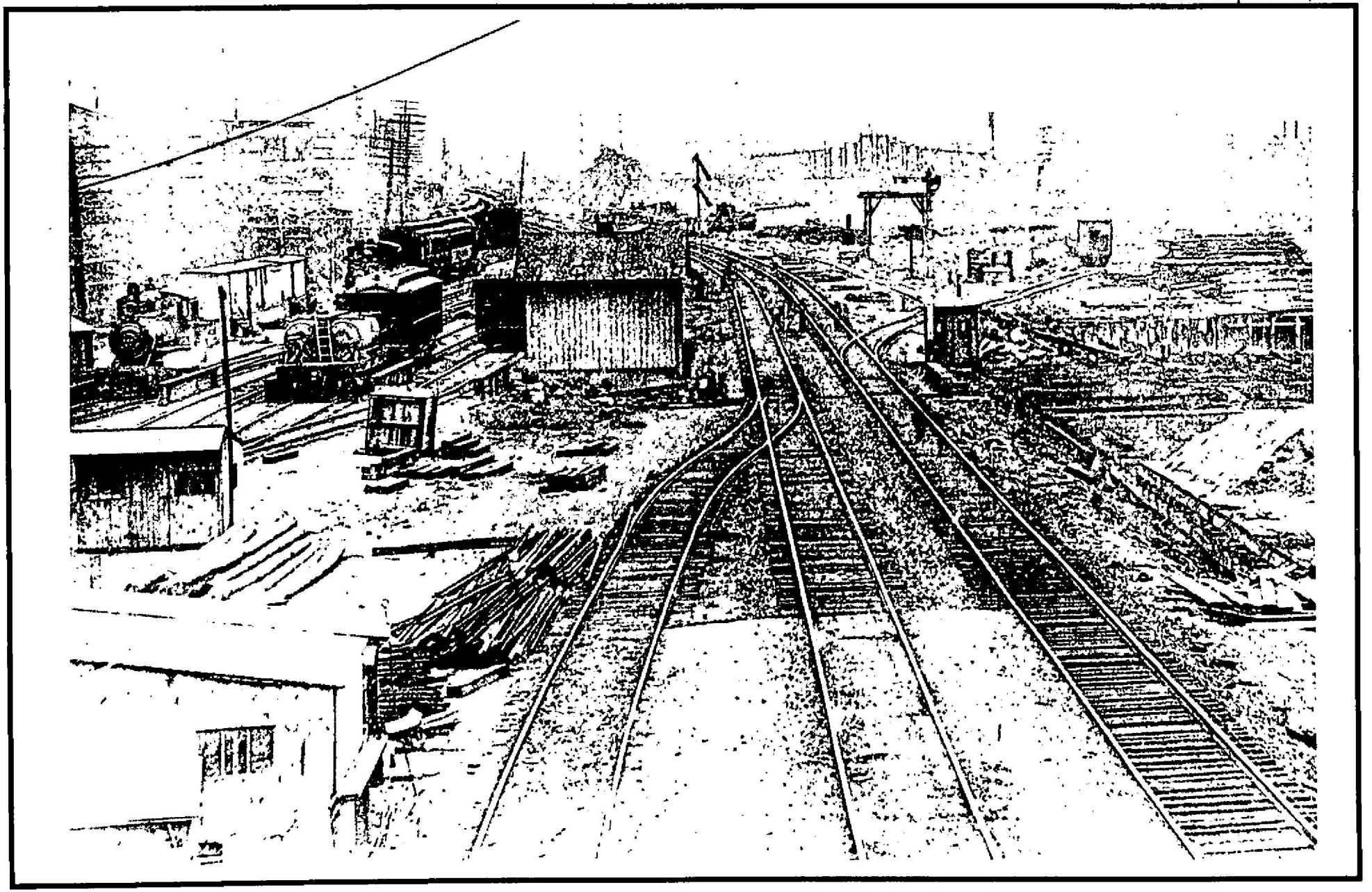

FIGURE 9

Photograph of Project Site, ca 1905, facing south from Depot Place. New York Central's Putnam Division tracks at left and Hudson Division tracks at right. Note numerous sheds throughout, and land-reclamation/filling along the shoreline at right of picture.

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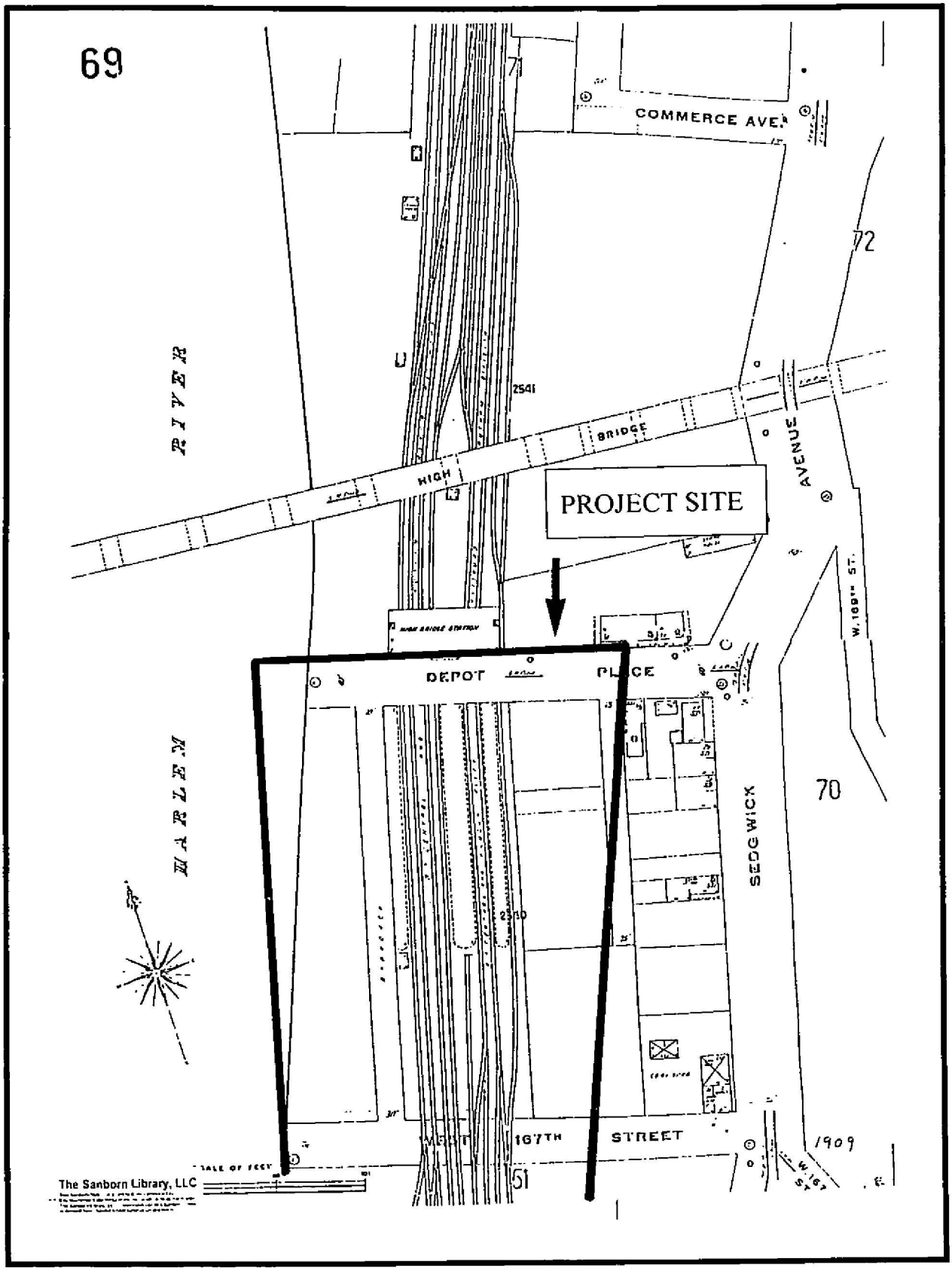


FIGURE 10a
Insurance Maps. Sanborn, 1909.

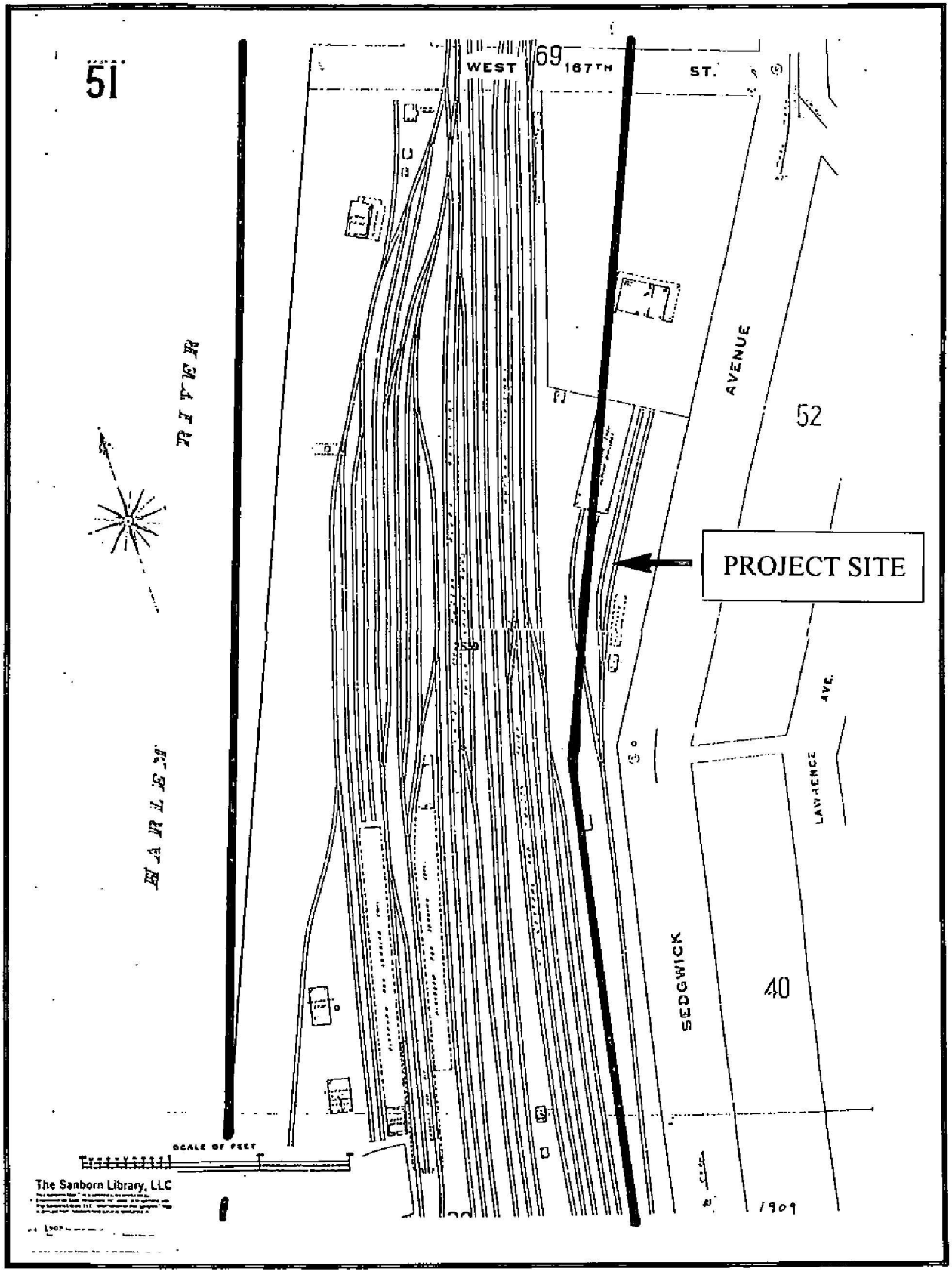


FIGURE 10b
Insurance Maps. Sanborn, 1909.

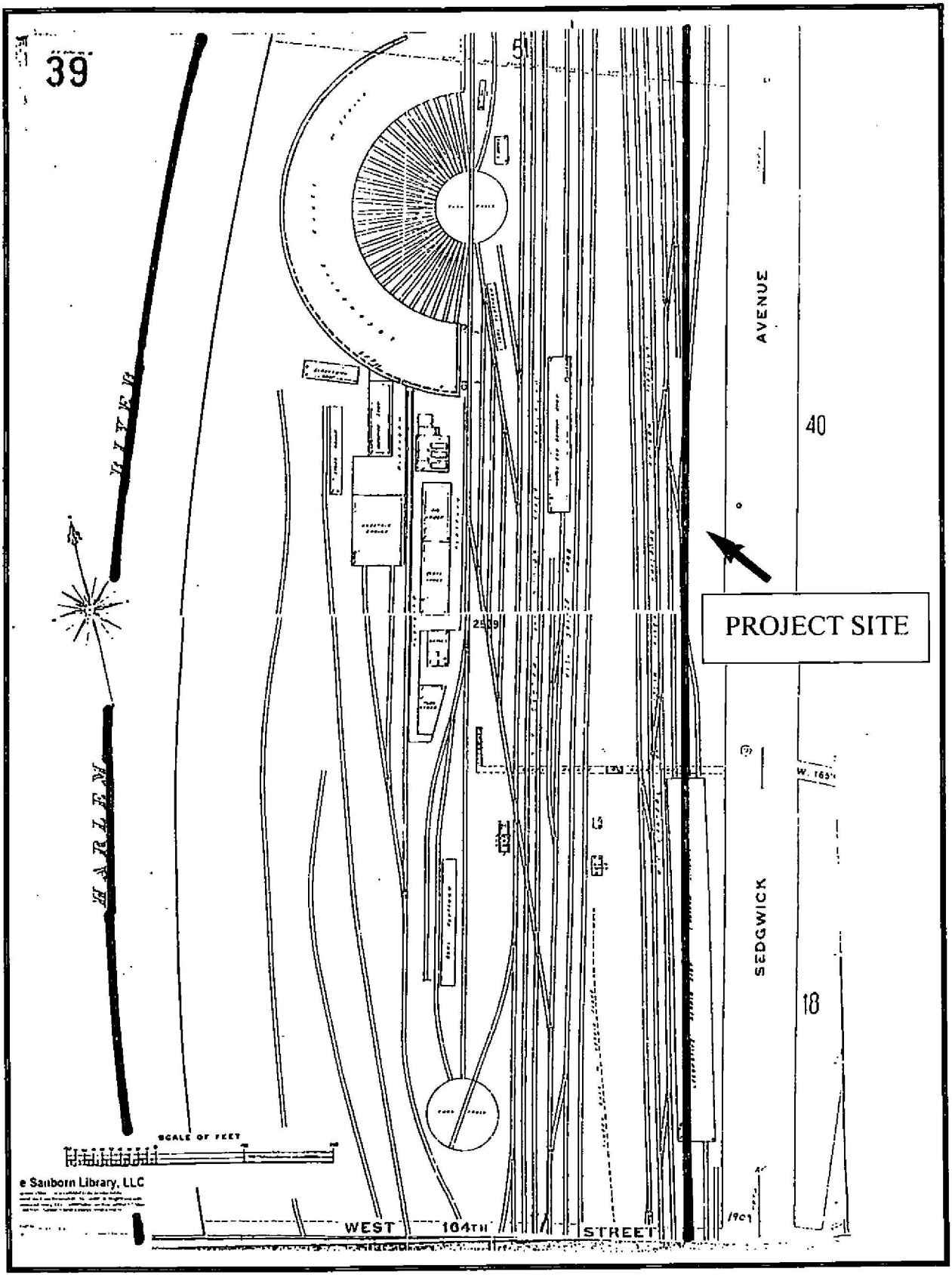


FIGURE 10c
Insurance Maps. Sanborn, 1909.

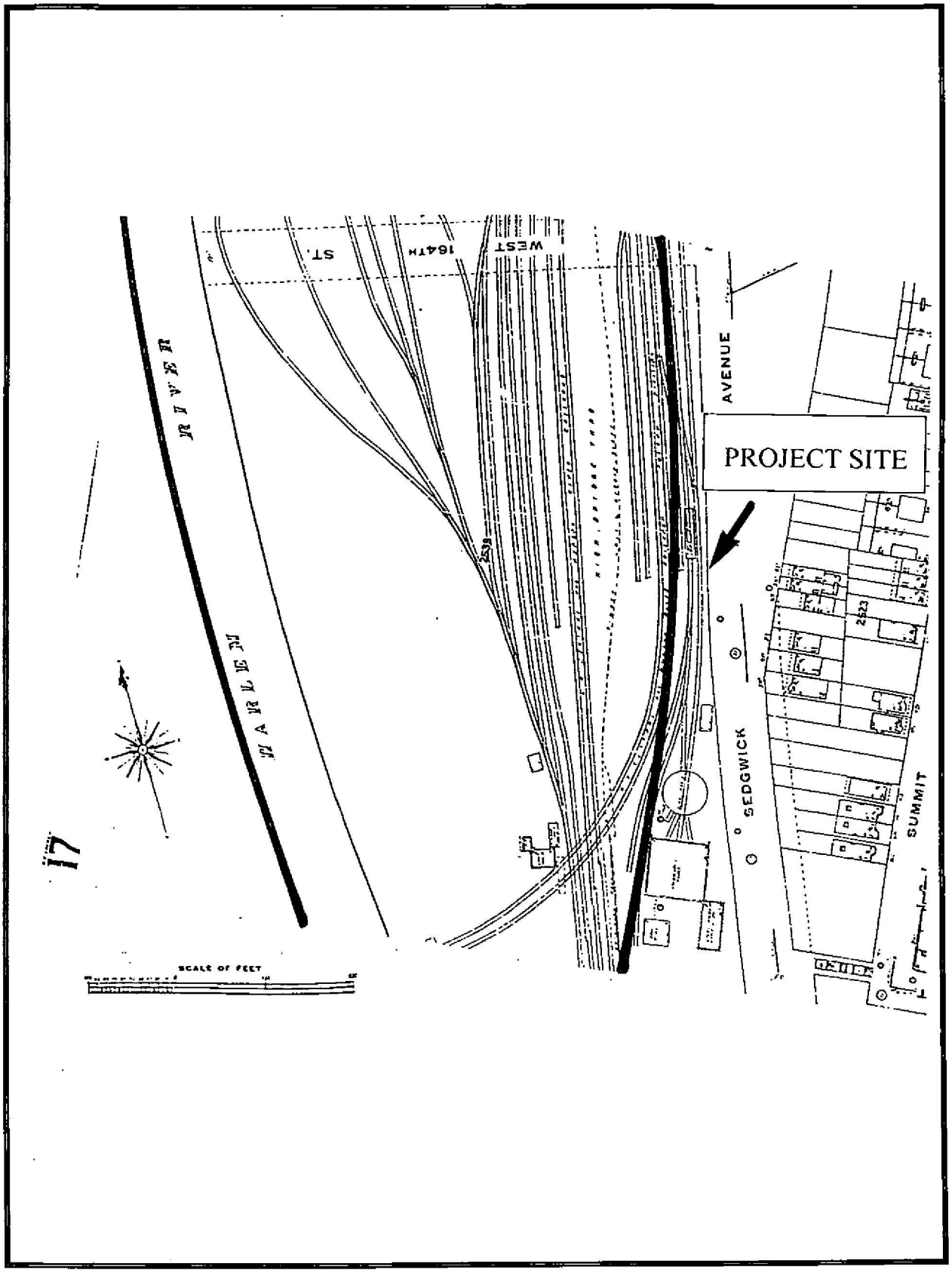


FIGURE 10d
Insurance Maps. Sanborn, 1909.

KEY TO FIGURE 11

Map#	Description	Date(s) Present on Maps
1.	High Bridge Station	1909-1951
2.	NY & NRR Depot	1879-1891
3.	Stable on Depot	1891
4.	Canal	1876-1891
5.	Coal and Wood Yard	1891
6.	Storehouse and Platform	1909
7.	Print Shop, Car Repair Shop	1891, 1909-1951
8.	Platform for Loading Coal	1909
9.	Carpenter Shop	1909
10.	Coal Shed	1891
11.	Lounging House	1909
12.	Sand (?)	1909
13.	Locomotive Roundhouse- 30 stalls	1909
14.	Unlabeled building	1909
15.	Office	1909
16.	Turntable	1909-1981
17.	Blacksmith Shop	1909
18.	Store House	1909
19.	Machine Shop	1909
20.	Unlabeled Building	1909
21.	Electric Engine (?)	1909
22.	Oil House	1909
23.	Store House	1909
24.	Motor Car Repair Shop	1909
25.	Office	1909
26.	Tool House	1909
27.	Electric Coal House	1909-1991
28.	Turntable	1951
29.	Locomotive Repair Shop	1891-1951
30.	Locomotive Repair Shop	1891-1909
31.	Turntable	1909-1981
32.	Turntable	1909
33.	S?	1891
34.	Locomotive House	1909
35.	Battery	1909
36.	Store House	1909
37.	Store House Offices	1909

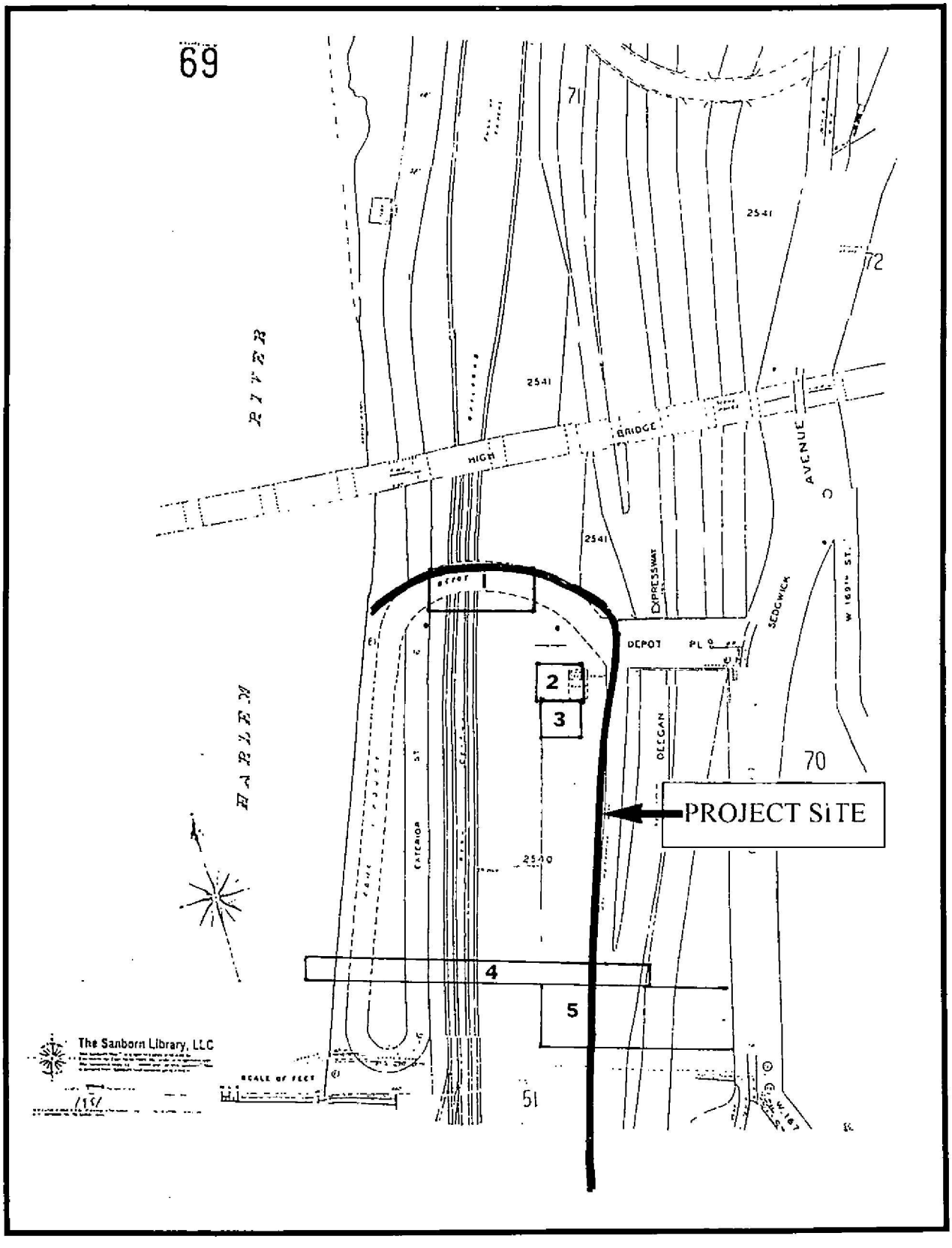


FIGURE 11a
Archaeological Sensitivity Map, Highbridge Yard

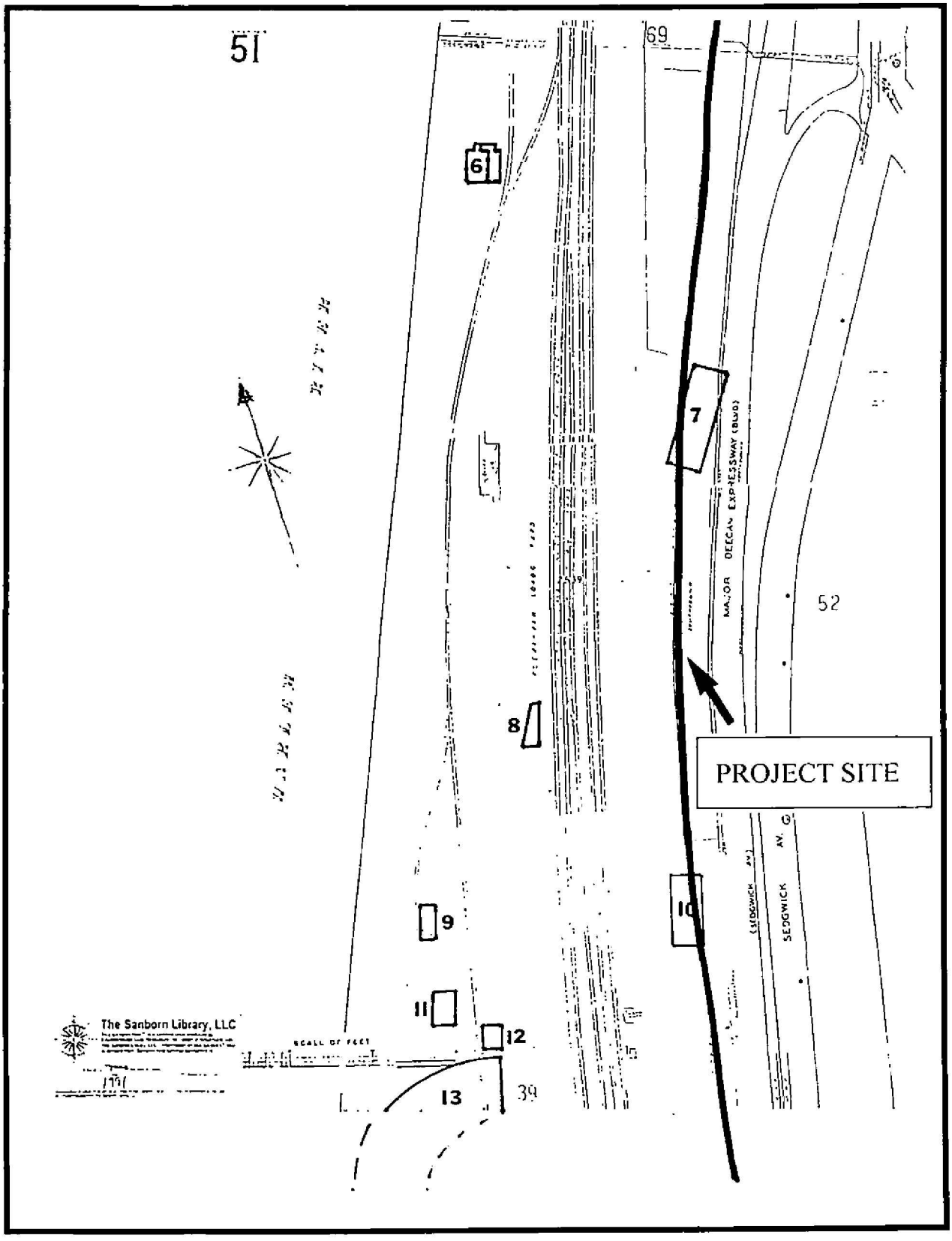


FIGURE 11b
Archaeological Sensitivity Map, Highbridge Yard

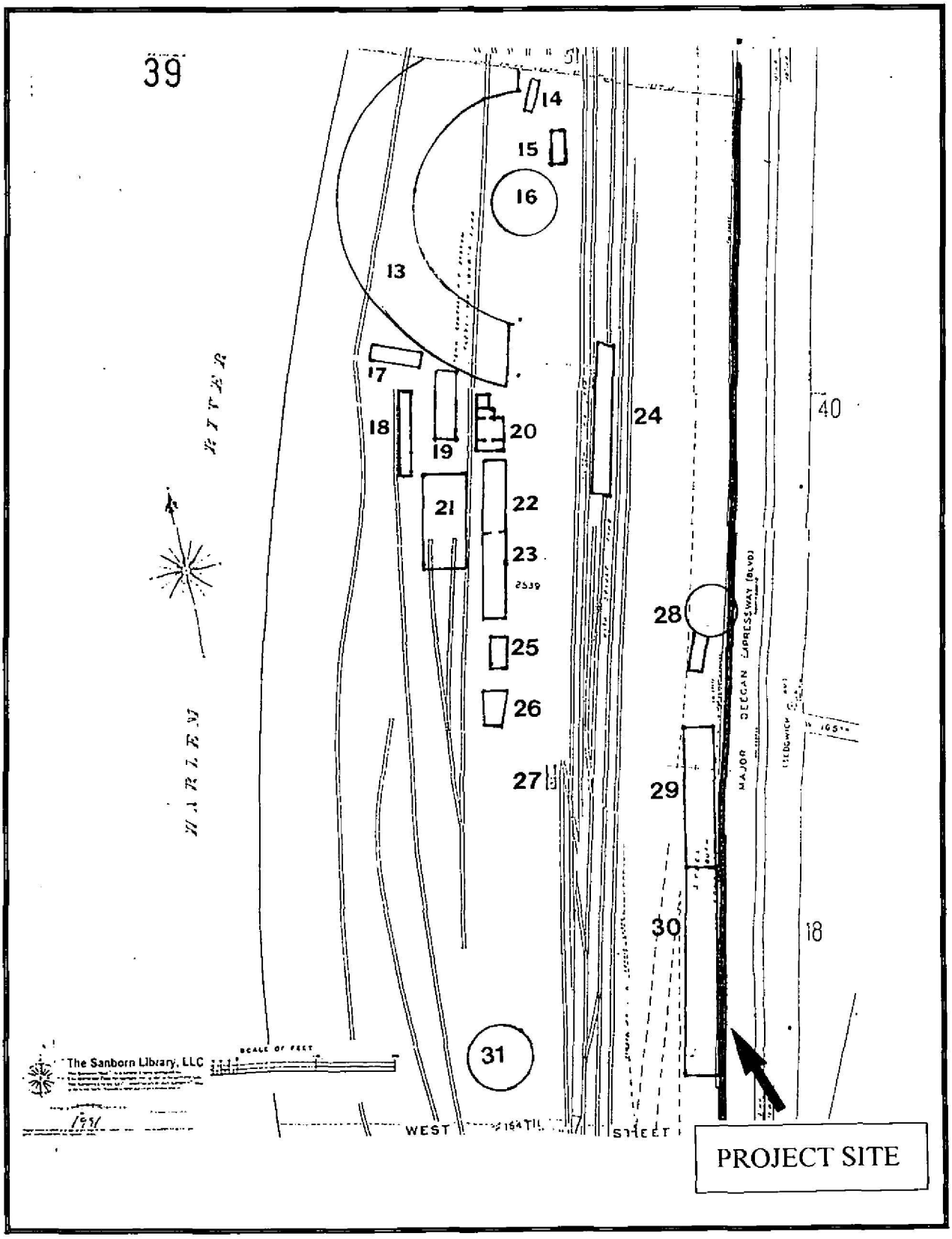


FIGURE 11c
Archaeological Sensitivity Map, Highbridge Yard

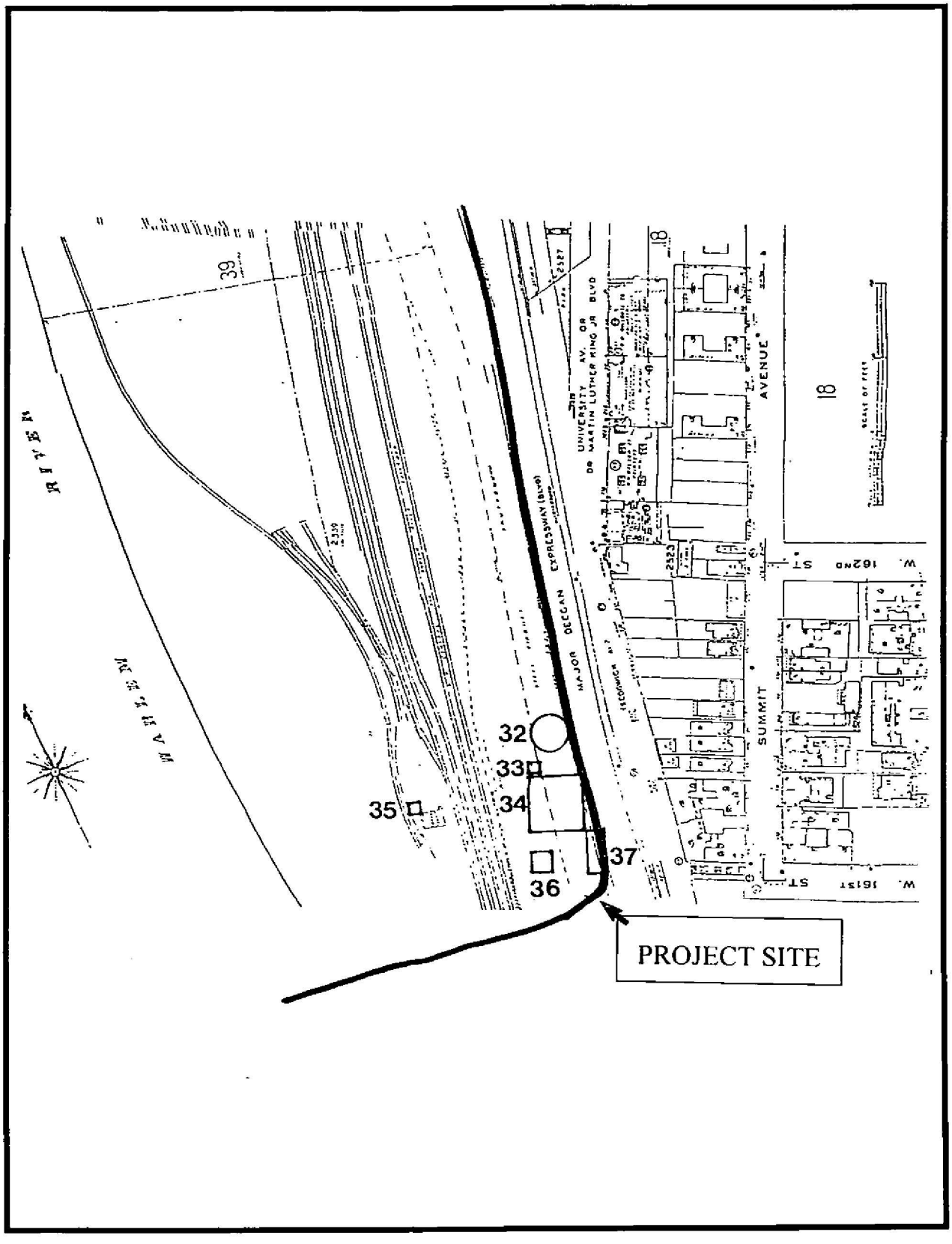


FIGURE 11d
Archaeological Sensitivity Map, Highbridge Yard

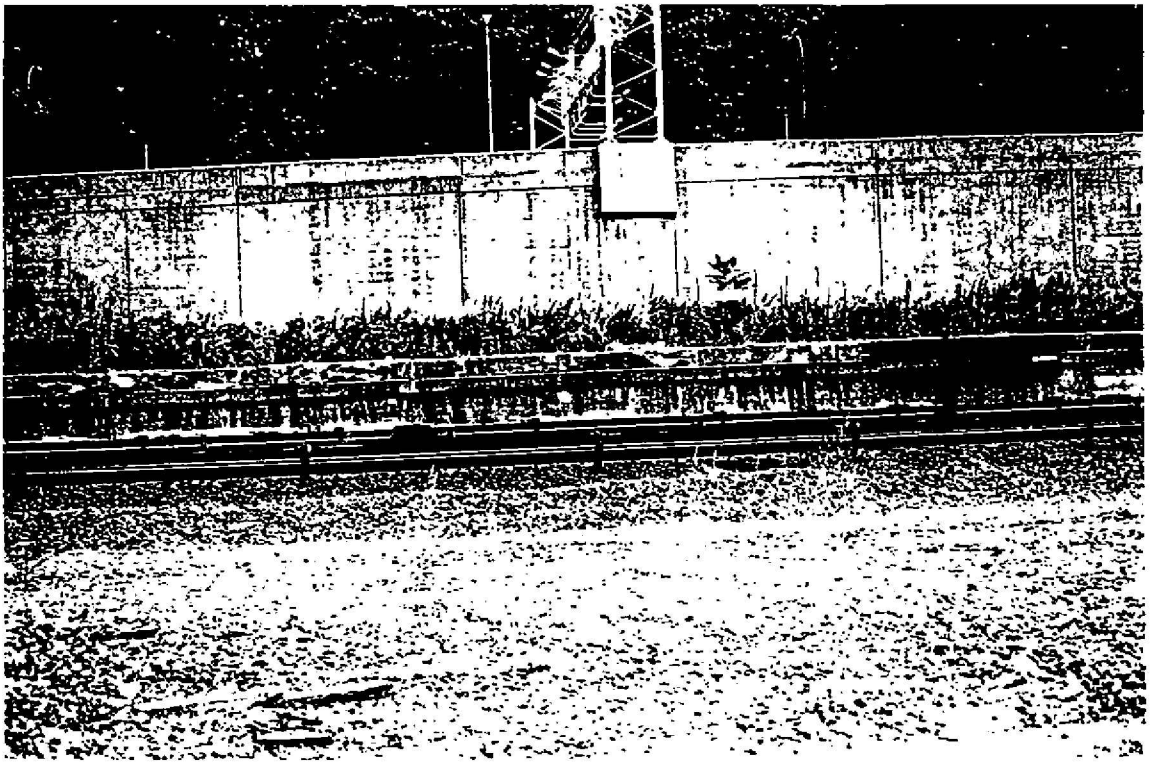
Photograph 1. North end of Project Site, facing north towards Highbridge.

Photograph 2: North end of site, facing northeast towards overgrown areas of yard.

Photograph 3. North end of Project Site, facing north. Note cement slab foundation from razed structure, now used for supply storage.

Photograph 4: Facing southeast from north end of Project Site. Note embankment for Major Deegan Expressway in background.

Photograph 5: Middle of Project Site, facing east. Note embankment for Major Deegan Expressway in background.



Photograph 6: Facing east from middle of Project Site. Note embankment for Major Deegan Expressway east of the railroad tracks.

Photograph 7: Middle of Project Site, facing northwest. Note demolition debris and rubble along bank of the Harlem River.

Photograph 8: Facing south from northern part of Project Site.

Photograph 9: South end of project site, facing west. Note piles of demolition debris, now overgrown.

4.7 Appendix

4.7.1 Site File Search Results, NYSOPRHP, NYSM and NYCLPC

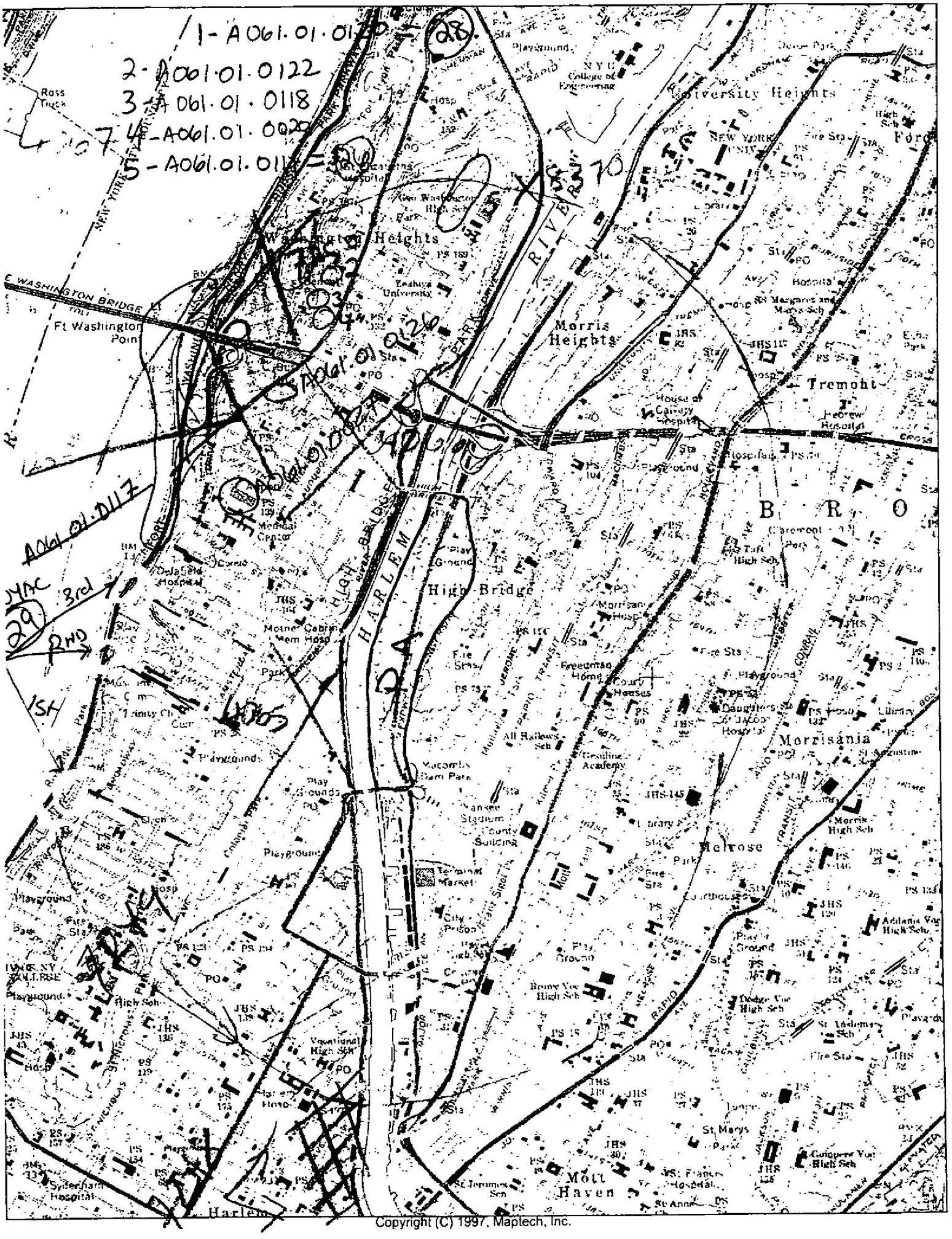
Project Name: High Bridge YARD HAA Project Number: 1306 Client:

Village: Town: BRONX County: BRONX

Quadrangle: Central Park

NEW YORK STATE MUSEUM conducted by: Kim Lacsher Date: 8.10.99 Site Sensitivity requested: # Sites: 7

NYSM#	Other#	Name	Period	Type	Comments
4065	ACP NYRK	—	—	VILLAGE	Reporter: A.C. Parker 1922 - [Bolton? Skinner?]
4066	ACP NYRK	—	—	UNHCD village + Fields? to west,	Reporter: A.C. Parker 1922 - [Bolton? Skinner?]
7250	ACP NYRK NO # Bolton MP?	—	—	VILLAGES; CAMP (Fishing)	2 villages on ACP map see 4067 for shell item to Area William Roberts 8/13 Bolton #14 in same area = Fishing station + Shell middens at Landing cove, now destroyed by bridge
4067	ACP NYRK	—	—	Shell middens	See site 7250 villages in same area on Parker map. Reporter: A.C. Parker 1922 [Bolton? Skinner?]
8370	ACP NYRK	—	—	CAMP	Reporter: Parker 1922
7249	ACP NYRK	—	—	TRACES	Reporter: A.C. Parker 1922
7248	ACP NYRK	—	—	TRACES?	Two Dash marks on Parker map Apparently Traces. Reporter, Parker 1922


1 - A061.01.0121
2 - A061.01.0122
3 - A061.01.0118
4 - A061.01.0020
5 - A061.01.0117
Washington Heights
Ft Washington Point
WASHINGTON BRIDGE
Morris Heights
University Heights
Tremont
High Bridge
HARLEM RIVER
Morrisania
Melrose
Mott Haven
Harlem
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4.7.2 Soil Boring Logs

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 647-9169 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME High bridge Yard
LOCATION Bronx, NY
RIG NO. 214

BORING MW-1
SHEET NO 1 OF 1

DRILLING EQUIPMENT Failing/Speedstar
DRILLING METHOD Hollow Stem Auger
DRILLER R. Head HELPER D. Mayes INSPECTOR J. Bogdanski
PERMIT NUMBER WATER TABLE

PROJECT NO. 1346
DATE STARTED 7/30/90
DATE COMPLETED 7/30/90

COMMENTS

MONITORING WELL CONSTRUCTION
SCREEN 4" IN. DIA. FROM 15 TO 5 FT. DEPTH
RISER 4" IN. DIA. FROM 5 TO 0 FT. DEPTH
FLUSH BOX X STICK-UP
GRAVEL FILTER #2 sand
BENTONITE SEAL pellets
SURFACE SEAL concrete
LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO.	SAMPLES FROM	SAMPLES TO	SAMPLES BLOW / 6"	WELL EQUIPMENT INSTALLED
0'	0.5	Asphalt					
0.5		Gravel fill (Bluestone)					
	2.5	and asphalt					
2.5'		Blackish brown, fine sand, little	S1	4'	6'	11,9,9,7	
	5'	medium sand, trace gravel.					
5'		Light brown, well-sorted medium	S2	6'	8'	6,7,11,8	
	7'	sand, trace coarse sand					
7'		Rust brown (Fe-ox stained) Fine					
		sand and clay, (Moist, conesive					
		and sticky) little friable mica.					
	8.5	Schist fragments	S3	8'	10'	4,1,3,3	
8.5		Dark gray clay (organic rich)					
	15	Trace wood					
		EOB at 15'					

SAMPLE IDENTIFICATION
X SPLIT SPOON
____ THIN WALL TUBE
____ UNDISTURBED PISTON
____ OPEN END ROD
____ WASH SAMPLE
X GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
5-8	LOOSE	3-4	SOFT
10-29	MED. DENSE	5-8	MEDIUM STIFF
30-49	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED

TRACE	1-10%
LITTLE	10-20%
SOME	20-30%
AND	30-50%

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 647-9169 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME High Bridge Yard
LOCATION Bronx, NY

BORING MW-2
SHEET NO. 1 OF 1

DRILLING EQUIPMENT Failing/Speedstar RIG NO. 214
DRILLING METHOD Hollow-stem Auger
DRILLER R. Head HELPER D. Mayes INSPECTOR J. Boggansky
PERMIT NUMBER WATER TABLE

PROJECT NO. 1346
DATE STARTED 7/30/90
DATE COMPLETED 7/30/90

COMMENTS Located near discarded 550 tank and a 55-gallon drum

MONITORING WELL CONSTRUCTION
SCREEN 4 IN. DIA. FROM 15' TO 5' FT. DEPTH
RISER 4 IN. DIA. FROM 5' TO FT. DEPTH
FLUSH BOX X STICK-UP
GRAVEL FILTER #2 sand
BENTONITE SEAL pellets
SURFACE SEAL cement
LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO.	FROM	TO	BLOW / 6"	WELL EQUIPMENT INSTALLED
0'	1'	Vegaration & organic rich soil	S1	1'	2'	Grab	
1'		Blackish brown fine sand, little					
	4.5	medium sand, trace gravel					
4.5		Rust brown (Fe-ox staining),					
	7.5	well-sorted fine sand, trace wood		4'	6'	4,11,13,12	
7.5	8'	Friable mica schist		6'	8'	4,22,50/	
8'	8.5'	Mica schist boulder - drilling slow					
8.5		Dark gray clay (organic rich,					
		moist, conesive, sticky), trace		10'	12	2,1,1,2	
	20	wood					
			S2	12'	14'	3,2,2,3	
		EOB at 20'					
				14'	16	3,3,2,3	
				16	18'	4,3,3,4	

SAMPLE IDENTIFICATION
X SPLIT SPOON
THIN WALL TUBE
UNDISTURBED PISTON
OPEN END ROD
WASH SAMPLE
X GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
5-9	LOOSE	3-4	SOFT
10-29	MED. DENSE	5-8	MSTIFF
30-49	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED

TRACE	1-10%
LITTLE	10-20%
SOME	20-30%
AND	30-60%

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 847-9169 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME Hian Bridge Yard
LOCATION Bronx, NY
BORING MW-3
SHEET NO. 1 OF 1

DRILLING EQUIPMENT Failing/Speedstar
RIG NO. 214
DRILLING METHOD Hollow-Stem Auger
PROJECT NO. 1346
DRILLER R. Head HELPER D. Mayes INSPECTOR J. Bogdanski
DATE STARTED 7/30/90
PERMIT NUMBER
WATER TABLE ~9'
DATE COMPLETED 7/30/90
COMMENTS Well located in asphalt patch near abandoned center track

MONITORING WELL CONSTRUCTION
SCREEN 4 IN. DIA. FROM 12 TO 2 FT. DEPTH
RISER 4 IN. DIA. FROM 2 TO 0 FT. DEPTH
FLUSH BOX X STICK-UP
GRAVEL FILTER #2 sand
BENTONITE SEAL pellets
SURFACE SEAL cement
LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO.	FROM	TO	BLOW / 6"	WELL EQUIPMENT INSTALLED
0'	0.5	Asphalt					
0.5	1'	Gravel fill					
1'	3.5	Blackish brown fine sand, little	S1	1'	2'	Grab	
		medium sand, trace gravel					
3.5		Wood (Railroad Tie)	S2	3'	4'	Grab	
	4'	Creosote coated					
4'		Dark brown, poorly-sorted sand					
		(Coarse to fine), little pebbles,					
	8'	trace silt & clay	S3	7'	9'	7,10,6,2	
8'	9'	Dark brown, medium to coarse sand					
9'		Medium brown, well-sorted medium					
	12'	sand		10'	12'	1,1,1,1	

SAMPLE IDENTIFICATION
X SPLIT SPOON
THIN WALL TUBE
UNDISTURBED PISTON
OPEN END ROD
WASH SAMPLE
X GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
5-8	LOOSE	3-4	SOFT
10-29	MED. DENSE	5-8	MSTIFF
30-49	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED
TRACE 1-10%
LITTLE 10-20%
SOME 20-30%
AND 30-50%

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 647-9169 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME High Bridge Yard
LOCATION Bronx, NY

BORING MW-4
SHEET NO. 1 OF 1

DRILLING EQUIPMENT Failing/Speedstar RIG NO. 214
DRILLING METHOD Hollow-Stem Auger PROJECT NO. 1346
DRILLER R. Head HELPER D. Mayes INSPECTOR J. Bogdanski DATE STARTED 7/30/90
PERMIT NUMBER WATER TABLE 8.5 DATE COMPLETED

COMMENTS Well located near three discarded 55 gal. drums (partially filled w/petroleum based product

MONITORING WELL CONSTRUCTION
SCREEN 4 IN. DIA. FROM 4.5 TO 10.5 FT. DEPTH GRAVEL FILTER #2 sand
RISER 4 IN. DIA. FROM 4.5 TO 0 FT. DEPTH BENTONITE SEAL pellets
FLUSH BOX X STICK-UP SURFACE SEAL cement LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO.	SAMPLES FROM	SAMPLES TO	SAMPLES BLOW/6"	WELL EQUIPMENT INSTALLED
0"	0.75	Asphalt	S1	1'	2'	Grab	
0.75		Blackish brown, fine sand, little					
		coarse sand and pebbles, trace					
	4'	silt					
4'	4.5	Wood, probably a railroad tie	S2	4'	5'	7,50/	
		creosote, accumulation on auger					
4.5	6'	Mica schist boulder	S2	4'	6'	Grab	
		Refusal at 6'					
		Abandoned borehole					
		Moved to new location 5' away					
6'		Light brown medium sand, some					
	12'	friable mica schist	S3	10'	12'	31,7,15,5	
		Refusal at 12'					

SAMPLE IDENTIFICATION
X SPLIT SPOON
THIN WALL TUBE
UNDISTURBED PISTON
OPEN END ROD
WASH SAMPLE
X GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
5-8	LOOSE	3-4	SOFT
10-29	MED. DENSE	5-8	MEDSTIFF
30-49	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED
TRACE 1-10%
LITTLE 10-20%
SOME 20-30%
AND 30-50%

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 647-9169 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME High Bridge Yard
LOCATION Bronx, NY
RIG NO. 214

BORING MW-5
SHEET NO. 1 OF 1

DRILLING EQUIPMENT Failing/Speedstar
DRILLING METHOD Hollow Stem Auger
DRILLER R. Head HELPER D. Mayes INSPECTOR R. Trombetta
PERMIT NUMBER WATER TABLE

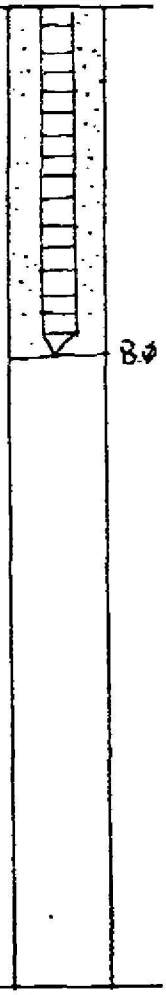
PROJECT NO. 1346
DATE STARTED 7/31/90
DATE COMPLETED 7/31/90

COMMENTS Half way down paved area on East side of lot. South of building "CBH-HB"

MONITORING WELL CONSTRUCTION
SCREEN 4 IN. DIA. FROM 8 TO 0 FT DEPTH
RISER IN. DIA. FROM TO FT DEPTH
FLUSH BOX X STICK-UP
GRAVEL FILTER #2 sand
BENTONITE SEAL
SURFACE SEAL cement
LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO.	SAMPLES FROM	SAMPLES TO	SAMPLES BLOW/6"
0.0	0.5	Asphalt				
0.5	4.5	Dry, compact, silt sand, trace clay, little gravel (Fill)				
4.5	6.0	Moist to wet, poorly sorted, very fine to coarse sand, some silt and gravel, wood fragments. (Fill)				
6.0	8.0	Wet, silty fine to coarse sand, little clay, trace fine gravel and weathered rock.	S1	7.0	8.0	12-14-50/1"
		Refusal at 8.0 feet.				

WELL EQUIPMENT INSTALLED



SAMPLE IDENTIFICATION
X SPLIT SPOON
THIN WALL TUBE
UNDISTURBED PISTON
OPEN END ROD
WASH SAMPLE
GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
5-8	LOOSE	3-4	SOFT
10-29	MED. DENSE	5-8	MSTIFF
30-49	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED

TRACE	1-10%
LITTLE	10-20%
SOME	20-35%
AND	35-50%

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 647-9168 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME High Bridge Yard
LOCATION Bronx, NY

BORING MW-6
SHEET NO. 1 OF 1

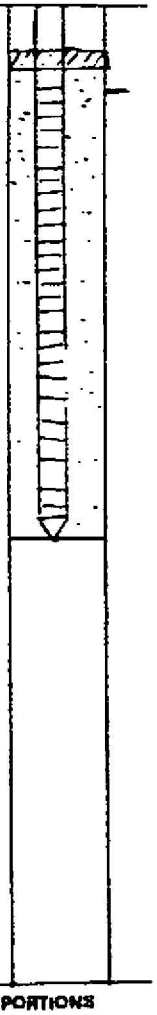
DRILLING EQUIPMENT Failing/Speedstar
RIG NO. 214
DRILLING METHOD Hollow Stem Auger
PROJECT NO 1346
DRILLER R. Head HELPER D. Mayes INSPECTOR R. Tromperra
DATE STARTED 7/31/90
PERMIT NUMBER
WATER TABLE
DATE COMPLETED 7/31/90

COMMENTS On west side of paved area, approximarely 3/4 down from entrance

MONITORING WELL CONSTRUCTION
SCREEN 4 IN DIA. FROM 12 TO 2 FT. DEPTH
RISER 4 IN DIA. FROM 2 TO 0 FT. DEPTH
FLUSH BOX X STICK-UP
GRAVEL FILTER #2 sand
BENTONITE SEAL pellets
SURFACE SEAL cement
LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO.	FROM	TO	BLOW / 6"
0.0	0.5	Asphalt				
0.50	10.0	Dry to wet, black, metal, brick,				
		silt, sand and gravel, cinders,	S1	4.0	6.0	4-8-9-30
		wood RR ties (Fill)	S2	6.0	7.0	3-8-50/0"
10.0	12.0	Wet, gray, sandy, silt and clayey	S3	11	12	18-18
		silt, trace coarse sand, trace				
		very fine gravel.				
		EOB at 12.0 feet				

WELL EQUIPMENT INSTALLED



SAMPLE IDENTIFICATION
X SPLIT SPOON
THIN WALL TUBE
UNDISTURBED PISTON
OPEN END ROD
WASH SAMPLE
GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
5-9	LOOSE	3-4	SOFT
10-29	MED. DENSE	5-8	MSTIFF
30-48	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED

TRACE	1-10%
LITTLE	10-20%
SOME	20-35%
AND	35-50%

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 647-9169 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME High Bridge Yard
LOCATION Bronx, NY

BORING MW-7
SHEET NO 1 OF 1

DRILLING EQUIPMENT Failing/Speedstar RIG NO 214
DRILLING METHOD Hollow Stem Auger
DRILLER R. Head HELPER D. Mayes INSPECTOR R. Trombetta
PERMIT NUMBER WATER TABLE

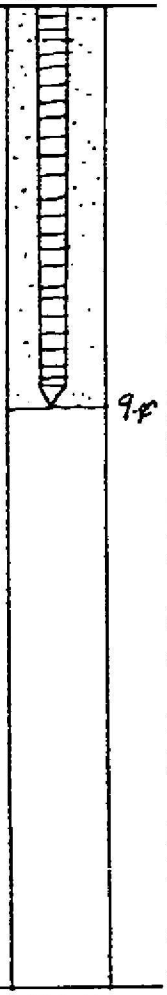
PROJECT NO. 1346
DATE STARTED 7/31/90
DATE COMPLETED 7/31/90

COMMENTS Off pavement - in southend of site

MONITORING WELL CONSTRUCTION
SCREEN 4 IN. DIA. FROM 9 TO 0 FT DEPTH
RISER IN. DIA. FROM TO FT DEPTH
FLUSH BOX STICK-UP
GRAVEL FILTER #2
BENTONITE SEAL
SURFACE SEAL cement
LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO	FROM	TO	BLOW / 6"
0.0	10.0	Dry to wet, black coal cinders, ash and gravel; brick, wood, metal objects, trace boulders, some silt and sand. (Fill)	S1	4.0	6.0	10-11-12-5
			S2	6.0	8.0	12-31-31-14
		EOB at 10.0'				

WELL EQUIPMENT INSTALLED



SAMPLE IDENTIFICATION
X SPLIT SPOON
THIN WALL TUBE
UNDISTURBED PISTON
OPEN END ROD
WASH SAMPLE
GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
5-8	LOOSE	3-4	SOFT
10-29	MED. DENSE	5-8	M/STIFF
30-49	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED
TRACE 1-10%
LITTLE 10-20%
SOME 20-30%
AND 30-50%

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 647-9169 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME High Bridge Yard
LOCATION Bronx, NY

BORING MW-8
SHEET NO 1 OF 1

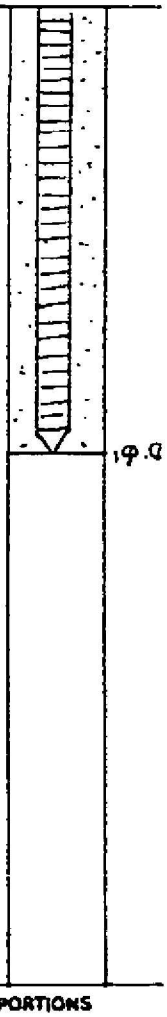
DRILLING EQUIPMENT Failing/Speedstar
RIG NO. 214
DRILLING METHOD Hollow Stem Auger
PROJECT NO 1346
DRILLER R. Head HELPER D. Mayes INSPECTOR R. Trombetta
DATE STARTED 7/31/90
PERMIT NUMBER
WATER TABLE
DATE COMPLETED 7/31/90

COMMENTS Southend Between Brick transfer station and pavement

MONITORING WELL CONSTRUCTION
SCREEN 4 IN. DIA. FROM 10 TO 0 FT. DEPTH
GRAVEL FILTER #2
RISER IN. DIA. FROM TO FT. DEPTH
BENTONITE SEAL
FLUSH BOX X STICK-UP
SURFACE SEAL cement
LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO.	SAMPLES FROM	SAMPLES TO	SAMPLES BLOW / 6"
0.0	8.0	Dry to wet, black cinders, ash and				
		gravel; wood, brick, boulders, sand	S1	3	4	Grab
		silt, trace clay. (Fill)	S2	5	6	Grab
8.0	10.0	Wet, gray, sand silt, and clayey	S3	8	9	Grab
		silt, trace very-fine gravel,				
		trace coarse sand.				
		EOB at 10'				

WELL EQUIPMENT INSTALLED



SAMPLE IDENTIFICATION
_____ SPLIT SPOON
_____ THIN WALL TUBE
_____ UNDISTURBED PISTON
_____ OPEN END ROD
_____ WASH SAMPLE
X GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
5-9	LOOSE	3-4	SOFT
10-29	MED. DENSE	5-8	MSTIFF
30-49	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED

TRACE	1-10%
LITTLE	10-20%
SOME	20-30%
AND	30-50%

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 647-9169 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME High Bridge Yard
LOCATION Bronx, NY
RIG NO. 214

BORING MW-9
SHEET NO. 1 OF 1

DRILLING EQUIPMENT Failing/Speedstar
DRILLING METHOD Hollow Stem Auger
DRILLER R. Head HELPER D. Mayes INSPECTOR
PERMIT NUMBER WATER TABLE ≃ 7.5'

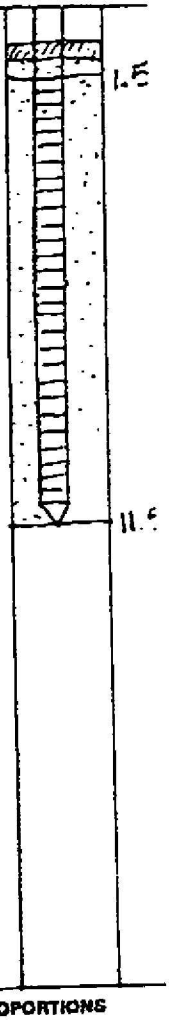
PROJECT NO 1346
DATE STARTED 7/31/90
DATE COMPLETED 7/31/90

COMMENTS on east side of lot, between voltage poles #8 & #9, adjacent to RR tracks

MONITORING WELL CONSTRUCTION
SCREEN 4 IN DIA FROM 11.5 TO 1.5 FT. DEPTH
RISER 4 IN DIA FROM 1.5 TO 0 FT. DEPTH
FLUSH BOX X STICK-UP
SURFACE SEAL cement
GRAVEL FILTER #2 sand
BENTONITE SEAL pellets
LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO.	FROM	TO	BLOW / 6"
0.0	0.5	Aspnalt				
0.5	8.0	Dry to wet, brown sand silt and gravel, some processed stone, wood fragments, boulders (Fill)	S1	4	5	Grab
			S2	7	8	Grab
8.0	11.5	Wet, grey sandy silt and clayey silt, trace very fine gravel, trace very coarse sand.	S3	10	11	Grab
		EOB at 11.5'				

WELL EQUIPMENT INSTALLED



SAMPLE IDENTIFICATION
_____ SPLIT SPOON
_____ THIN WALL TUBE
_____ UNDISTURBED PISTON
_____ OPEN END ROD
_____ WASH SAMPLE
X GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
5-8	LOOSE	3-4	SOFT
10-29	MED. DENSE	5-8	MSTIFF
30-49	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED

TRACE	1-10%
LITTLE	10-20%
SOME	20-30%
AND	30-50%

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 647-9169 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME High Bridge Yard
LOCATION Bronx, NY

BORING MW-10
SHEET NO. 1 OF 1

DRILLING EQUIPMENT Failing/Speedstar RIG NO. 214
DRILLING METHOD Hollow Stem Auger
DRILLER R. Head HELPER D. Mayes INSPECTOR R. Trombetta
PERMIT NUMBER WATER TABLE ~ 7'

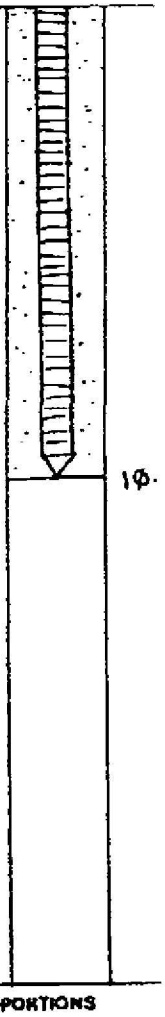
PROJECT NO. 1346
DATE STARTED 8/1/90
DATE COMPLETED 8/1/90

COMMENTS South end of Yard, approx. 200' west of abandoned switching building

MONITORING WELL CONSTRUCTION
SCREEN 4 IN. DIA FROM 10 TO 0 FT. DEPTH GRAVEL FILTER #2 sand
RISER IN. DIA. FROM TO FT. DEPTH BENTONITE SEAL
FLUSH BOX X STICK-UP SURFACE SEAL cement LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO.	FROM	TO	BLOW / 6"
0.0	7.0	Dry to wet, silt, sand and gravel, metal objects, cement, boulders, wood, black cinders (Fill)	S1	0	1	Grab
			S2	3	4	Grab
			S3	5	6	Grab
7.0	10.5	Wet, dark brown, micaeous, medium to very coarse sand, medium dense, some gravel, some boulders, trace silt.				
		EOB at 10.5 feet				

WELL EQUIPMENT INSTALLED



SAMPLE IDENTIFICATION
_____ SPLIT SPOON
_____ THIN WALL TUBE
_____ UNDISTURBED PISTON
_____ OPEN END ROD
_____ WASH SAMPLE
X GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
4-8	LOOSE	3-4	SOFT
10-28	MED. DENSE	5-8	MSTIFF
30-49	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED

TRACE	1-10%
LITTLE	10-20%
SOME	20-35%
AND	35-50%

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 647-9169 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME High Bridge Yard
LOCATION Bronx, NY

BORING MW-11
SHEET NO 1 OF 1

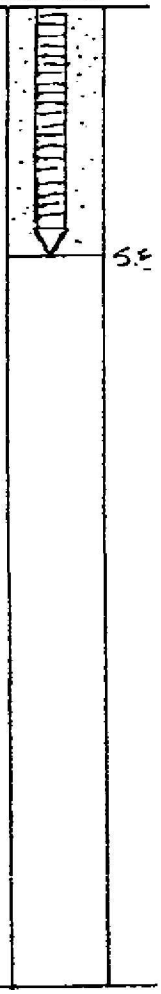
DRILLING EQUIPMENT Failing/Speedstar
RIG NO. 214
DRILLING METHOD Hollow Stem Auger
PROJECT NO. 1346
DRILLER R. Head HELPER D. Mayes INSPECTOR R. Trombetta
DATE STARTED 8/1/90
PERMIT NUMBER
WATER TABLE 5'
DATE COMPLETED 8/1/90

COMMENTS South end of Yard, midway between RR tracks and paved area.

MONITORING WELL CONSTRUCTION
SCREEN 4 IN. DIA. FROM 5.5 TO 0 FT. DEPTH
GRAVEL FILTER #2 sand
RISER IN. DIA. FROM TO FT. DEPTH
BENTONITE SEAL
FLUSH BOX X STICK-UP
SURFACE SEAL cement
LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO.	FROM	TO	BLOW / 6"
0.0	0.5	Asphalt				
				2	3	Grab
0.5	4.0	Dry, black stained silt, sand,		4	5	Grab
		gravel, cinders, trace boulders				
		(Fill)				
4.0	5.5	Dry to moist, dark brown silty				
		sand and gravel, trace boulders,				
		trace wood (Fill)				
		Refusal at 5.5 feet				

WELL EQUIPMENT INSTALLED



SAMPLE IDENTIFICATION
_____ SPLIT SPOON
_____ THIN WALL TUBE
_____ UNDISTURBED PISTON
_____ OPEN END ROD
_____ WASH SAMPLE
X GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
5-9	LOOSE	3-4	SOFT
10-29	MED. DENSE	5-8	MSTIFF
30-49	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED

TRACE	1-10%
LITTLE	10-20%
SOME	20-30%
AND	30-50%

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 647-9169 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME High Bridge Yard
LOCATION Bronx, NY

BORING MW-12
SHEET NO. 1 OF 1

DRILLING EQUIPMENT Failing/Speedstar RIG NO. 214
DRILLING METHOD Hollow Stem Auger
DRILLER R. Head HELPER D. Mayes INSPECTOR R. Trombetta
PERMIT NUMBER WATER TABLE

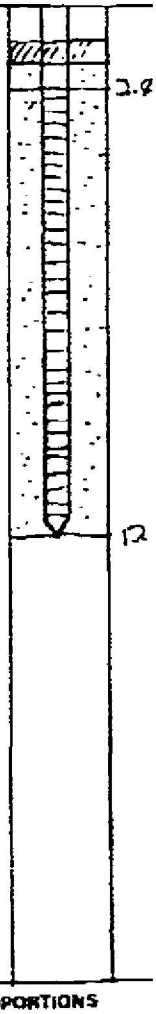
PROJECT NO. 1346
DATE STARTED 8/1/90
DATE COMPLETED 8/1/90

COMMENTS Middle of paved area, S. West of Gray metal nut "CBH-HB"

MONITORING WELL CONSTRUCTION
SCREEN 4 IN. DIA. FROM 12 TO 2 FT. DEPTH
RISER 4 IN. DIA. FROM 2 TO 0 FT. DEPTH
FLUSH BOX X STICK-UP
GRAVEL FILTER #2 sand
BENTONITE SEAL pellets
SURFACE SEAL cement
LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO.	FROM	TO	BLOW / 6"
0.0	0.5	Asphalt				
0.50	3.5	Dry to moist, black stained silt, sand gravel, trace cobbles & boulders (Fill)	S1	0	1	Grab
			S2	2	3	Grab
3.5	7.5	Moist to wet, silt, sand, gravel. Wood fragments, brick, concrete, boulders. (Fill)	S3	5	6	Grab
7.5	12.0	Wet, dark grey sandy silt, and clayey silt, trace very fine gravel, trace very coarse sand.	S4	8	9	Grab
		EOB at 12.0 feet.				

WELL EQUIPMENT INSTALLED



SAMPLE IDENTIFICATION
_____ SPLIT SPOON
_____ THIN WALL TUBE
_____ UNDISTURBED PISTON
_____ OPEN END ROD
_____ WASH SAMPLE
X GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
5-8	LOOSE	3-4	SOFT
10-29	MED. DENSE	5-8	MSTIFF
30-49	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED

TRACE	1-10%
LITTLE	10-20%
SOME	20-30%
AND	30-50%

TES TECHNICAL ENVIRONMENTAL SPECIALISTS CORPORATION
(203) 647-9169 210 MAIN ST., MANCHESTER, CT 06040

CLIENT Metro-North
PROJECT NAME High Bridge Yard
LOCATION Bronx, NY

BORING B-1
SHEET NO. 1 OF 1

DRILLING EQUIPMENT Failing/Speedstar
RIG NO 214
DRILLING METHOD Hollow Stem Auger
PROJECT NO. 1346
DRILLER R. Head HELPER D. Mayes INSPECTOR R. Tromperia
DATE STARTED 8/1/90
PERMIT NUMBER WATER TABLE
DATE COMPLETED 8/1/90

COMMENTS South end of site, near concrete slab, adjacent to river

MONITORING WELL CONSTRUCTION
SCREEN IN. DIA. FROM TO FT. DEPTH
RISER IN. DIA. FROM TO FT. DEPTH
FLUSH BOX X STICK-UP
GRAVEL FILTER
BENTONITE SEAL
SURFACE SEAL cement
LOCKING CAP X

DEPTH FROM	DEPTH TO	FIELD CLASSIFICATION AND REMARKS	SAMPLES NO.	SAMPLES FROM	SAMPLES TO	SAMPLES BLOW / 6"	WELL EQUIPMENT INSTALLED
0.0	2.5	Dry silt, sand, gravel, boulders, metal, wood brick (Fill)	S1	1	2	Grab	
2.5	3.0	Dry, brown silt sand, some gravel, trace brick. (Fill)	S2	2	3	Grab	
		Refusal at 3.0 feet					
		NOTE: Made 3 additional attempts to penetrate deeper.					

SAMPLE IDENTIFICATION
_____ SPLIT SPOON
_____ THIN WALL TUBE
_____ UNDISTURBED PISTON
_____ OPEN END ROD
_____ WASH SAMPLE
X GRAB SAMPLE

PENETRATION RESISTANCE
140 lb. wt. FALLING 30" ON 2" O.D. SAMPLER

COHESIONLESS DENSITY		COHESIVE CONSISTENCY	
0-4	VERY LOOSE	0-2	VERY SOFT
5-9	LOOSE	3-4	SOFT
10-29	MED. DENSE	5-8	MSTIFF
30-49	DENSE	9-15	STIFF
50+	VERY DENSE	16+	VERY STIFF

PROPORTIONS USED

TRACE	1-10%
LITTLE	10-20%
SOME	20-30%
AND	30-50%

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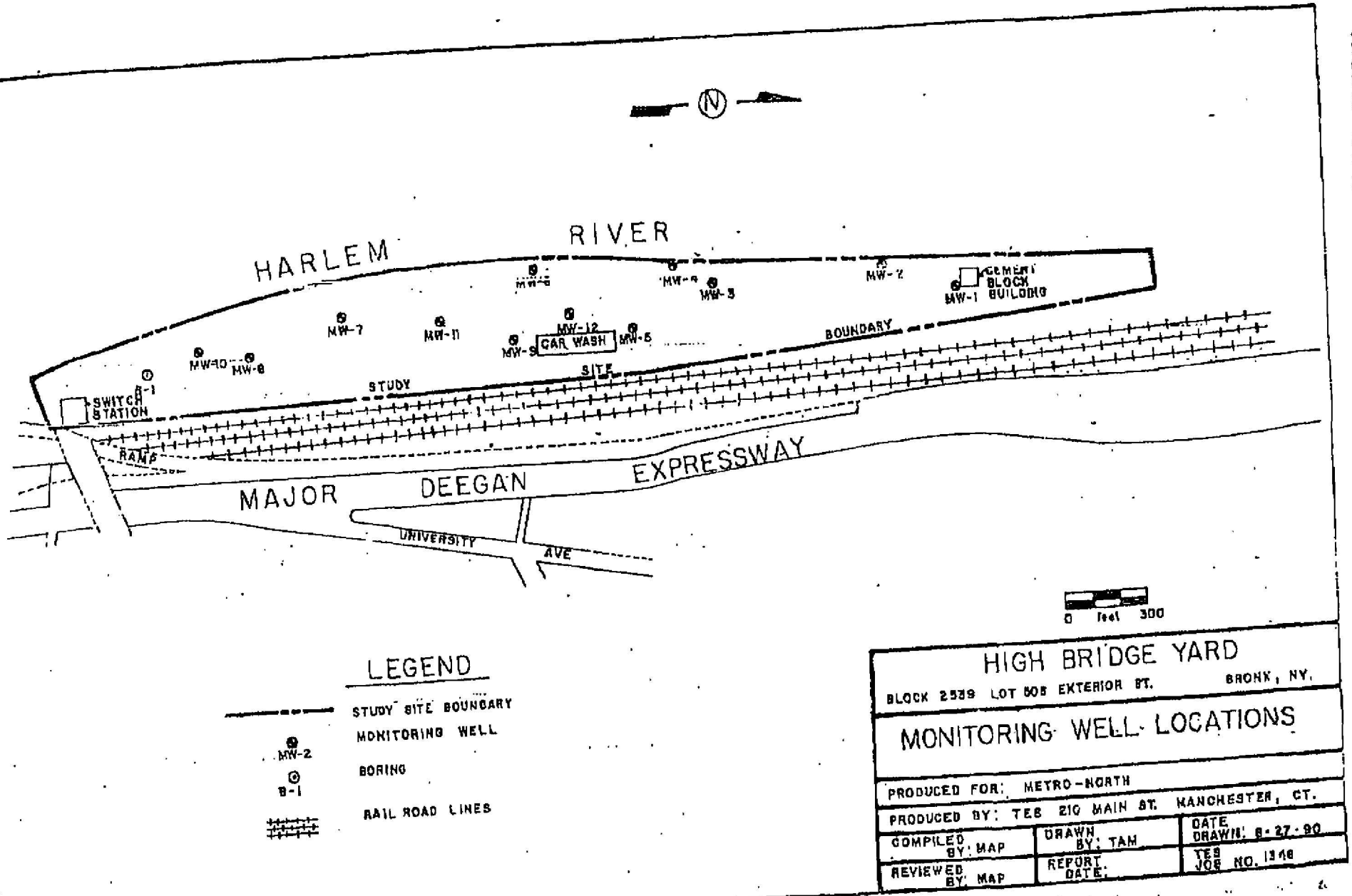

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AKRF, INC.
Environmental Consultants

FIELD BOREHOLE LOG

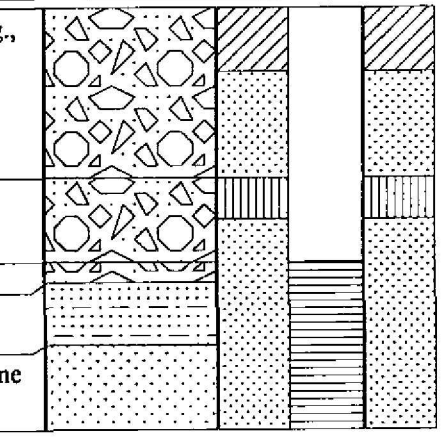
BOREHOLE NUMBER
HB/MW-1

PROJECT NUMBER: **30068-2145**
PROJECT NAME: **EAST SIDE ACCESS**
LOACATION: **HIGHBRIDGE YARD, BRONX**
DRILLING CO: **WARREN GEORGE**
DRILLING METHOD: **HAND AUGER/HOLLOW STEM AUGER**
FIELD PARTY: **GREG & GREG**
FIELD INSPECTOR:
DATE BEGUN: **4/22/99** DATE COMPLETED: **4/22/99**

FIELD BOOK NO: **NA**
TOTAL DEPTH: **10 (ft)**
GROUND SURFACE ELEVATION: **0**

STATIC WATER LEVEL (BLS)		
Depth (ft)	10	
Time	N/A	
Date	N/A	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0 – 1.0			4.0	100% Recovery	Fill: m-c black sand, some coal frag., moist.		
1.0 – 2.0			0.5	100% Recovery			
2.0 – 3.0							
3.0 – 4.0							
4.0 – 5.0		20 16 8 5	7.0	58% Recovery	Fill: gray/brown some orange, m-c sand, some cobbles, moist.		
5.0 – 6.0							
6.0 – 7.0	Sample HB/MW-1 (6-8')	2 2 4 7	453	83% Recovery	Fill: orange m-c sand, moist.		
7.0 – 8.0					Sand and Silt: gray, strong odor, staining.		
8.0 – 9.0		20 6 17 15	?	50% Recovery	Sand: m-c grained, some wood, some cobbles, WET.		
9.0 – 10.0							



AKRF, INC.	FIELD BOREHOLE LOG	BOREHOLE NUMBER
Environmental Consultants		HB-2

PROJECT NUMBER:	30068-2145	FIELD BOOK NO:	NA
PROJECT NAME:	EAST SIDE ACCESS	TOTAL DEPTH:	3.5 (ft)
LOACATION:	HIGHBRIDGE YARD, BRONX	GROUND SURFACE ELEVATION:	0
DRILLING CO:	WARREN GEORGE		
DRILLING METHOD:	HAND AUGER/HOLLOW STEM AUGER		
FIELD PARTY:	GREG & GREG		
FIELD INSPECTOR:			
DATE BEGUN:	4/21/99	DATE COMPLETED:	4/21/99

STATIC WATER LEVEL (BLS)		
Depth (ft)	3.5	
Time	N/A	
Date	N/A	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0							
1.0	No Sample			100% Recovery	Fill: moist, coarse black sand.		
2.0				100% Recovery			
3.0					Concrete.		

AKRF, INC.	FIELD BOREHOLE LOG	BOREHOLE NUMBER
Environmental Consultants		HB-2A

PROJECT NUMBER: 30068-2145
PROJECT NAME: EAST SIDE ACCESS
LOACATION: HIGHBRIDGE YARD, BRONX
DRILLING CO: WARREN GEORGE
DRILLING METHOD: HAND AUGER/HOLLOW STEM AUGER
FIELD PARTY: GREG & GREG
FIELD INSPECTOR:
DATE BEGUN: 4/21/99 DATE COMPLETED: 4/21/99

FIELD BOOK NO: NA
TOTAL DEPTH: 10 (ft)
GROUND SURFACE ELEVATION: 0

STATIC WATER LEVEL (BLS)		
Depth (ft)	10	
Time	N/A	
Date	N/A	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0			0.6	100% Recovery	Fill: moist, coarse black sand with some coal fragments.		
1.0							
2.0	Sample HB-2A (2-4')		0.9	100% Recovery			
3.0							
4.0		2 2 2 2	0.9	17% Recovery			
5.0							
6.0		43 10 7 9	0.4	29% Recovery	Sand and Silt: orange/tan, schist layer at 8', WET at 9'.		
7.0							
8.0		3 27 9 22	0.2	50% Recovery			
9.0							
10.0							

AKRF, INC.	FIELD BOREHOLE LOG	BOREHOLE NUMBER
Environmental Consultants		HB-4

PROJECT NUMBER: **30068-2145**
PROJECT NAME: **EAST SIDE ACCESS**
LOACATION: **HIGHBRIDGE YARD, BRONX**
DRILLING CO: **WARREN GEORGE**
DRILLING METHOD: **HAND AUGER/HOLLOW STEM AUGER**
FIELD PARTY: **GREG & GREG**
FIELD INSPECTOR:
DATE BEGUN: **4/22/99** DATE COMPLETED: **4/22/99**

FIELD BOOK NO: **NA**
TOTAL DEPTH: **8 (ft)**
GROUND SURFACE ELEVATION: **0**

STATIC WATER LEVEL (BLS)		
Depth (ft)	8	
Time	N/A	
Date	N/A	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0	Sample HB-4 Surface		0	100% Recovery	Fill: black/dark brown med. to coarse sand, organic (wood) at 4', brick fragments from 4.5' to 5.5'.		
1.0							
2.0			0	100% Recovery			
3.0							
4.0	Sample HB-4 (4-6')	2 6 9 2 6	47	83% Recovery			
5.0							
6.0		7 7 7 100	15	25% Recovery	Fill: WET, black, coarse, some brick fragments.		
7.0							
8.0							

AKRF, INC.	FIELD BOREHOLE LOG	BOREHOLE NUMBER
Environmental Consultants		HB-5

PROJECT NUMBER: 30068-2145
PROJECT NAME: EAST SIDE ACCESS
LOACATION: HIGHBRIDGE YARD, BRONX
DRILLING CO: WARREN GEORGE
DRILLING METHOD: HAND AUGER/HOLLOW STEM AUGER
FIELD PARTY: GREG & GREG
FIELD INSPECTOR:
DATE BEGUN: 4/22/99 DATE COMPLETED: 4/22/99

FIELD BOOK NO: NA
TOTAL DEPTH: 8 (ft)
GROUND SURFACE ELEVATION: 0

STATIC WATER LEVEL (BLS)		
Depth (ft)	8	
Time	N/A	
Date	N/A	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0			41	100% Recovery	Fill: sand, brown, med. to coarse grained, some wood, moist.		
1.0							
2.0			221	100% Recovery			
3.0							
4.0	Sample HB-5 (4-6')	3 2 2 1	588	75% Recovery	Fill: black, coarse, some ash/cinders, moist.		
5.0							
6.0		2 2 2 30	881	75% Recovery	Clay: gray, WET.		
7.0							
8.0							

AKRF, INC.	FIELD BOREHOLE LOG	BOREHOLE NUMBER
Environmental Consultants		HB-6

PROJECT NUMBER: 30068-2145
PROJECT NAME: EAST SIDE ACCESS
LOACATION: HIGHBRIDGE YARD, BRONX
DRILLING CO: WARREN GEORGE
DRILLING METHOD: HAND AUGER/HOLLOW STEM AUGER
FIELD PARTY: GREG & GREG
FIELD INSPECTOR:
DATE BEGUN: 4/23/99 DATE COMPLETED: 4/23/99

FIELD BOOK NO: NA
TOTAL DEPTH: 8 (ft)
GROUND SURFACE ELEVATION: 0

STATIC WATER LEVEL (BLS)		
Depth (ft)	8	
Time	N/A	
Date	N/A	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0				100% Recovery	Asphalt		
1.0					Crushed Stone		
2.0				100% Recovery	Fill: moist, dark brown/black med. grained sand, some silt, little coal, grades to lighter brown.		
3.0							
4.0	Sample HB-6 (4-6')	3 5 5 5		83% Recovery			
5.0							
6.0		4 8 9 9		67% Recovery			
7.0					Fill: WET - thin layer orange m-c sand and clay.		
8.0					Rock		

AKRF, INC.	FIELD BOREHOLE LOG	BOREHOLE NUMBER
Environmental Consultants		HB/MW-7

PROJECT NUMBER: 30068-2145
PROJECT NAME: EAST SIDE ACCESS
LOACATION: HIGHBRIDGE YARD, BRONX
DRILLING CO: WARREN GEORGE
DRILLING METHOD: HAND AUGER/HOLLOW STEM AUGER
FIELD PARTY: GREG & GREG
FIELD INSPECTOR:
DATE BEGUN: 4/22/99 DATE COMPLETED: 4/22/99

FIELD BOOK NO: NA
TOTAL DEPTH: 8 (ft)
GROUND SURFACE ELEVATION: 0

STATIC WATER LEVEL (BLS)		
Depth (ft)	8	
Time	N/A	
Date	N/A	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0			1.0	100% Recovery	Fill: m-c black/dark brown sand, some coal frag., moist.		
1.0							
2.0			0.0	100% Recovery			
3.0							
4.0	Sample HB/MW-7 (4-6')	5 10 7 7	46	33% Recovery	Fill: black/dark brown, some clay, quartz cobble at 5', some brick frag. at 6'.		
5.0							
6.0		4 4 4 8	25	25% Recovery			
7.0					Fill: black/dark brown, some clay, WET.		
8.0							

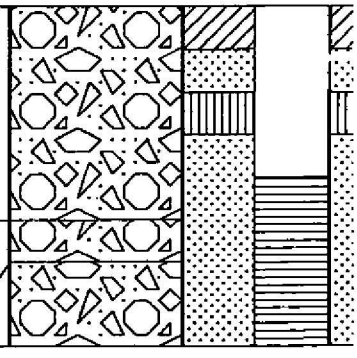
AKRF, INC.	FIELD BOREHOLE LOG	BOREHOLE NUMBER
Environmental Consultants		HB/MW-8

PROJECT NUMBER: 30068-2145
PROJECT NAME: EAST SIDE ACCESS
LOACATION: HIGHBRIDGE YARD, BRONX
DRILLING CO: WARREN GEORGE
DRILLING METHOD: HAND AUGER/HOLLOW STEM AUGER
FIELD PARTY: GREG & GREG
FIELD INSPECTOR:
DATE BEGUN: 4/23/99 DATE COMPLETED: 4/23/99

FIELD BOOK NO: NA
TOTAL DEPTH: 8 (ft)
GROUND SURFACE ELEVATION: 0

STATIC WATER LEVEL (BLS)		
Depth (ft)	8	
Time	N/A	
Date	N/A	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0			0.0	100% Recovery	Fill: m-c black/dark brown sand, some clay at 3', ash at 4', moist.		
1.0							
2.0			0.0	100% Recovery			
3.0							
4.0	Sample HB/MW-8 (4-6')	6 11 16 12	1.0	83% Recovery			
5.0					Fill: dark brown, some clay, some ballast, odor, moist.		
6.0		8 22 21 7	0.0	50% Recovery			
7.0					Fill: m-c black sand, some ash, WET at 7'.		
8.0							



AKRF, INC.	FIELD BOREHOLE LOG	BOREHOLE NUMBER
Environmental Consultants		HB/MW-9

PROJECT NUMBER: 30068-2145
PROJECT NAME: EAST SIDE ACCESS
LOACATION: HIGHBRIDGE YARD, BRONX
DRILLING CO: WARREN GEORGE
DRILLING METHOD: HAND AUGER/HOLLOW STEM AUGER
FIELD PARTY: GREG & GREG
FIELD INSPECTOR:
DATE BEGUN: 4/23/99 DATE COMPLETED: 4/23/99

FIELD BOOK NO: NA
TOTAL DEPTH: 8 (ft)
GROUND SURFACE ELEVATION: 0

STATIC WATER LEVEL (BLS)		
Depth (ft)	8	
Time	N/A	
Date	N/A	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0				100% Recovery	Fill: m-c black sand, some cobbles, moist.		
1.0							
2.0				100% Recovery			
3.0					Sand and Silt: gray/tan, moist.		
4.0	Sample HB/MW-9 (4-6')	5 11 11 17		75% Recovery	Fill: m-c black sand, some coal frag., some cobbles, schist frag. at 6',moist.		
5.0							
6.0		9 15 3 3		50% Recovery	Clay: gray/green, WET.		
7.0							
8.0							

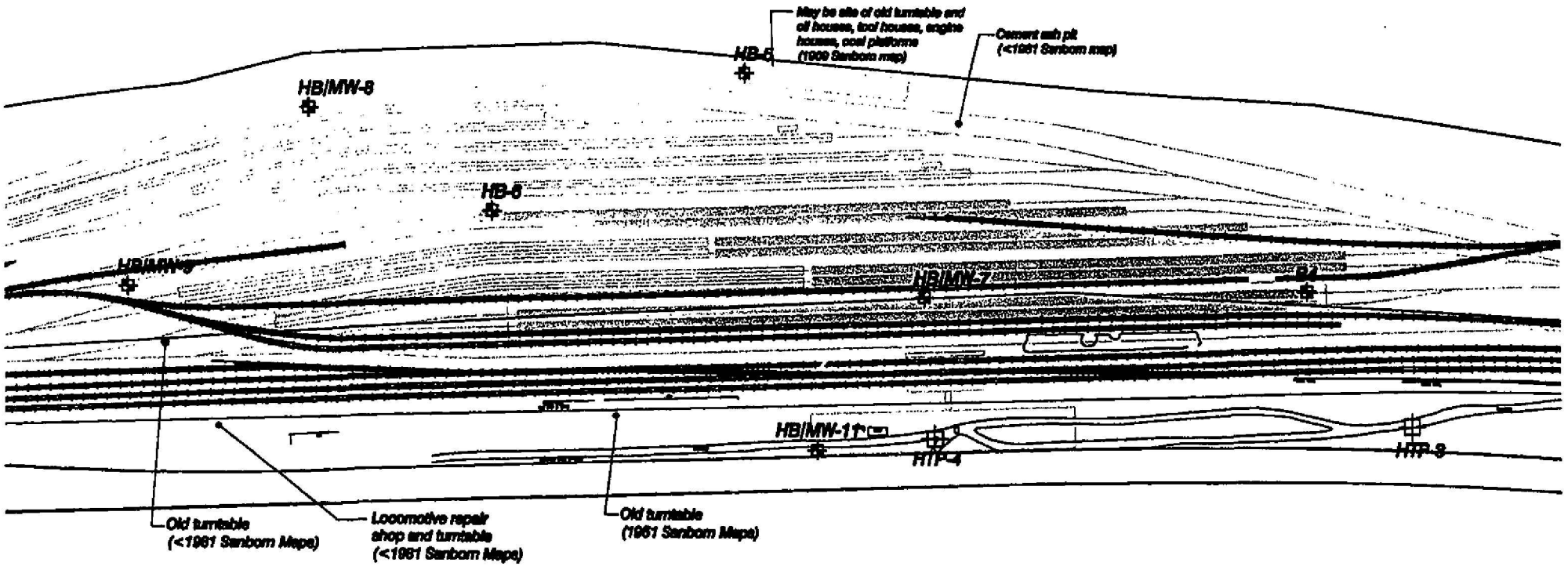
AKRF, INC.	FIELD BOREHOLE LOG	BOREHOLE NUMBER
Environmental Consultants		HB-10

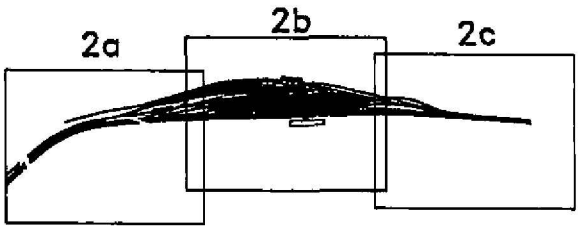
ROJECT NUMBER: 30068-2145
ROJECT NAME: EAST SIDE ACCESS
.OACATION: HIGHBRIDGE YARD, BRONX
)RILLING CO: WARREN GEORGE
)RILLING METHOD: HAND AUGER/HOLLOW STEM AUGER
IELD PARTY: GREG & GREG
IELD INSPECTOR:
)ATE BEGUN: 4/26/99 DATE COMPLETED: 4/26/99

FIELD BOOK NO: NA
TOTAL DEPTH: 8 (ft)
GROUND SURFACE ELEVATION: 0

STATIC WATER LEVEL (BLS)		
Depth (ft)	13	
Time	N/A	
Date	N/A	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
.0			1.3	100% Recovery	Sand and Silt: some gravel, moist.		
.0			1.5	100% Recovery			
.0		19 17 18 10	1.9	33% Recovery			
.0	Sample HB-10 (6-8')	2 2 11 6	0.0	25% Recovery			
.0					Sand and Silt: WET.		
.0							





0 25 50 75 100

Scale in Feet

Legend

- Test Pit
- Boring/Monitoring Well Location
- Boring Location
- Existing Facility Plan
- Proposed Facility Plan
- Shoreline

MTA/LIRR EAST SIDE ACCESS

New York, New York

BORING LOCATIONS

AKRF, Inc.

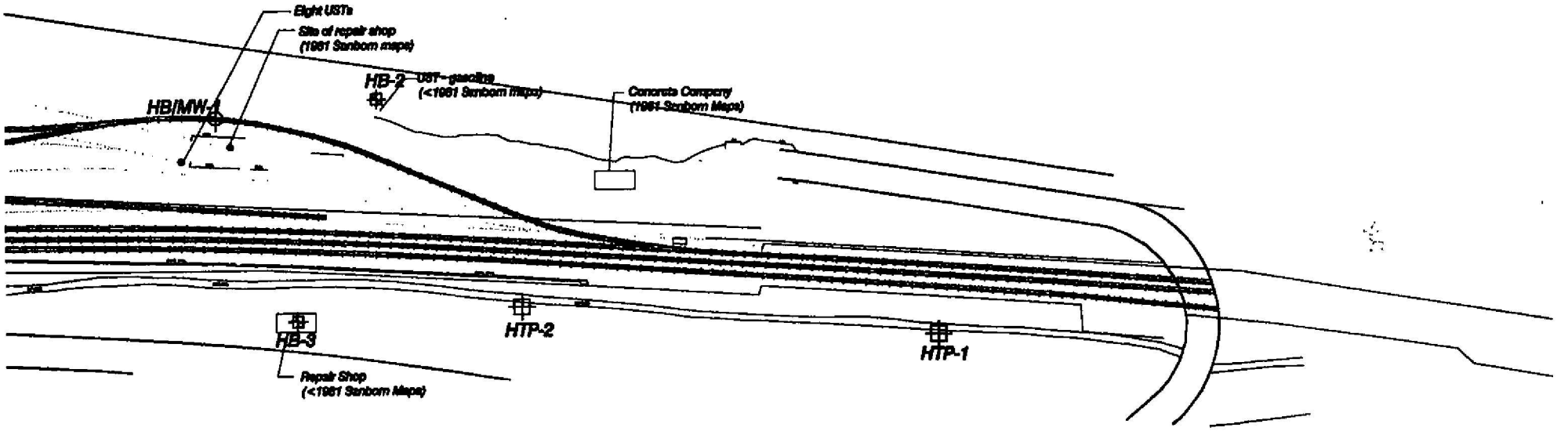
Environmental Consultants

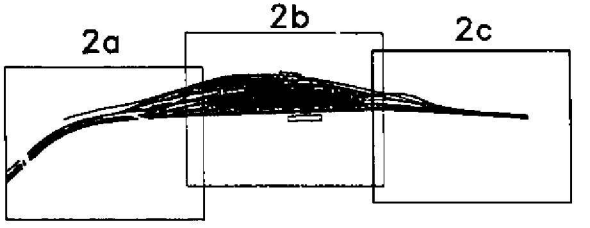
117 East 29 Street New York, N.Y. 10016

DATE 4/28/99

PROJECT No. 30068-4121

FIGURE No. 2b





0 25 50 75 100

Scale in Feet

Legend

- Test Pit
- Boring/Monitoring Well Location
- Boring Location
- Existing Facility Plan
- Proposed Facility Plan
- Shoreline

MTA/LIRR EAST SIDE ACCESS

New York, New York

BORING LOCATIONS

AKRF, Inc.

Environmental Consultants

117 East 29 Street New York, N.Y. 10016

DATE 4/28/99

PROJECT No. 30068-4121

FIGURE No. 2c

5.0 ROOSEVELT ISLAND ARCHAEOLOGICAL RESOURCE EVALUATION

5.0 ROOSEVELT ISLAND ARCHAEOLOGICAL RESOURCE EVALUATION

The proposed project would provide new LIRR service to Grand Central Terminal by connecting the Port Washington Branch and Main Line tracks at the rail yard complex at Sunnyside in Queens to the lower level of the existing 63rd Street Tunnel beneath the East River, and continuing in a new tunnel to Grand Central Terminal in Manhattan. As part of this project a proposed new 60 foot by 40 foot substation would be constructed on Roosevelt Island (Figure 1). This substation would be built near the shoreline on the north side of an existing subway vent, west of Main Street and north of the Queensboro Bridge. It is expected to extend from grade down to 87' above sea level (ASL), which would impact approximately 20 feet below existing grade. A 100 foot by 100 foot area around the existing subway vent has been defined as the Area of Potential Effect (APE) for this project element (Figure 2; Photographs 1-3).

5.1 Study Area Description

Roosevelt Island is an approximately one-and-a-half mile outcrop of Fordham gneiss situated amid more easily weathered dolomite. The gneiss, one of New York City's oldest bedrock formations, resisted erosion while the surrounding dolomite was easily carved away to form the East River channels (Schuberth 1968). Except where it is exposed, the gneiss is covered by a shallow cover of glacial till of varying thickness, deposited during the last glacial advance, c.12,000 years ago.

A 1784 description of the 107-acre island reports that it "abounds with running springs of most excellent water," eight acres of salt meadow, and is "remarkable for the number of fish and fowl that is caught there in the different seasons" (NYHS 1921). Unfortunately, the exact locations of these resources are unclear from early maps (Viele 1874; Manatus 1639), and little evidence of the study area's predevelopment state is visible at present.

Much of the island has been reshaped and filled during the last two centuries. An examination of late-nineteenth century topographic maps show even terrain, sloping steeply down along the East River shoreline (Viele 1874), with elevations below 20 feet above mean sea level (USGS 1897). A 1978 survey of Roosevelt Island records areas exceeding 30 feet above sea level. With only a 2.265-foot elevation difference between datum points, this indicates an intensive filling program (Geismar 1985).

In addition, the construction of seawalls and filling activities during the nineteenth century, and continuing deposition of construction and demolition debris through 1985, have increased the size of the island to its present 147 acres, particularly along its northern and southern ends (Geismar 1985).

5.2 Contextual Overview

5.2.1 Prehistoric Context

In order to determine the likelihood that prehistoric cultural resources were ever present within the Roosevelt Island Project Site, and to provide a framework in which to interpret potential resources, it is necessary to establish the cultural chronology and prehistoric context of the project area.

The present knowledge and understanding of the Native Americans in the lower Hudson Valley and Greater New York area are derived from three sources: historical accounts, ethnographic reports, Native American artifact collections, and archaeological investigations. The prehistoric period in the northeastern United States is traditionally divided into the Paleo-Indian, Archaic, Transitional, Woodland and Contact stages, the Archaic and Woodland periods being further subdivided into Early, Middle, and Late substages. Settlement, subsistence and cultural systems changed through time, leading to the designation of these distinct periods. At the time of European contact, a Native American group known as the Siwanoy occupied the northern coastline of Long Island Sound from Norwalk, Connecticut to what is now the south Bronx. However the Bronx River may have been the dividing line between the Siwanoy and another Upper Delaware Munsee speaking cultural group who once inhabited the region, the Wiechquaesqueak (Grumet 1981).

The Manhattan and their Wiechquaesgeck relatives had few furs to trade with the Dutch. As a result, there was little motivation on either side for good relations, and Nieuw Amsterdammers probably considered the local Indians an annoyance. In addition, the sometimes cruel and often dishonest practices of European traders led to Wiechquaesgeck retaliation, which took the form of several murders between 1640 and 1642, leading to various raids and counter raids between Dutch and Indians (Grumet 1981; Kammen 1975).

The Dutch practice of trading firearms to the upriver Mahican and Mohawk, while denying guns to the Indians of the lower Hudson, left them vulnerable to attack. When a large force of Mahican or Mohawk attacked the Wiechquaesgeck and Tappan in 1643, the surviving Indians fled to the Dutch in New Jersey and Corlaer's Hook on Manhattan for protection. Governor Kieft and his advisors seized this chance to revenge themselves, and sent a force to attack the refugee camp at Pavonia (now Jersey City), massacring 80 Tappan, while another force killed 40 Wiechquaesgeck on Manhattan. Eventually every lower Hudson native group joined in war against the Dutch, with disastrous results for European settlers. "Governor Kieft's War" ended when the Manhattan and Wiechquaesgeck sued for peace in 1644, after a series of surprise attacks on Indian villages ended in brutal massacres. Nevertheless, friction with the Dutch continued, as the Wiechquaesgeck participated in the "Peach War" (1655-1657) and the "Esopus War" (1659-1664) (Grumet 1981; Brodhead 1853; Bolton 1975).

These hostilities, coupled with the introduction of European diseases against which Native American populations had no natural protection, decimated Indian populations in the New York City area, and forced many groups to merge in order to maintain viable communities. The last of the Manhattans apparently left the island sometime after 1628, joining the mainland Wiechquaesgeck, where they were noted in 1680 as the *former* inhabitants of Manhattan Island (Grumet 1981).

Most researchers have identified Roosevelt Island as the native Minnahanonck, meaning something like "island place." However, more recent research with Dutch colonial deeds suggests that Minnahanonck actually refers to Randalls Island (Grumet 1981), and therefore records referring to Dutch governor Wouter van Twiller's purchase of Minnahanonck from the Indians (Brodhead 1853; NYHS 1921) have nothing to do with Roosevelt Island.

This being the case, there appears to be no mention of native sites on, occupancy of, or assertions of hegemony over Roosevelt Island during the prehistoric or contact periods. However, there is little doubt that at the time of the first European contacts with the Upper Delawarean Indians inhabiting what is now New York City, that Native Americans had at some point visited Roosevelt Island. Bolton describes the waters of the East River as offering good fishing, especially those between Queens and Roosevelt Island (Bolton1922). The presence of fresh water sources, salt marshes, fine hunting and elevated land (NYHS 1921), suggest that Roosevelt Island would have made a convenient resting or fishing place between Long Island and Manhattan (Geismar 1985).

Site File Search Results. Site file searches at the New York State Museum and the New York State Historic Preservation Office reported several prehistoric sites along the Manhattan and Queens shores of the East River in the vicinity of Roosevelt Island (Appendix). These include two shell middens along Hallets Cove (#AO81-01-0099, NYSM Site #4535) in Queens facing the present north tip of Roosevelt Island and further south the Sunswick Shell Midden Site (#A081-01-0100), on the East River shore at Rainey Park. In addition, at least two other sites, a village and burial, further south in Long Island City, about half mile from the modern shore of the East River are inventoried.

Also reported were "traces of occupation" along the manhattan Shore in the area of 59th Street at NYSM Site #4061 (the project area faces 64th Street). Although these sites are separated from Roosevelt island by the East River, there is no reason to presume that this cut off contact among the three islands. Locational models (Ceci 1979) and sensitivity reports (Gonzalez and Daniel 1978) show that such waterways were no barriers to Indian groups, and in fact, water sources and waterways appear to be the preferred areas of activity.

5.2.2 Historic Context

The first mention of the island occurs in 1642, when it was already occupied by a settler and under Dutch West India Company ownership. As discussed in section *5.2.1,* the mistaken report that Roosevelt Island was purchased by Dutch Governor Wouter van Twiller is based on the incorrect application of the Indian name Minnahanonck to Roosevelt Island, when it actually refers to Randalls Island (Grumet 1981). The first recorded mention of Roosevelt Island, known as Varckens Eylandt (Hog's or Pig's Island) to the Dutch, occurred in 1642. Apparently the Dutch West India Company had already leased it to Jan Claesen Alteras, and it was to reimburse him 300 guilders for the improvements he had made, which included the construction of a house, goat pen, sowed garden and fences (NYHS 1921).

Before the English conquest of New Netherland in 1664, the island was leased to a Captain Francis Fyn in 1652, but was seized by the English in 1665, and granted to Captain John Manning, Sheriff of New York, in 1668. While in charge of Fort James in New York City, Manning surrendered it to the Dutch in 1673, and when the colony was returned to the English in 1674, Manning was court marshaled and publicly disgraced. He retired to his island, in either an official or self-imposed exile. With Manning's death in ca.1688, the island passed to Mary Manningham, his stepdaughter, and her husband, Robert Blackwell, who took up residence there (NYHS 1921).

During the British occupation of New York (1782) Roosevelt Island was proposed as a summer daytime location to hold American prisoners-of-war, given the horrendous conditions on the British prison ships, but there is no evidence that this plan was ever implemented (Geismar 1985; N-YHS 1921).

James and Jacob Blackwell began attempts to sell their island beginning in 1780, advertising the "two small Dwelling Houses, a Barn, Bake and Fowl House, Cyder Mill" in addition to the apple orchard, cleared fields, stone quarries, stock and equipment. They were unsuccessful. Circa 1796, the Blackwells built a house on the island, north of the project site. Restored in 1973, "Blackwell Farmhouse" is a city landmark (Geismar 1985; Willensky and White 1988). Although the Blackwells eventually sold the island to the city in 1828, the island was known as Blackwell's Island until 1921, when the name was changed to Welfare Island (NYHS 1921).

The Blackwells owned the island until it was purchased by James Bell in 1823. However, when Bell died in 1825, ownership reverted back to Blackwell. In 1828, New York City purchased the island for a prison (Seitz and Miller 1996). It eventually became home for its correctional and charitable institutions. These included the Smallpox Hospital, built 1854-1856 and the City or Charity Hospital, under construction from 1858-1870, both designed by James Renwick Jr., as well as the Lunatic Asylum, built 1839, and expanded 1847-1848 and again in 1879, with original plans by Alexander Jackson Davis. These still or partially-standing buildings are all situated outside the study area.

No longer standing are the Penitentiary, the numerous structures of the Almshouse (except for landmarked Chapel of the Good Shepherd, 1889), the Metropolitan Hospital, built in the 1890s, and the Workhouse, cornerstone laid 1850. None of these stood within the project site.

These institutions, for the poor, criminal and diseased, were purposely isolated on the island. Access was only by ferry, and then tightly controlled. Access became simpler in the twentieth century, with the opening of the Queensboro Bridge in 1909 a pedestrian bridge from Queens in 1955, the construction of the tramway in ca.1976, and the present subway completed in 1989 (Willensky and White 1988; WPA 1939; Seitz and Miller 1996).

In 1921 the island was renamed Welfare Island. Between corruption scandals and simple obsolescence, most of the institutions left the island for newer quarters beginning in the 1930s. Two new hospitals were constructed to the north and south of the project site, the Goldwater Memorial Hospital (1939) and the Bird S. Coler Hospital (1952). Their support facilities, the Central Nurses Residence, Garage, Laundry, and Power House were built directly east of the project site in 1938 (Geismar 1989). The nurses residence was designed to house 675 nurses who worked at various institutions on the island. It was closed in 1971.

The development of residential neighborhoods on the island was first conceived in 1971, and much of the construction was completed by 1976. In conjunction with this residential development, the island's name was changed to Franklin Delano Roosevelt Island in 1973 (Willensky and White 1988; Geismar 1985).

Cartographic Review. The 17th and 18th century maps depicting Roosevelt Island portray it as undeveloped and unnamed (Manatus 1639; Carwitham 1730). In 1782 the Island appeared virtually unimproved, with small tracts designated as planting grounds. The project site appeared either as directly on the shoreline or as land under water at the time of the American Revolution (British Headquarters Map 1872).

Early 19th century maps indicate the filling along the shoreline had not yet occurred (Randel 1814; Randel 1821; Colton 1836). Throughout this period, "Blackwell's Island" appeared largely undeveloped. By 1866 a bulkhead and pier line had been established around the island, and filling had occurred out to this line (Dripps 1866). However, the shoreline directly west of the project site did not appear it its current configuration, as it was depicted as less irregular than it is today. The map probably portrayed the shoreline as extending out to an intended configuration, rather than what it actually looked like.

In 1879, the shoreline adjacent to the project site appeared as it does today, and the site remained undeveloped (Bromley and Robinson 1879; Figure 3). Northeast of the site was a quarry, but this was clearly situated outside of the project site, north of where the central nurses residences were eventually built.

By 1883, a building had been constructed east of the project site, but there was no development within the project site itself (Colton 1883). By 1885 a long rectangular building had been constructed parallel to the shoreline on top of project site (Robinson 1885; Figure 4). The unlabeled structure may have been associated with either the quarry to the east, or with an ice house and reservoir to the south. Its function is unknown, but it was gone by 1890 (Colton 1890).

According to a list compiled by the Map Division of the New York Public Library, there are no maps in its collection showing Roosevelt Island between the years 1900 and 1954. However, a 1932 USGS topographic map of the island was found elsewhere. This showed extensive development north, south, and east of the project site but none within it. By this time Main Street had been laid out directly east of the site (U.S.G.S. 1932).

According to a map of the island created in 1954, the project site was undeveloped, but a small rectangular spit of land that extended out to the pierhead and bulkhead lines just north of the project site was labeled as an "intended bridge pier" (Figure 5). The map stated:

> *Site of bridge pier(s) for proposed (1893) bridge from 64th Street - Manhattan to Long Island City, Queens: Proposed by Dr. Thomas Rainey of Astoria - was to be a cantilever bridge, 153' above the water.*
> (City of New York 1954).

While the actual bridge was never completed, the topography had been altered to accommodate the anticipated bridge pier. The cantilevered Queensboro Bridge at 59th Street was probably built in its place. The 1954 map also portrayed the historic quarry as lying east of Main Street (formerly West Road), and thus east of the project site (City of New York 1954; Figure 5).

Although a subway station was opened on Roosevelt Island in 1989, the 1976 Sanborn map shows a subway ventilation shaft directly in the middle of the project site by that time (Sanborn 1976). The vent shaft, measuring approximately 70' by 90', is also portrayed on the current Sanborn map (Sanborn 1999; Figure 2).

5.3 Existing Conditions

5.3.1 Prehistoric Archaeological Potential

In order to determine the likelihood that the current project site was at one time exploited by native peoples, it is necessary to review what is known about the site's topographic characteristics over time. While areas on Roosevelt Island would have been conducive to prehistoric utilization, the project site, which was inundated for much of the later prehistoric era, was not ideal for habitation. However, studies of the prehistoric environment indicate that the rate of post-glacial rising sea levels varied throughout the

prehistoric period, and, therefore, the site may have been drier and available for habitation when water tables were lowered (Weiss 1987; Kardas and Larrabee 1977).

Beginning some 9,000 years ago, the rising sea level directly shaped most of the topography of the New York Metropolitan region. The East River and its entire tributary system were inundated, turning the East River and Harlem River into tidal straits (Raber et al 1984 as quoted in Historical Perspectives 1987). Currently, the date of inundation is not known.

At the time of European Contact, the project site was land under water. However, because of the documented presence of prehistoric sites on both Manhattan and in Queens not far from the project site, this location cannot be completely dismissed for archaeological sensitivity. It is assumed that during some prehistoric periods, the site may have contained habitable land. Subsequent filling of the site may have actually served to preserve and protect any prehistoric deposits.

In order to determine subsurface conditions, efforts were made to locate soil borings for the project site at the Department of Design and Construction (formerly the Subsurface Exploration Bureau). They have no record of borings taken within the project site boundaries. Although it is possible that borings have been completed within the Roosevelt Island project site by private companies, none were found.

It is impossible to know exactly how deep potential prehistoric resources may lie without completing more extensive subsurface reconstruction efforts (e.g. deeper continuous soil borings extending below all fill levels). An examination of soil cores and soil boring data may provide information regarding the development of the Roosevelt Island shoreline that would further refine the assessment of prehistoric sensitivity.

Since this report is only designed to provide a preliminary identification of potentially sensitive areas (i.e., the affected environment), it is assumed that in all locations where proposed subsurface work extends beneath the historic landfill, buried prehistoric resources may potentially exist. Overall prehistoric potential is considered to be low to moderate, given that if the site was inhabited, it was subsequently inundated and filled - both of which would have caused some degree of disturbance to fragile prehistoric resources.

Furthermore, at least some portion of the project site was previously impacted by the construction of a subway vent in the 1970s. The ventilation shaft itself, which is about 70 feet by 90 feet, clearly impacted at least part of the project site. A large structure, measuring 25 feet by 90 feet, rises from the surface (Photographs A-C). Attempts were made to ascertain the precise horizontal extent of impacts caused by its construction, but borings were not available (personal communication Sue Pacucci, September 1999).

5.3.2 Historic Archaeological Potential

Until the 1860s, the project site was land under water. Filling out to the current western boundary of the site was completed in stages starting in the mid-to-late 19th century, and concluding by 1879. Because the fill dates to this late period, it is not considered to have archaeological potential. In order for the fill itself to be considered as a resource, it must be tied to specific dumping episodes or sources. Fill within the project site is neither. No specific industries occurred near or within the site which would have contributed to the fill, nor was it deposited in a single episode or over a short time span.

No evidence of early historic farm sites or structures within the project site was found. Once the shoreline was filled along the East River, the project site remained undeveloped, with the exception of a short-term unidentifiable structure which stood on it from approximately 1885 through 1890 (Robinson 1885, Figure 4; Colton 1890). The nature of the structure is unknown, and it stood for less than seven years (it was not shown on an 1883 atlas). Because the structure has little research value, the Roosevelt Island project site is not deemed sensitive for below-ground historical resources.

5.4 Impact Assessment

The construction of a substation within the Roosevelt Island project site will have no impact on historic archaeological resources. However, there is the possibility that prehistoric resources may exist within the site buried beneath late 19th century landfill. Where prior impacts were not caused by the installation of the 1970s subway vent, there is the possibility that excavations for the substation to about 87' ASL, or 20' below current grade, may impact deeply buried prehistoric resources, the depths of which are currently unknown.

5.5 Mitigation Recommendations

There is the possibility that the project site was inhabited at some time prehistorically, but the sensitivity for prehistoric resources is considered low to moderate, except where there was prior disturbance by the subway vent. Because of this disturbance, the area impacted by the vent is considered to have no archaeological sensitivity.

Mitigation recommendations include completing a series of continuous tube soil borings to establish the depth of fill throughout the project site, and to search for the distinctive presence of markers typically associated with a prehistoric presence. The absence of shell, other definitive signs of a Native American presence, and/or the presence of a habitable living surface buried beneath the fill would suggest that no prehistoric potential remains.

A total of 2 continuous tube soil borings, three inches in diameter, should be completed about 30' north of the existing subway vent. These should be placed in the approximate locations demarcated on Figure 6, and if refusals are encountered, they should be offset from these locations by no more than 10' if possible. Borings should extend beneath all

fill layers and either down to bedrock or to elevation 87' ASL (the vertical depth of impacts at about 20' below grade), whichever is reached first. This would allow archaeologists to better assess subsurface conditions.

If borings indicate potential prehistoric sensitivity, mitigation would include reevaluating potential impacts. The locations of potential prehistoric resources, if any are indicated, should be compared to proposed disturbance areas to assess if this resource type would be impacted.

If avoidance of potential resources, if any are indicated, is possible, then this is considered a viable mitigation alternative However, if the avoidance of impact to potentially National Register eligible archaeological resources is not possible, the appropriate mitigation procedures could take the form of construction monitoring, or exploratory excavations, or finally, data recovery.

5.6 Figures and Photographs

1. Project Site Location

2. Project Site Boundaries

3. *Atlas of the Entire City of New York.* Bromley and Robinson, 1879.

4. *Atlas of the City of New York.* Robinson and Pidgeon, 1885.

5. *Welfare Island Plot Plan.* City of New York, Department of Hospitals, 1954.

6. Proposed Soil Boring Locations

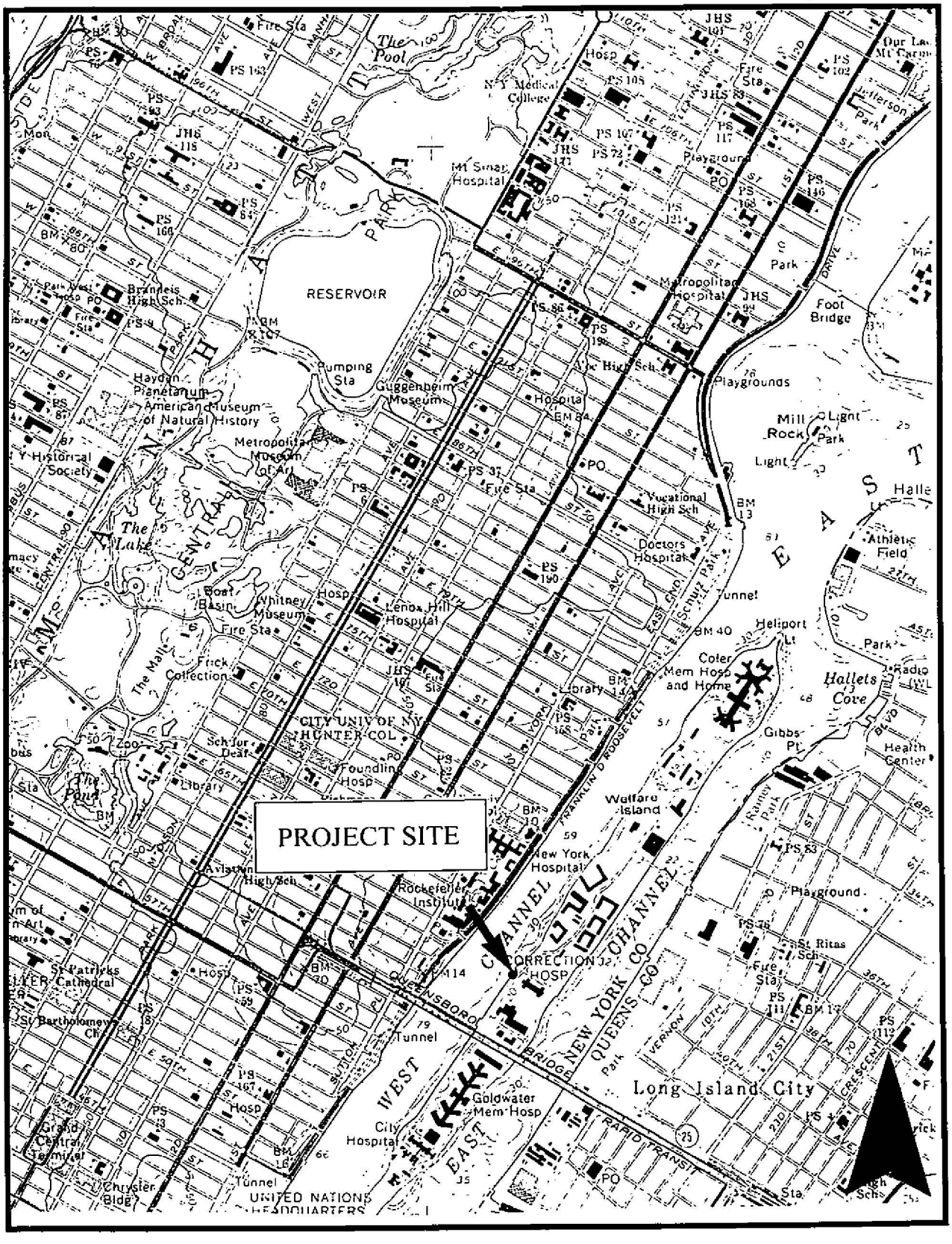


FIGURE 1
Project Site Location, *USGS Central Park, N.Y. - N.J Quadrangle,* 1979.
Scale 1: 24,000

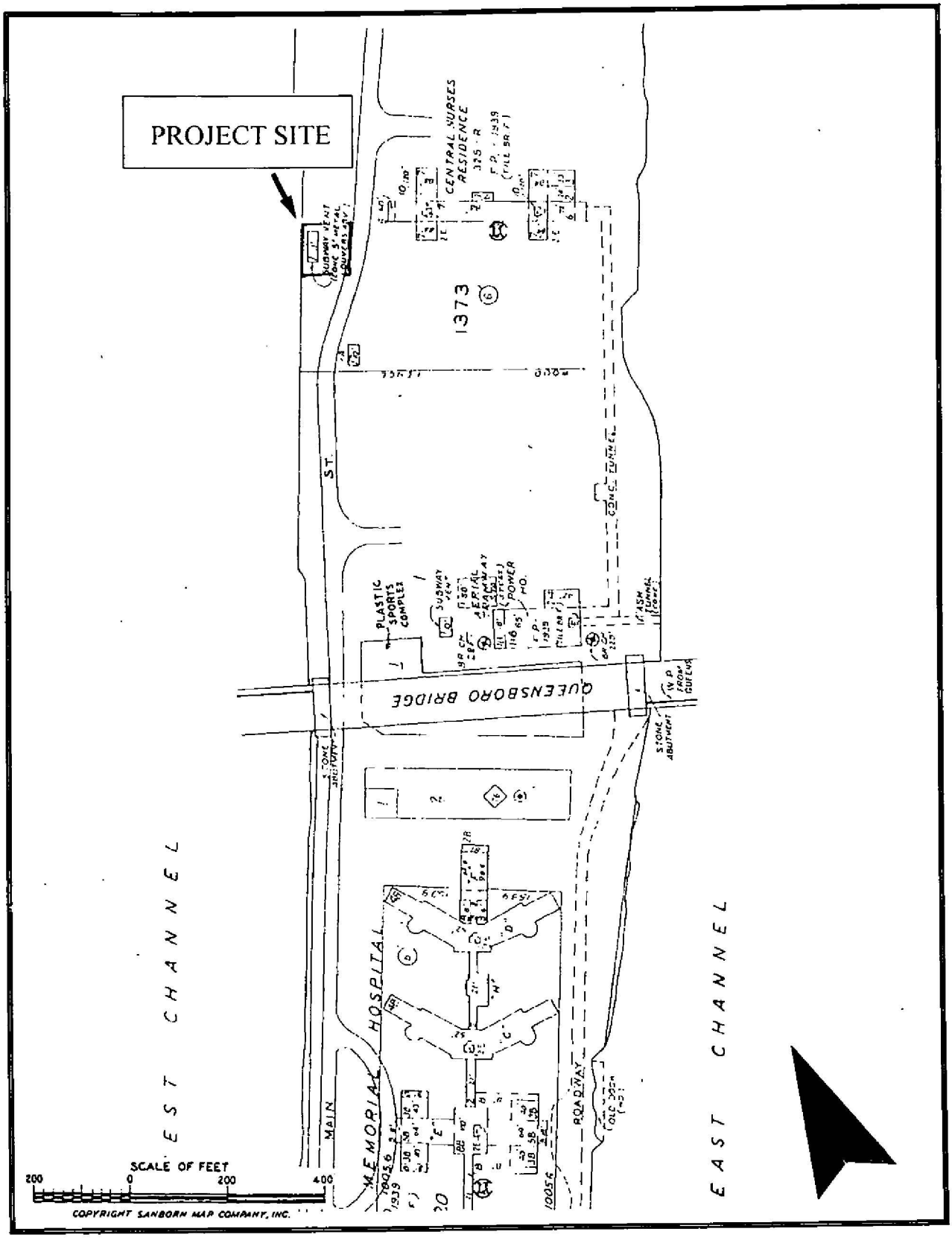


FIGURE 2
Project Site Boundaries. *Insurance Maps,* Sanborn, 1999.

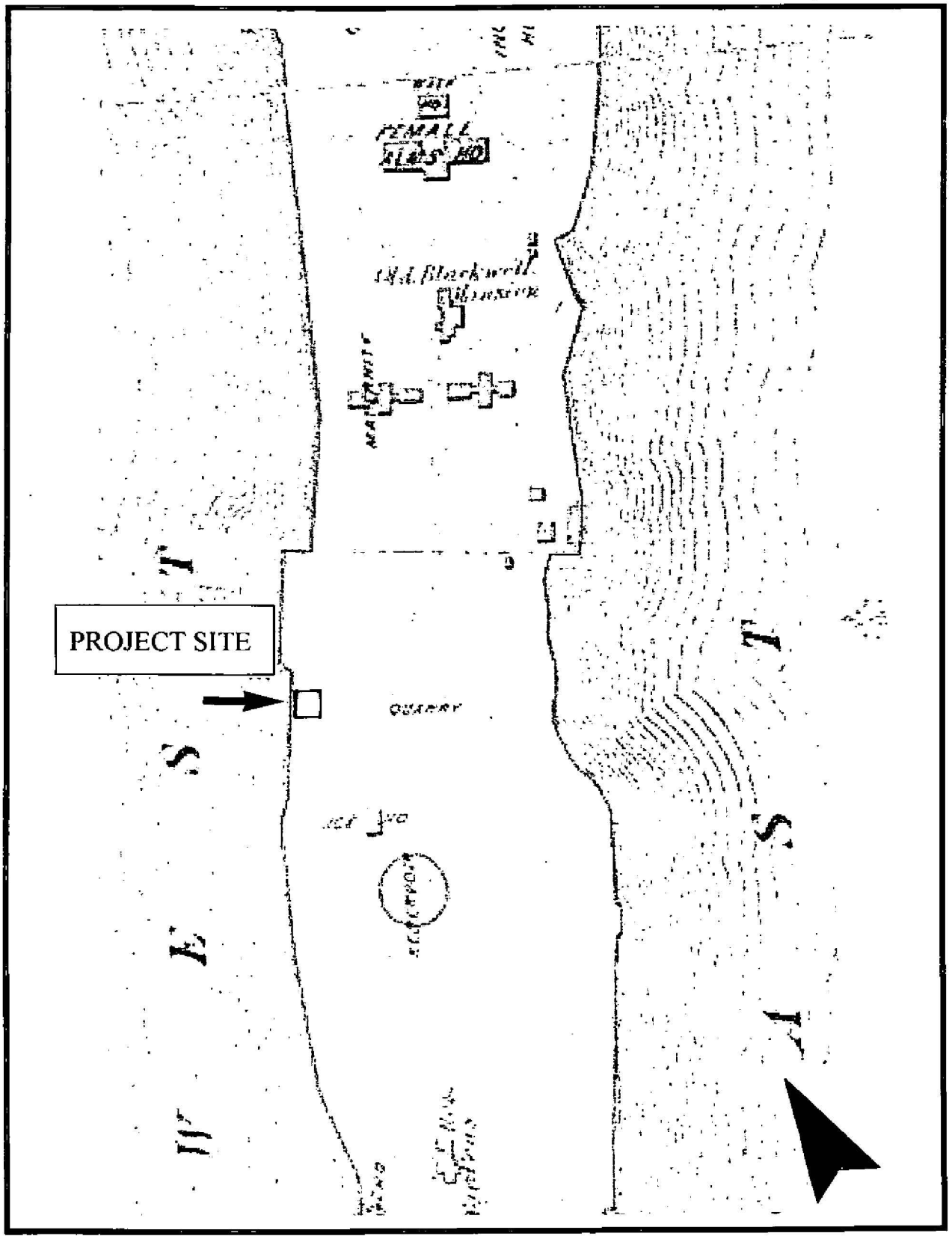


FIGURE 3
Atlas of the Entire City of New York. Bromley and Robinson, 1879.

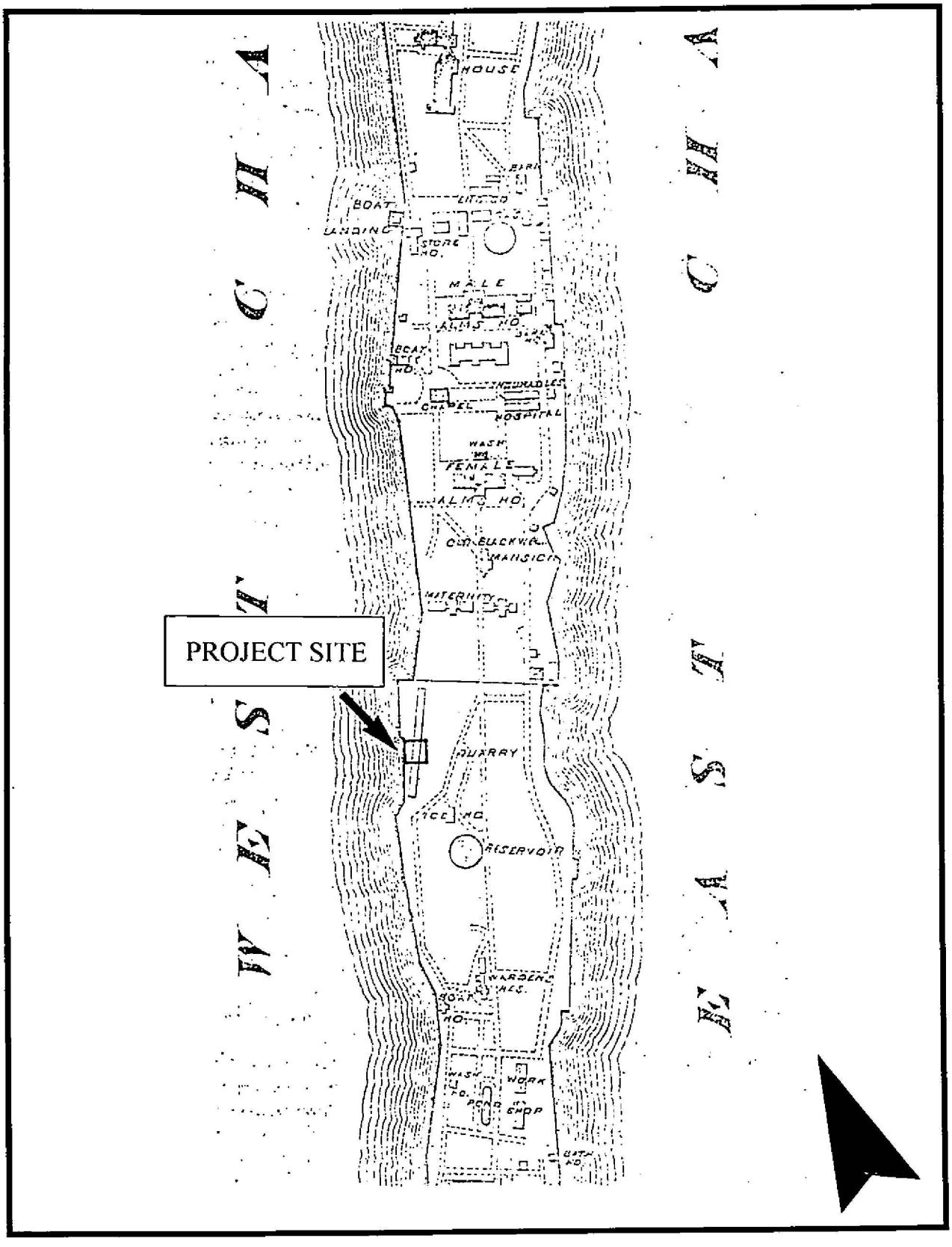


FIGURE 4
Atlas of the City of New York. Robinson and Pidgeon, 1885.
Scale 1" = 600'

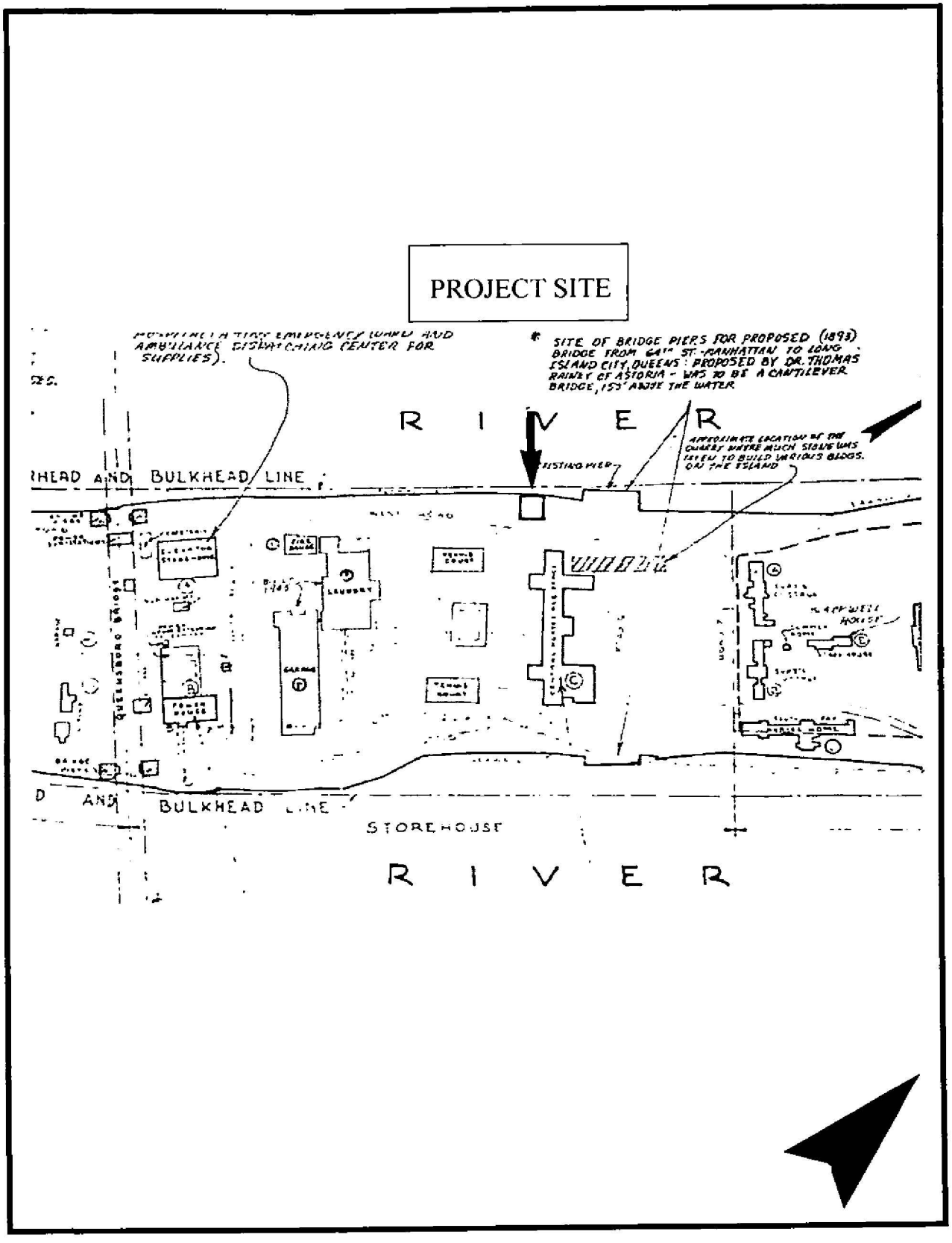


FIGURE 5
Welfare Island Plot Plan. City of New York, Department of Hospitals, 1954.

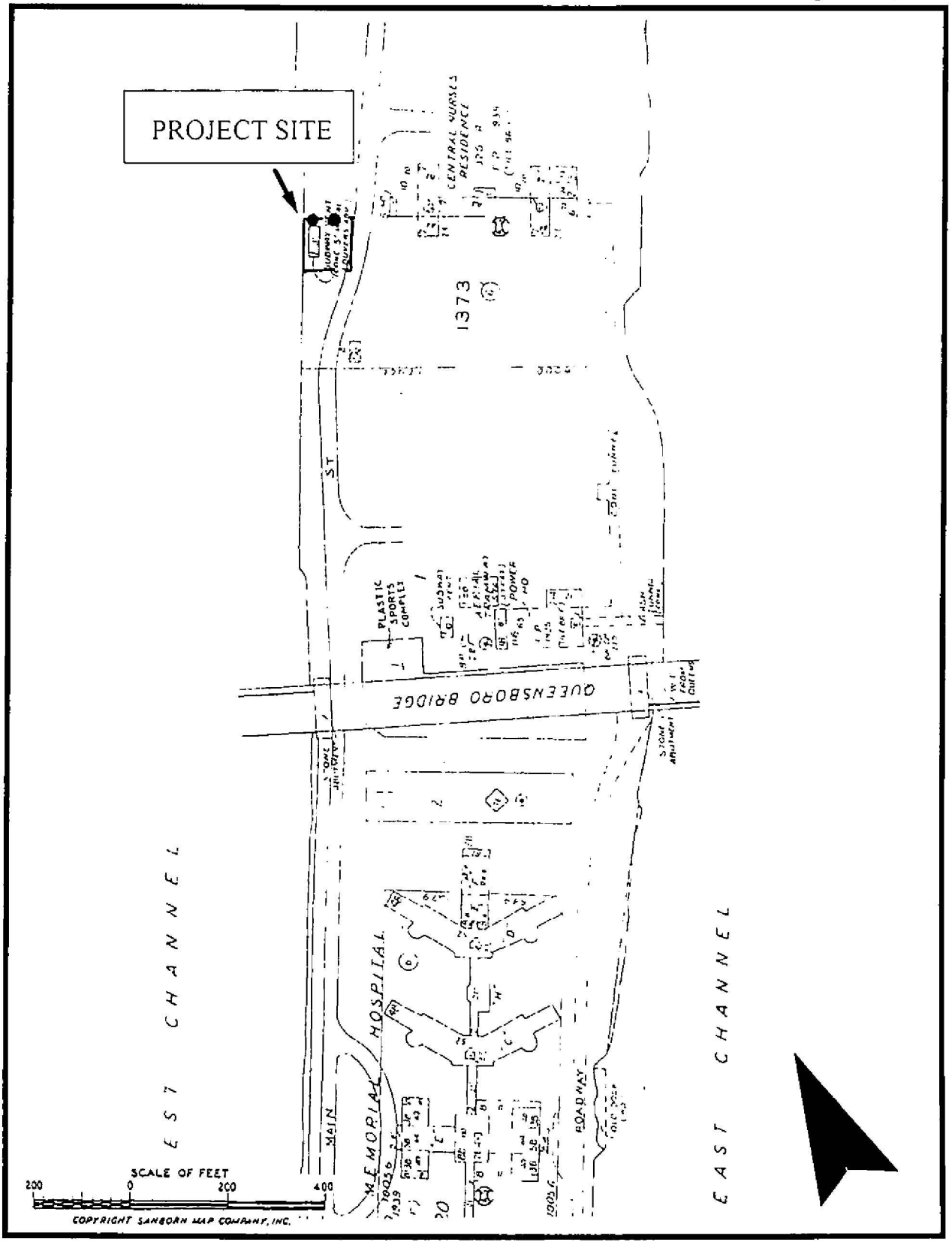
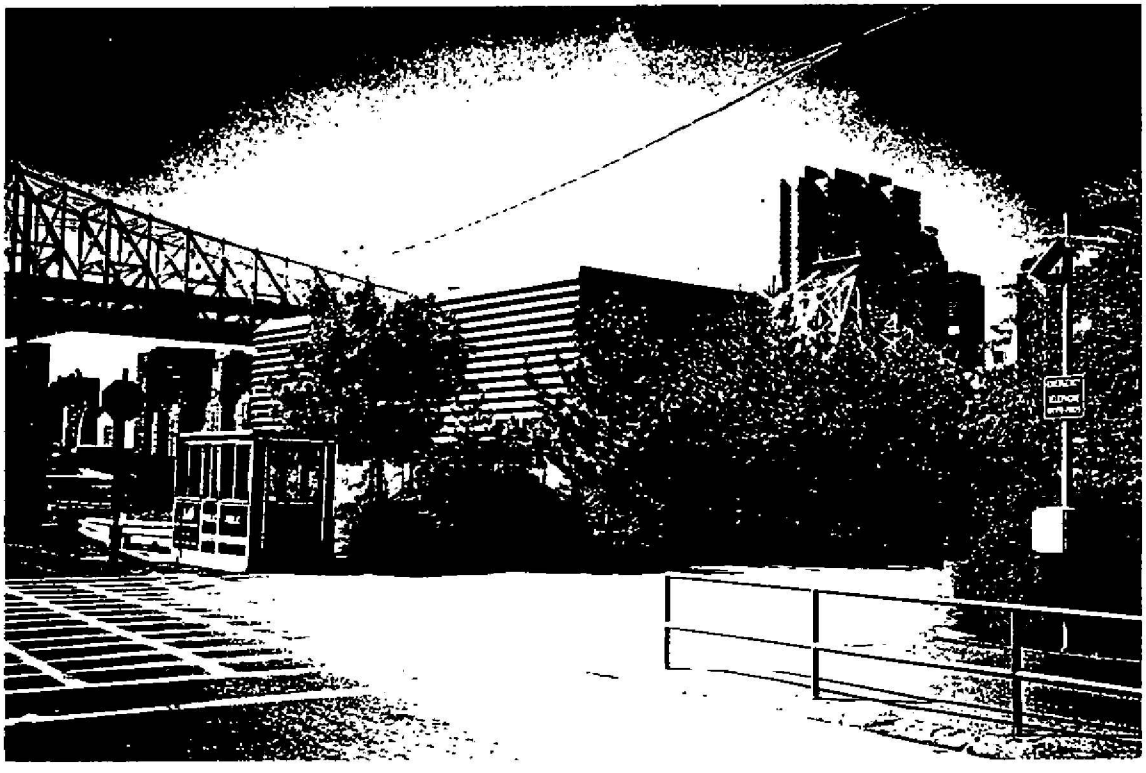


FIGURE 6
Proposed Soil Boring Locations

Photograph 1: Existing subway vent, facing north from Main Street.

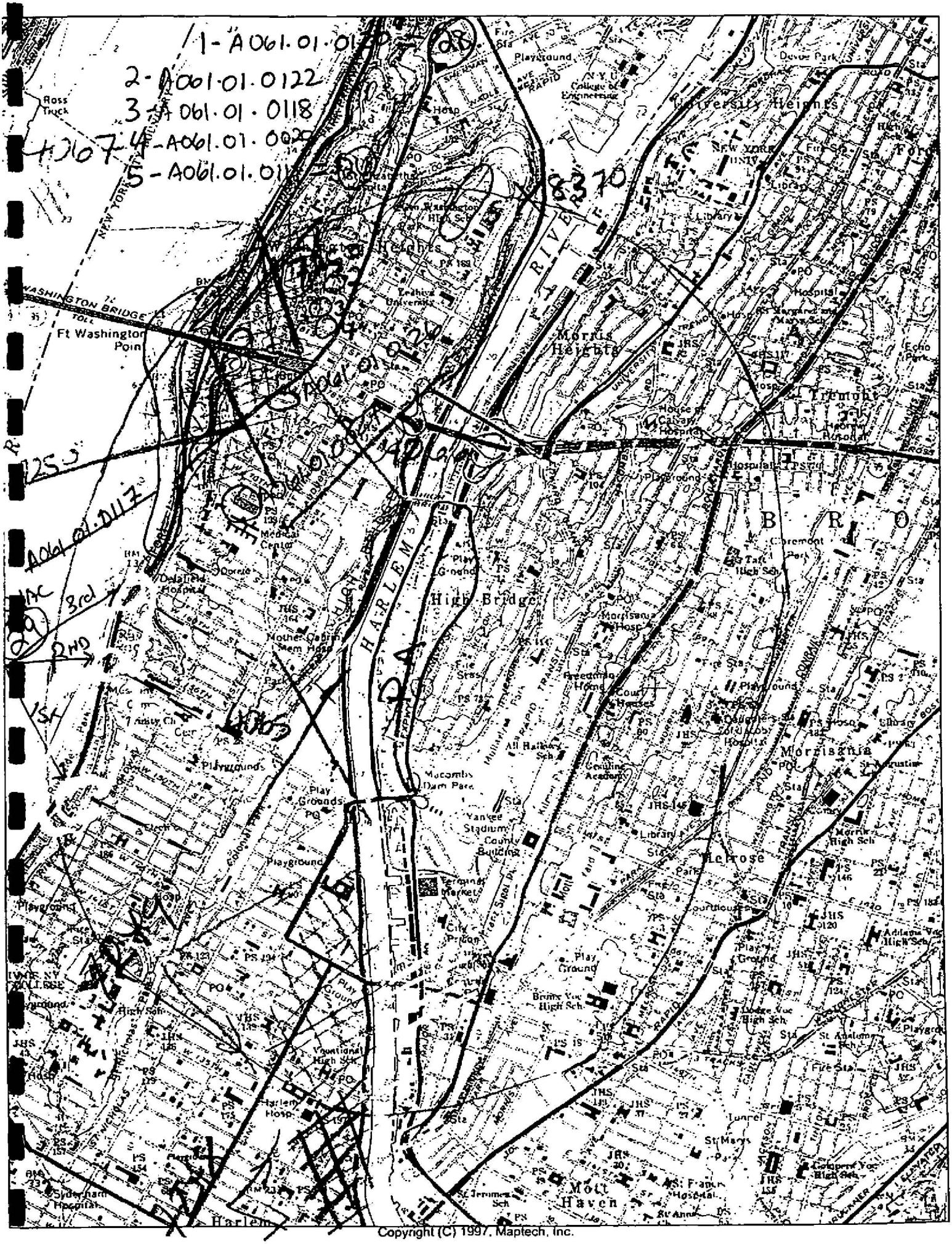
Photograph 2: Facing south toward proposed shaft site and existing subway vent.



Photograph 3: Northeast side of existing subway ventilation shaft, facing southwest from Main Street.

5.7 Appendix

5.7.1 Site File Search Results, NYSOPRHP, NYSM and NYCLPC


1-A061.01.0120
2-A061.01.0122
3-A061.01.0118
4-A061.01.0020
5-A061.01.0117
A061.01.0117
Ross Truck
NEW YORK
WASHINGTON BRIDGE
TOLL
Ft Washington Point
Fort Washington
Washington Heights
Hudson River
University Heights
Morris Heights
Tremont
Bronx
High Bridge
Harlem River
Morrisania
Melrose
Mott Haven
Harlem
Yankee Stadium
Macombs Dam Park
Courthouse
Hospital
Medical Center
Playground
Play Ground
Library
Fire Sta
Sta
PO
JHS
PS
Copyright (C) 1997, Maptech, Inc.

Project Name: High Bridge YARD HAA Project Number: 1306 Client:

Village: Town: Bronx County: BRONX

Quadrangle: Central Park

NEW YORK STATE MUSEUM conducted by: Kim Lacsher Date: 8.10.99 Site Sensitivity requested: # Sites: 7

NYSM#	Other#	Name	Period	Type	Comments
4065	ACP NYRK	—	—	VILLAGE	Reporter: A.C. Parker 1922 [Bolton] Skinner
4066	ACP NYRK	—	—	UNNAMED village + fields? to west,	Reporter: A.C. Parker 1922 - [Bolton] Skinner
7250	ACP NYRK NOT BOLTON MAP	—	—	VILLAGES: CAMP (Fishing)	5 villages on NY map see 4065 for Skinner to Area William Roberts 5/15 Bolton #14 in same area = Fishing station, Shell middens at Landing cove, now destroyed by bridge 1.0 acre
4067	ACP NYRK	—	—	Shell middens	See site 7250 villages in same area on Parker map Reporter: A.C. Parker 1922 [Bolton] Skinner
8370	ACP NYRK	—	—	CAMP	Reporter: Parker 1922
7249	ACP NYRK	—	—	TRACES	Reporter: A.C. Parker 1922
7248	ACP NYRK	—	—	TRACES?	Two Dash marks on Parker map Apparently traces. Reporter Parker/1922

Conducted by: K.C. Date 8.10.99 # archeological sites 9

NYSM Site # Form Copied Final fill in ? Site Name Site Description

A061.9.0120 = NYAC (28)
A061.01.0122
A061.01.0 118
A061.01.0020
A061.01.0 111 = NYAC (26)
A061.01.0126
A061.01.0027
A061.01.00117
NYAC (29) → look at NYAC form

NATIONAL REGISTER ELIGIBLE and LISTED Eligible Listed

Property Name NR Status (L/E/N) Form Copied Description

PREVIOUS SURVEYS

by Info

No previous surveys

6.0 BLISSVILLE YARD ARCHAEOLOGICAL RESOURCE EVALUATION

6.0 BLISSVILLE YARD ARCHAEOLOGICAL RESOURCE EVALUATION

The Blissville Yard is located in the borough of Queens adjacent to the north shore of Newtown Creek (Figure 1). It is currently used by the Long Island Rail Road (LIRR) for rail car storage and maintenance.

LIRR's rail yard complex at Sunnyside in Queens is currently used by New York & Atlantic Railway (NYAR), a freight railroad. Some of the NYAR facilities would be relocated to the existing Blissville Yard in Queens. Limited facilities would be constructed here to meet NYAR's needs, but the yard would not be expanded beyond its current boundaries.

There would be limited subsurface impacts at this yard. Installing new tracks and realigning old ones will not cause subsurface disturbance to depths expected to impact potential archaeological resources. However, there may be excavations for utility trenches which are expected to extend five feet below the current grade, and could extend into archaeologically sensitive areas. Since the locations of utility trenches are unknown, the APE for the Blissville Yard is the entire yard (Figure 2; Photograph 1).

A comprehensive study of the entire Blissville Yard was completed in order to determine the archaeological potential of the site, and to assess impacts which may result from the proposed project.

6.1 Study Area Description

Blissville Yard is bounded by industrial properties on Newtown Creek, Greenpoint Avenue, Review Avenue and the Dutch Kills. Prior to historical filling and the regulation of the Newtown Creek, most of the site was either marshland or inundated by the Creek.

The borough of Queens is located on the western end of Long Island. As with much of the coastal area, the topography was dramatically altered by the advance and retreat of glaciers over the last one million years. This glacial activity produced a terminal moraine, or ridge line, along the limit of the advancing ice sheets. The moraine, which is almost two hundred feet high in some locations, lies several miles to the south of the project site, in Brooklyn close to the Eastern Parkway. To the north of this glacial ridge, glacial activity produced a coastal plain, or an elevated sea bottom with locations of low topographic relief, estuaries, and extensive marshy tracts (Eisenberg 1978; Schuberth 1968).

Predevelopment maps of the study parcel show that the project area was once characterized by an irregular creek shoreline and adjacent marshlands. Because the Newtown Creek is a tidal arm of the East River, located to the west of the site, the rising and falling of the shoreline occurred regularly. Early maps also indicate that the

marshlands had small rivulets that drained into the larger creek. To the north of the project site, glacial deposition created numerous small hills and meadowlands that produced the headwaters for the Dutch Kills. To the south of the project area, the terminal moraine produced larger hills and the South Shore alluvial plain (WPA 1939). East of the project area large meadows once dotted the irregular terrain.

As a result of urban and commercial development during the last century, the hills north of the Dutch Kills were reduced and the surrounding meadows filled (Seyfried 1984b). The Dutch Kills was narrowed to a small canal below 47th Street, adjacent to the project site. The marshy tracts within the project site, were also filled as urban development encouraged the manipulation of the Newtown Creek shoreline.

The current USGS topographic map (Brooklyn Quad) depicts the results of urbanization and the regulation of the Creek in the Blissville Yard study area, which is approximately 10 feet above sea level (USGS 1979).

6.2 Contextual Overview

6.2.1 Prehistoric Context

In order to complete a comprehensive study of the use of the project site through time, it is necessary to develop a cultural chronology and a prehistoric context for the project area. To achieve this goal, the review of what is known about the characteristics of native peoples during each of the accepted prehistoric periods was conducted. This examination provides a framework in which to interpret potential resources within the project site.

Archaeologists have divided North American prehistory into the following periods, the Paleo-Indian, Archaic, Transitional, Woodland and Contact periods. The Archaic and Woodland periods are further divided into subperiods using the appellations Early, Middle, and Late. Each period is defined by environmental changes, the characteristics of prehistoric peoples, and the cultural artifacts that were left behind. Historical accounts, ethnographic reports, Native American artifact collections, and archaeological investigations provide the information for our current understanding of prehistory.

At the time of European contact, the inhabitants of the Queens area in western Long Island are believed to have been culturally similar to the Munsee-speaking Delaware Indians. One of the founders of the town of Jamaica, Queens, Daniel Denton, wrote in 1670 that the Indians of western Long Island lived principally by hunting, fishing, fowling and the cultivation of corn. They relocated their "small moveable tents" two or three times a year, going to their principal quarters where they plant their corn, hunt, and fish (Denton 1902). He further reported that because of disease and war, the number of native villages on western Long Island had decreased from six to two.

Unfortunately, while documentary sources confirm the presence of native groups in northwestern Queens, they seldom identify group affiliation. Perhaps, because declining 17th century populations caused many Long Island Indian groups to combine and reorganize in complex ways, those recording the information were unable to clearly identify distinct groups.

Based on research conducted during the early 20th century, archaeologist Reginald P. Bolton has identified that the former occupants of the study area were subject to or members of the Rockaway chieftaincy, whose territory stretched from the East River to Jamaica Bay, diagonally across Long Island (Bolton 1922). He has also identified their main settlement as being located in Far Rockaway, Queens (Grumet 1981).

Other researchers have suggested that the Maspeth or Mispat native group, once located in the project area, may have been a subdivision of the Canarsee chieftaincy, whose main village was located at Canarsie in southern Brooklyn. This group would have had settlements scattered above the Newtown Creek wetlands. This theory however, is not supported by surviving documentation or archaeological evidence (Grumet 1981).

It is generally accepted that the proto-historic cultural groups that populated the area practiced a settlement and subsistence pattern of seasonal rounds exploiting a diverse array of resources. The types of sites found in the surrounding area, as reported by archaeologists, ethnographers, and amateur collectors, reflect this pattern and include villages, burials, and small campsites. These sites are often situated on well-drained upland soils in proximity to fresh water, and on tidal inlets. However, shell heaps, or middens, were frequently generated along rivers where prehistoric peoples discarded their "garbage," away from their living areas (Ritchie and Funk 1973).

Reported Sites in the Region. There are no recorded prehistoric sites located within the specific boundaries of the project site. However, there are three reports of prehistoric sites within the area. Although documentary evidence supports their presence, to date, no confirmation of site location has been made.

(1) Canapaukah: Identified as "long water land" or "water-place" the site was likely on the northern end of the Dutch Kills. Documentary evidence of this native presence close to the project site comes from a 1656 deed. The document describes a "small Creeke called by the Indyans Canapaukah," later named the Dutch Kills. Canapaukah is mentioned in conjunction with Burger's Mill, a water powered grist mill built to the north of the study area, between 41st Avenue and 41st Road, slightly south of Jackson Avenue (Grumet 1981; Seyfried 1984b). The estimated location of this site is approximately 1 mile north of the Blissville Yard.

(2) Maspeth (Marshpath): Bolton suggests that the area along Mespacht Kill, or Mespaethches (present Newtown Creek), was the location of a village. Several incidents between the Dutch and Native Americans occurred in this area during

the Governor Kieft War (1643-1645), and a wigwam was recorded east of the project site at Maspeth Kills in 1669 (Grumet 1981). According to historian James Riker, the "rude implements" of the local Indians', chiefly "stone axes arrowheads, and arrows of reed" were still being found in 1852 (Riker 1852). According to the documentary data, this site may have been approximable 1.5 miles to the east of the Blissville Yard.

(3) Quandus Quaricus: Located along the English Kills, the west branch of the Maspeth Kills, this site was mentioned in a document dating to 1656 (Grumet 1981). Little else is known about this site, which may have been approximately 1.5 miles to the southeast of the Blissville Yard.

Site File Search Results. The site file search identified two prehistoric sites within close proximity to the project site, and five within several miles of its boundaries (Appendix 6.7.1). These sites predominantly date to the Woodland period. While generalized locations were provided by the NYSM, this information was supplemented by other archaeological and historical sources (Bolton 1972; 1922; Skinner 1915; Beauchamp 1971; 1900; Grumet 1981) in an attempt to more accurately demarcate each site. Unfortunately, these publications provide little additional data with which to pinpoint site locations on the present landscape.

(1) NYSM #3613 (ACP Kings no #): This site is located near the mouth of Newtown Creek in Greenpoint, Kings County. Archaeologist Arthur C. Parker reported "traces of occupation" in this area (Parker 1920)[1]. The NYSM places it extending northwest of Greenpoint Avenue (which crosses Newtown Creek south of Dutch Kills) west toward the East River. Therefore, it is ca. 400-3000 feet south-southwest of Blissville Yard.

(2) NYSM #4536 (ACP Queens #13): This site was identified by Parker as a village site at the head of Newtown Creek (on the north side), less than one and a half miles to the southeast of Blissville Yard near Maspeth Yard.

(3) NYSM #4535 (ACP Queens #12) This site is identified as a shell heap or midden found at Sanford's Point in Astoria, Queens. Parker indicated that "early and modern relics" were recovered, and Bolton mentions "various Indian objects." Parker's map places the midden on the northern shore of Hallett's Cove, about two and three-quarters miles north northeast of the study area (Parker 1920; Bolton 1972).

[1] Parker's research into the known prehistoric sites of New York State identified a number of sites within New York City, which he describes, and often gives numbered designations (ACP#) in his 1920 publication, "The Archaeological History of New York." The NYSM locates these sites based on his maps.

(4) NYSM#8217 (ACP Queens no #) is a camp site located at Sanford's Point, in Astoria, Queens, to the north of the shell heap (NYSM#4535) discussed above (Parker 1920). The location is about three miles north northeast of the study area.

(5) NYSM#4538 (ACP Queens no #) refers to a village site in Long Island City, Queens. The location provided by the NYSM extends from the rail yard complex at Sunnyside on the east to 12th Street on the west. Parker's published map appears to show the village somewhat further north, approximately centered on 35th Avenue and Crescent Street (Parker 1920), which would place it approximately two miles northeast of the study area.

(6) NYSM#4537 (ACP Queens #14) identifies a burial site in Long Island City, Queens. Parker places this burial on Crescent Street, but does not provide the cross street. His map seems to put it northeast of the village site discussed above (NYSM#4538) on or northeast of Broadway, which would mean that it was at least 2 1/4 miles outside the study area (Parker 1920). Bolton reports human burials (note the plural), "near Crescent Street," although his map siting is the same as Parker's (Bolton 1972). The locations and comments provided by the NYSM suggest two or more burials, giving two locations, both centered on Crescent Street several miles north of the project site.

(7) OPRHP #A081-01-0100 or "Sunwick" was described by archaeologist Reginald Bolton who reported that the site (also called Sunwicks or Sunswicks) was a "native station" which yielded shell deposits and a few artifacts. W. L. Carver also reported the presence of a shell midden at this location. Sunwick was in Ravenswood Park, now Rainey Park, on the Queens shore of the East River Shore, more than two and a half miles north of the project site (Bolton 1922; Grumet 1981).

6.2.2 Historic Context

European settlement of Queens began in the early years of the 17th century when fur trappers, working for the Dutch West India Company, set up camps along the East River and its tidal creeks or kills ("Kill" is the Dutch word for a small stream or tidal inlet). By the middle of the century, both Dutch and English settlers inhabited parts of northwestern Queens. The land in Queens, well-suited for agriculture and commercial development, provided the rapidly growing European community in Manhattan with raw materials and land.

One of the initial areas settled was the northwestern part of Queens. Documentary evidence indicates that one of the first substantial land grants within the project area occurred in 1642 when Reverend Francis Doughty received a patent for 14,000 acres of land called "Mispot (Maspeth) or English Kills at the head of Newtown Creek" (Queens Borough Library, BULLETIN #650,1939). Newtown Creek is a tidal water body that flows into the East River and is part of the boundary between Queens and Brooklyn.

This land grant encompassed "practically all of the present Long Island City and Newtown" including the village of Maspeth at the eastern end of the creek, approximately 1.5 miles east southeast of the current project site (Von Skal 1908). Doughty did not enjoy his bounty for long and soon moved on to Flushing when a dispute with Governor Kieft, who, as Director-General of New Netherland had granted the land patent, culminated in Kieft fining him "ten dollars and twenty-four hours imprisonment" (Ibid. 1908).

After Doughty left, a few settlers remained at Maspeth until the following year when hostilities with the Native peoples escalated. Kieft's War, which began in 1643, led to the massacre of an entire Indian village. In retaliation, many of the Long Island bands joined with their neighbors in an effort to burn the encroaching Europeans' farms. One area that was targeted for burning was Maspeth, and the early settlers fled to Manhattan (Erlich 1979).

Following the "war" the settlement of Queens began in earnest. Numerous farms were established during the mid to late 17th century to the north and west of the project site in the area known as "Dutch Kills," where the headwaters of the kill were found. In 1643, Burger Jorissen, a native of Silesia, received a *grondbrief* for land just less than one mile north of the current project site in the vicinity of present Bridge Plaza, and eastward along Jackson Avenue. By 1650 Jorissen, who came with his wife and five sons, had constructed a dam and water-powered grist mill on Dutch Kills (between 41st Avenue and 40th Road, south of Jackson Avenue). It remained in the family until 1690 when the farm and mill were purchased by Burgon Brocard (or Bragaw), a French Huguenot refugee. He and his family built a new house on the site of Burger Jorissen's dwelling. His descendants constructed another house nearby in ca.1790 which, after 1818, came into the hands of the Payntar family (Munsell 1882; Seyfried 1984b).

To the west of Jorissen was the property of Joris Stevenson van Alst, who purchased two farms on the west bank of Dutch Kills by 1670. This property remained in the Van Alst family for two centuries.

Because there were few maintained roads in western Queens, farmers relied on water transportation to get their produce to market and bring in purchased items. Goods were transported via a boat down the Dutch Kills and/or Newtown Creek to the East River. In fact, a 1781 map of western Long Island, indicates that the only road across the Dutch Kills swamp traversed the creek at the line of present Queens Plaza North, then followed the line of 39th Avenue (former Middelburgh Avenue) eastward. This road linked other roads going south, north and west (Taylor and Skinner 1781; Seyfried 1984b).

Other residents of the Dutch Kills area include the Bragaws, who built a farmhouse north of 41st Avenue at Jackson Avenue in the early 1700s. The Payntar family occupied this house from 1801 until it was torn down in 1912. In addition, there was a tavern to the north of the project site at 41st Avenue and 28th Street. It was run by John Francis Ryerson during the second half of the 18th century. In 1798, Ryerson was killed in a

tavern brawl and his grave and tombstone were found six feet below the 29th Street sidewalk during the excavation for the basement of Long Island City High School (29th Street and 41st Avenue) (Seyfried 1984b).

Another old family farm was located to the north of the project site in the location of the present rail yard complex at Sunnyside (39th Avenue and 39th Street). The land was purchased by John Griswold (or Gressell) in 1678, acquired by Joris Brinckerhoff in 1714, and then passed to his son Teunis, who died there in 1784. The farmhouse was later owned by Richard Bragaw (Seyfried 1984b).

The majority of the residents of Queens supported the British during the Revolutionary War (WPA 1939). However, northwestern Queens was the location of numerous Colonial supporters. By the time of the Revolution, Dutch Kills was a crossroads hamlet with several old farms. From 1776 until 1783, British forces occupied northwestern Queens. The Middelburgh Road (39th Avenue), approximately 1.5 miles north of the project site, was the chief communication/transportation route between east and west. British officers commandeered the better rooms of local farmhouses, while troops were bivouacked in kitchens, huts, and tents along the road and in the fields. These soldiers destroyed fences, buildings and orchards in search of firewood and often stole valuables and livestock (Munsell 1882; Seyfried 1984b). Well over 100 years later, some of their huts were still visible and local farmers frequently plowed up Revolutionary War relics.

The Dutch Kills area returned to a peaceful agricultural existence, until the early 19th century when numerous commercial and industrial ventures were established in the area. In 1836 the introduction of the Long Island Rail Road between Jamaica and Brooklyn allowed for swifter transport of goods encouraging the rapid urbanization of the project area. Queens also became the final resting place for many Manhattan residents after May 1, 1851 when burial grounds were banned on Manhattan for sanitary reasons (Jackson 1995).

The 1850s saw the almost complete disappearance of many farms and rural residential locales, an increase in population, and accelerated construction activity which, in turn, encouraged the formation of small hamlets or villages. The project site is located in Blissville, one of these new neighborhoods. Blissville was named after a prominent resident of Queens, Neziah Bliss, who had purchased the Hunter Farm in Hunt's Point in 1837 (Jackson 1995). The Blissville neighborhood is located on the north side of Newtown Creek between the Dutch Kills and Greenpoint Avenue.

In 1870, Astoria, Ravenswood, Dutch Kills, Hunters Point and Blissville were incorporated into Long Island City. Hunters Point, at the mouth of Newtown Creek was the industrial hub of the area, and contained the majority of the population, mostly recent immigrants from Ireland and Germany. Street grading, paving and sewerage were started in this portion of Long Island City in the early 1870s.

Following the Civil War, kerosene fuel refineries were established along Newtown Creek. In fact, one of the most devastating fires occurred in 1865 at the Cozzens & Co.'s kerosene factory below Penny Bridge on the Creek (Seyfried 1984b). The fire was so large and hot that it covered the area with thick black smoke.

The concentration of new factories and businesses in Hunters Point, Blissville, Astoria and later Ravenswood, encouraged the residential and commercial development of previously empty areas during the 1860s and 1870s. The land was becoming too valuable to be left as marsh or farm. The project site, which was shown as swampland on an 1849 map was later filled as the Newtown Creek shoreline was regulated over the next fifty years (Sidney 1849; Beers 1873; Wolverton 1891).

The 20th century was characterized by the continued growth and urbanization of the project area. From 1903 to 1907 many 19th century buildings were razed to the north of the project site, and the acreage leveled, including a 200-acre hill between 34th and 35th Streets. The earth was used to fill in the northern section of the Dutch Kills waterway and its remaining marsh, in and around the project site (Seyfried 1984a; WPA 1982). Just two years later, in 1909, the opening of the Queensboro Bridge provided easy access to Queens from Manhattan. In the two decades following the bridge's opening, the population of the borough quadrupled.

Cartographic Review. A detailed reconstruction of land use and development at the project site throughout the historical period was accomplished by reviewing available maps and atlases. This process permits the potential identification of archaeologically sensitive areas as well as any subsequent activities which may have caused subsurface disturbance to potential resources.

Early maps reviewed all depict the project site as undeveloped marsh land or inundated by the Newtown Creek (e.g., Van der Donck 1656; Taylor and Skinner 1781; Sidney 1849; Dripps 1852; Conner 1852). Cleared or developed land is present to the east of the site where, by 1849, the Pine family farm had been established (Figure 3). Land was also cleared to the south of the site by George Kowenoven and Paul Rapelye.

The earliest map of Queens that shows any significant change to the topography of the project site is the 1873 Beers Atlas, which indicates that, by that date, the marsh land had been sufficiently filled enough to support the tracks for the South Shore Rail Road (Figure 4). Instead of large-scale wetlands, only a single tributary creek runs through the project site into the larger Newtown Creek. The Blissville neighborhood had also been established to the east and southeast of the project site by that date. Instead of the former farmsteads, streets had been laid out from the interior to Newtown Creek. Also southeast of the project site at the creekside, a large oil works is depicted signaling the beginnings of this important industry in this section of Queens.

By 1891, streets had been laid out across the entire project site and the blocks divided into lots (Figure 5; Wolverton 1891). The shoreline of the Newtown creek was still

irregular at this date. The Dutch Kills to the west and north of the project site however, had been partially filled and contained within bulkheads. Only a single track was present within the project site and no buildings were noted within its boundaries.

By 1898, the project site had become a functioning rail yard identified as the "Long Island Rail Road Switch Yards" with at least 12 tracks present (Sanborn 1898). The only structures shown were located just south, and outside of the limits of the project site at Greenpoint Avenue where the J.P. Williams and Company Lumber Yard was established. On the northwest side of the project site two piers extended out into the Newtown Creek providing water access to the Rail Road. The locations of these piers was also outside of the project site boundaries.

Two maps from 1915 indicate that by that date, the railroad was identified as the Montauk Division of the Long Island Rail Road (City of New York 1915; Sanborn 1915). The Sanborn Map indicates that at the northwest end of the project site a third pier had been added along with a small office building approximately lined up with Marsh Street (Figure 6). The lumber yard noted in 1898 was no longer present and the block adjacent to Greenpoint Avenue, and bordering the project site, was empty.

A review of 20th century Sanborn maps indicate that by 1936 the Tide Water Oil Co. was present on the site of the former lumber yard, outside of the project site (Figure 7; Sanborn 1936). At that date, just within the southern boundary of the project site, two small unidentified one-story buildings were present adjacent to the tracks. These were probably switching boxes or towers, structures typically found within active rail yards. No other notable changes occurred to the project site until after 1950, when the small office near Marsh Street was removed and the docks, just outside of the project site were incorporated into the landfill to create a Scrap Iron Yard and Oil Pump Station (Sanborn 1936, 1947, 1950, 1980). A new freight station building was added at the northwestern end of the site by 1980. Near the south side of the project site, adjacent to the Creek, a large Oil Storage building and a tiny unidentified structure had also been constructed. No further significant changes were noted on the 1991 and 1996 Sanborn Atlas maps.

6.3 Existing Conditions

6.3.1 Prehistoric Archaeological Potential

As discussed above the site files search identified two prehistoric sites that may have been located near the project site, NYSM #3613 (ACP Kings no #) and NYSM #4536 (ACP Queens #13). The former site, identified by Parker as "traces of occupation," may have been partially identified through documentary sources. Because the documentary evidence of prehistoric occupation is fairly abundant for this section of Queens, these resources can be considered reasonably accurate. NYSM#4536, the latter site, was identified as a village near the mouth of the Newtown Creek, however, the exact site location has not been verified. Five other sites, discussed above, were also identified as outside of the project site.

In order to determine the likelihood that the current project site was at one time exploited by native peoples, it is necessary to review what is known about the site's topographic characteristics over time. While much of the Queens landscape would have been conducive to prehistoric utilization, the project site, which was either swampland or inundated for much of the later prehistoric era, was not ideal for habitation and retained few resources needed by native peoples (e.g., rock quarries, game animals). However, studies of the prehistoric environment indicate that the rate of post-glacial rising sea levels varied throughout the prehistoric period, and, therefore, the site may have been drier and available for habitation when water tables were lowered (Weiss 1987; Kardas and Larrabee 1977).

Beginning some 9,000 years ago the rising sea level directly shaped most of the topography of the New York Metropolitan region. The East River and its entire tributary system was inundated, turning the East River and Harlem River into tidal straits (Raber et al 1984 as quoted in Historical Perspectives 1987). Currently, the date of inundation is not known.

At the time of European Contact, the project site did not exhibit the preferred topographical characteristics that native groups chose to inhabit. The fact that the site was marsh, or inundated land, indicates that it would have experienced limited usage by the prehistoric population of Queens. However, because of the documented presence of prehistoric sites adjacent to Newtown Creek, this location cannot be completely dismissed for archaeological sensitivity. It is assumed that during some prehistoric periods, the site may have contained habitable land. Subsequent filling of the site may have actually served to preserve and protect any prehistoric deposits.

In order to determine subsurface conditions, efforts were made to locate soil borings for the project site at the Department of Design and Construction (formerly the Subsurface Exploration Bureau). They have no record of borings taken within the project site boundaries, and Rock Line Map #314 indicated no water courses traversed it. Although it is possible that borings have been completed within the Blissville Yard by private companies, none were found.

It is impossible to know what sections of the site may have once been habitable and exactly how deep potential prehistoric resources may lie without completing more extensive subsurface reconstruction efforts (e.g. continuous soil borings extending below all fill levels). Although soil borings were completed by AKRF, Inc., these only extended into fill levels, terminating at about three feet below grade. No determination of the final depth of fill or types of soils beneath them could be made (AKRF 1999). An examination of more complete soil cores and soil boring data may provide information regarding the development of the Newtown Creek shoreline that would further refine the assessment of prehistoric sensitivity.

Since this section of the report is only designed to provide a preliminary identification of potentially sensitive areas (i.e., the affected environment), it is assumed that in all

locations where proposed subsurface work extends beneath the historic landfill, buried prehistoric resources may potentially exist. Overall prehistoric potential is considered to be low to moderate, given that if the site was inhabited, it was subsequently inundated and filled - both of which would have caused some degree of disturbance to fragile prehistoric resources.

6.3.2 Historic Archaeological Potential

No evidence of early historic farm sites or structures within the project site was found. Once the marshland was filled and the Newtown Creek regulated, the project site was utilized exclusively by the railroad throughout the remaining historical period. Research indicates that the site was covered with tracks and only a few small short-term, and mostly unidentified, railroad-related buildings. Because these structures were likely not unique or significant the Blissville site is not deemed sensitive for below-ground historical resources.

6.4 Impact Assessment

Proposed work at Blissville Yard may include a variety of surface and/or track changes, and utility installation. Some of these activities, such as creating new tracks, will have no impact to any potential resources since the site has already been predominantly covered with tracks for over one hundred years.

The installation of utility lines within the yard would require excavations to five feet below grade. Subsurface conditions are unknown and it is not certain if these excavations would only extend into fill levels or into buried surfaces beneath the fill. Therefore, it must be assumed that these activities may disturb buried layers which are potentially sensitive for prehistoric cultural resources.

6.5 Mitigation Recommendations

There is the possibility that the project site was inhabited at some time prehistorically, but the sensitivity for prehistoric resources is considered only low to moderate since upland areas were preferred habitation sites. Mitigation recommendations include completing a series of continuous tube soil borings to establish the depth of fill throughout the project site, and to search for the distinctive presence of markers typically associated with a prehistoric presence. The absence of definitive signs of a Native American presence, and/or the presence of a habitable living surface buried beneath the fill would suggest that no prehistoric potential remains.

A series of continuous tube soil borings, three inches in diameter, should be completed to address the depth of fill and to clarify subsurface conditions. These should be placed in approximately 100 foot intervals along the locations of proposed utility trenches. If refusals are encountered then borings should be offset by no more than 10 feet. Borings should extend beneath all fill layers and either down to bedrock or at least 10' below

grade (to be conservative), whichever is reached first. This would allow archaeologists to better assess subsurface conditions.

If soil borings indicate potential sensitivity, mitigation would include reevaluating potential impacts. The locations of potential prehistoric resources, if any are indicated, should be compared to proposed disturbance areas to assess if this resource type would be impacted.

If avoidance of potential resources, if any are indicated, is possible, then this is considered a viable mitigation alternative. However, if the avoidance of impact to potentially National Register eligible archaeological resources is not possible, the appropriate mitigation procedures could take the form of construction monitoring, or exploratory excavations, or finally, data recovery.

6.6 Figures and Photographs

1. Project Site Location

2. Project Site Boundaries

3. *Map of Twelve Miles around New-York*, Sidney 1849

4. *Atlas of Long Island*, Beers 1873

5. *Atlas of Queens County*, Wolverton 1891

6. *Insurance Maps*, Sanborn 1915

7. *Insurance Maps*, Sanborn 1936

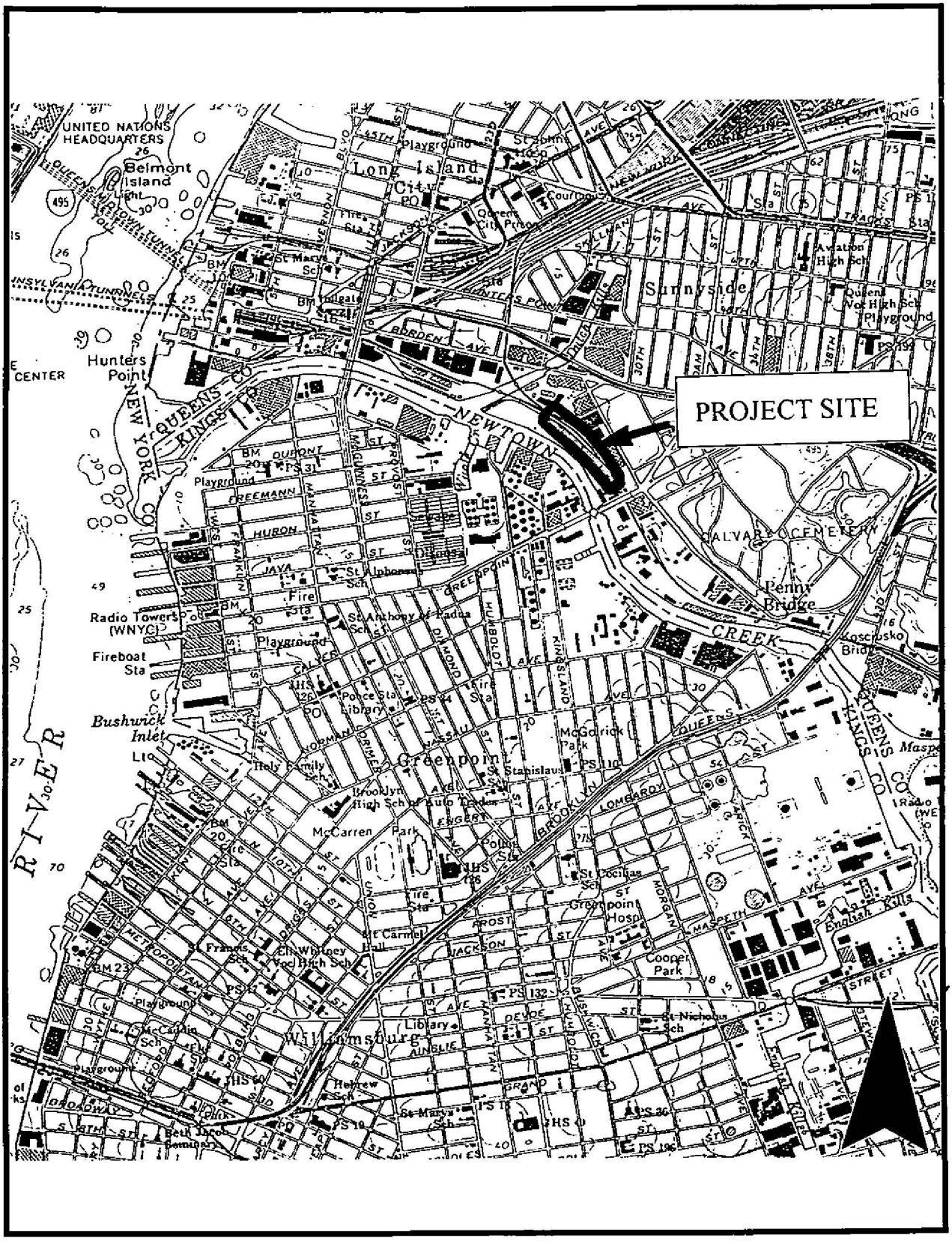


FIGURE 1
Project Site Location, *USGS Brooklyn, N.Y. Quadrangle*, 1979.
Scale 1:24,000

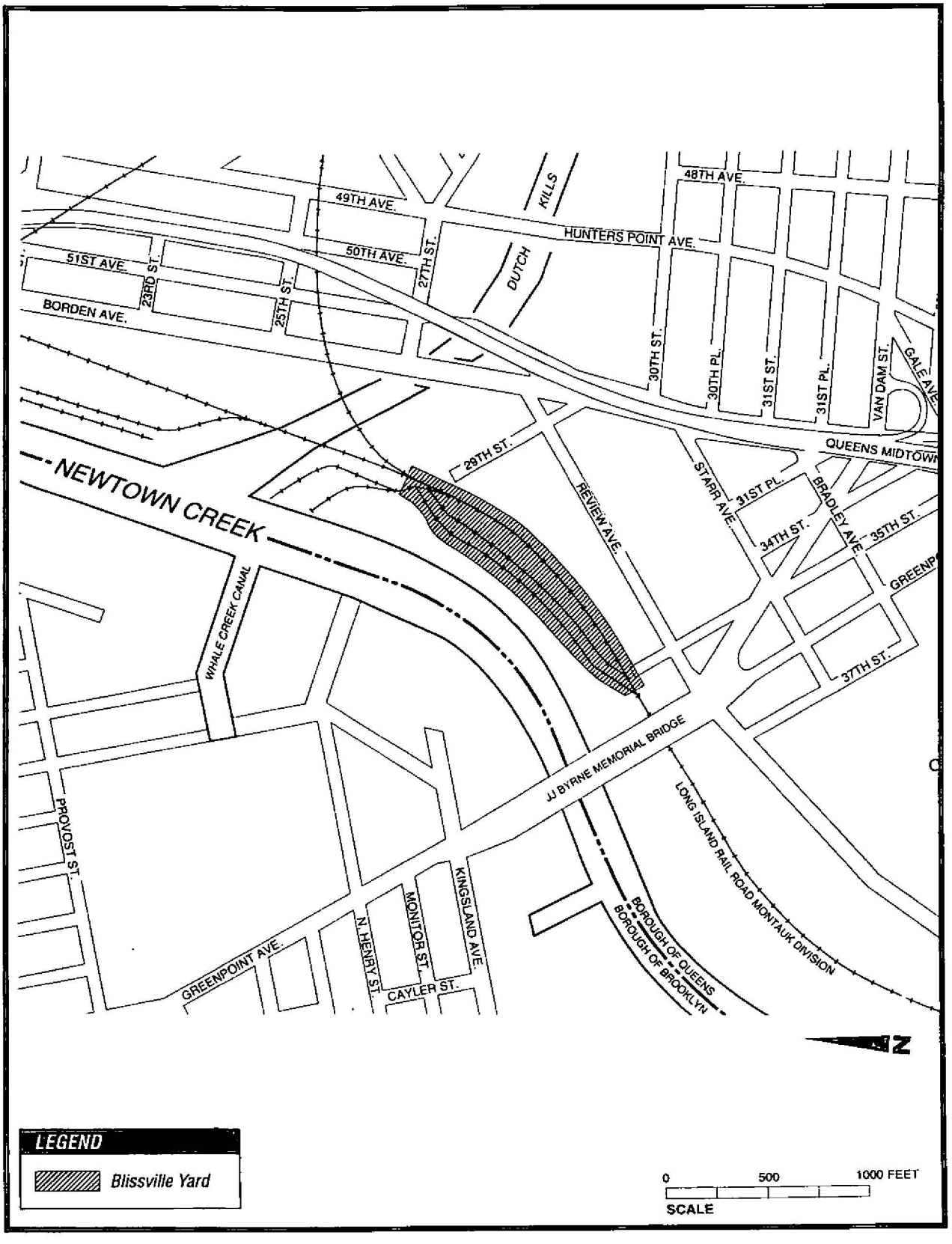


FIGURE 2
Project Site Boundaries

FIGURE 3
Map of Twelve Miles around New York, Sidney 1849.

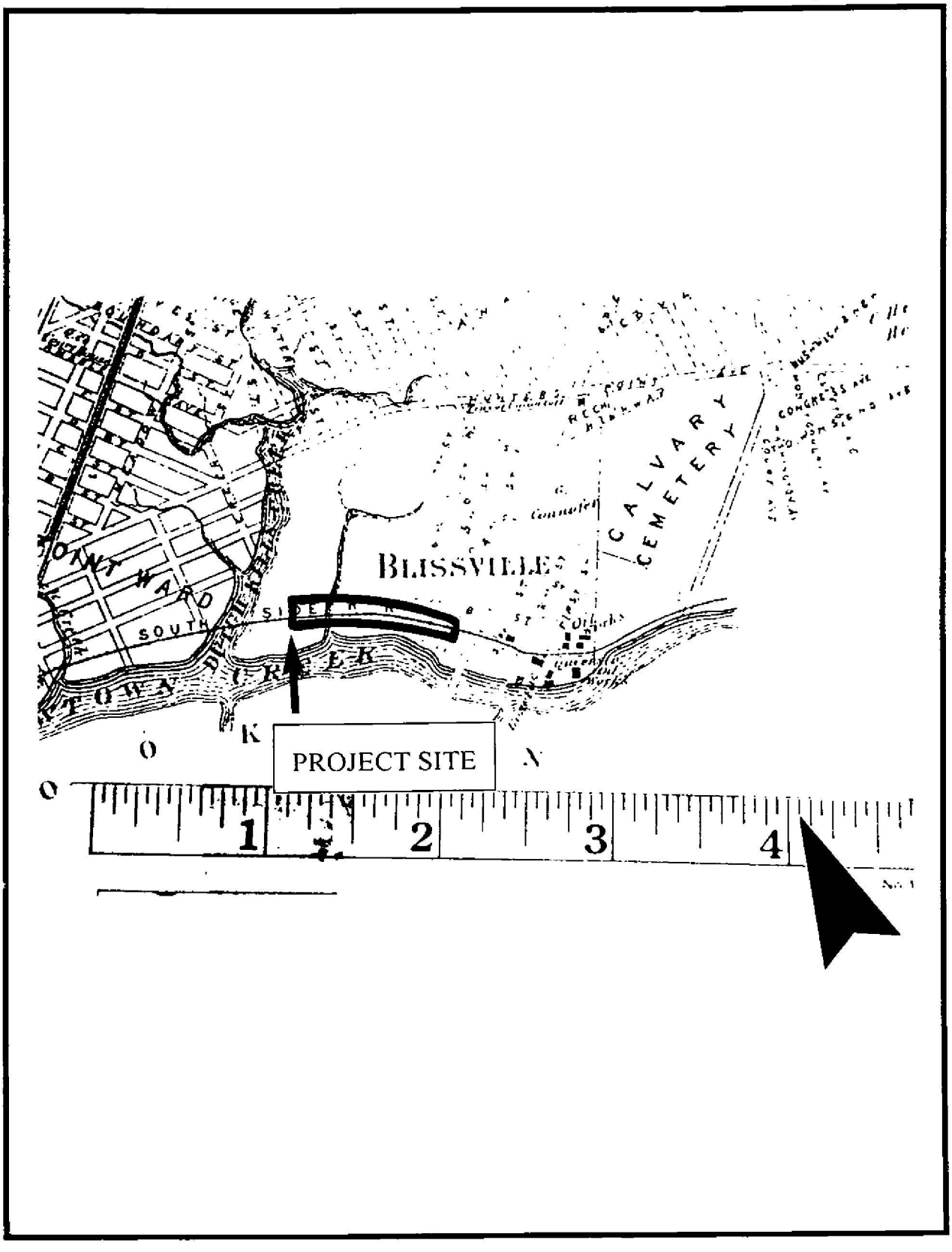


FIGURE 4
Atlas of Long Island, Beers 1873.

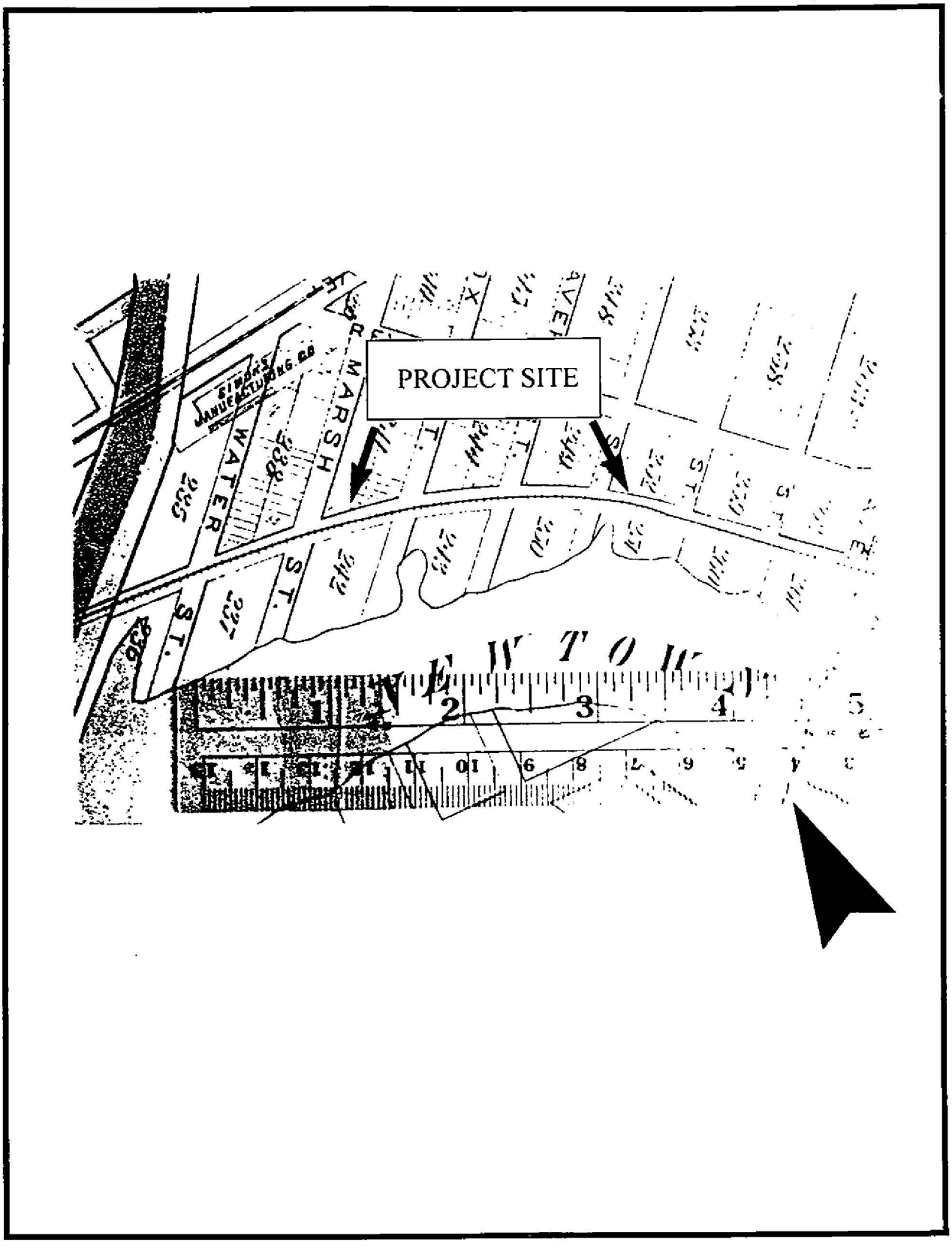


FIGURE 5
Atlas of Queens County, Wolverton 1891.

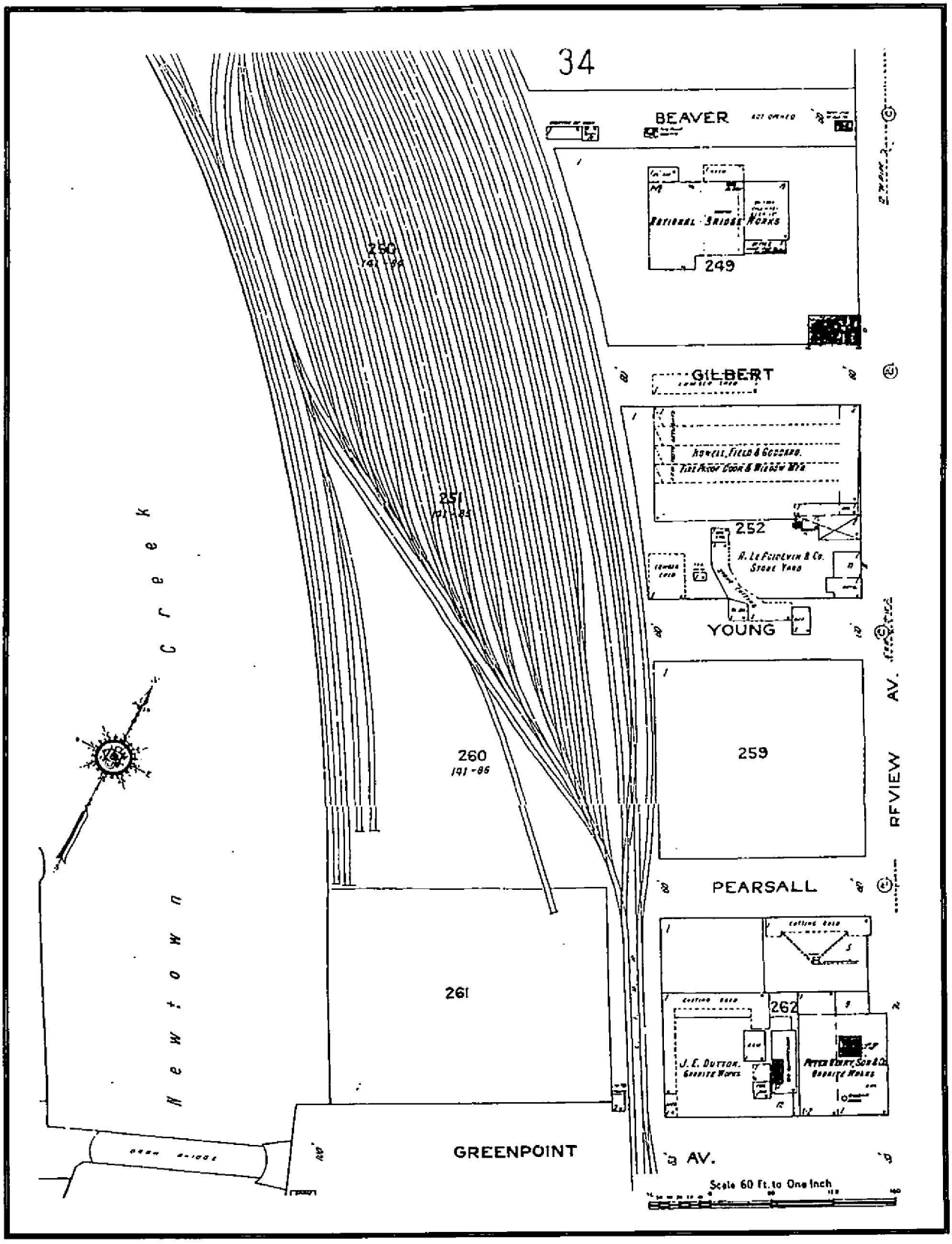


FIGURE 6a
Insurance Maps. Sanborn, 1915.

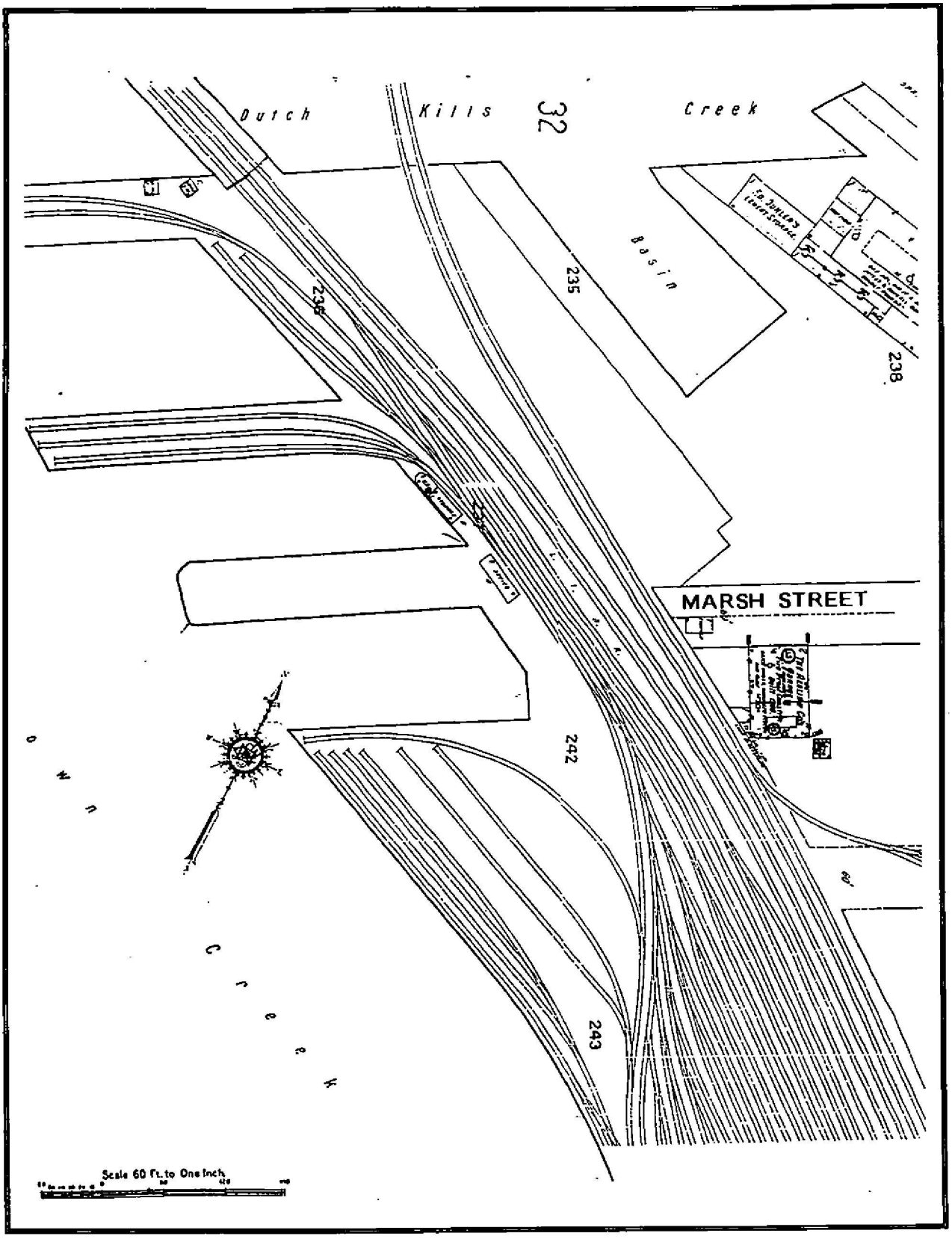


FIGURE 6b
Insurance Maps. Sanborn, 1915.

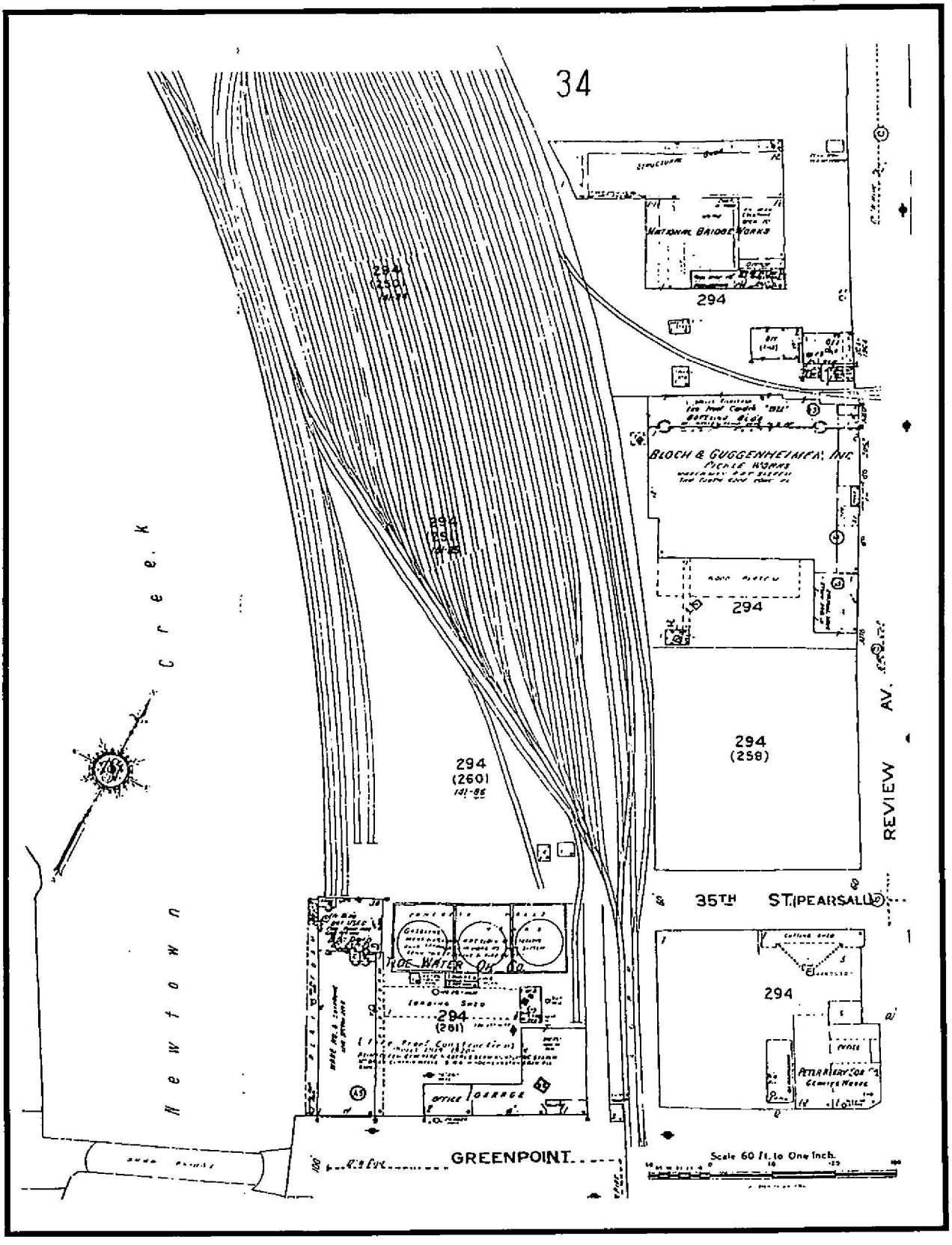


FIGURE 7a
Insurance Maps. Sanborn, 1936.

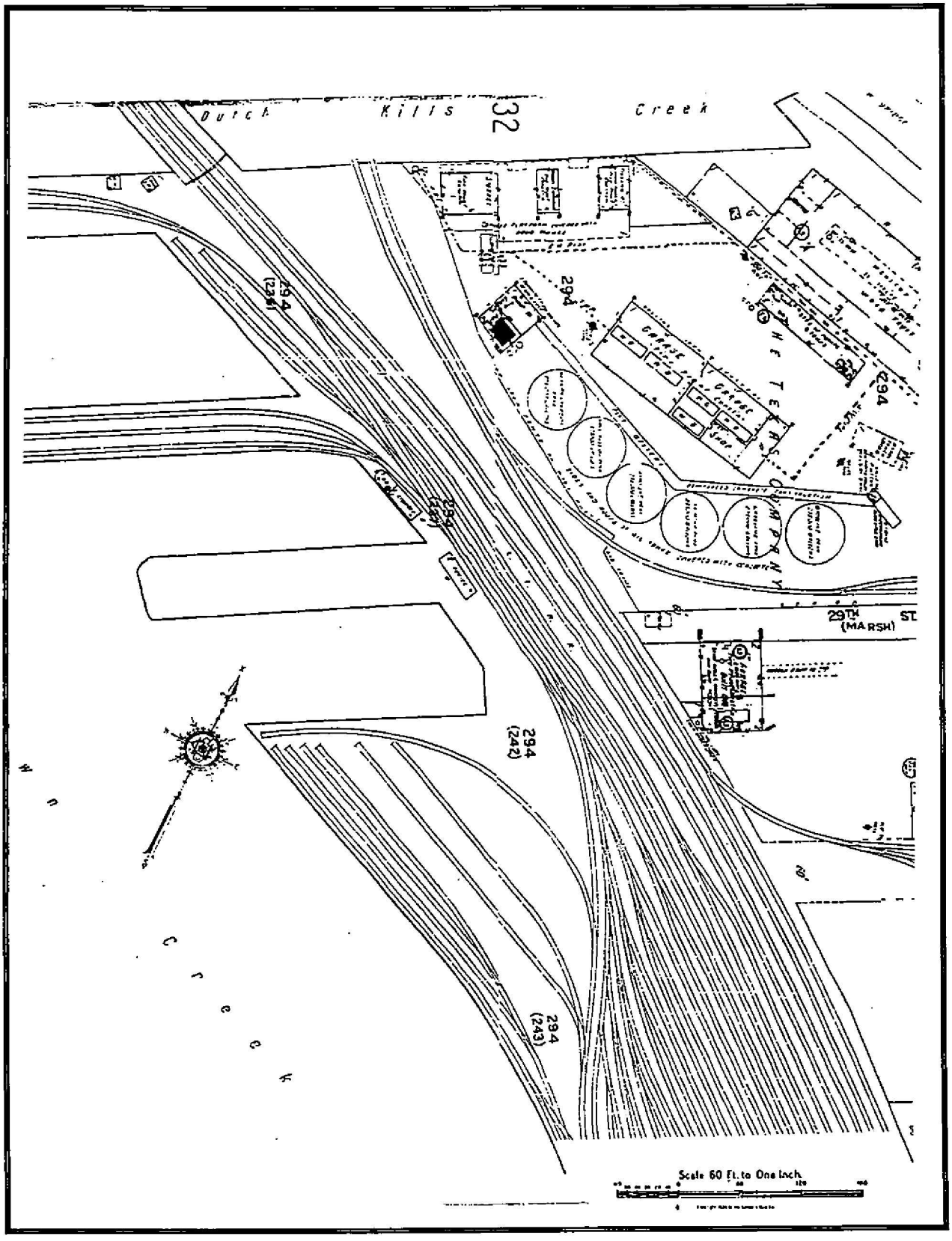


FIGURE 7b
Insurance Maps. Sanborn, 1936.

Photograph 1: Blissville Yard, facing north from Greenpoint Avenue Bridge.

6.7 Appendix

6.7.1 Site File Search Results, NYCLPC, NYSOPRHP and NYSM

PHOTO conducted by: KC Date 8.5.99 # archeological sites 2

Your Site #	Form Copied	If not fill in →	Site Name	Site Description
7 081.01.0101				
081.01.0108	#			
	081.01.0113			
	081.01.0110 (*)			
No form → location 9	→ 081.01.00642(*)			
	→ 081.01.00632(*)			
	→ 081.01.00913(*)			

Status	NRE Listings	Surveyed	Description
NRE	Emergence medical Squad	✓	38-18 Northern Blv.
NRE	Engine Co. 258 Hook + Ladder 115	✓	10-40 47th Ave - ? location not plotted on SAS map
NRE	89-02 32nd Ave PS 148	no form	
NRE	77-02/37th Ave Jackson Heights School (Primary School 69)	no form	
NRE	167-02 45th Ave. PS. 107	no form	

(*) = No location - just keep in mind these locations if they are adjacent to your project area - Public Schools and Fire Station seem to be NRE as well

TIONAL REGISTER ELIGIBLE and LISTED At least 1 Eligible 5 Listed

City Name	NR Status (L/E/N)	Form Copied	Description
	NRL	✓	Long Island City Courthouse Complex
	NRL District	✓	Ridgewood Multiple Resource Area - include -
	NRL District	✓	Hunters Pt Hist. District or Domino's (Hook Bennett P.A.
	NRL District	✓	Sunnyside Gardens Historic District
	NRL	✓	Long Island City Post office 46-02 21st St.

- Fresh Pond Traffic Hist. Dist.
- 68th Ave to 64th Place Hist. Dist.
- Central Ave. Hist. Dist

VIOUS SURVEYS

11 -2 Reports - OncleDonk House - Greater Ridgewood Historical Society - 1983 - + 1975

8 3 Reports - 2 are yours West Queens High School - 2 Reports 1992 + 1988 HPI - the other (Greenhouse Consultants - 1992)

5* - Pin 0227.75 Long Island Expressway - written by Arnold Pickman - 1983 -

5 previous surveys

Project Name: MTA/LIRR Eastside Access HAA Project Number: 1302 Client: HPI

Map: ____ Town: NYCity County: Queens

Subsheets: Brooklyn + Central Pk

W YORK STATE MUSEUM conducted by: Kim Crosher Date: 8.5.99 Site Sensitivity requested: ____ # Sites: 5

YSM#	Other#	Name	Period	Type	Comments
4554	ACP QUNS 14	—	—	Burial Site	ACP... in LI city on cresent St. NYSM Loc of cresent St. in vicinity of LI city Reporter: A.C. Parker/1922
4553	ACP KNS	—	—	TRACES OF OCCUPATION	Reporter: A.C. Parker 1922
5330	ACP QUNS 13	—	—	VILLAGE	ACP... on Maspeth Hills at Head of Newton Creek. Reporter: A.C. Parker/1922
2nd part of QUNS 376 Plotted on map	ACP KNGS	Sites General	—	—	Kings Co. NYS "... without Doubt.. occupied in nearly every part... ACP part 2, p. 582. Reporter: A.C. Parker/1922
5356	ACP QUNS NO #			VILLAGE	Reporter: A.C. Parker/1922

...RK STATE HISTORIC ARCHAEOLOGICAL SITE INVENTORY FORM

...ice Use Only--Site Identifier A081-01-0108

Project Identifier _____ Date 11/21/79
Your Name _____ Phone ( ) _____
Address _____
_____
Zip _____

NOV 21 1979

Organization (if any) _____

1. Site Identifier(s) Vander Ende-Onderdonk House Site
2. County Queens One of following: City _____
Township _____
Incorporated Village _____
Unincorporated Village or
Hamlet Ridgewood

3. Present Owner Greater Ridgewood Historical Society
Address 803 Cypress Avenue
Ridgewood NY
Zip

4. Site Description (Check all appropriate categories):
Structure/site
xx Superstructure: complete__ partialxx collapsed__ not evident__
Foundation: above__ below__ (ground level) not evident__
xx Structural subdivisions apparent __Only surface traces visible
xx Buried traces detected
List construction materials (be as specific as possible):
The site has been listed on the National Register, and is being restored with a DHP A&D grant (HP79-10035). Details on the site can be found in the documentation assembled for the above actions.
Grounds:
__Under cultivation __Sustaining erosion __Woodland __Upland
__Never cultivated __Previously cultivated __Floodplain __Pastureland
Soil Drainage: excellent__ good__ fair__ poor__
Slope: flat__ gentle__ moderate__ steep__
Distance to nearest water from structure (approx.) _____
Elevation: _____

5. Site Investigation (append additional sheets, if necessary):
Surface--date(s) _____
__Site Map (Submit with form*)
__Collection
Subsurface--date(s) _____
Testing: shovel__ coring__ other _____ unit size _____
no. of units _____ (Submit plan of units with form*)

Excavation: unit size _____ no. of units _____
(Submit plan of units with form*)
* Submission should be 8½"x11", if feasible

Investigator George Hoppal
Manuscript or published report(s) (reference fully):
Test Trench No. 1: Onderdonk House, Nassau, Queens County, New York (1975)

Present repository of materials _____

6. Site inventory:
   a. date constructed or occupation period _____
   b. previous owners, if known

   c. modifications, if known

   (append additional sheets, if necessary)

7. Site documentation (append additional sheets, if necessary):
   a. Historic map references
      1) Name _____ Date _____ Source _____
         Present location of original, if known _____

      2) Name _____ Date _____ Source _____
         Present location of original, if known _____

   b. Representation in existing photography.
      1) Photo date _____ Where located _____
      2) Photo date _____ Where located _____

   c. Primary and secondary source documentation (reference fully)

   d. Persons with memory of site:
      1) Name _____ Address _____
      2) Name _____ Address _____

8. List of material remains other than those used in construction (be as specific as possible in identifying object and material):

   If prehistoric materials are evident, check here and fill out prehistoric site form. __

9. Map References: Map or maps showing exact location and extent of site must accompany this form and must be identified by source and date. Keep this submission to 8½"x11", if feasible. See plot on U.S.G.S. Topo Sheet

   USGS 7½ Minute Series Quad. Name Brooklyn

   For Office Use Only--UTM Coordinates _____

10. Photography (optional for environmental impact survey):
    Please submit a 5"x7" black and white print(s) showing the current state of the site. Provide a label for the print(s) on a separate sheet.

INSTRUCTIONS: Write on hard surface with 2½ Pencil. Fill in & circle where appropriate. Keep top two copies (white and yellow) and send third copy (pink) to the NYAC Central Office. Coding space is provided on the right margin. Take pad apart at top first.

NEW YORK ARCHAEOLOGICAL COUNCIL — SITE SURVEY FORM

Page

NYAC SITE NO:

Location Classification: Unrestricted / Restricted

SITE NAME

Official	Institution
	NYSAA
Other: Crescent St. Site	Collector

PERIOD

Paleo. / Archaic E M L / Transitional / Woodland E M L / Historic

Unknown / Prehistoric

CULTURE(S)

SITE TYPE

Stray Find; Pictograph; Kill Site; Cemetery; Camp; Commercial/Factory
Cave; Quarry; Shell Midden; Ossuary; Cabin/House; Government
Rockshelter; Workshop; Mound; Family Plot; Village; Military
OTHER: BOG

LOCATION

State: New York
County:
Town:
Township:
Lot:
Range:

MAP

U.S.G.S. 7½ Quad Name	No.	Quarter	Coordinates
CENTRAL PARK	20	NW NE SW SE	METERS: 17325

PROPERTY

	Owner	Tenant	Previous Owner/Tenant
Name:			
Address:			
Phone:	( )	( )	( )

SITE INVESTIGATION

	Surface Collection	Testing	Excavation
Who:			
Project			"Burial Site in Long Island City along Crescent St."
Dates			

COLLECTIONS

Who:
Cat. Nos.:

PHOTOS

Who
B & W
Color
Slides
I-R

REFERENCES

Pub: PARKER #...
Unpub: STATE ED. DEPT ...

Original Reporter: Date:

STORICAL DOCUMENTATION OF SITE:
Parker, Arthur C. 1922. The Archaeological History of New York, New York State Museum Bulletin, Nos. 235-236, 43-548. Fig.

10. POSSIBILITY OF SITE DESTRUCTION OR DISTURBANCE:

SITE TYPE

11. REMARKS:

12. MAP LOCATION

7 ½ MINUTE SERIES QUAD. NAME: Laurel Park

15 MINUTE SERIES QUAD. NAME: [illegible] SW4)

U.S.G.S. COORDINATES: 18T E 0324[illegible]50 N13[illegible]50

D.O.T. COORDINATES: (if known) _____

ATTACH SKETCH, TRACING OR COPY OF MAP

SOURCE OF MAP:

13. PHOTOGRAPHS (optional)

(ATTACH)

9. HISTORICAL DOCUMENTATION OF SITE:

Parker 1922 : [illegible]

10. POSSIBILITY OF SITE DESTRUCTION OR DISTURBANCE:

11. REMARKS:

12. MAP LOCATION

7½ MINUTE SERIES QUAD. NAME: Central Park

15 MINUTE SERIES QUAD. NAME: Harlem (SW/4)

U.S.G.S. COORDINATES: 18T 590450 4513250

D.O.T. COORDINATES: (if known) _____

ATTACH SKETCH, TRACING OR COPY OF MAP

SOURCE OF MAP:

13. PHOTOGRAPHS (optional)

(ATTACH)

ARCHEOLOGICAL SITE INVENTORY FORM

DIVISION FOR HISTORIC PRESERVATION
NEW YORK STATE PARKS AND RECREATION
ALBANY, NEW YORK
518 474-0479

FOR OFFICE USE ONLY
UNIQUE SITE NO. An81-01-0101
QUAD.
SERIES
NEG. NO.

REPORTED BY: Susan Karlins

YOUR ADDRESS: _____ TELEPHONE: _____

ORGANIZATION (if any): NYAC

DATE: 6/1/77

1. SITE NAME: Faber #14

2. COUNTY: Queens TOWN/CITY: Long Island City VILLAGE: _____

3. LOCATION: Crescent St.

4. PRESENT OWNER: _____

5. OWNER'S ADDRESS: _____

6. DESCRIPTION, CONDITION, EVIDENCE OF SITE:

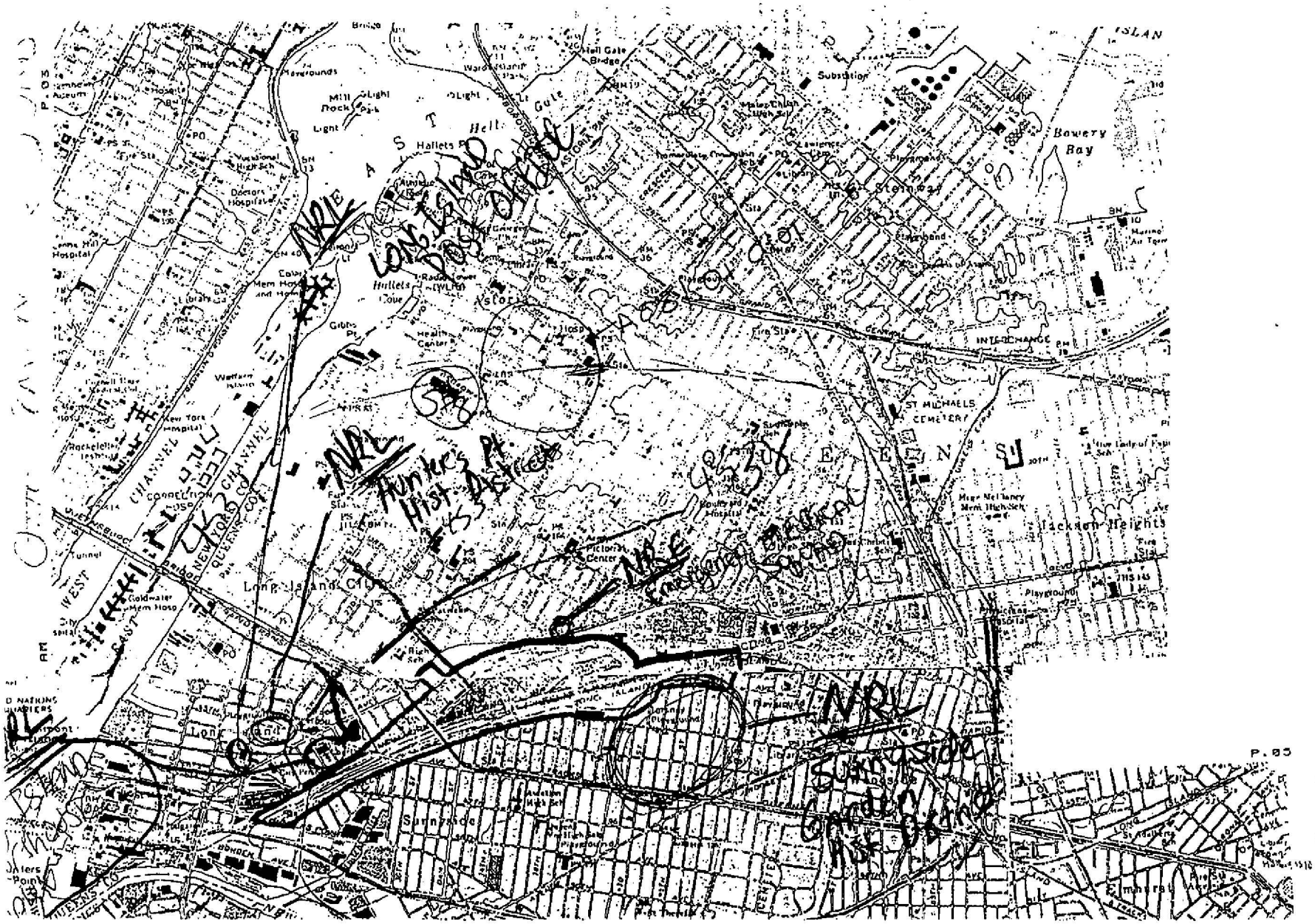
- ☐ STANDING RUINS
- ☐ CELLAR HOLE WITH WALLS
- ☐ SURFACE TRACES VISIBLE
- ☐ WALLS WITHOUT CELLAR HOLE
- ☐ UNDER CULTIVATION
- ☐ EROSION
- ☐ UNDERWATER
- ☐ NO VISIBLE EVIDENCE
- ☐ OTHER _____

7. COLLECTION OF MATERIAL FROM SITE:

- ☐ SURFACE HUNTING BY WHOM _____ DATE _____
- ☐ TESTING BY WHOM _____ DATE _____
- ☐ EXCAVATION BY WHOM _____ DATE _____
- ☐ NONE

PRESENT REPOSITORY OF MATERIALS: _____

8. PREHISTORIC CULTURAL AFFILIATION OR DATE: Unknown


NRE
Long Island Expressway
Hunters Pt. Hist. District
NRE
Sunnyside
NRE
Sunnyside Gardens Hist. District
Astoria
Long Island City
Queensboro Bridge
Hell Gate Bridge
Bowery Bay
Jackson Heights
Elmhurst
P. 85
Elm Quad

Brooklyn Quad
NRL
Fresh Pond Traffic Hist. District
NRL
Fresh Pond Hist. District
64th Place Hist. District
NRL
Central Ave. Hist. District
Site
All the circles represent different parts of the NRL Ridgewood Mult. Resource Area

Long Island City
Sunnyside
Hunters Point
Queens
Kings Co
Newtown
Calvary Cemetery
Penny Bridge
Creek
Radio Towers (WNYC)
Fireboat Sta
Bushwick Inlet
East River
McCarren Park
Greenpoint
Williamsburg
Dept of Pub Works
Queensboro Bridge
Grand
Island
Cooper Park
Playground
Community
Hospital
AUG-05-88 04:31 PM

7.0 MASPETH YARD ARCHAEOLOGICAL RESOURCE EVALUATION

7.0 MASPETH YARD ARCHAEOLOGICAL RESOURCE EVALUATION

The Maspeth Yard is located in the borough of Queens near the head of Maspeth Creek, a tributary of Newtown Creek (Figure 1). The site is bounded by 57th Street to the south, a large manufacturing complex to the west, approximately 20 feet northwest of 49th Street, and Rust Street to the east (Figure 2; Photographs 1-6). Project plans include utilizing the site for freight operations.

LIRR's rail yard complex at Sunnyside in Queens is currently used by New York & Atlantic Railway (NYAR), a freight railroad. Some of the NYAR facilities would be relocated to the existing Maspeth Yard in Queens. Limited facilities would be constructed here to meet NYAR's needs, but the yard would not be expanded beyond its current boundaries.

There will be limited subsurface impacts at this yard. Installing new tracks and realigning old ones will not cause subsurface disturbance to depths expected to impact potential archaeological resources. However, there may be excavations for utility trenches which would be about five feet deep, and could extend into archaeologically sensitive areas. Since the locations of utility trenches is unknown, the APE for the Maspeth Yard is the entire yard (Figure 2).

A comprehensive study of the Maspeth Yard area was completed in order to determine the archaeological potential of the site, and to assess impacts which may result from the proposed project.

7.1 Study Area Description

The project site is located in the borough of Queens on the western end of Long Island, New York. Over the last one million years, the topography of Queens was altered by the advance and retreat of glaciers. A terminal moraine, or ridge line was produced by glacial activity along the limit of the advancing ice sheets. The moraine, which is almost two hundred feet high in some locations, lies in Brooklyn, several miles to the south of the project site, near the Eastern Parkway. To the north of this glacial ridge, a coastal plain, or an elevated sea bottom with locations of low topographic relief, estuaries, and extensive marshy tracts was created (Eisenberg 1978; Schuberth 1968).

The Maspeth Yard is a curved site following the railroad tracks near the head of Maspeth Creek, a tributary of Newtown Creek (Figures 1 and 2). Early maps and documents indicate that the project area was once partially inundated by a tributary of the Newtown Creek, itself a tidal arm of the East River. Shallow wetlands surrounded portions of the creek shoreline. To the east of the project site was higher ground more suitable for settlement. To the west, a small island, approximately 35-45 acres, was formerly located within the Newtown Creek. First named Smith's Island by early European settlers, the Island was later known as Maspeth Island and finally Furman's Island. The island was

present until the 1920s when the surrounding waters were filled. The examination of 19th century maps indicate that the tributary, called Maspeth Creek, almost pointing toward the village of Maspeth, still dominated the landscape (Figure 3). As a result of agricultural land development and later urbanization, the former wetlands and creek were slowly filled.

The 1979 USGS topographic map (Brooklyn Quad) depicts the Maspeth yard amidst a well-developed urban industrial locale (Figure 1). The Maspeth site, which slopes slightly to the southwest, is approximately 10-20 feet above sea level (ASL).

7.2 Contextual Overview

7.2.1 Prehistoric Context

In order to understand the prehistoric development of the project site, it is necessary to develop a cultural chronology and a prehistoric context for the project area. To achieve this goal, the review of what is known about the characteristics of native peoples during each of the accepted prehistoric periods was conducted. This type of examination provides a framework with which to interpret potential resources within the project site.

North American prehistory is divided into the following periods, the Paleo-Indian, Archaic, Transitional, and Woodland. Scholars further divided the Archaic and Woodland periods into subperiods using the designations Early, Middle, and Late. Each period is characterized by environmental changes, the characteristics of prehistoric peoples, and the cultural artifacts that were left behind. Researchers utilize a variety of sources including historical documents, ethnographic reports, prehistoric artifact collections, and archaeological investigations to increase our current understanding of prehistory.

Based on research conducted during the early 20th century, archaeologist Reginald P. Bolton concluded that the former occupants of the study area were subject to, or members of, the Rockaway chieftaincy, whose territory stretched from the East River to Jamaica Bay, diagonally across Long Island (Bolton 1922). He has also identified their main settlement as located in Far Rockaway, Queens (Grumet 1981).

An alternative suggested by a few researchers is that the Maspeth or Mispat native group, once located just west of the project area, may have been a subdivision of the Canarsee chieftaincy, whose main village was located at Canarsie in southern Brooklyn. This group may have had settlements scattered above the Newtown Creek wetlands. This theory however, is not supported by surviving documentation or archaeological evidence (Grumet 1981).

Although documentary sources confirm the presence of native groups throughout Queens, they seldom identify group affiliation. The decline of the native population, particularly during the 1640s and 1650s, caused many Long Island Indian groups to

combine and reorganize in complex ways. The individuals recording the information were therefore unable to clearly identify distinct groups.

In 1670, Daniel Denton, an early resident of Queens, wrote that the Indians of western Long Island lived principally by "hunting, fishing, fowling and the cultivation of corn" (Denton 1902). Without mentioning group affiliation, he reported that because of disease and war, the number of native villages on western Long Island had decreased from six to two. He further wrote that the natives relocated their "small moveable Tents" a few times a year, going to their principal quarters where they plant their corn, hunt, and fish.

Researchers agree that the prehistoric cultural groups that populated the area practiced a settlement and subsistence pattern of seasonal rounds exploiting a diverse array of resources. The types of sites found in the surrounding area, as reported by archaeologists, ethnographers, and amateur collectors, reflect this pattern. These sites include villages, burials, middens, and small campsites. These sites are often situated on well-drained upland soils in proximity to fresh water.

Reported Sites in the Region. There is a strong body of documentary data reporting that three prehistoric sites lie within two to five miles of the Maspeth Yards. One of the recorded prehistoric sites may be within the specific boundaries of the Maspeth Yard, while the other two are some distance away.

(1) Maspeth (Marshpath): Historian Bolton suggests that the area along Newtown Creek (Mespacht Kill, or Mespaethches), was the location of a native village. Grumet reports that a wigwam was recorded east of the project site at Maspeth Kills in 1669 (Grumet 1981). Historian James Riker, wrote that "rude implements" of the local Indians, chiefly "stone axes arrowheads, and arrows of reed" were still being found by local farmers in 1852 (Riker 1852). Records indicate that during the Governor Kieft War (1643-1645), several incidents between the Dutch and Native Americans occurred in this area. According to the documentary data, part of the village site may have been located within the boundaries of the Maspeth Yard.

(2) Canapaukah: Identified as "long water land" or "water-place" this site was likely on the northern end of the Dutch Kills. A 1656 deed describes its location along a "small Creeke called by the Indyans Canapaukah," which was later named the Dutch Kills. The site is also mentioned in conjunction with a waterpowered grist mill, called Burger's Mill, built to the northwest of the study area, between 41st Avenue and 41st Road, slightly south of Jackson Avenue (Grumet 1981; Seyfried 1984b). The estimated location of this site is approximately three miles northwest of the Maspeth Yard.

(3) Quandus Quaricus: Mentioned in a document dating to 1656, the site was located near the English Kills, the southwest branch of the Maspeth Kills

(Grumet 1981). No other information is known about this site, which may have been approximately two miles to the southwest of the project site.

Site File Search Results. The site file search found one prehistoric site within the boundaries of the Maspeth Yard. Six additional sites were also identified within the wider project area, approximately one to five miles away (Appendix 7.7.1). These recorded sites date to the Woodland period. Generalized site locations were provided by the NYSM and supplemented by other archaeological and historical sources (Bolton 1972; 1922; Skinner 1915; Beauchamp 1971; 1900; Grumet 1981) in an attempt to more accurately describe each site.

(1) NYSM #4536 (ACP Queens #13): This site was identified by Parker as a village site at the head of Newtown Creek (on the north side) close to, or partially within, the Maspeth Yard project site.

(2) NYSM #3613 (ACP Kings no #): This site is located near the mouth of Newtown Creek in Greenpoint, Kings County. Archaeologist Arthur C. Parker reported "traces of occupation" in this area (Parker 1920)[1]. The NYSM places it staring northwest of Greenpoint Avenue (which crosses Newtown Creek south of Dutch Kills), and extending west toward the East River. Therefore, it is one and a quarter miles northwest of Maspeth Yard.

(3) NYSM #4535 (ACP Queens #12) This site is identified as a shell heap or midden found at Sanford's Point in Astoria, Queens. Parker[1] indicated that "early and modern relics" were recovered, and Bolton mentions "various Indian objects." Parker's map places the midden on the northern shore of Hallett's Cove, about four miles northwest of the study area (Parker 1920; Bolton 1972).

(4) NYSM#8217 (ACP Queens no #) is a camp site located at Sanford's Point, in Astoria, Queens, to the north of the shell heap (NYSM#4535) discussed above (Parker 1920). The location is just under five miles northwest of the study area.

(5) NYSM#4538 (ACP Queens no #) refers to a village site in Long Island City, Queens. The location provided by the NYSM extends from the rail yard complex at Sunnyside on the east to 12th Street on the west. Parker's published map appears to show the village somewhat further north, approximately centered on 35th Avenue and Crescent Street (Parker 1920), which would place it three miles to the northwest of the study area.

[1] Parker's research into the known prehistoric sites of New York State identified a number of sites within New York City, which he describes, and often gives numbered designations (ACP#) in his 1920 publication, "The Archaeological History of New York." The NYSM locates these sites based on his maps.

(6) NYSM#4537 (ACP Queens #14) identifies a burial site in Long Island City, Queens. Parker places this burial on Crescent Street, but does not provide the cross street. His map seems to put it northeast of the village site discussed above (NYSM#4538) on or northeast of Broadway, which would mean that it was at least three miles outside the study area (Parker 1920). Bolton reports human burials (note the plural), "near Crescent Street," although his map siting is the same as Parker's (Bolton 1972). The locations and comments provided by the NYSM suggest two or more burials, giving two locations, both centered on Crescent Street.

(7) OPRHP #A081-01-0100 or "Sunwick" was described by archaeologist Reginald Bolton who reported that the site (also called Sunwicks or Sunswicks) was a "native station" which yielded shell deposits and a few artifacts. Sunwick was in Ravenswood Park, now Rainey Park, on the Queens shore of the East River Shore, about two and a half miles to the northwest of the project site (Bolton 1922; Grumet 1981).

7.2.2 Historic Context

During the early 17th century the Dutch explored and founded the colony of New Netherland (1609-1624). Settlement began in Manhattan and soon spread across the East River to Brooklyn and Queens. In the late 1630s, fur trappers, working for the Dutch West India Company, were the first Europeans to set up camps in western Long Island along the East River and its tidal creeks or kills ("Kill" is the Dutch word for a small stream or tidal inlet). In 1638, Hendrick Harmensen became one of the first Europeans to build a small cabin at the head of the Newtown Creek. Newtown Creek is a tidal water body that flows into the East River and is part of the current boundary between Queens and Brooklyn. Although likely within the project area, the exact location of this residence is unknown. Over the next 15 years both the Dutch and English settled in western Long Island.

Documentary research indicates that the oldest land deed for Long Island was a 1642 patent, still on file in Albany, for ca.14,000 acres of land called "Mispot (Maspeth) at the head of Newtown Creek" (Queens Borough Library, BULLETIN #650,1939). Reverend Francis Doughty, a dissenting clergyman from England, had initially settled in New England. He organized a group of settlers and was granted land that encompassed "practically all of the present Long Island City and Newtown" including the young village of Maspeth at the eastern end of Newtown Creek (Von Skal 1908). Doughty soon moved to Flushing when a dispute with Gov. Kieft, the Director-General of New Netherland, culminated in Kieft imposing a fine of "ten dollars and twenty-four hours imprisonment" (Ibid. 1908).

After Doughty left, a few settlers remained at Maspeth until the following year when hostilities with the Native peoples escalated. During Governor Kieft's War, which began in 1643, an entire Indian village was massacred. Several Long Island Indians joined with

their neighbors in an effort to retaliate against the European settlements (Seyfried 1986; Erlich 1979). The village of Maspeth was attacked and the settlers fled to Manhattan.

After Kieft's War ended, many returned to reestablish the village of Maspeth, but during the English/Dutch war of 1652-1654, several settlers left the unprotected village for the relative safety of Connecticut. When the English made new threats against the Dutch in 1656, the Dutch residents of Maspeth, led by Nicasius De Sille, retreated to the safety of nearby Smith's Island (Solecki, 1948). Da Sille was able to obtain a patent for the island on March 27, 1656 and named his settlement "Aernheim" after his birthplace on the Rhine River (Ibid. 1948). The village did not survive for long because Governor Petrus Stuyvesant became concerned that the village of Arnhem would impinge on the development of other neighboring villages and so ordered the "village destroyed and the houses torn down" (Stankowski 1977).

In 1683 the English divided New York into ten discrete counties, one of which was Queens (Seyfried 1984). The western portion of this new county was further divided into three townships, with the project site being located in Newtown. This town extended west and encompassed the tidal creek called Mespaethches by the Native Americans and Newtown Creek by the English. Throughout the rest of the 17th, and well into the 18th century, Newtown became a hub of agricultural activity, providing the rapidly growing European community in Manhattan with produce and raw materials.

Englishman James Way, who settled at the "English Kills" sometime near 1650, was one of the earliest landowners in the area. He died in 1685 and his son John acquired the farm in 1691. John's son, James Way, owned the property from 1729 until his death in 1788. Samuel Way, the son of James' brother Samuel, then owned the land until he died in 1798. His daughter Jane, who had married Dr. Henry Mott in 1784, inherited the farm. Dr. Mott and his wife lived in Glen Cove until 1799 when they moved to Maspeth. He sold most of the estate to Garrit Furman in 1815.

The original Way farmhouse was a small two-room structure located just north of what is now Maspeth Avenue and just west of the present railroad tracks. It remained standing until ca.1928. During the Mott ownership, the family established a burying ground alongside the farmhouse (Figure 6)[2]. In December 1839, Dr. Henry was interred in the small plot, which had been enclosed by a granite wall topped with an iron railing (Seyfried 1986). By 1950, encroaching construction and vandalism threatened the small graveyard. Because the Motts had been one of the most prominent Quaker families in

[2]Those buried there include Maria Hobby, 1877; Eliza Mott, 1866; Esther Mott, 1854; Dr. Henry Mott, 1859; Jane Mott, 1834; John Way Mott, 1827; Henry Mott Hobby, 1826. There were also six additional burials with no inscriptions on the markers (Meigs 1932).

Maspeth, the Quakers excavated the thirteen graves and reburied them in Prospect Park in Brooklyn. (Meigs 1932)[3].

Another prominent settler of colonial Maspeth was Judge Joseph Sackett, who built a large Dutch colonial house on a hill at the top of Maspeth Creek during the first quarter of the 18th century. The residence had a double verandah with an impressive view of the Maspeth and Newtown Creeks. Judge Sackett died during the French and Indian Wars in 1765 and Walter Franklin acquired the house (Seyfried 1986). A wealthy New York merchant, Franklin occupied the house until 1780 when it came into the possession of Colonel Issac Corsa, a hero of the French and Indian War. General Warren used the Sackett House as his headquarters during part of the British occupation of Long Island.[4]

Throughout most of the 18th century, Maspeth was a rural agricultural community. At the onset of the Revolutionary War, the majority of the residents of Queens remained loyal to the British (French 1860; WPA 1939). However, many residents of Newtown and parts of northwestern Queens supported the Colonial efforts. British forces occupied Queens for the seven years following the defeat of George Washington's army at the Battle of Long Island in August 1776 (Seyfried 1984).

British soldiers spent their leisure time at the local tavern called the Queens Head, located not far from the Maspeth Town Dock which probably stood within the project site. The tavern was reported to stand either on the southeast corner of Maspeth Avenue and 57th Avenue, then Old Flushing Avenue (Stankowski 1977), or at the intersection of 58th Street and Maspeth Avenue (WPA 1939). The tavern, which in either scenario would have been several blocks southeast of the project site, had been built by the Township of Newtown ca. 1720 and rented to various tavern keepers over the years. It was from the porch of the Old Queen's Head tavern that General Howe watched his troops set out, down Maspeth Creek for Manhattan, possibly leaving from the dock within the project site (WPA 1939). During the Revolution the tavern was owned by Captain Peter Berton, who sold it in 1783 at the end of the British occupation (Stankowski 1977). It was in private hands until it was converted to an Amoco Gas Station in the 1930s before it was finally demolished.

During British occupation, officers commandeered the better rooms of local farmhouses, while troops were bivouacked in kitchens, huts, and tents along the road and in the fields. These soldiers destroyed fences, buildings and orchards in search of firewood and often stole valuables and livestock (Munsell 1882; Seyfried 1984b). Well over 100 years later,

[3] An insert in the volume reads "New York Supreme Court, File 73, 1950: Application of the New York Monthly Meeting, Religious Society of Flushing, as trustee of certain trust under the last will testament of Eliza Mott and Maria Mott Hobby. Received January 10,1950 an order authorizing the Society to disinter the bodies in Queens cemetery and bury in Prospect Park Cemetery, Brooklyn."

[4] The house was at one time owned by De Witt Clinton, the Governor of New York State and builder of the Erie Canal. This site lies at the foot of 56th Terrace on the right and before the railroad tracks.

some of their huts were still visible along the roadway and local farmers frequently plowed up Revolutionary War relics.

After the war, Maspeth prospered. As the population grew, the village moved away from its agricultural economy, and a number of commercial industries were established. During the 19th century, the Furman family introduced two of these new ventures to Maspeth.

Garrit Furman, a successful lawyer, purchased a large tract of land, including Smith's Island, during the first quarter of the 19th century (Seyfried 1986). In 1817-1819, Furman had an imposing mansion constructed in the Federal style. Garrit and his wife, Mary Eaton Furman, spent their summers at the house into the 1880s. Inspired by the pleasant surroundings of Maspeth, the judge wrote a poem in the 1840s entitled "Rural Hours" (Seyfried 1986).

Judge Furman laid out and opened Maspeth Avenue in April 1836 to serve as a means of a land approach to this mansion, initially only accessible by water. The new road ran from the junction of 58th Street and Maurice Avenue west over the marshy ground to the creek shore. The Maspeth Avenue and Toll Bridge Company, a commercial venture, was created to oversee the road as well as a toll bridge constructed over Newtown Creek and the newly named Furman's Island (Ibid. 1986). Nineteenth century maps show the path of the road, and sometimes the toll house, as well as other unidentified structures (Figure 3; Sidney 1849; Riker 1852; Dripps 1852).

Judge Furman died at Maspeth on June 6, 1848 and left his estate to his son William H. Furman (Seyfried 1986). William was a passionate trout fisherman who often fished the numerous small streams on the south side of Long Island. When he was financially well-off and in his early forties, he decided to set up a trout hatchery on his own property. He believed that this would invigorate the waning sport and restock the streams of Long Island. He selected a five-acre site on the south side of Maspeth Avenue, just opposite his mansion (about 56th Street). He planned to raise trout in an artificially excavated stream in the marshy ground near Newtown Creek instead of in a cold, swiftly running stream. This was a revolutionary idea in the 19th century. Many of his friends pointed out that the water he struck would be brackish from tidal flow and the ground seepage would not be rapid enough to simulate a mountain stream. Furman devoted much of his time to the project and despite the many attempts to dissuade him, his persistence was rewarded. When excavated, numerous springs of cold, pure water flowed into his artificial stream, thus beginning the trout hatchery, a project that he perfected over the next twenty years. Furman spared no efforts in making the spawning race a "natural" environment for the trout, and eventually screened off the stream from water rats and human poachers. By 1870 Furman and the Maspeth Trout hatchery were nationally known (Figure 4).

His fame, however, came with a price. The large numbers of visitors, often more than he could accommodate, flocked to this novelty. He attempted to discourage tourists who

tried to use his estate as a picnic ground and sightseeing attraction. To flee the crowds, Furman began spending more than more time at his summer residence in Smithtown, Long Island. By the late 19th century, rapid commercial development on the shores of Newtown Creek and increased water pollution made it virtually impossible to maintain the hatchery.

When Furman died in 1893 the trout hatchery at Maspeth was abandoned. The mansion was believed to have survived until 1899 (Seyfried 1986).

One of the wealthy and prominent neighbors of the Furmans was James Maurice. Born in 1814, Maurice became a lawyer, State Assemblyman and eventually a United States Congressman. In October 1840 he bought eight acres of land from the Furmans and had a mansion constructed on the south side of Maspeth Avenue (Figure 6).

To the west of the project site, Furman's Island (previously Smith's and Maspeth Island) has had a long commercial history. It was the opening of the toll road that initially stimulated the founding of commercial ventures in the area. Peter Cooper, the founder of Cooper Union, established his glue factory on a ten-acre site fronting Maspeth Avenue between Grand Avenue and Debevoise Avenue. The factory was active from 1849 until ca.1905 (Stankowski 1977). Nearby, the ropewalk of Lawrence and Cooper was established on Morgan Avenue near Maspeth Avenue. This venture operated into the 1890s.

Cord Meyer, a German immigrant, started the Acme Fertilizer Company on Furman's Island in the 1840s which was immensely successful (Stankowski 1977). When Meyer died on June 10, 1891, he was a multimillionaire. Unfortunately, with his death, the fertilizer business on the island shut down. Charles G. Covert, born at Maspeth in 1826, founded the coal and lumber business on the north side of Furman's Island above Maspeth Avenue. Covert served as Supervisor of Newtown in 1858 and 1865 and died on November 24, 1873. The lumber yard closed soon after his death (Seyfried 1986).

Closer to the project site, the Maspeth village was changing from a widespread settlement to a well-planned village. Surveyors "laid out streets and house lots with orderly precision, forming a grid pattern called a village plat. The streets of the village plat were arranged so that they intersected the colonial Period highways of the area" (Stankowski 1977).

Another change to the village occurred in 1866 when the charter for the Maspeth Avenue and Toll Bridge Company, mentioned above, expired. The owners tried to extend its life by incorporating as the Williamsburgh and Newtown Railroad in 1867 (Stankowski 1977). Iron rails were laid from 58th Street and Maurice Avenue in Maspeth in a straight line over William Furman's land to the junction of Kingsland and Metropolitan Avenues in Brooklyn. However, before operations began the company abandoned the project and property holdings were sold under foreclosure with the unused rails selling for $10,000.00. The old road and bridge over Newtown Creek fell into disrepair.

Authorities deemed it unsafe and removed it in 1876. To compensate for the loss of the bridge, Grand Street, which paralleled Maspeth Avenue, was extended from Brooklyn into Queens County with a new bridge over Newtown Creek. Travelers preferred the new road, and Maspeth Avenue soon fell into disrepair, and eventually reverted to a dirt path.

In the 1860s the South Side Railroad was constructed across the project site. The introduction of the railroad quickly changed the fabric of the landscape. This "high-speed" form of travel gave industry, and individuals, fairly quick access to Manhattan and the ports of New York. The project area, however, did not see the dramatic development that other portions of Queens enjoyed.

One of the new industries in the area was The Liquid Carbonic Company, which built a plant between the old Way farmhouse at 55th Street and the Long Island Railroad ca.1920 (Stankowski 1977). By the end of the 1920s the building was now the home of the Circle Wire and Cable Company, with a large factory on the south side of Maspeth Avenue. The land from 55th Street to Newtown Creek, including Furman's Island, remained undeveloped through the 1930s.

Historical Sites In the Vicinity. One historical site was examined archaeologically within the vicinity of the project site. In 1935 an early colonial fireplace dating from ca.1650 was examined by Ralph Solecki and Stanley Wisniewski (Solecki 1948).[5] The site was located west of the railroad tracks on the south side of Maspeth Avenue, outside of the project site.

Wisniewski also reported another historical find in the area:

> *The property map of land belonging to the heirs of Garrit Furman, made August 1877, shows only one building structure on plot No.3 which is north of Maspeth Avenue and west of the railroad tracks. No large foundation was present in this area when Ralph Solecki and I explored the area in the early 1930s. There was only a small house foundation located about a hundred feet N.W. of the old Mott Cemetery plot. This small foundation measured approximately 9' x 15' and may have been the remains of the old James Way structure. As I recall, it was composed of rough field stone, with stone steps entering the basement from the east side.* (Wisniewski 1986)

[5] Among the European material were 22 pieces of white kaolin pipe stems, 7 complete pipe bowls of which three were marked with the initials PG on the heel, 1 fragmentary pipe bowl, 17 lead buckshot balls about .26 caliber, 2 lead balls about .70 caliber, a dark gun flint, 6 small pieces of blue china plate, 39 hand wrought nails, and 26 pieces of clay bricks mentioned above. These were crudely fashioned, not all of the same dimensions and somewhat smaller than modern bricks. There were five whole bricks in the collection.

In addition, a small pipe-maker's kiln was found in the 1940s, located further west of this small unidentified foundation. Based on the styles of pipes recovered, Wisniewski identified this as a 19th century kiln, although it did not appear on historic maps (Wisniewski 1986).

Cartographic Review. A detailed reconstruction of land use and development at the project site throughout the historical period was accomplished by reviewing available maps and atlases. This process permitted the potential identification of archaeologically sensitive areas as well as any subsequent activities which may have caused subsurface disturbance to potential resources.

Cartographic research indicates that through at least the mid-19th century, the project area was partially inundated along the shore of the Maspeth Kill, a tributary of the Newtown Creek (Van der Donck 1656; Borough of Queens 1800; Sidney 1849; Riker 1852; Dripps [Conner] 1852). A map from 1800 showed the project site partially inundated with land on both sides of Maspeth Avenue owned by Henry and Jane Mott (Borough of Queens 1800). The earliest published map that showed individual land owners for the immediate area was Sidney's 1849 *Map of Queens*, however, no owner was shown for the project site.

Three years later, two maps indicated that W. H. Furman owned almost all of the project site that was not inundated (Dripps 1852, Figure 2; Riker 1852). By 1873, the project area had been altered considerably (Beers 1873; Figure 4). Maspeth and the surrounding area had numerous streets laid out and the railroad now crossed the project site. W. H. Furman was shown as the owner of the land just west of the railroad right of way on both sides of Maspeth Avenue. The curved trout hatchery was present, as well as the Maurice house and several structures on Furman's property. By 1891, the hatchery had disappeared (only to reappear on later maps), but the residential tracts remained under the same ownership (Wolverton 1891; Figure 5). The cluster of historic houses and outbuildings outside of the project site, including the Mott cemetery, remained unchanged for many years (Figure 6; Sanborn 1902, 1914; Hyde 1903, 1908, 1915). Throughout this period the project site remained vacant except for the railroad tracks (Ibid.).

A 1915 map depicted the location of the "Old Town Dock" at the limit of the Maspeth Kill adjacent to the Montauk Branch of the Long Island Railroad, within the project site (Figure 6). It further indicated that by that date much of the creek had been filled in. The project site was still devoid of development.

By 1936 the former Furman dwellings and outbuildings had been removed and the Liquid Carbonic Company's factory now stood on the north side of Maspeth Avenue, to the west of the project site. In addition, the railroad yard appeared to have been expanded with a series of new spurs built to service various factories (Sanborn 1936). On the south side of Maspeth Avenue outside of the project site a small coal company had been established. While the 1950 Sanborn indicated that the Mott family cemetery

was present, it was actually removed early in that year (Sanborn 1950). On the south side of Maspeth Avenue, the coal company building was still present, but this was gone by 1980. Sometime between 1950 and 1980 the Maspeth yard had taken its current form (Sanborn 1950; 1980).

7.3 Existing Conditions

7.3.1 Prehistoric Archaeological Potential

The information collected from documentary sources indicates that the closest potential prehistoric site is the one Reginald Bolton described at Maspeth (Marshpath) adjacent to the Newtown Creek. The exact location of this site, however, has not been verified archaeologically. The site file searches identified a prehistoric site that may have been located within the current project site, NYSM #4536 (ACP Queens #13) was identified by Parker as a village near the mouth of the Newtown Creek. The site which has not been verified archaeologically, may be the same village that Bolton wrote about.

The site files search identified six other sites, discussed above, as present within the surrounding area. These sites range in type from the vague "traces of prehistoric occupation" to burial sites, camp sites and village sites. Because the documentary evidence of prehistoric occupation is fairly abundant for this section of Queens, these resources can be considered reasonably accurate.

In order to determine the likelihood that the current project site was at one time exploited by native peoples, it is necessary to review what is known about the site's topographic characteristics over time. Because the site may have been partially inundated by the Maspeth Creek during at least some part of the prehistoric era it is not considered to be a preferred location for a primary or habitation site. The adjacent landscape to the south and east of the site retains the characteristics typically preferred by prehistoric peoples, that is well-drained upland soils in proximity to fresh water.

Although the site was inundated at the end of the prehistoric era, it may not have been during earlier periods when water tables were lower. Studies of the prehistoric environment indicate that the rate of post-glacial rising sea levels varied throughout the prehistoric period (Weiss 1987; Kardas and Larrabee 1977). Beginning some 9,000 years ago the rising sea level directly shaped most of the topography of the region. The East River and its entire tributary system, including Maspeth and Newtown Creeks, were inundated, turning the East River and Harlem River into tidal straits (Raber et al 1984 as quoted in Historical Perspectives 1987).

Toward establishing subsurface conditions, soil boring logs were reviewed. A series of seven borings was completed across the project site in April 1999 (See Appendix 7.7.2). Tests were conducted to depths between 10-16 feet and water was encountered during each test. The results indicate that a considerable amount of historical activity has taken place within the site boundaries which may have impacted prehistorically sensitive areas.

Five of the seven borings reported fill levels varying between ten and 16 feet deep (MYW 1-3, and MYB 3-4). The final two tests, conducted near where Maspeth Avenue intersects the yard, contained less than two feet of fill underlain by varying types of sandy soil. (MYB 1-2). Furthermore, soil boring MYB-1 encountered water at nine and a half feet below the surface. The presence of sand may be indicative of the site's previous inundation. No levels of peat or obviously buried living surfaces were encountered in any of the test borings, although in two of the borings clay was encountered. It is clear from the varying levels of fill and sand that at one time the project site had an undulating surface that required varying degrees of filling in order to level it for use by the railroad.

The borings suggest that the project site has a moderate degree of sensitivity for prehistoric resources buried beneath the fill. Prehistoric habitation sites are typically found on well drained surfaces. Sand provides an overly well-drained surface, while clay would have resulted in poor drainage. The combination on these levels could have created pools of standing water, not the preferred living surface of native peoples. However because the depths of soil borings were limited (10-16 feet below the surface), and some did not extend beneath fill levels, it is unclear if a buried living surface with more permeable soils exists beneath protective layers of historical fill below that depth.

The borings imply that most of the project site did not appear to exhibit the preferred topographical characteristics that native groups chose to inhabit during the prehistoric era. The fact that the site may have been partially inundated land indicates that it would have seen limited usage by the prehistoric population of Queens. However, because of the documented presence of prehistoric sites adjacent to Newtown Creek, there is the possibility that the project site was utilized prehistorically in some capacity. Therefore, the project site has a moderate sensitivity for prehistoric resources which may lie buried beneath fill.

7.3.2 Historic Archaeological Potential

Up until the late nineteenth century the northern portion of the project site was inundated by the Maspeth Kill (Figure 3). There is no record of a concerted effort to fill and level the streams and marshy areas at the end of the Maspeth Kill, however, some dumping/filling in conjunction with silting has obviously taken place over the decades to create today's land surface. The low-lying, deserted tracts were convenient dumping grounds well into the twentieth century, when cartographic resources depict most of the filling took place.

Cartographic research indicates that the project site only possessed one historical resource prior to the introduction of the railroad. The Old Town Dock, which once stood at the head of the Maspeth Kill, may have once been located within the project site alongside the former creek and west of the first set of railroad tracks which were laid through the site (Figure 6; Hyde 1915). Historic reports placed a town dock somewhere in this vicinity as early as the 1770s (WPA 1936; Stankowski 1977), but 19th century

maps and atlases did not show it within the project site (Beers 1873; Wolverton 1891; Figures 4, 5). Conversely, 20th century atlases labeled the site of the Old Town Dock or Old Town Landing opposite 56th Terrace within the project site (Figure 6). However, these atlases were not clear about whether they were reporting the dock's former location or its existing location (Hyde 1915, 1954). By the late 19th century, the railroad had been built either over or adjacent to the site of the dock, so it may have become part of the landfill.

The precise age of the Old Town Dock is unknown, but it is postulated that it stood from at least the 1770s through part of the 19th century, and possibly into the 20th century. If a dock did stand at this location for more than two hundred years, it was probably upgraded and/or replaced during its existence. It is highly unlikely that a dock built over a small creek in the 18th century could have survived repeated use and the effects of weathering without requiring periodic improvements at the very least. Moreover, as ship designs evolved and dockage requirements altered to meet these changing needs, original dock components would have been replaced. Most likely, if the dock stood for more than two centuries, it was periodically rebuilt and modified as needed. Therefore, if the dock was buried within landfill in the 20th century, its remains would exhibit evidence of multiple 19th and 20th century structural and functional improvements, not evidence of its late 18th century construction.

Because filling the creek was an ongoing process, and because the street configuration was altered so many times in the vicinity of the project site, it is difficult to determine exactly where the original location of the dock would have been in relation to today's landscape. Cartographic and documentary resources do little to elucidate when it ceased to exist, or when it ceased being functional and became part of the landfill - if in fact it did. Based on an extensive comparison of historic and modern maps, its approximate location is estimated to be just north of where Maspeth Avenue now crosses the project site.

A soil boring taken at the approximate location of the Old Town Dock as portrayed in 1915 (Figure 6) revealed only one foot of fill, containing ash and coal fragments, underlain by layers of culturally sterile sand and gravel (Boring MYB-2; Appendix 7.7.2). Water was found at 13 feet deep, and no evidence of wood was reported in the boring log. This suggests that even if the dock had become part of the landfill, little of it could have survived beneath the modern surface since the shallow fill level would have done little to afford protection. If fill levels were deeper, they may have served to preserve the dock, but otherwise it would have been so close to grade level that modern railroad use would have caused disturbance to its site.

In all likelihood, if the dock still stood in the 20th century, it would have been removed and/or demolished and used as fill when the Maspeth yard was created. The need to have a solid base beneath the railroad tracks would have necessitated intensive compaction of the shallow fill layer, which would have further disturbed its footprint. It is highly unlikely that undisturbed and potentially significant remains of the dock exist beneath

the modern surface. Therefore, the project site is not considered potentially sensitive for this resource.

Prior to the introduction of the railroad, the main body of a historical farm site (belonging to the Way, Mott, and Furman families) was located to the west of the project site (Figures 3, 4, 5, 6). The domestic compound of the farmstead, including any barns, outbuildings or potential shaft features (e.g. wells, privies), would have been in close proximity to the main house which fronted on Maspeth Avenue at least 600 feet west of the project site. If any significant features were at one time present, they would have been severely impacted by the construction of the Liquid Carbonic Factory during the twentieth century. Because of the distance to the tracks to the farm compound, it is unlikely that any features relating to these domestic sites were ever located within the project site.

It is remotely possible that some undocumented historical features, such as those recovered by Solecki and Wisniewski, were once present within the project area. However, historical features and sites were typically situated close to a road front. Prior to the construction of the Grand Avenue Bridge, Maspeth Avenue was a well traveled road, and it is possible that many such undocumented sites lie along its border. However, since the portion of the Maspeth Yard which intersects Maspeth Road is minimal, there is almost no potential for undocumented historical resources to exist within the project site. Furthermore, soil borings taken at this area contained less than one foot of fill in test unit MYB-2, less than two feet of fill in MYB-1, and no evidence of any historic features. Therefore, there is limited potential for the recovery of significant historical features in the location of the roadbed.

A series of seven soil borings were conducted across the project site in April 1999, and their logs were analyzed to determine if any historical resources may exist within the project site (Appendix 7.7.2). No evidence of significant features were recorded on the logs, and historical levels only possessed undistinguished fill containing ash, brick, concrete, glass, and coal.

7.4 Impact Assessment

Proposed work at Maspeth Yard includes surface track changes and the installation of utility lines, which will require excavations to no more than five feet below existing grade. Some of these activities, such as creating new tracks and rerouting others, will have no impact to any potential resources since the site has already been predominantly covered with tracks for over one hundred years.

Excavations for utility trenches, which would extend approximately five feet below surface, would cause impacts to potential prehistoric resources which may lie beneath shallow fill. Where borings MYB-1 and 2 were taken, approximately 100 feet south of Maspeth Avenue and 400 feet north of Maspeth Avenue respectively, fill was only one to two feet deep over levels of sandy silt with gravel. Here the predevelopment land

surface was higher in elevation, which is why Maspeth Avenue was laid out in this locale. Since this area was probably well-drained land prehistorically, it is considered the most likely section of the project site to have once hosted prehistoric resources (Figure 7). Therefore, excavations down to five feet below grade would impact between three and four feet of a buried surface which is considered sensitive for prehistoric cultural resources.

Where borings reported fill extending more than five feet below surface, such as where borings MYB-3 and 4, and MYW 1-3 were taken, there will be no impact to prehistoric resources. This includes land at the southern end of the project site, south of boring MYB1, and at the northern end of the project site extending south to a point approximately 500 feet north of Maspeth Avenue. Here borings indicated that fill ranged between 10 and 13 feet below the surface. Therefore, utility excavations would only impact fill levels not considered potentially sensitive for prehistoric resources in this area.

7.5 Mitigation Recommendations

Excavations for utility trenches, which would extend approximately five feet below surface, would cause impacts to potential prehistoric resources which may lie beneath shallow fill north and south of Maspeth Avenue (Figure 7). If avoidance of potential resources is possible, then this is considered a viable mitigation alternative. However, if the avoidance of impact to potentially National Register eligible archaeological resources is not possible, the appropriate mitigation procedures could take the form of construction monitoring, or exploratory excavations, or finally, data recovery.

7.6 Figures and Photographs

1. Project Site Location

2. Project Site Boundaries

3. *Map of Queens,* Conner 1852

4. *Atlas of Long Island*, Beers 1873

5. *Atlas of Queens County*, Wolverton 1891

6. Composite Tracing of *Atlas of the Borough of Queens,* Hyde 1903, 1908, 1915

7. Approximate Location of Prehistoric Sensitivity

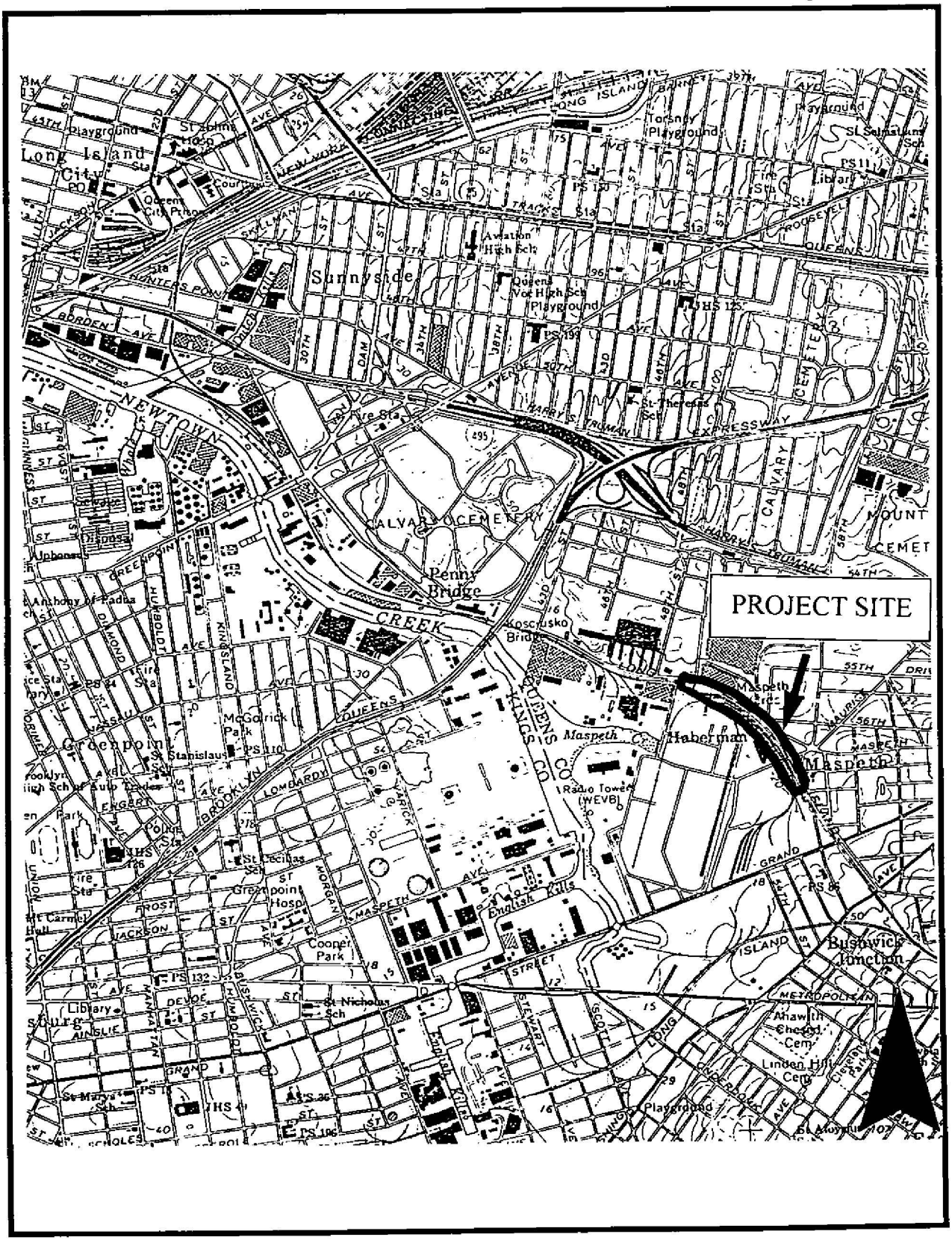


FIGURE 1
Project Site Location, *USGS Brooklyn, N.Y. Quadrangle*, 1979.
Scale 1:24,000

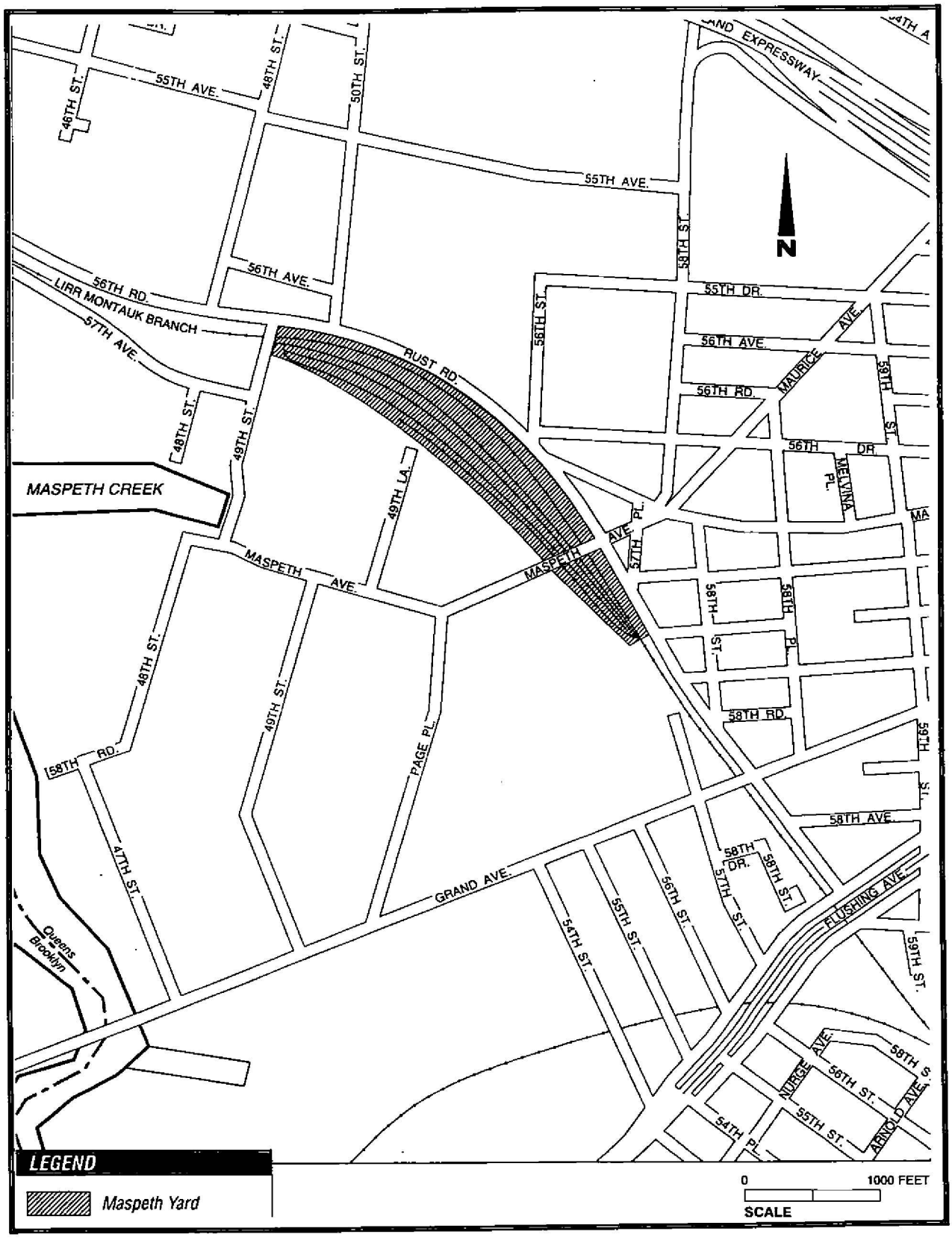


FIGURE 2
Project Site Boundaries

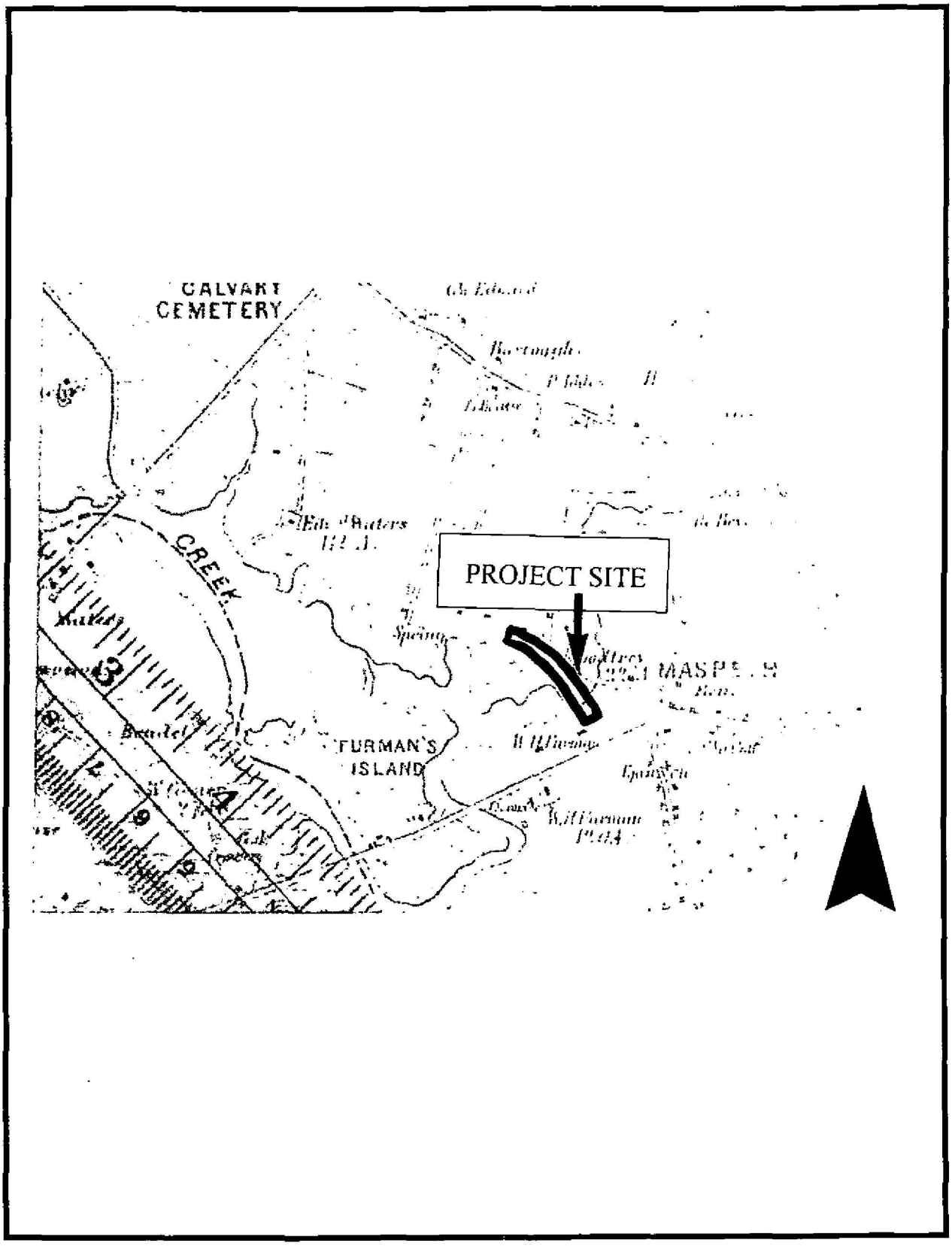


FIGURE 3
Map of Queens, Conner 1852.

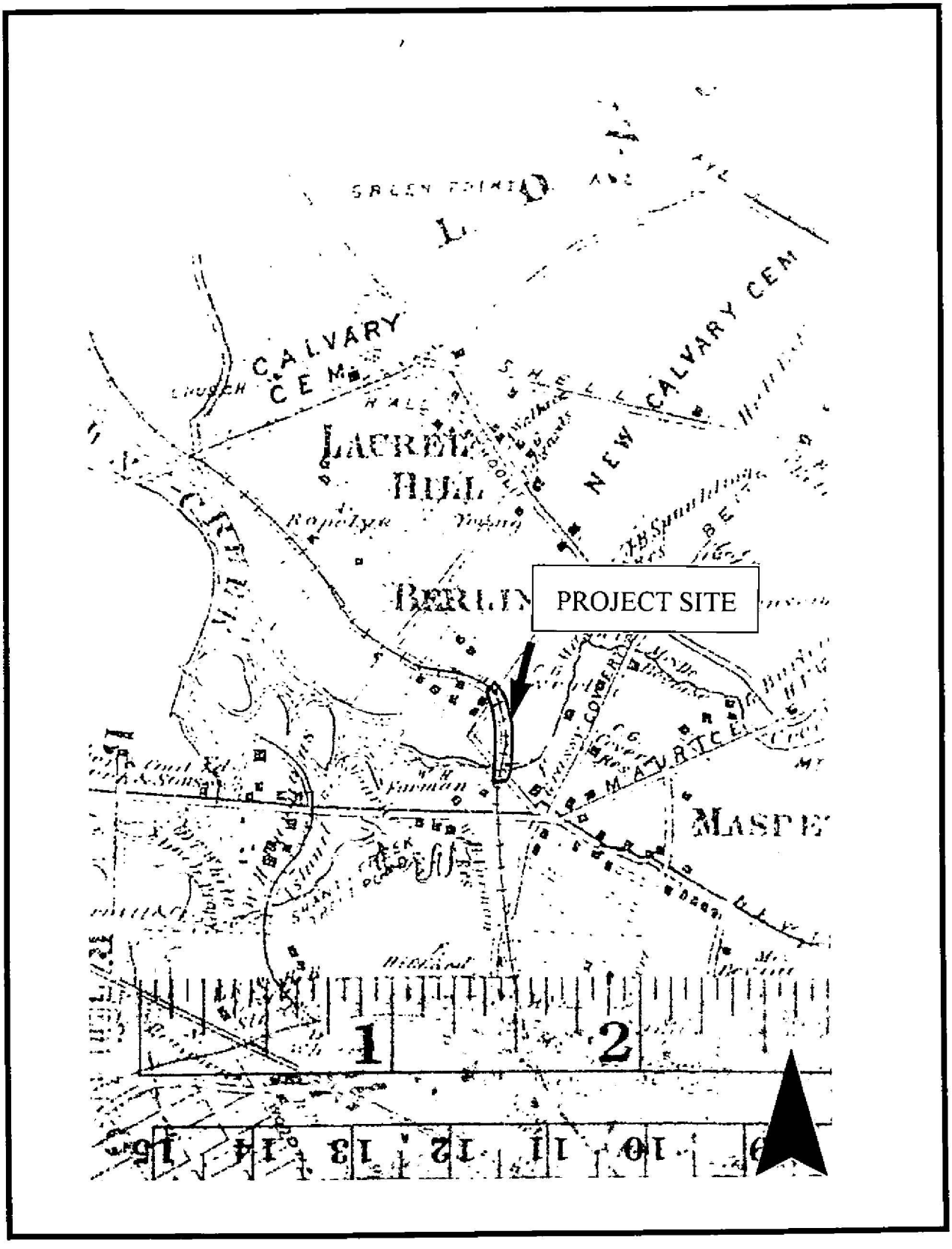


FIGURE 4
Atlas of Long Island, Beers 1873.

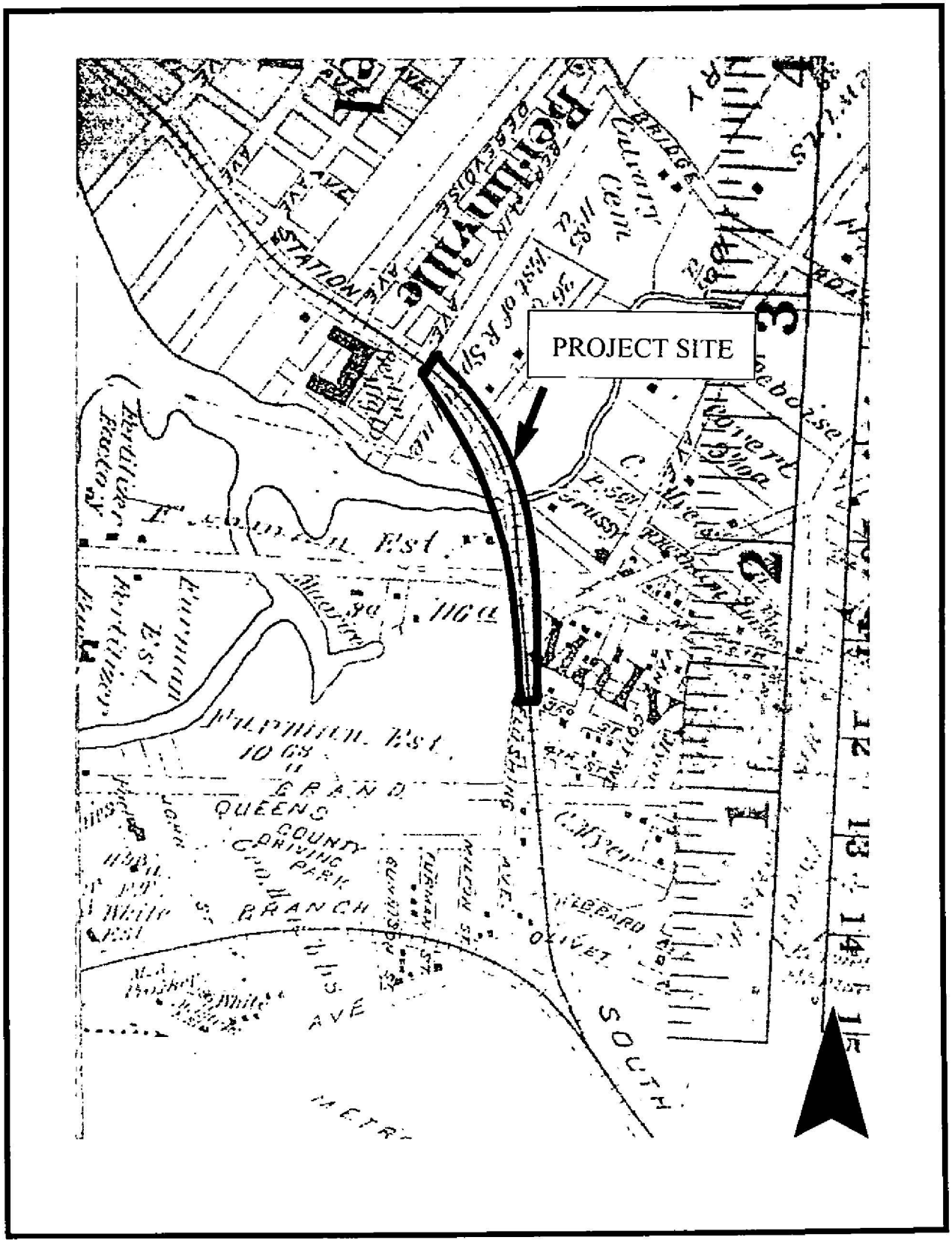


FIGURE 5
Atlas of Queens County, Wolverton 1891.

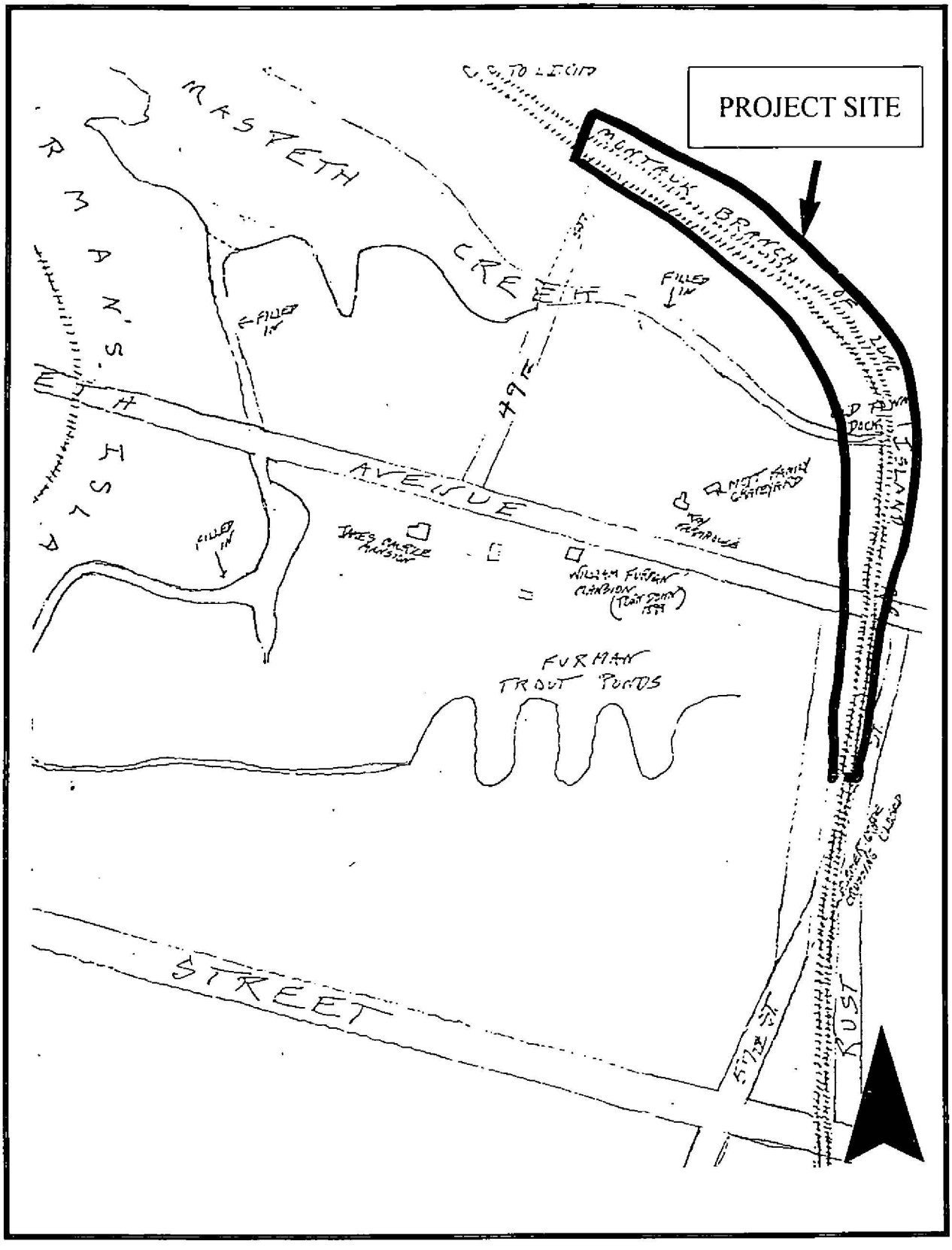


FIGURE 6
Composite Tracing of *Atlas of the City of New York.* Hyde 1903, 1908 and 1915. No Scale.

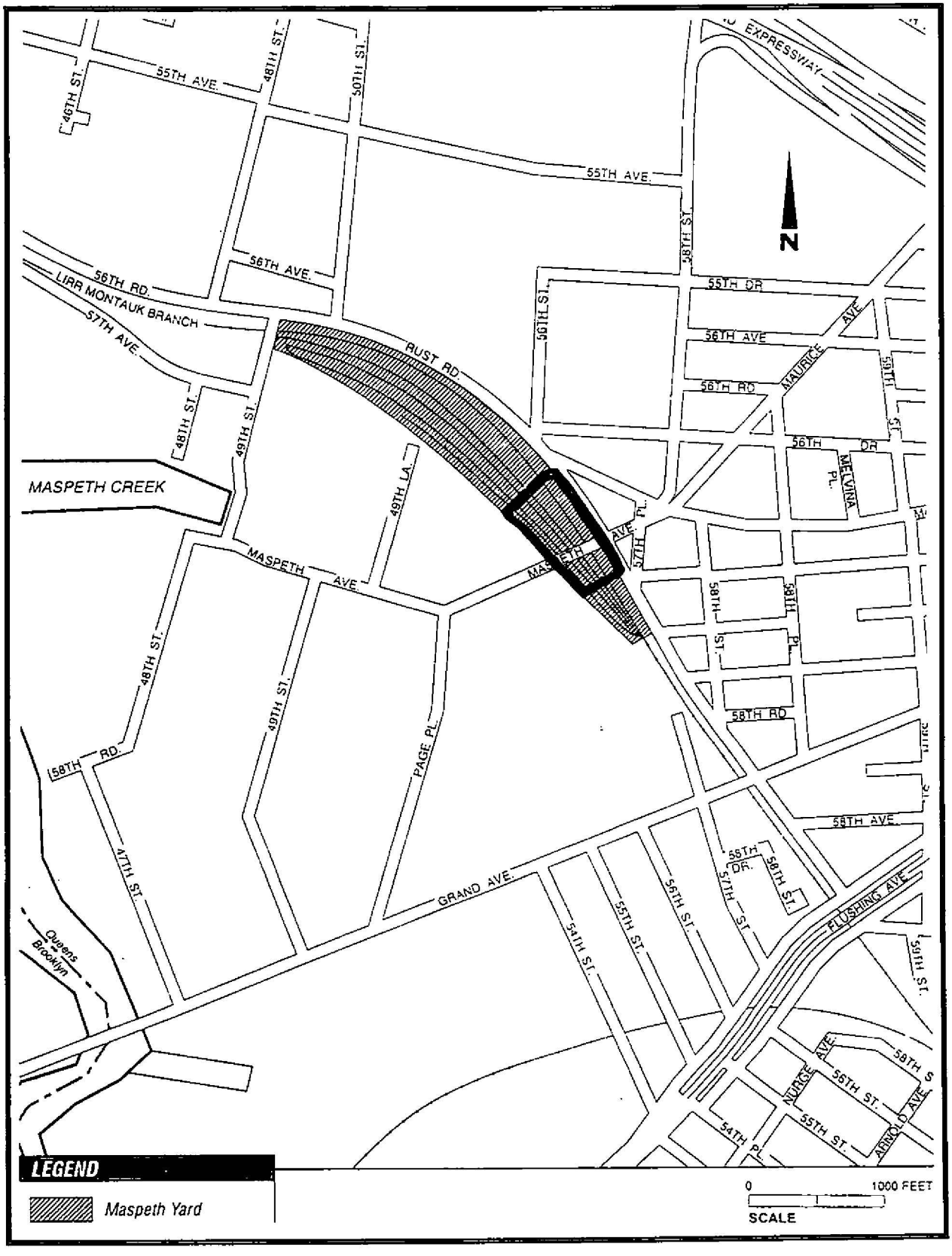


FIGURE 7
Approximate Location of Prehistoric Sensitivity

Photograph 1: Maspeth Yard, directly north of Maspeth Avenue.

Photograph 2: Maspeth Yard, north of Maspeth Avenue and Photograph 1.

Photograph 3: Maspeth Yard, north of Maspeth Avenue near intersection of 56th Street and Rust Avenue.

Photograph 4: Maspeth Yard, north of Maspeth Avenue and Photograph 3.

Photograph 5: Maspeth Yard, south of Maspeth Avenue from east side of tracks.

Photograph 6: Maspeth Yard, south of Maspeth Avenue from west side of tracks.

7.7 Appendix

7.7.1 Site File Search Results, NYCLPC, NYSOPRHP and NYSM

conducted by: LCC Date 8.5.99 # archeological sites 2

SHPO Site #	Form Copied	If not fill in → Site Name	Site Description
081.01.0101			
081.01.0108	#		
	081.01.0113		
	081.01.0110 (*)		
No form → Location 9	→ 081.01.0064208 (*)		
	→ 081.01.0063206 (*)		
	→ 081.01.0091308 (*)		

Status	NRE Listings	Form Copied	Description
NRE	Emergence Medical Squad	✓	38-18 Northern Blv.
NRE	Engine Co 258 Hook + Ladder 115	✓	10-40 47th Ave - 9 Location not plotted on SES map
NRE	89-02 32nd Ave PS 148	no form	
NRE	77-02/37th Ave Jackson Heights School (Primary School 69)	no form	
NRE	167-02 45th Ave. PS. 107	No form	

(*) = No location - just keep in mind these locations if they are adjacent to your Project Area - Public Schools and Fire Station seem to be NRE as well

TIONAL REGISTER ELIGIBLE and LISTED At least 1 Eligible 5 Listed

erty Name	NR Status (L/E/N)	Form Copied	Description
	NRL	✓	Long Island City Courthouse Complex
	NRL District	✓	Ridgewood Multiple Resource Area - include -
	NRL District	✓	Hunters Pt Hist. District or Domino's (Hook Bennett's)
	NRL District	✓	Sunnyside Gardens Historic District
	NRL	✓	Long Island City Post office 46-02 21st St

- Fresh Pond Traffic Hist. Dist.
- 68th Ave + 64th Place Hist. Dist.
- Central Ave. Hist. Dist

VIOUS SURVEYS

11 (2 Reports) - Onclecoonk House - Greater Ridgewood Historical Society - 1983 + 1975

8 (3 Reports - 2 are yours) West Queens High School - 2 Reports HPI (1992 + 1988) - the other (Greenhouse Consultants - 1992)

5* - PIN 0227.75 Long Island Expressway - written by Arnold Pickman - 1983 -

5 previous surveys

[redacted] RESEARCH RESULTS

Project Name MTA/LIRR Eastside Access HAA Project Number 1302 Client HPI

Village _____ Town NYCity County Queens

Quadsheets Brooklyn + Central PK

NEW YORK STATE MUSEUM conducted by: Kim Crosher Date 8.5.99 Site Sensitivity requested _____ # Sites 5

NYSM#	Other#	Name	Period	Type	Comments
4557	ACP QUNS 14	—	—	BURIAL SITE	ACP... in LI city on present St. NYSM Local present St. in vicinity of LI city Reporter: A.C. Parker/1922
603	ACP KNS	—	—	TRACES OF OCCUPATION	Reporter: A.C. Parker 1922
5340	ACP QUNS 13	—	—	VILLAGE	ACP... on Maspeth Hills at Head of Newton Creek. Reporter: A.C. Parker/1922
3376 Plotted on map	ACP KNGS	Sites General	—	—	Kings Co. NYS "... without Doubt occupied in nearly every part... "ACP part 2, p. 582. Reporter: AC. Parker/1922
1538	ACP QUNS NO #			VILLAGE	Reporter: A.C. Parker/1922

...RK STATE HISTORIC ARCHAEOLOGICAL SITE INVENTORY FORM

...ice Use Only--Site Identifier A081-01-0108

Project Identifier _____ Date 11/21/79
Your Name _____ Phone ( ) _____
Address _____
_____
Zip _____

NOV 21 1979

Organization (if any) _____

1. Site Identifier(s) Vander Ende-Onderdonk House Site
2. County Queens One of following: City _____
   Date _____
   St. Orig. _____
   Site _____
   Township _____
   Incorporated Village _____
   Unincorporated Village or Hamlet Ridgewood
3. Present Owner Greater Ridgewood Historical Society
   Address 803 Cypress Avenue
   Ridgewood, NY
   Zip
4. Site Description (check all appropriate categories):
   Structure/site
   Superstructure: complete__ partialxx collapsed__ not evident__
   Foundation: above__ below__ (ground level) not evident__
   xx Structural subdivisions apparent __Only surface traces visible
   xx Buried traces detected
   List construction materials (be as specific as possible):
   The site has been listed on the National Register, and is being restored with a DHP A&D grant (HP79-10035). Details on the site can be found in the documentation assembled for the above actions.
   Grounds
   __Under cultivation __Sustaining erosion __Woodland __Upland
   __Never cultivated __Previously cultivated __Floodplain __Pastureland
   Soil Drainage: excellent__ good__ fair__ poor__
   Slope: flat__ gentle__ moderate__ steep__
   Distance to nearest water from structure (approx.) _____
   Elevation: _____

5. Site Investigation (append additional sheets, if necessary):
   Surface--date(s) _____
   __Site Map (Submit with form*)
   __Collection
   Subsurface--date(s) _____
   Testing: shovel__ coring__ other _____ unit size _____
   no. of units _____ (Submit plan of units with form*)

   Excavation: unit size _____ no. of units _____
   (Submit plan of units with form*)
   * Submission should be 8½"x11", if feasible

   Investigator George Happel
   Manuscript or published report(s) (reference fully):
   Test Trench No. 1: Onderdonk House, Maspeth, Queens County, New York (1975)

   Present repository of materials _____

6. Site inventory:
   a. date constructed or occupation period _____
   b. previous owners, if known

   c. modifications, if known

   (append additional sheets, if necessary)

7. Site documentation (append additional sheets, if necessary):
   a. Historic map references
      1) Name _____ Date _____ Source _____
         Present location of original, if known _____

      2) Name _____ Date _____ Source _____
         Present location of original, if known _____

   b. Representation in existing photography.
      1) Photo date _____ Where located _____
      2) Photo date _____ Where located _____

   c. Primary and secondary source documentation (reference fully)

   d. Persons with memory of site:
      1) Name _____ Address _____
      2) Name _____ Address _____

8. List of material remains other than those used in construction (be as specific as possible in identifying object and material):

   If prehistoric materials are evident, check here and fill out prehistoric site form. __

9. Map References: Map or maps showing exact location and extent of site must accompany this form and must be identified by source and date. Keep this submission to 8½"x11", if feasible. See plot on U.S.G.S Topo Sheet

   USGS 7½ Minute Series Quad. Name Brooklyn

   For Office Use Only--UTM Coordinates _____

10. Photography (optional for environmental impact survey):
    Please submit a 5"x7" black and white print(s) showing the current state of the site. Provide a label for the print(s) on a separate sheet.

INSTRUCTIONS: Write on hard surface with 2H Pencil. Fill in or circle where appropriate. Keep top two copies (white and yellow) and send third copy (pink) to the NYAC Central Office. Coding space is provided on the right margin. Take pad apart at top first.

NEW YORK ARCHAEOLOGICAL COUNCIL

SITE SURVEY FORM

Page

NYAC SITE NO:

Location Classification: Unrestricted / Restricted

SITE NAME

Official:

Other: Crescent St. Site

Institution:

NYSAA:

Collector:

PERIOD

Paleo. / Archaic: E M L / Transitional / Woodland: E M L / Historic

Unknown Prehistoric

CULTURE(S)

SITE TYPE

Stray Find | Pictograph | Kill Site | Cemetery | Camp | Commercial/Factory

Cave | Quarry | Shell Midden | Ossuary | Cabin/House | Government

Rockshelter | Workshop | Mound | Family Plot | Village | Military

OTHER: Burial Ground

LOCATION

State: NEW YORK

County:

Town:

Township:

Lot:

Range:

MAP

U.S.G.S. 7½ Quad Name: CENTRAL PARK | No.: 20 | Quarter: NW NE SW SE | Coordinates: [illegible]

PROPERTY

	Owner	Tenant	Previous Owner/Tenant
Name:			
Address:	[illegible]		
Phone	( )	( )	( )

SITE INVESTIGATION

	Surface Collection	Testing	Excavation
Who			
Project			"Burial Site in Long Island City along Crescent St."
Dates			

COLLECTIONS

Who:

Cat. Nos:

PHOTOS

Who:

B & W:

Color:

Slides:

I-R:

REFERENCES

Pub: Parker [illegible]

Unpub: State Ed. Dept. [illegible]

Original Reported: Date:

STORICAL DOCUMENTATION OF SITE:
Parker, Arthur C. 1922. The Archeological History of New York, New York State Museum Bulletin, Nos. 235-236, pp. 37-826. #14.

10. POSSIBILITY OF SITE DESTRUCTION OR DISTURBANCE:

REMARKS:

12. MAP LOCATION

7 ½ MINUTE SERIES QUAD. NAME: Central Park

15 MINUTE SERIES QUAD. NAME:

U.S.G.S. COORDINATES: 18T E93450 N13500

D.O.T. COORDINATES: (if known)

ATTACH SKETCH, TRACING OR COPY OF MAP

SOURCE OF MAP:

13. PHOTOGRAPHS (optional)

(ATTACH)

9. HISTORICAL DOCUMENTATION OF SITE:

Parker 1922 : [illegible]

10. POSSIBILITY OF SITE DESTRUCTION OR DISTURBANCE:

11. REMARKS:

12. MAP LOCATION

7 ½ MINUTE SERIES QUAD. NAME: Central Park

15 MINUTE SERIES QUAD. NAME: Harlem (SW/4)

U.S.G.S. COORDINATES: 18T 590450 4513250

D.O.T. COORDINATES: (if known) _____

ATTACH SKETCH, TRACING OR COPY OF MAP

SOURCE OF MAP:

13. PHOTOGRAPHS (optional)

(ATTACH)

ARCHEOLOGICAL SITE INVENTORY FORM

DIVISION FOR HISTORIC PRESERVATION
NEW YORK STATE PARKS AND RECREATION
ALBANY, NEW YORK
518 474-0479

FOR OFFICE USE ONLY
UNIQUE SITE NO. Ar81-01-0101
QUAD. _____
SERIES _____
NEG. NO. _____

REPORTED BY: Susan Karlsen

YOUR ADDRESS: _____ TELEPHONE: _____

ORGANIZATION (if any): NYC

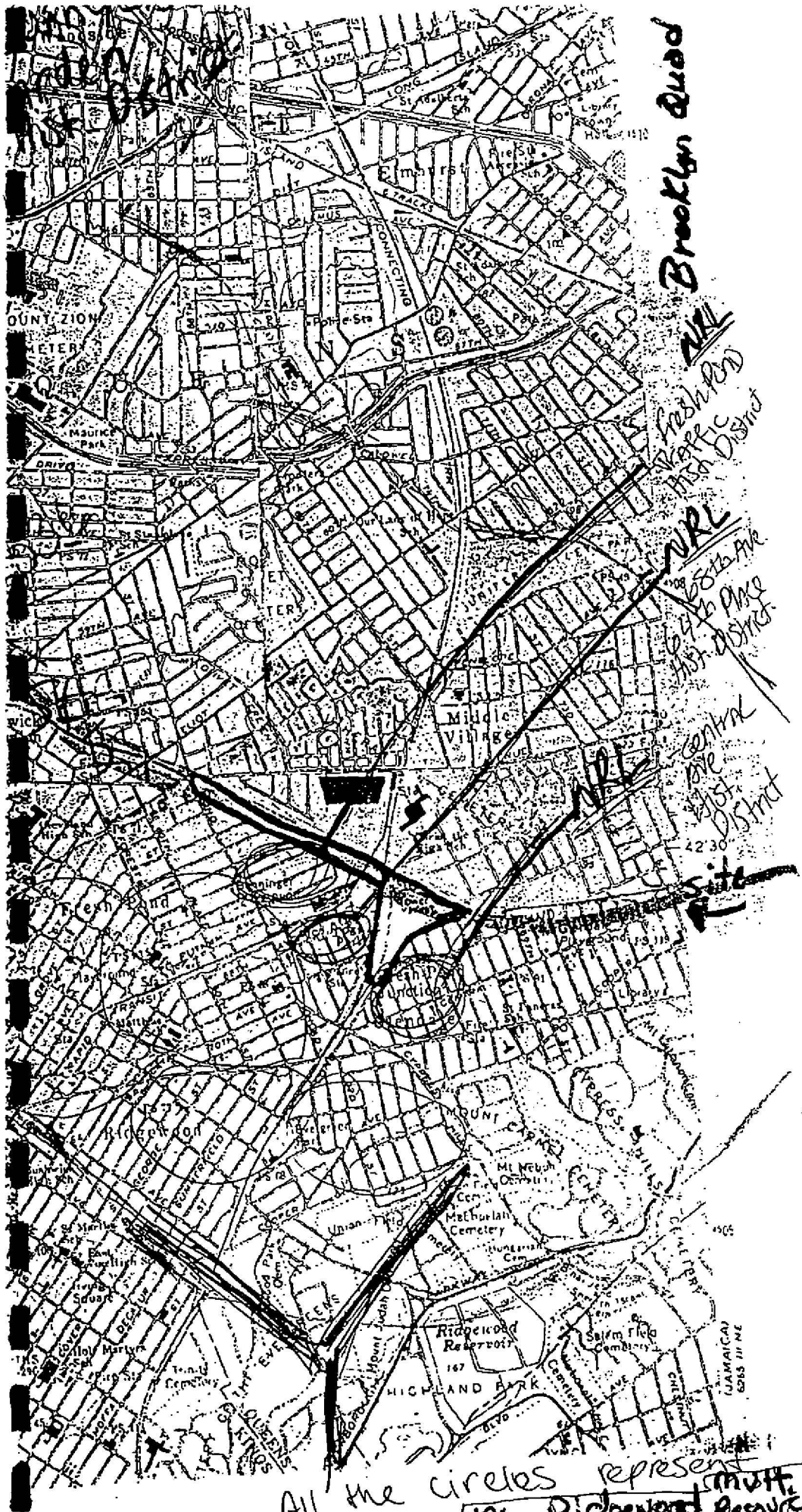
DATE: 6/1/77

* *

1. SITE NAME: Parker #14
2. COUNTY: Queens TOWN/CITY: Long Island City VILLAGE: _____
3. LOCATION: Crescent St
4. PRESENT OWNER: _____
5. OWNER'S ADDRESS: _____
6. DESCRIPTION, CONDITION, EVIDENCE OF SITE:
   - ☐ STANDING RUINS
   - ☐ CELLAR HOLE WITH WALLS
   - ☐ SURFACE TRACES VISIBLE
   - ☐ WALLS WITHOUT CELLAR HOLE
   - ☐ UNDER CULTIVATION
   - ☐ EROSION
   - ☐ UNDERWATER
   - ☐ NO VISIBLE EVIDENCE
   - ☐ OTHER _____
7. COLLECTION OF MATERIAL FROM SITE:
   - ☐ SURFACE HUNTING BY WHOM _____ DATE _____
   - ☐ TESTING BY WHOM _____ DATE _____
   - ☐ EXCAVATION BY WHOM _____ DATE _____
   - ☐ NONE

   PRESENT REPOSITORY OF MATERIALS: _____
8. PREHISTORIC CULTURAL AFFILIATION OR DATE: Unknown

Klm Quad


Brooklyn Quad
NRL
Freshpond Traffic High District
NRL
Central Ave Hist. District
Site
All the circles represent
different parts of the NRL Ridgewood Multi Resource Area

Long Island City Comprehensive Study
3613
RIVER
Hunters Point
Sunnyside
Newtown Creek
Bushwick Inlet
Williamsburg
Greenpoint
Queens
Kings Co
Calvary Cemetery
Jeremy Bridge
Radio Towers (WNYC)
Fireboat Sta
Playground
Dept of Pub Works
Expressway
Island
Harbor
Ave
St
Sta
Pk
Sch
Hosp
Library
Police Sta
Fire Sta
Playground
Community
Armory
Cooper Park
McCarren Park
Astoria
Long Island City
Greenpoint Hosp
Williamsburg Bridge
Queensboro Bridge
Brooklyn Bridge
Manhattan Bridge
Triborough Bridge
Calvary Cemetery
Newtown Creek
Bushwick Inlet
Hunters Point
Sunnyside
Astoria
Long Island City
Greenpoint
Williamsburg
Queens
Kings Co

7.7.2 Soil Boring Logs

AKRF, INC. Environmental Consultants	FIELD BOREHOLE LOG	BOREHOLE NUMBER MYB-1

PROJECT NUMBER: 30068-2145
PROJECT NAME: MTA/LIRR EAST SIDE ACCESS
LOACATION: MAPETH YARD- MASPETH,QUEENS
DRILLING CO: WARREN GEORGE
DRILLING METHOD: HOLLOW STEM AUGER
FIELD PARTY: JACK HARRIS, DANE HARRIS
FIELD INSPECTOR:
DATE BEGUN: 04/17/99 DATE COMPLETED: 04/17/99

FIELD BOOK NO: 301
TOTAL DEPTH: 10.0 (ft)
GROUND SURFACE ELEVATION: 0

STATIC WATER LEVEL (BLS)		
Depth (ft)	10.0'	
Time		
Date	04/17/1996	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0							
1.0	1	3 3 4 5	0		Fill: fine to medium black sand with some silt, wood, coal and glass fragments.		
2.0							
3.0	2	7 7 8 8	0		Sand: fine to medium yellowish brown sand with some silt and gravel.		
4.0							
5.0	3	3 4 4 4	0				
6.0							
7.0	4	3 3 2 2	0				
8.0					Sand: course yellowish brown silty sand with little gravel.		
9.0 ▼	5	3 2 2 2	106		Clay: dark grey sandy clay, WET at - 9.5'		
10.0							

AKRF, INC.
Environmental Consultants

FIELD BOREHOLE LOG

BOREHOLE NUMBER: MYB-2

PROJECT NUMBER: 30068-2145
PROJECT NAME: MTA/LIRR EAST SIDE ACCESS
LOACATION: MAPETH YARD- MASPETH,QUEENS
DRILLING CO: WARREN GEORGE
DRILLING METHOD: HOLLOW STEM AUGER
FIELD PARTY: JACK HARRIS, DANE HARRIS
FIELD INSPECTOR:
DATE BEGUN: 04/17/99 DATE COMPLETED: 04/17/99

FIELD BOOK NO: 301
TOTAL DEPTH: 14.0 (ft)
GROUND SURFACE ELEVATION: 0

STATIC WATER LEVEL (BLS)		
Depth (ft)	14.0'	
Time		
Date	04/17/1996	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0					Fill: ash and coal fragments.		
1.0		2 6 5 4	270		Sand: silty sand with some gravel.		
2.0							
3.0		7 5 3 4	410				
4.0					Sand: fine to medium yellowish brown sand.		
5.0		3 3 4 6	115				
6.0					Sand: course yellow sand with some gravel, WET at -13.0'		
7.0		6 6 7 9	97				
8.0							
9.0		6 6 7 9	373				
10.0							
11.0	Sample MYB-2 (10-12')	7 9 9 10	596				
12.0							
13.0		4 4 6 7	219				
14.0							

AKRF, INC. Environmental Consultants	FIELD BOREHOLE LOG	BOREHOLE NUMBER MYB-3

PROJECT NUMBER: 30068-2145
PROJECT NAME: MTA/LIRR EAST SIDE ACCESS
LOACATION: MAPETH YARD- MASPETH,QUEENS
DRILLING CO: WARREN GEORGE
DRILLING METHOD: HOLLOW STEM AUGER
FIELD PARTY: JACK HARRIS, DANE HARRIS
FIELD INSPECTOR:
DATE BEGUN: 04/17/99 DATE COMPLETED: 04/17/99

FIELD BOOK NO: 301
TOTAL DEPTH: 14.0 (ft)
GROUND SURFACE ELEVATION: 0

STATIC WATER LEVEL (BLS)		
Depth (ft)	14.0'	
Time		
Date	04/17/1996	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0					Fill: concrete chips, red brick and coal fragments.		
1.0		3 3 5 5	2				
2.0							
3.0		4 5 7 7	76				
4.0							
5.0		17 9 8 8	4				
6.0							
7.0		17 49 53 67	117				
8.0							
9.0		50 10 11 10	N/A				
10.0							
11.0	Sample MYB-3 (10-12')	9 11 6 6	130	No Recovery			
12.0							
13.0		7 8 5 4	1.3		Clay: yellowish brown sandy clay, WET at -14.0'		
14.0							

AKRF, INC.
Environmental Consultants

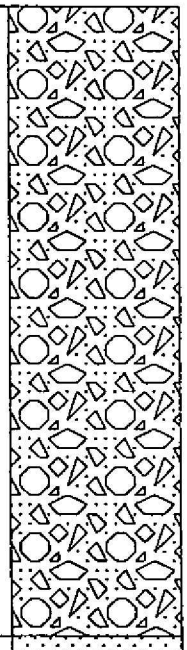
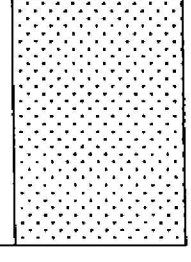
FIELD BOREHOLE LOG

BOREHOLE NUMBER: MYB-4

PROJECT NUMBER: 30068-2145
PROJECT NAME: MTA/LIRR EAST SIDE ACCESS
LOACATION: MAPETH YARD- MASPETH,QUEENS
DRILLING CO: WARREN GEORGE
DRILLING METHOD: HOLLOW STEM AUGER
FIELD PARTY: JACK HARRIS, DANE HARRIS
FIELD INSPECTOR:
DATE BEGUN: 04/24/99 DATE COMPLETED: 04/24/99

FIELD BOOK NO: 301
TOTAL DEPTH: 14.0 (ft)
GROUND SURFACE ELEVATION: 0

STATIC WATER LEVEL (BLS)		
Depth (ft)	14.0'	
Time		
Date	04/24/1996	

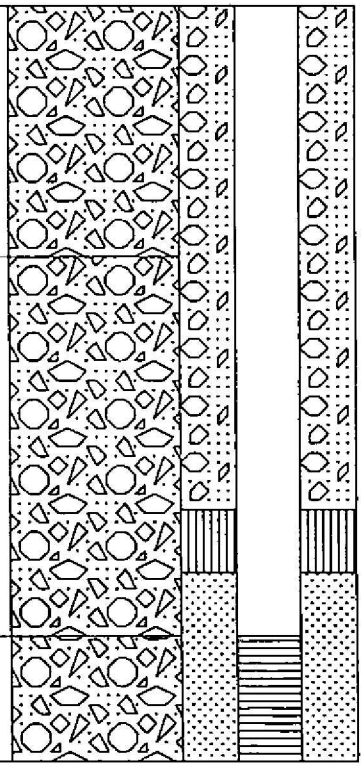
DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0							
1.0		3 4 4 4	0		Fill: black to yellow silty sand with ash, and red brick and coal fragments.		
2.0							
3.0	Sample MYB-4 (2-4')	3 3 5 7	2.0				
4.0							
5.0		6 7 12 20	0				
6.0							
7.0		N/A	0				
8.0				Refusal. Hole moved to a new location 10' south.			
9.0		31 23 20 17	2.0				
10.0					Sand: yellowish brown silty sand with some gravel, WET at -14.0'		
11.0		9 11 6 6	2.0				
12.0							
13.0		29 37 45 51	0				
14.0							

AKRF, INC. Environmental Consultants	FIELD BOREHOLE LOG	BOREHOLE NUMBER MYW-1

PROJECT NUMBER:	30068-2145	FIELD BOOK NO:	301
PROJECT NAME:	MTA/LIRR EAST SIDE ACCESS	TOTAL DEPTH:	14.9
LOACATION:	MASPETH YARD-MASPETH, QUEENS	GROUND SURFACE ELEVATION:	0.0 (ft)
DRILLING CO:	WARREN GEORGE		
DRILLING METHOD:	HOLLOW STEM AUGER		
FIELD PARTY:	JACK HARRIS, DAVE HARRIS		
FIELD INSPECTOR:	MOHAMED AHMED		
DATE BEGUN:	04/16/99	DATE COMPLETED:	04/16/99

STATIC WATER LEVEL (BLS)		
Depth (ft)	12.0 (ft)	
Time	9:45 A.M.	
Date	05/08/1999	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0							
1.0	1	1 2 2 3	0		Fill: yellow silty sand with gravel, concrete and coal fragments, and wood.		
2.0							
3.0	2	6 6 7 9	1.0				
4.0					Fill: yellowish brown silty sand with some gravel, coal fragments, and ash.		
5.0	3	-7.0 3 7 14 20	1.0				
6.0							
7.0	4		1.0				
8.0							
9.0	5	8 12 13 14	0				
10.0					Fill: yellowish brown silty sand with some gravel, coal fragments, and ash, WET.		
11.0	6	7 13 17 19	5.5				
12.0							



AKRF, INC.
Environmental Consultants

FIELD BOREHOLE LOG

BOREHOLE NUMBER: MYW-2

PROJECT NUMBER: 30068-2145
PROJECT NAME: MTA/LIRR EAST SIDE ACCESS
LOACATION: MASPETH YARD-MASPETH, QUEENS
DRILLING CO: WARREN GEORGE
DRILLING METHOD: HOLLOW STEM AUGER
FIELD PARTY: JACK HARRIS, DAVE HARRIS
FIELD INSPECTOR: MOHAMED AHMED
DATE BEGUN: 04/17/99 DATE COMPLETED: 04/17/99

FIELD BOOK NO: 301
TOTAL DEPTH: 16 (ft)
GROUND SURFACE ELEVATION: 0.0 (ft)

STATIC WATER LEVEL (BLS)		
Depth (ft)	14.9	
Time	9:45 A.M.	
Date	05/08/1999	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0							
1.0		2 2 3 4	1.3		Fill: black silty sand with gravel, red brick and coal fragments, and ash.		
2.0							
3.0	Sample MYW-2 (2-4')	4 4 4 4	463				
4.0							
5.0		3 7 4 3	52				
6.0							
7.0		3 4 6 4	305				
8.0							
9.0		4 3 4 5	197				
10.0							
11.0		3 3 4 4	22				
12.0					Ash: black coal cinders and ash, WET at 15'.		
13.0		12 14 30 22	1.0				
14.0							
15.0		6 7 9 11	1.0				
16.0							

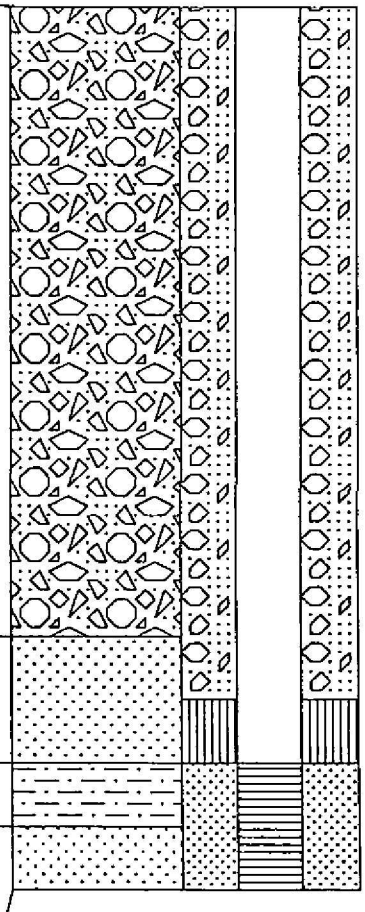
AKRF, INC. Environmental Consultants	FIELD BOREHOLE LOG	BOREHOLE NUMBER MYW-3

PROJECT NUMBER: 30068-2145
PROJECT NAME: MTA/LIRR EAST SIDE ACCESS
LOACATION: MASPETH YARD-MASPETH, QUEENS
DRILLING CO: WARREN GEORGE
DRILLING METHOD: HOLLOW STEM AUGER
FIELD PARTY: JACK HARRIS, DAVE HARRIS
FIELD INSPECTOR: MOHAMED AHMED
DATE BEGUN: 04/24/99 DATE COMPLETED: 04/24/99

FIELD BOOK NO: 301
TOTAL DEPTH: 14 (ft)
GROUND SURFACE ELEVATION: 0.0 (ft)

STATIC WATER LEVEL (BLS)		
Depth (ft)	8.5	
Time	10:30 A.M.	
Date	05/08/1999	

DEPTH (ft)	SAMPLE NUMBER	BLOWS COUNT	PID/ppm	REMARKS	DESCRIPTION	LITHOLOGY	WELL INSTALLATION
0.0							
1.0		2 2 3 4	0		Fill: black silty sand with glass, gravel, red brick and coal fragments, and ash.		
2.0							
3.0		4 5 2 2	2.0				
4.0							
5.0		6 7 9 10	0				
6.0							
7.0		7 9 9 9	0				
8.0 ▼							
9.0	Sample MYW-3 (8-10')	20 12 10 10	200				
10.0					Sand: black silty sand.		
11.0		2 2 2 2	9.1				
12.0					Silt: clayey silt.		
13.0		5 7 9 11	4.4		Sand: fine to medium yellowish brown sand with a trace of silt, WET at 14'.		
14.0							



8.0 FRESH POND YARD ARCHAEOLOGICAL RESOURCE EVALUATION

8.0 FRESH POND YARD ARCHAEOLOGICAL RESOURCE EVALUATION

The Fresh Pond Yard site is located in Glendale, Queens (Figure 1). The site is divided into two sections, the east yard, a triangularly shaped parcel. The west yard is a narrow track (Figure 2; Photographs 1-4). Fresh Pond is also the transfer point, or connector, between the New York & Atlantic Railway and Conrail.

LIRR's rail yard complex at Sunnyside in Queens is currently used by New York & Atlantic Railway (NYAR), a freight railroad. Some of the NYAR facilities would be relocated to the existing Fresh Pond Yard in Queens. Limited facilities would be constructed here to meet NYAR's needs, but the yard would not be expanded beyond its current boundaries.

There will be limited subsurface impacts at this yard. Installing new tracks and realigning old ones will not cause subsurface disturbance to depths expected to impact potential archaeological resources. However, there may be excavations for utility trenches which are anticipated to be no more than five feet below existing grade, and could extend into archaeologically sensitive areas. Furthermore, a new building is going to be constructed within the east yard. The APE for the Fresh Pond Yard is the entire yard.

A comprehensive study of the entire Fresh Pond Yard was completed in order to determine the archaeological potential of the site, and to assess impacts which may result from proposed changes to the layout of the site.

8.1 Study Area Description

The borough of Queens is located on the western end of Long Island. The topography of Queens, the largest borough in New York City, was dramatically altered by the advance and retreat of glaciers over the last one million years. This glacial activity produced a terminal moraine, or ridge line, along the limit of the advancing ice sheets. The moraine, which is almost two hundred feet high in some locations, lies in Brooklyn, several miles to the south of the project site, near the Eastern Parkway. To the north of this glacial ridge, glacial activity produced a coastal plain, or an elevated sea bottom with locations of low topographic relief, estuaries, and extensive marshy tracts (Eisenberg 1978; Schuberth 1968).

The east yard at the Fresh Pond site is a triangular parcel bounded by the Lutheran Cemetery, Mafera Park, and Otto Road (Figures 1 and 2), and the west yard is a narrow tract running along the LIRR track line. Seventeenth and 18th century records indicate that the project area was once a swampy locale dotted with numerous fresh water ponds. The examination of nineteenth century maps depict the surrounding area as forest and meadowland. As a result of agricultural land development and later urbanization, the former swamp and ponds may have drained or been slowly filled.

The 1979 USGS topographic map (Brooklyn Quad) depicts the Fresh Pond Junction and associated rail yards (Figure 1). The surrounding area is shown as a well-developed urban complex with elevations approximately 90 - 100 feet above sea level (ASL)

8.2 Contextual Overview

8.2.1 Prehistoric Context

As part of the overall research plan it is necessary to develop a cultural chronology and a prehistoric context for the project area. This study will provide an understanding of the use of the project site over time. To achieve this goal, the review of what is known about the characteristics of native peoples during each of the accepted prehistoric periods was conducted. This type of examination provides a framework with which to interpret potential resources within the project site.

Scholars researching North American prehistory have divided the prehistoric era into the following periods, the Paleo-Indian, Archaic, Transitional, Woodland and Contact. The Archaic and Woodland periods are further divided into subperiods using the appellations Early, Middle, and Late. Each period is defined by environmental changes, the characteristics of prehistoric peoples, and the cultural artifacts that were left behind. Historical accounts, ethnographic reports, prehistoric artifact collections, and archaeological investigations provide information for our current understanding of prehistory.

Based on research conducted during the early 20th century, archaeologist Reginald P. Bolton concluded that the former occupants of the study area were subject to, or members of, the Rockaway chieftaincy, whose territory stretched from the East River to Jamaica Bay, diagonally across Long Island (Bolton 1922). He has also identified their main settlement as located in Far Rockaway, Queens (Grumet 1981).

An alternative suggested by a few researchers is that the Maspeth or Mispat native group, once located just west of the project area, may have been a subdivision of the Canarsee chieftaincy, whose main village was located at Canarsie in southern Brooklyn. This group may have had settlements scattered above the Newtown Creek wetlands. This theory however, is not supported by surviving documentation or archaeological evidence (Grumet 1981).

Although documentary sources confirm the presence of native groups throughout Queens, they seldom identify group affiliation. The decline of the native population, particularly during the 1640s and 1650s, caused many Long Island Indian groups to combine and reorganize in complex ways. The individuals recording the information were therefore unable to clearly identify distinct groups.

An early resident of Queens, Daniel Denton, wrote in 1670 that the Indians of western Long Island lived principally by "hunting, fishing, fowling and the cultivation of corn" (Denton 1902). Without mentioning group affiliation, he reported that because of disease and war, the number of native villages on western Long Island had decreased from six to two. He further wrote that the natives relocated their "small moveable Tents" a few times a year, going to their principal quarters where they plant their corn, hunt, and fish.

Researchers agree that the prehistoric cultural groups that populated the area practiced a settlement and subsistence pattern of seasonal rounds exploiting a diverse array of resources. The types of sites found in the surrounding area, as reported by archaeologists, ethnographers, and amateur collectors, reflect this pattern. These sites include villages, burials, middens, and small campsites. These sites are often situated on well-drained upland soils in proximity to fresh water.

Reported Sites in the Region. There are no recorded prehistoric sites located within the specific boundaries of the project site. However, there is a strong body of documentary data reporting three prehistoric sites within two to five miles.

(1) Canapaukah: Identified as "long water land" or "water-place" the site was likely on the northern end of the Dutch Kills. A 1656 deed describes a "small Creeke called by the Indyans Canapaukah," later named the Dutch Kills. The site is further mentioned in conjunction with Burger's Mill, a waterpowered grist mill built to the north of the study area, between 41st Avenue and 41st Road, slightly south of Jackson Avenue (Grumet 1981; Seyfried 1984b). The estimated location of this site is approximately four-and-a-half miles northwest of the Fresh Pond Yard.

(2) Maspeth (Marshpath): Historian Bolton suggests that the area along Newtown Creek (Mespacht Kill, or Mespaethches), was the location of a native village. During the Governor Kieft War (1643-1645), several incidents between the Dutch and Native Americans occurred in this area. Grumet reports that a wigwam was recorded east of the project site at Maspeth Kills in 1669 (Grumet 1981). Historian James Riker, wrote that "rude implements" of the local Indians', chiefly "stone axes arrowheads, and arrows of reed" were still being found by local farmers in 1852 (Riker 1852). According to the documentary data, this site may have been approximately two-and-a-quarter miles to the northwest of the Fresh Pond Yard.

(3) Quandus Quaricus: This site, mentioned in a document dating to 1656, was located along the English Kills, the west branch of the Maspeth Kills (Grumet 1981). No other information is known about this site, which may have been approximately three miles to the west of the Fresh Pond Yard.

Site File Search Results. The site file search found no prehistoric sites within close proximity to Fresh Pond Yard (Appendix 8.7.1). Seven sites, dating to the Woodland period, were identified approximately four to six miles away. Generalized site locations were provided by the NYSM, supplemented by other archaeological and historical sources (Bolton 1972; 1922; Skinner 1915; Beauchamp 1971; 1900; Grumet 1981) in an attempt to more accurately describe each site.

(1) NYSM #3613 (ACP Kings no #): This site is located near the mouth of Newtown Creek in Greenpoint, Kings County. Archaeologist Arthur C. Parker reported "traces of occupation" in this area (Parker 1920)[1]. The NYSM places it starting northwest of Greenpoint Avenue (which crosses Newtown Creek south of Dutch Kills) and extending west toward the East River. Therefore it is four and three-quarters miles west northwest of the Fresh Pond Yard.

(2) NYSM #4536 (ACP Queens #13): This site was identified by Parker as a village site at the head of Newtown Creek (on the north side), approximately two and a quarter miles west of Maspeth Yard.

(3) NYSM #4535 (ACP Queens #12) This site is identified as a shell heap or midden found at Sanford's Point in Astoria, Queens. Parker indicated that "early and modern relics" were recovered, and Bolton mentions "various Indian objects." Parker's map places the midden on the northern shore of Hallett's Cove, about five and a half miles northwest of the study area (Parker 1920; Bolton 1972).

(4) NYSM#8217 (ACP Queens no #) is a camp site located at Sanford's Point, in Astoria, Queens, to the north of the shell heap (NYSM#4535) discussed above (Parker 1920). The location is just under six miles northwest of the study area.

(5) NYSM#4538 (ACP Queens no #) refers to a village site in Long Island City, Queens. The location provided by the NYSM extends from the rail yard complex at Sunnyside on the east to 12th Street on the west. Parker's published map appears to show the village somewhat further north, approximately centered on 35th Avenue and Crescent Street (Parker 1920), which would place it about five miles to the northwest of the study area.

(6) NYSM#4537 (ACP Queens #14) identifies a burial site in Long Island City, Queens. Parker places this burial on Crescent Street, but does not provide the cross street. His map seems to put it northeast of the village site discussed above (NYSM#4538) on or northeast of Broadway, which would mean that it was about

[1] Parker's research into the known prehistoric sites of New York State identified a number of sites within New York City, which he describes, and often gives numbered designations (ACP#) in his 1920 publication, "The Archaeological History of New York." The NYSM locates these sites based on his maps.

four and a half miles outside the study area (Parker 1920). Bolton reports human burials (note the plural), "near Crescent Street," although his map siting is the same as Parker's (Bolton 1972). The locations and comments provided by the NYSM suggest two or more burials, giving two locations, both centered on Crescent Street.

(7) OPRHP #A081-01-0100 or "Sunwick" was described by archaeologist Reginald Bolton who reported that the site (also called Sunwicks or Sunswicks) was a "native station" which yielded shell deposits and a few artifacts. Sunwick was in Ravenswood Park, now Rainey Park, on the Queens shore of the East River Shore, about four and a half miles to the northwest of the site (Bolton 1922; Grumet 1981).

8.2.2 Historic Context

During the first quarter of the 17th century the Dutch explored and founded the colony of New Netherland (1609-1624). In the late 1630s, fur trappers, working for the Dutch West India Company, were the first Europeans to set up camps in western Long Island along the East River and its tidal creeks or kills ("Kill" is the Dutch word for a small stream or tidal inlet). By the middle of the century, both Dutch and English settlers inhabited parts of the land that was to become Queens.

Documentary evidence indicates that one of the first substantial land grants, which included the project area, occurred in 1642 when Reverend Francis Doughty received a very large land patent that extended from a place called "Mispot (Maspeth) or English Kills at the head of Newtown Creek" northward toward Long Island City, and eastward to a remote swampy area (Queens Borough Library, BULLETIN #650 1939; Seyfried 1984a). This land grant encompassed "practically all of the present Long Island City and Newtown" including the village of Maspeth at the eastern end of the creek, approximately 2 miles west of the current project site (Von Skal 1908). Doughty did not enjoy his bounty for long as a dispute with Gov. Kieft, who had granted the land patent, culminated in Kieft fining him "ten dollars and twenty-four hours imprisonment" (Ibid. 1908).

After Doughty left Maspeth, a few settlers remained in the hamlet until the following year when hostilities with the Native peoples escalated. Governor Kieft's War, which began in 1643, led to the massacre of an entire Indian village. In retaliation, many of the Long Island bands joined with their neighbors in an effort to burn the encroaching Europeans' farms. One area that was targeted for burning was Maspeth, causing the early settlers to flee to Manhattan. (Erlich 1979).

Following the "war" the settlement of Queens began in earnest. Numerous farms were established during the mid- to late 17th century when several land patents were granted. A charter to create an inland settlement near the location of the Fresh Water Ponds was granted in 1652 (Fresh Pond). Later known as Middle Village, the settlement was

thought to be located halfway between Manhattan and Long Island. The land in this area was well-suited for agriculture and soon many farms were established. Initially these farmers were under Dutch rule, but during the 1660s, the English had gained control of the colony and renamed it New York.

The English divided New York into ten distinct counties, including Queens, in 1683 (Seyfried 1984). The western portion of this new county was further divided into three townships, with the project site being located in Newtown. This town extended west and encompassed the tidal creek called Mespaethches by the Native Americans and Newtown Creek by the English. Throughout the rest of the 17th, and well into the 18th century, Newtown became a hub of agricultural activity. Queens provided the rapidly growing European community in Manhattan with produce and raw materials, especially wood, which was found in abundance in Newtown.

The majority of the residents of Queens supported the British during the Revolutionary War (WPA 1939). However, many residents of Newtown and parts of northwestern Queens supported the Colonial efforts. Following the defeat of George Washington's army at the Battle of Long Island in August 1776, British forces occupied Queens for the next seven years (Seyfried 1984). The Middelburgh Road (39th Avenue), approximately one-and-a-half miles north of the project site, was the chief communication/transportation route between east and west. British officers commandeered the better rooms of local farmhouses, while troops were bivouacked in kitchens, huts, and tents along the road and in the fields. These soldiers destroyed fences, buildings and orchards in search of firewood and often stole valuables and livestock (Munsell 1882; Seyfried 1984b). Well more than 100 years later, some of their huts were still visible along the roadway and local farmers frequently plowed up Revolutionary War relics.

Following the War, the Fresh Pond area returned to a peaceful agricultural existence. In 1836 the introduction of the Long Island Railroad between Jamaica and Brooklyn allowed for swifter transport of goods, thus encouraging rapid population growth in the interior sections of Queens. Queens also became the final resting place for many Manhattan residents after May 1, 1851 when burial grounds were banned on lower Manhattan for sanitary reasons (Jackson 1995; Seyfried 1984a). The following year, members of the Lutheran Church in Manhattan purchased several farms north of the project site in order to establish a cemetery (Jackson 1995).

By the 1850s the need for urban residential property aided in the demise of the family farm in Queens. An increase in population and accelerated construction activity encouraged the formation of many new small hamlets or villages. The project site is located in Glendale, which was a large piece of the area previously known as Fresh Ponds. As part of a payment of a debt, George S. Schott was given the land, which he renamed Glendale after his birthplace in Ohio (Jackson 1995).

By the mid 19th century, the western part of Queens became the hub of industrial activity. The establishment of new factories and businesses encouraged the residential development of the interior lands during the 1860s and 1870s. The land was essentially becoming too valuable to be left as marsh or open fields. To the northeast of the project site, Middle Village was founded, and to the west lay Ridgewood, named after a heavily forested area.

During the late 19th century the project area saw an influx of Irish and German immigrants. In fact, after the Civil War, the population of Middle Village was almost completely German. Several breweries and knitting mills were established in the project area (Jackson 1995). The introduction of the South Shore Railroad through the project site also contributed to the local urbanization process. Developers began to purchase the farms within the project area in order to divide them into small lots for sale to these new working-class Americans.

The 20th century was characterized by the continued growth and urbanization of the project area. In 1909, the opening of the Queensboro Bridge provided easy access to Queens from Manhattan. In the two decades following the bridge's opening, the population of the borough quadrupled. It was during this time that the last of the large area farms were divided and sold, and large neighborhoods of brick row houses were established.

Cartographic Review. A detailed reconstruction of land use and development at the project site throughout the historical period was accomplished by reviewing available maps and atlases. This process permitted the identification of potentially archaeologically sensitive areas as well as any subsequent activities which may have caused subsurface disturbance to identified resources.

Historical reports described the community of Fresh Pond as a large swamp that contained numerous fresh water ponds. However, early historic maps indicate that the Fresh Ponds Yard was actually forest land and that the "swamp land" may not have been extensive as originally described (e.g., Van der Donck 1656; Taylor and Skinner 1781; Sidney 1849; Conner 1852). While most historic maps portray the project site as wooded, these early maps lack the detail necessary to discern distinct topographic features.

The 1852 map is the first to identify landowners within the project site (Conner 1852). At this time the east yard was part of a large farm owned by the Lhar (Lahr) family that fronted onto Fresh Pond Road (Figure 3). The west yard cut across the rear acreage of two family farms owned by the Ways. Although the project site was part of this farmland, it was depicted as wooded on this map. To the northeast of the project site, the newly established Lutheran Cemetery, which has since grown considerably in size, had been created.

By 1873, the large farms in the vicinity of the project site had been considerably reduced in size (Beers 1873; Figure 4). The 1873 atlas depicts the east yard of the Fresh Pond site as on the eastern end of the "G. Lahr Est." property, with the main residence far removed from the project site fronting Fresh Pond Road. The South Side Rail Road had been completed by this time, and ran through the west yard. Three farms now bordered the west yard section of the project site, owned by Way, DeBevoise, and Bomjes farms. Houses associated with each of these land holdings were also far removed from the project site, fronting Fresh Pond Road. By this time, the Lutheran Cemetery had extended onto both sides of Williamsburgh Road (shown as the Horse Car Railroad), still northeast of the project site (Ibid.). An 1885 map showing the Long Island Railroad connections, indicates that both the South Side Railroad and the Manhattan Beach Branch were present on the project site by that date.

The 1891 Wolverton Atlas portrayed the east yard section of the project site as on the eastern end of a 23-acre tract belonging to F. Wagner (Wolverton 1891;Figure 5). The west yard still abutted the eastern ends of properties owned by the Way, DeBevoise, and Bomjes families (Ibid.). The main houses for each of these parcels were far removed from the project site, fronting Fresh Pond Road. A new station had been created for the railroad on Williamsburgh Avenue, just west of the project site, and Williamsburgh Avenue had been renamed Metropolitan Avenue. The Lutheran Cemetery had grown in size, extending south to border the northern side of the east yard section of the project site.

The 1897 USGS topographic map of the project area, showed the railroad tracks forming a "triangle" at the Fresh Pond site by that date (USGS 1897). The site, however, did not appear to be a functioning rail yard at that time as no sidings or other associated features were present. By 1910, the Yard appeared to be in operation (Borough of Queens 1910).

The *Final Maps for the Borough of Queens* from 1930 indicate that numerous railroad branches converged at the Fresh Pond project site by that time (Figure 6). Topographic lines show that the east yard ranged in elevation from a low of 85 feet above sea level (ASL) in the south, to a high of 100 feet ASL in the northeast. Generally the main triangle of the east yard was highest to the northeast, and gradually sloped downward to the south and west. This precise topography is identical on the 1979 USGS topographic map (compare Figures 1 and 6).

By 1966, the Fresh Pond site had been divided into the east and west yards (Long Island Railroad 1966). A small freight office and tower had been constructed on the site by this time. Current maps indicate that a jet fuel pipeline, laid somewhere below the frost line approximately four feet below grade prior to 1969, is located adjacent to the tracks within the Fresh Pond Yard right of way.

8.3 Existing Conditions

8.3.1 Prehistoric Archaeological Potential

As discussed above, site file research indicates that no prehistoric sites fall within a four-mile radius of the project site. The closest potential prehistoric site is the one Reginald Bolton described at Maspeth (Marshpath) adjacent to the Newtown Creek far from the project site.

Cartographic research indicates that during the 19th century, the project site was wooded land. Although there are historical accounts of the Fresh Pond environs being a series of wetlands and ponds, none of the historic maps consulted suggested that the project site fit this description. Prior to historical manipulation the project site appeared on maps as relatively level and wooded. Given that the 1930 elevations varied between 85 and 100 feet above sea level, cresting in the northeastern part of the site, the project site clearly once possessed land forms which may have been inhabited by Native Americans

Upland well-drained land forms in proximity to fresh water were prehistorically utilized for long and short term habitation, hunting, planting, and a number of other specific uses. As a result, in Queens prehistoric sites are often situated on well-drained upland soils in proximity to fresh water. Several archaeological surveys of prehistoric sites completed in Westchester County, New York and Fairfield County, Connecticut, demonstrate that the probability that a land form was occupied by prehistoric peoples drops off sharply as travel time to a source of fresh water increases. The majority of prehistoric sites tend to be within 50 meters of a fresh water source, which, depending on local topography, could translate into a travel time of as great as 15 minutes (Wiegand 1998).

Based on the above discussion, it is clear that prehistoric archaeological potential declines as the distance to a fresh water source increases. Fresh Pond, a fresh water source, was situated within 2,000 feet north of the west yard of the project site, and about 3,000 feet northwest of the east yard. Given the relatively level topography, these distances translate to a travel time of about 15 minute or less to fresh water. Therefore, it is possible that the project site may have once been utilized by Native Americans in some capacity. More specifically, the top of the knoll which crested at 100 feet ASL in the northeastern section of the east yard would have been ideal for prehistoric habitation.

The continued presence of potential prehistoric cultural resources within the project site depends largely on the extent of subsurface disturbance to the prehistoric landscape. Throughout the metropolitan region, under normal circumstances prehistoric archaeological resources are shallowly-buried, usually within three or four feet of the pre-development surface. As a result, they are extremely vulnerable to post-depositional construction.

In order to determine subsurface conditions at the Fresh Pond Yard, efforts were made to locate soil borings for the project site at the Department of Design and Construction

(formerly the Subsurface Exploration Bureau). They have no record of borings taken within the project site boundaries. Although it is possible that borings have been completed within the Fresh Pond Yard by private companies, none were found. Soil borings were recently completed by AKRF, Inc., within this yard. However, these only extended into fill levels, terminating at about three feet below grade. No determination of the final depth of fill or types of soils beneath them could be made (AKRF 1999). An examination of more complete soil cores and soil boring data may provide information that would further refine the assessment of prehistoric sensitivity.

It is currently unclear if there was ever any fill introduced onto the site to level areas for track beds or other railroad use, which, in many cases, can serve to preserve and protect fragile prehistoric resources. Although there has clearly been some subsurface disturbance over the last century caused by excavations for the installation of buried utility lines and the jet fuel pipe, the project area may possess undisturbed areas which could contain buried prehistoric cultural resources.

8.3.2 Historic Archaeological Potential

Research indicates that up until the 20th century, the project site encompassed the back acreage of large farms which bordered Fresh Pond Road, one of the early transportation routes in this portion of Queens. The domestic compounds, which typically include the farmhouse, barn, privy, and other outbuildings, clearly fronted onto Fresh Pond Road, far from the project site. Mid-19th century maps show that this property was undeveloped woodland, with cleared farmland situated to the southwest. Because it is unlikely that any significant historical features relating to the agricultural/domestic history of the site were present so far from the active farm compounds, the Fresh Pond site has no potential for historic resources relating to these homesteads.

Starting in the late 19th century and continuing throughout the 20th century, the project site was utilized exclusively by the railroad. All railroad-related resources which were observed on maps were determined to lack archaeological importance for a number of reasons. For example, railroad tracks have been updated throughout the history of the yard, and have little research potential since their technological evolution is detailed in the documentary record. Also, switching and signaling boxes and towers were determined to lack archaeological potential since they were also upgraded as technology advanced, and their mechanisms were typically removed when they were abandoned altogether. Therefore, these resource types are not considered to have archaeological potential.

8.4 Impact Assessment

Proposed surface activities at Fresh Pond Yard, such as creating new tracks, will have no impact to any potential resources since the site has been covered with tracks for almost a century. The footings for the proposed six thousand square feet building which will be constructed on the east yard would extend approximately six feet below existing

grade, and may impact buried prehistoric cultural resources. Furthermore, excavations to five feet below grade for utilities also have the potential to impact potential prehistoric resources.

8.5 Mitigation Recommendations

There is the possibility that the project site was inhabited at some time prehistorically, and that prehistorically sensitive areas may exist undisturbed within impact areas. Mitigation recommendations include completing a series of continuous tube soil borings to establish the depth of fill throughout the project site, and to search for the distinctive presence of markers typically associated with a prehistoric presence. The absence of definitive signs of a Native American presence, and/or the presence of a habitable living surface buried beneath the fill would suggest that no prehistoric potential remains.

A total of three continuous tube soil borings, three inches in diameter, should be completed within the east yard at the site of the proposed building. Additional borings should be placed at 100 foot intervals where the utility trenches will be excavated. If refusals are encountered, then borings should be offset from these locations by no more than 10' if possible. Borings should extend beneath all fill layers and either down to bedrock or at least 10' below grade (the maximum depth of anticipated impacts for the building, and a conservative depth for the utility trenches), whichever is reached first. This would allow archaeologists to better assess subsurface conditions.

If soil borings indicate potential sensitivity, mitigation would include reevaluating potential impacts. The locations of potential prehistoric resources, if any are indicated, should be compared to proposed disturbance areas to assess if this resource type would be impacted.

If avoidance of potential resources, if any are indicated, is possible, then this is considered a viable mitigation alternative. However, if the avoidance of impact to potentially National Register eligible archaeological resources is not possible, the appropriate mitigation procedures could take the form of construction monitoring, or exploratory excavations, or finally, data recovery.

8.6 Figures and Photographs

1. Project Site Location

2. Project Site Boundaries

3. *Map of Queens*, Conner 1852

4. *Atlas of Long Island*, Beers 1873

5. *Atlas of Queens County*, Wolverton 1891

6. *Final Maps, Borough of Queens*, 1930

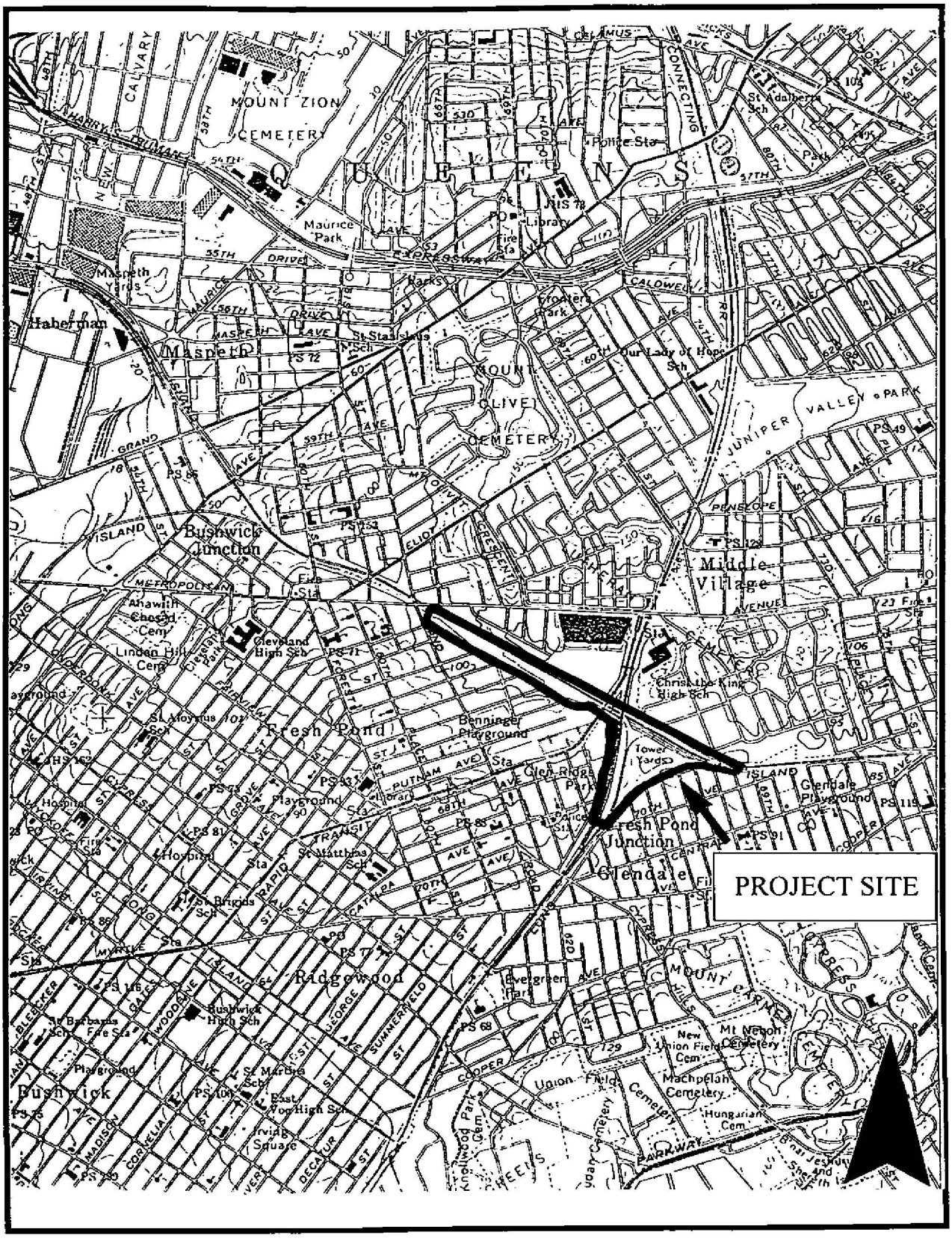


FIGURE 1
Project Site Location, *USGS Brooklyn, N.Y. Quadrangle*, 1979.
Scale 1:24,000

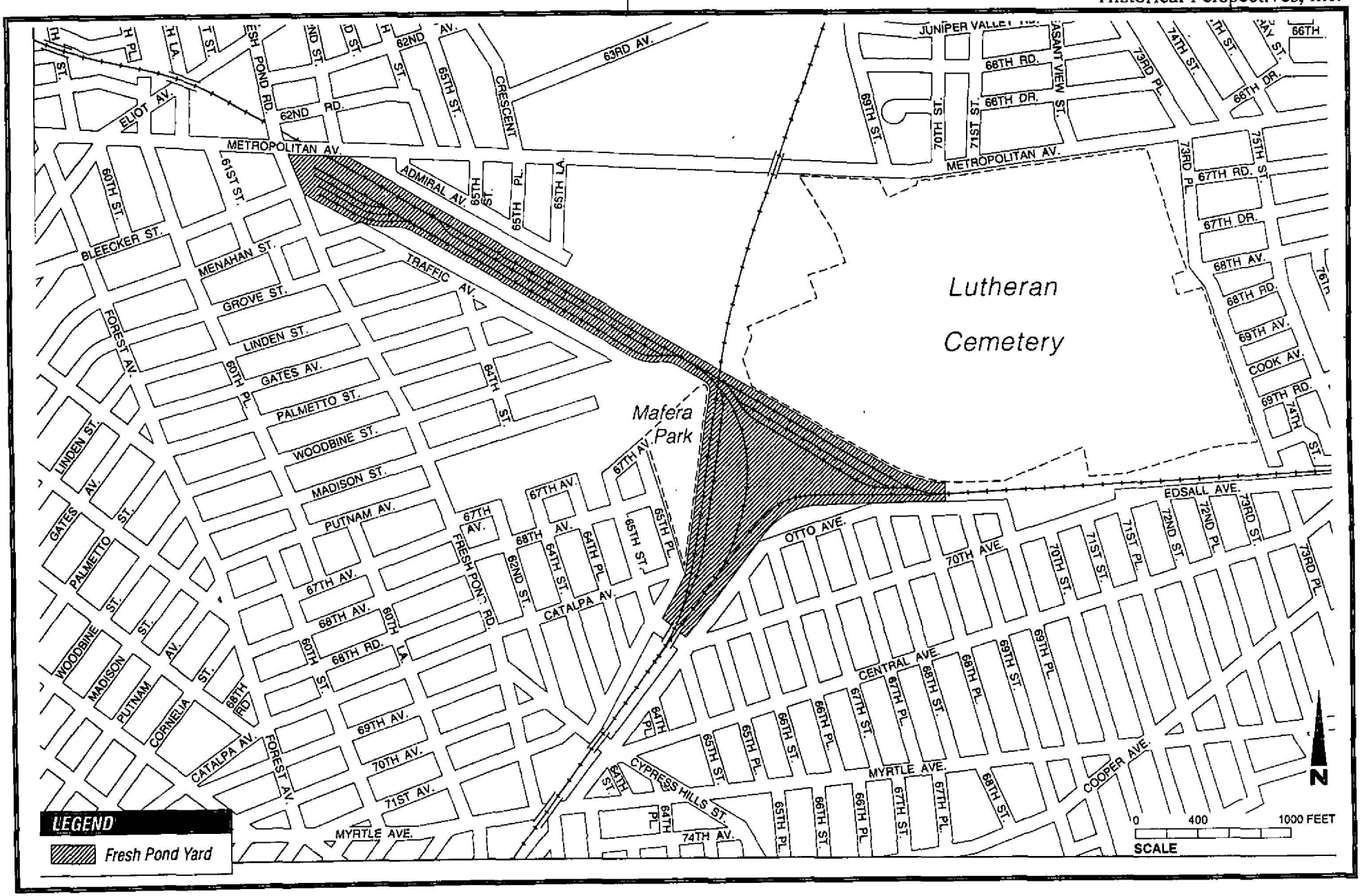


FIGURE 2
Project Site Boundaries.

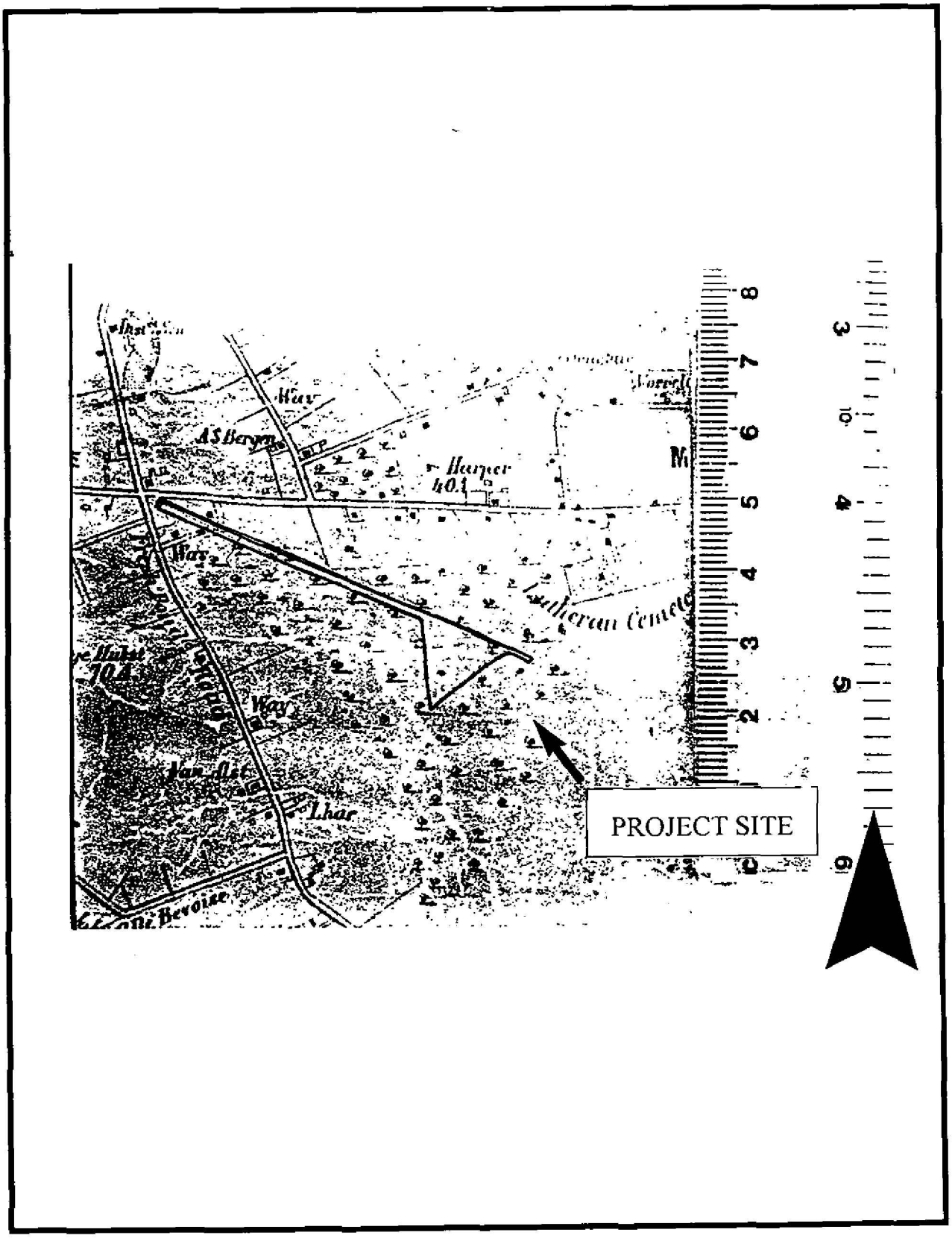


FIGURE 3
Map of Queens, Conner 1852.

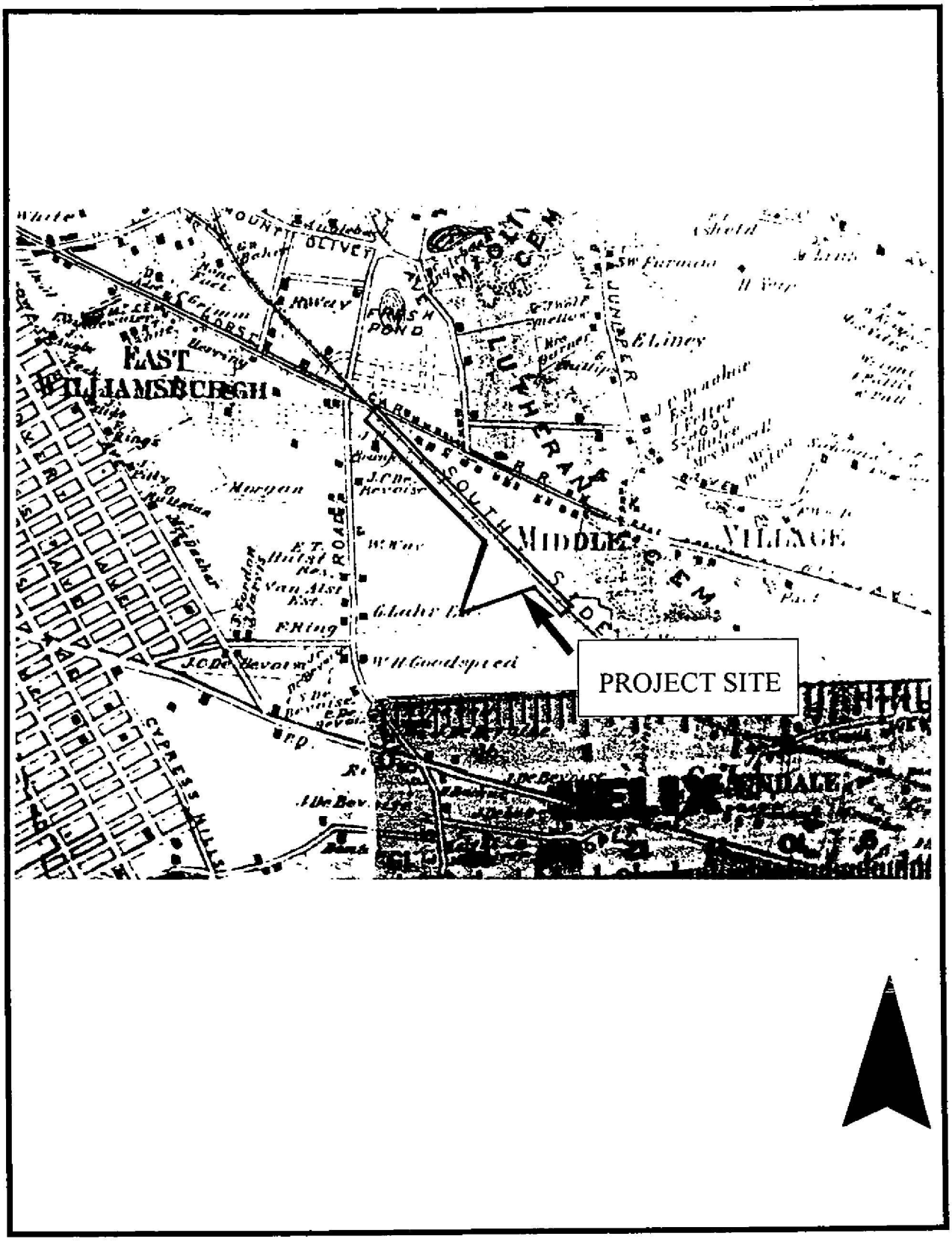


FIGURE 4
Atlas of Long Island, Beers 1873.

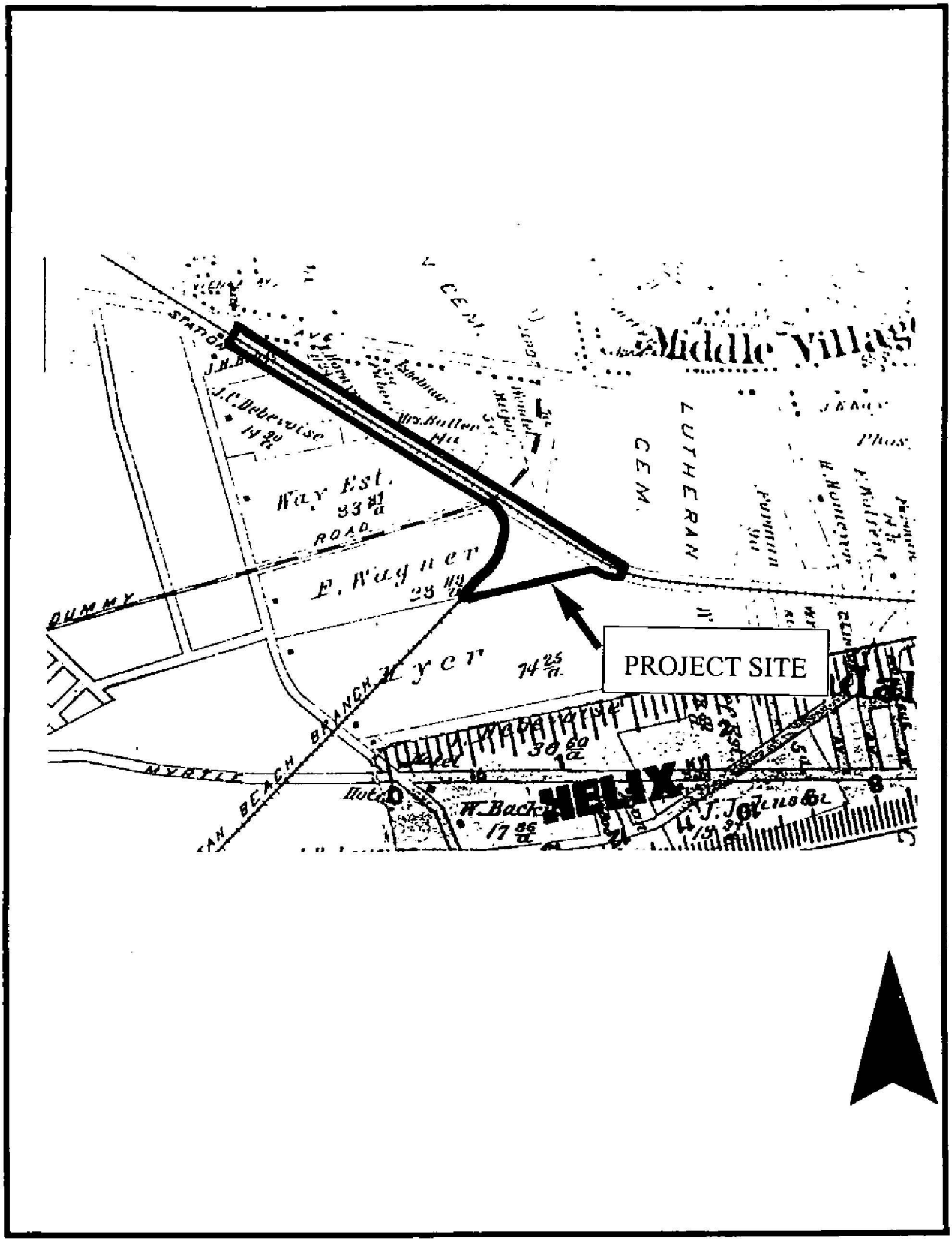


FIGURE 5
Atlas of Queens County, Wolverton 1891.

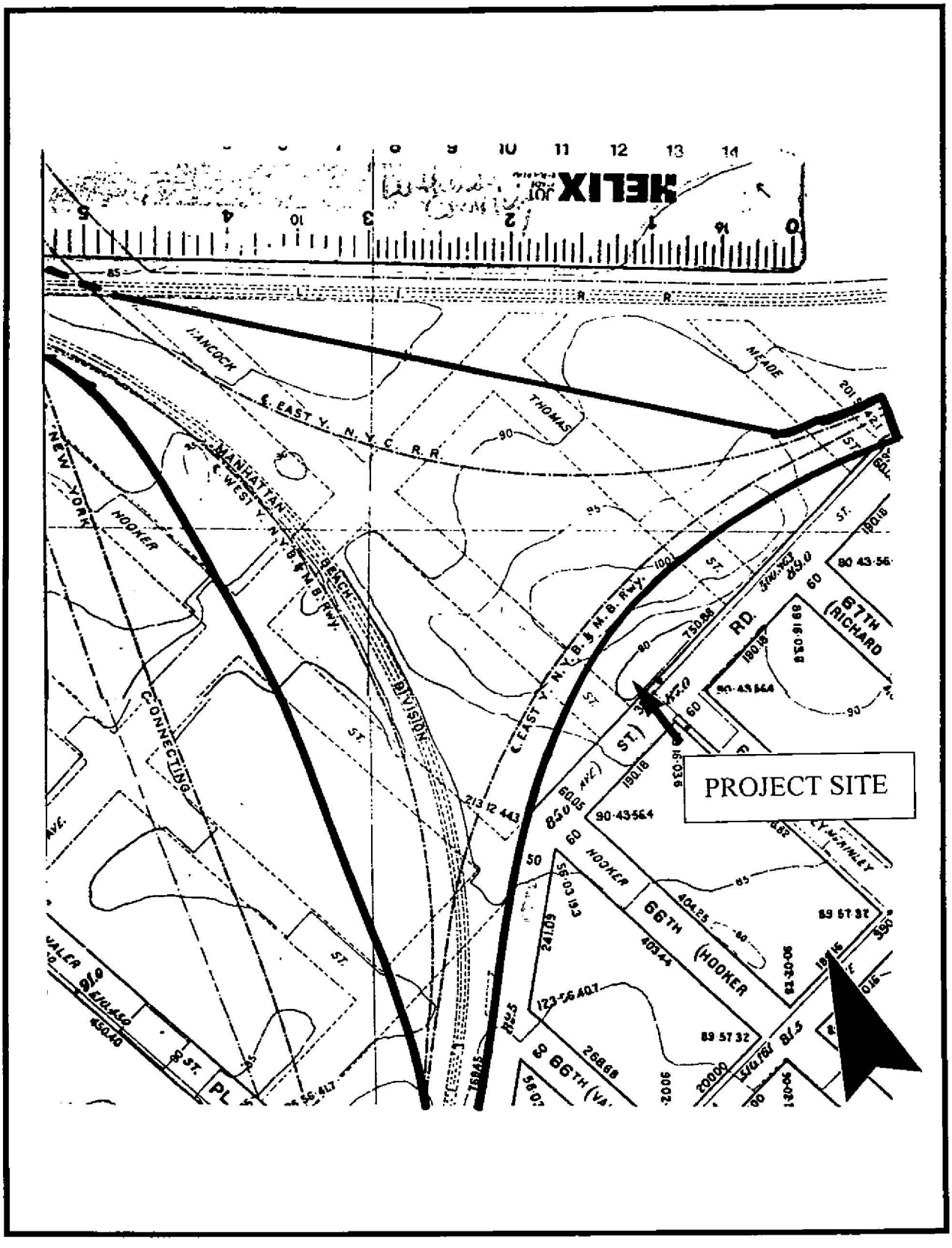
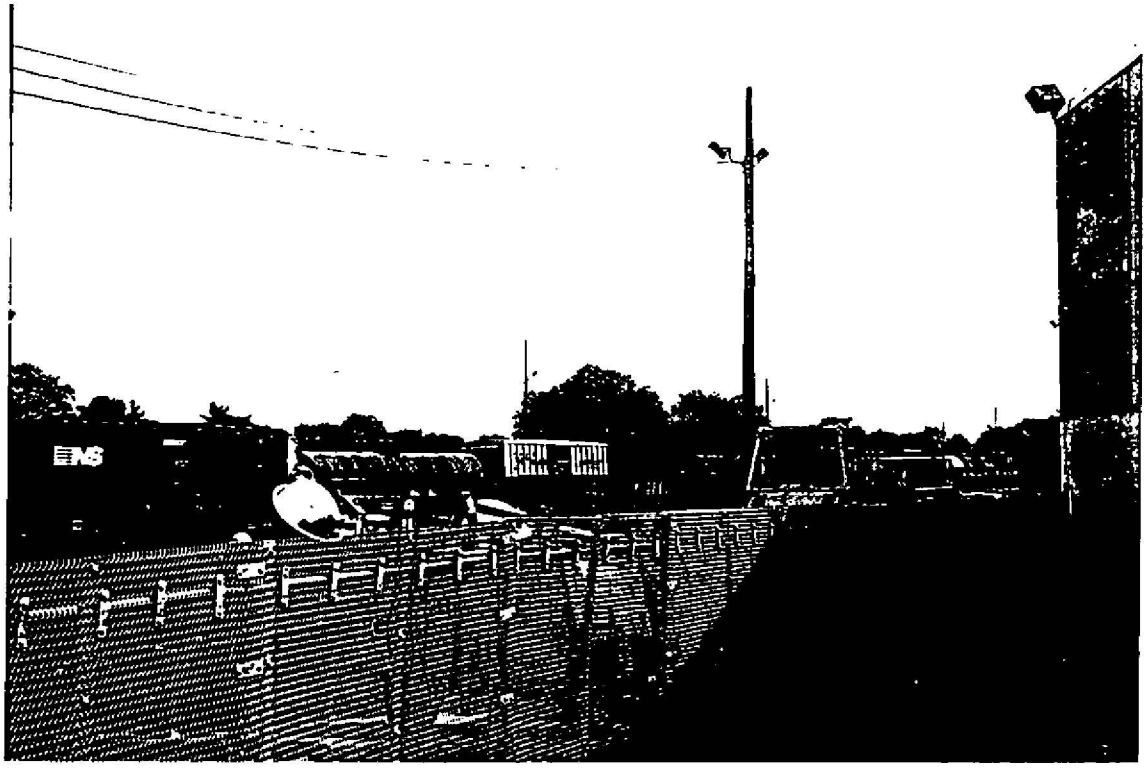


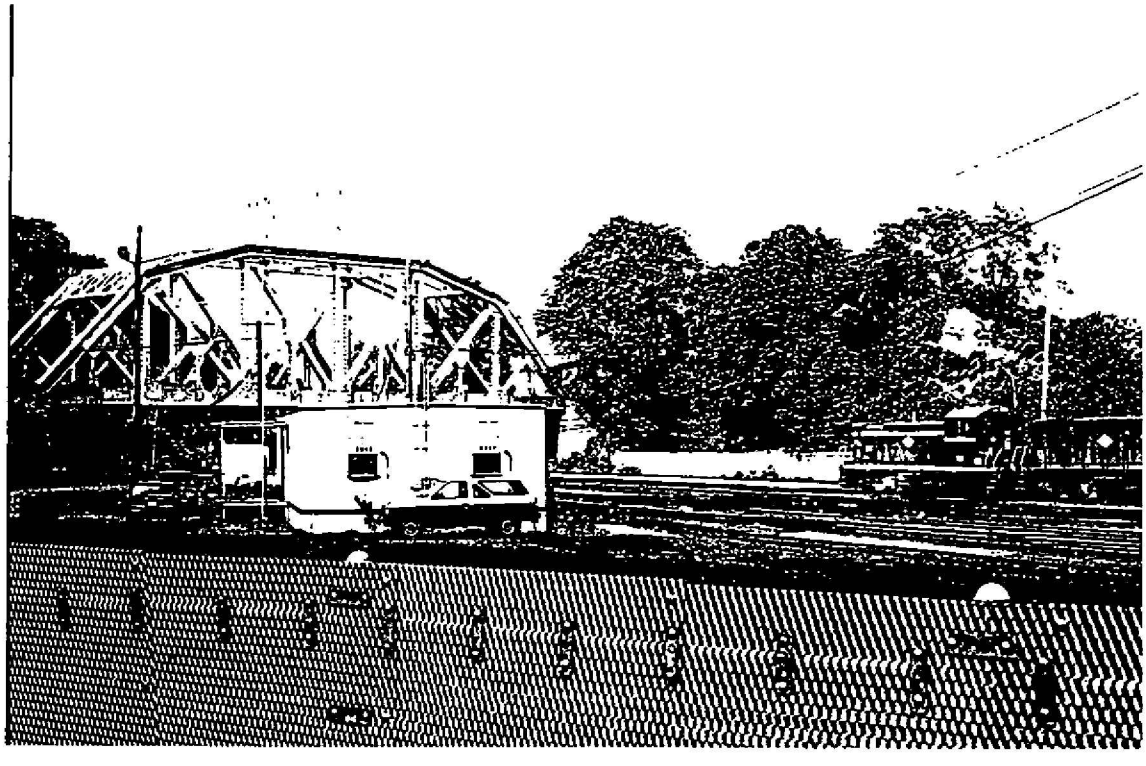
FIGURE 6
Final Maps, Borough of Queens. 1930.
Scale 1" = 200'

Photograph 1: Fresh Pond Yard, facing west from yard north of Otto Avenue opposite 68th Street.

Photograph 2: Fresh Pond Yard, facing west from yard, south of Otto Avenue.



Photograph 3: Fresh Pond Yard, facing northeast from 66th Street behind buildings.



Photograph 4: Fresh Pond Yard, facing northwest at 66th Street north of Otto Avenue.

8.7 Appendix

8.7.1 Site File Search Results, NYCLPC, NYSOPRHP and NYSM

Project conducted by: KC Date 8.5.99 # archeological sites 2

Project Site #	Form Copied	If not fill in -1	Site Name	Site Description
4 081.01.0101				
3 081.01.0108				
	081.01.0113			
	081.01.0110 (NR)			
No form → Location 9 →	081.01.0064208 (NR)			
	081.01.0063268 (NR)			
	081.01.0091318 (NR)			

Status	NRE Listings	Form Copied	Description
NRE	Emergency Medical Squad	✓	38-18 Northern Blv.
NRE	Engine Co. 258 Hook + Ladder 115	✓	10-40 47th Ave. - 9 location not plotted on GIS map
NRE	89-02 32nd Ave PS 148	no form	
NRE	77-02/37th Ave Jackson Heights School (Primary School 69)	no form	
NRE	167-02 45th Ave. PS. 107	no form	

(NR) = No location - just keep in mind these locations if they are adjacent to your project area - Public Schools and Fire Stations seem to be NRE. as well

TIONAL REGISTER ELIGIBLE and LISTED At least 1 Eligible 5 Listed

City Name	NR Status (L/E/N)	Form Copied	Description
	NRL	✓	Long Island City Courthouse Complex
	NRL District	✓	Ridgewood Multiple Resource Area - include -
	NRL District	✓	Hunters Pt Hist. District or Domino's
	NRL District	✓	Sunnyside Gardens Historic District (Hook Bennett Rd.)
	NRL	✓	Long Island City Post office 46-02 21st St.

- Fresh Pond Traffic Hist. Dist.
- 68th Ave 64th place Hist. Dist.
- Central Ave. Hist. Dist

VIOUS SURVEYS (2 Reports)

1! - Onderdonk House - Greater Ridgewood Historical Society - 1983 - + 1975

8 (3 Reports - 2 are yours) West Queens High School - 2 Reports (1992 + 1988) HPI - the other (Greenhouse Consultants - 1992)

5+ - P.I.N. 0227.75 Long Island Expressway - written by Arnold Pickman - 1983 -

5 previous surveys

[redacted] RESEARCH RESULTS

Project Name: MTA/LIRR Eastside Access HAA Project Number: 1302 Client: HPI

Village: _____ Town: NY City County: Queens

Quadsheets: Brooklyn + Central Pk

NEW YORK STATE MUSEUM conducted by: Kim Crosher Date: 8.5.99 Site Sensitivity requested: _____ # Sites: 5

NYSM#	Other#	Name	Period	Type	Comments
4537	ACP QUNS 14	—	—	BURIAL Site	ACP... in LI city on present St. NYSM Locat present St. in vicinity of LI city Reporter: A.C. Parker/1922
3683	ACP KNS	—	—	TRACES of OCCUPATION	Reporter: A.C. PARKER 1922
4530	ACP QUNS 13	—	—	VILLAGE	ACP... on Maspeth Hills at Head of Newton Creek. Reporter: A.C. Parker/1922
6376 at Plotted on map	ACP KINGS	Sites General	—	—	Kings Co. was "... without Doubt... occupied in nearly every part..." ACP part 2, p. 552. Reporter: AC Parker/1922
4536	ACP QUNS NO #			VILLAGE	Reporter: A.C. Parker/1922

...K STATE HISTORIC ARCHAEOLOGICAL SITE INVENTORY FORM

...ice Use Only--Site Identifier A081-01-0108

Project Identifier _____ Date 11/21/79
Your Name _____ Phone ( ) _____
Address _____
_____
Zip _____

NOV 21 1979

Organization (if any) _____

1. Site Identifier(s) Vander Ende-Onderdonk House Site
2. County Queens One of following: City _____
   Township _____
   Incorporated Village _____
   Unincorporated Village or
   Hamlet Ridgewood
3. Present Owner Greater Ridgewood Historical Society
   Address 803 Cypress Avenue
   Ridgewood, NY
   Zip
4. Site Description (check all appropriate categories):
   Structure/site
   Superstructure: __complete __partial xx collapsed __not evident __
   Foundation: __above __below __ (ground level) not evident __
   xx Structural subdivisions apparent __Only surface traces visible
   xx Buried traces detected
   List construction materials (be as specific as possible):
   The site has been listed on the National Register, and is being restored with a DHP A&D grant (HP79-10035). Details on the site can be found in the documentation assembled for the above actions.
   Grounds:
   __Under cultivation __Sustaining erosion __Woodland __Upland
   __Never cultivated __Previously cultivated __Floodplain __Pastureland
   Soil Drainage: excellent __ good __ fair __ poor __
   Slope: flat __ gentle __ moderate __ steep __
   Distance to nearest water from structure (approx.) _____
   Elevation: _____
5. Site Investigation (append additional sheets, if necessary):
   Surface--date(s) _____
   __Site Map (Submit with form*)
   __Collection
   Subsurface--date(s) _____
   Testing: shovel __coring __ other _____ unit size _____
   no. of units _____ (Submit plan of units with form*)

   Excavation: unit size _____ no. of units _____
   (Submit plan of units with form*)
   * Submission should be 8½"x11", if feasible

   Investigator George Happel
   Manuscript or published report(s) (reference fully):
   Test Trench No. 1: Onderdonk House, Maspeth, Queens County, New York (1975)

   Present repository of materials _____

6. Site inventory:
   a. date constructed or occupation period _____
   b. previous owners, if known

   c. modifications, if known

   (append additional sheets, if necessary)

7. Site documentation (append additional sheets, if necessary):
   a. Historic map references
      1) Name _____ Date _____ Source _____
         Present location of original, if known _____

      2) Name _____ Date _____ Source _____
         Present location of original, if known _____

   b. Representation in existing photography.
      1) Photo date _____ Where located _____
      2) Photo date _____ Where located _____

   c. Primary and secondary source documentation (reference fully)

   d. Persons with memory of site:
      1) Name _____ Address _____
      2) Name _____ Address _____

8. List of material remains other than those used in construction (be as specific as possible in identifying object and material):

   If prehistoric materials are evident, check here and fill out prehistoric site form. __

9. Map References: Map or maps showing exact location and extent of site must accompany this form and must be identified by source and date. Keep this submission to 8½"x11", if feasible. See plot on U.S.G.S Topo Sheet

   USGS 7½ Minute Series Quad. Name Brooklyn

   For Office Use Only--UTM Coordinates _____

10. Photography (optional for environmental impact survey):
    Please submit a 5"x7" black and white print(s) showing the current state of the site. Provide a label for the print(s) on a separate sheet.

INSTRUCTIONS. Write on hard surface with 2H Pencil. Fill in or circle where appropriate. Keep top two copies (white and yellow) and send third copy (pink) to the NYAC Central Office. Coding space is provided on the right margin. Take pad apart at top first.

NEW YORK ARCHAEOLOGICAL COUNCIL

SITE SURVEY FORM

Page

NYAC SITE NO.

Location Classification: Unrestricted / Restricted

SITE NAME

Official	Institution
Other: Crescent St. Site	NYSAA
	Collector

PERIOD

Paleo. / Archaic: E M L / Transitional / Woodland: E M L / Historic

Unknown Prehistoric

CULTURE(S)

SITE TYPE

Stray Find	Pictograph	Kill Site	Cemetery	Camp	Commercial/Factory
Cave	Quarry	Shell Midden	Ossuary	Cabin/House	Government
Rockshelter	Workshop	Mound	Family Plot	Village	Military

OTHER:

LOCATION

State: NEW YORK	Township
County: [illegible]	Lot
Town	Range

MAP

U.S.G.S. 7½ Quad Name	No.	Quarter	Coordinates
CENTRAL PARK	20	NW NE SW SE	INTERIOR VISITOR

PROPERTY

	Owner	Tenant	Previous Owner/Tenant
Name:			
Address:	[illegible]		
Phone:	( )	( )	( )

SITE INVESTIGATION

	Surface Collection	Testing	Excavation
Who:			
Project			"BURIAL SITE in Long Island City along Crescent St.
Dates			

COLLECTIONS

Who:

Cat. Nos

PHOTOS

Who

B & W

Color

Slides

I-R

REFERENCES

Pub: PARKER [illegible]

Unpub: STATE ED. DEPT [illegible]

Original Reporter | Date

HISTORICAL DOCUMENTATION OF SITE:
Parker, Arthur C. 1922. The Archaeological History of New York, New York State Museum Bulletin, Nos. 235-236, pp. 437-486. Illus.

10. POSSIBILITY OF SITE DESTRUCTION OR DISTURBANCE:

SITE TYPE

11. REMARKS:

LOCATION

12. MAP LOCATION

7 ½ MINUTE SERIES QUAD. NAME: Central Park

15 MINUTE SERIES QUAD. NAME: [illegible] SW/4

U.S.G.S. COORDINATES: 18T E 594450 N 4512500

D.O.T. COORDINATES: (if known) _____

ATTACH SKETCH, TRACING OR COPY OF MAP

SOURCE OF MAP:

13. PHOTOGRAPHS (optional)

(ATTACH)

9. HISTORICAL DOCUMENTATION OF SITE:

Parker 1922

10. POSSIBILITY OF SITE DESTRUCTION OR DISTURBANCE:

11. REMARKS:

12. MAP LOCATION

7½ MINUTE SERIES QUAD. NAME: Central Park

15 MINUTE SERIES QUAD. NAME: Harlem (SW/4)

U.S.G.S. COORDINATES: 18T E90450 N13250

D.O.T. COORDINATES: (if known)

☐ ATTACH SKETCH, TRACING OR COPY OF MAP

☐ ☐

☐ NO

SOURCE OF MAP:

13. PHOTOGRAPHS (optional)

HP-3

(ATTACH)

ARCHEOLOGICAL SITE INVENTORY FORM

DIVISION FOR HISTORIC PRESERVATION
NEW YORK STATE PARKS AND RECREATION
ALBANY, NEW YORK
518 474-0479

FOR OFFICE USE ONLY
UNIQUE SITE NO. Ar8L-01-0101
QUAD. _____
SERIES _____
NEG. NO. _____

REPORTED BY: Susan Karlsen

YOUR ADDRESS: _____ TELEPHONE: _____

ORGANIZATION (if any): L/I.A.C.

DATE: 6/1/77

* *

1. SITE NAME: Parker #14

2. COUNTY: Queens TOWN/CITY: Long Island City VILLAGE: _____

3. LOCATION: Crescent St.

4. PRESENT OWNER: _____

5. OWNER'S ADDRESS: _____

6. DESCRIPTION, CONDITION, EVIDENCE OF SITE:

☐ STANDING RUINS ☐ CELLAR HOLE WITH WALLS

☐ SURFACE TRACES VISIBLE ☐ WALLS WITHOUT CELLAR HOLE

☐ UNDER CULTIVATION ☐ EROSION ☐ UNDERWATER

☐ NO VISIBLE EVIDENCE ☐ OTHER _____

7. COLLECTION OF MATERIAL FROM SITE:

☐ SURFACE HUNTING BY WHOM _____ DATE _____

☐ TESTING BY WHOM _____ DATE _____

☐ EXCAVATION BY WHOM _____ DATE _____

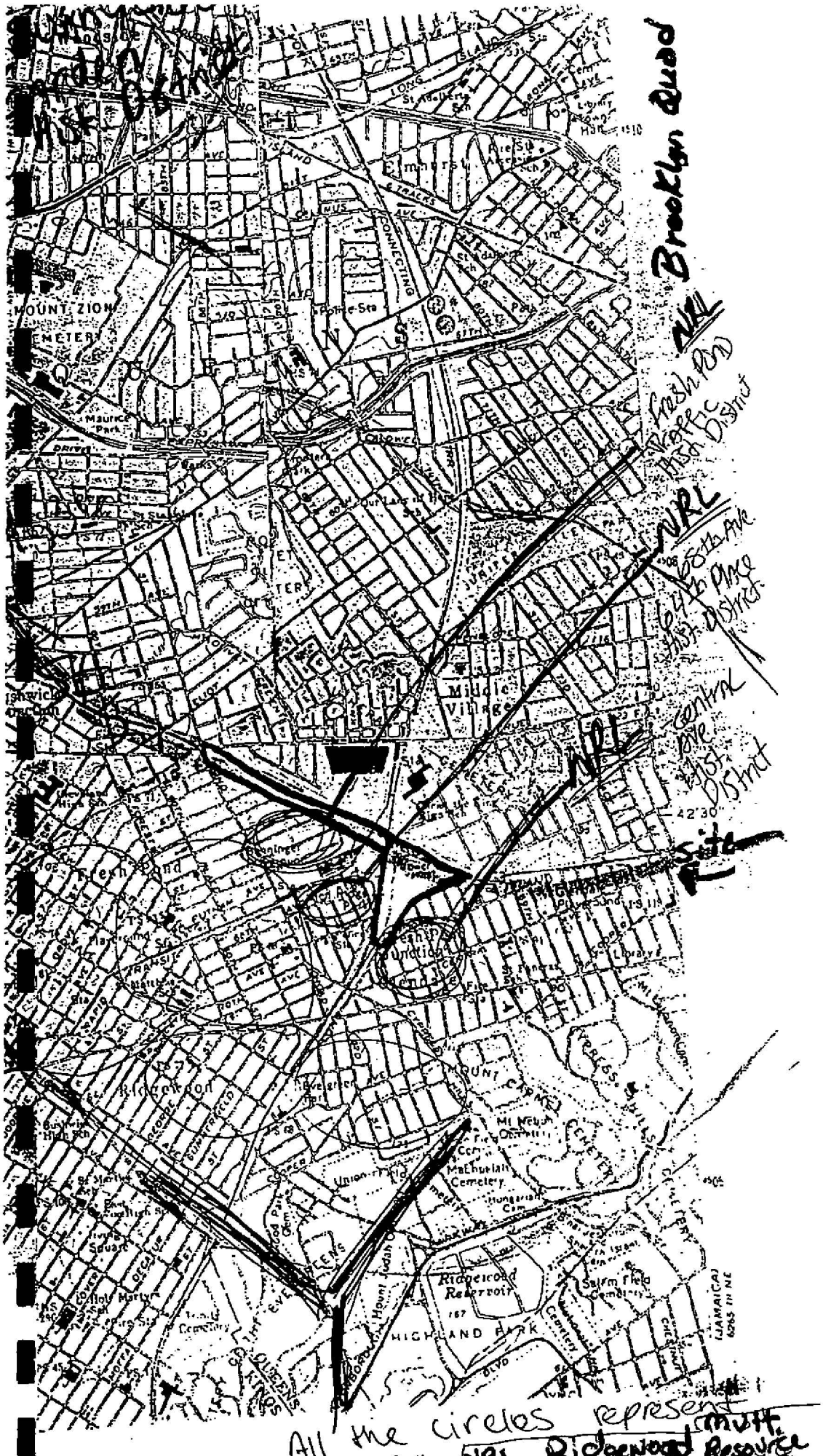
☐ NONE

PRESENT REPOSITORY OF MATERIALS: _____

8. PREHISTORIC CULTURAL AFFILIATION OR DATE: Unknown

P-83
WEST
EAST
CHANNEL
NEW YORK CO
QUEENS CO
Mem Hospital
Doctors Hospital
Mill Rock Park
Hallets Point Light
Hell Gate
Astoria
Subdivision
ST MICHAELS CEMETERY
INTERCHANGE
Bowery Bay
P-83

Klyn Quad


Brooklyn Quad
NRL
Freshland
Traffic
Assn. District
NRL
Fresh Pond
Middle Village
NRL
Central
Ave.
Assn.
District
42'30"
Site
Ridgewood
Ridgewood Reservoir
HIGHLAND PARK
All the circles represent
different parts of the NRL Ridgewood Resource Area

Long Island City Complex
Sunnyside
Hunters Point
QUEENS
KINGS CO
NEWTOWN
CREEK
Penny Bridge
Radio Towers (WNYC)
Fireboat Sta
Bushwick Inlet
RIVER
Greenpoint
McGarren Park
Williamsburg
WILLIAMSBURG BRIDGE
Dept of Pub Works
Cooper Park
Library
Playground
Community
Hospital
Calvary Cemetery
Mt Olivet Cem
Mt Carmel Cem
Linden Hill Cem
Evergreen Cem
Ahawath Chesed Cem
Long Island
Grand
Scott
Stewart
Morgan
Leonard
Manhattan
Bedford
Lorimer
Graham
Humboldt
Driggs
Roebling
Havemeyer
Union
Meeker
Jackson
Ocean
Metropolitan
Flushing
Broadway
Myrtle
Fulton
Hoyt
Nassau
Johnson
Harrison
Kent
Wythe
Berry
Whipple
Kingsland
Review
Ash
Oak
Pine
Elm
Maple
Spruce
Cedar
Walnut
Chestnut
Poplar
Vine
Sycamore
Locust
Willow
Laurel
Hemlock
Juniper
Cypress
Magnolia
Dogwood
Hawthorne
Sassafras
Beech
Birch
Aspen
Alder
Cherry
Peach
Plum
Pear
Quince
Apple
Orchard
Grove
Meadow
Valley
Ridge
Hill
Mountain
Canyon
Forest
Prairie
Desert
Ocean
Lake
River
Stream
Creek
Brook
Pond
Swamp
Marsh
Bog
Fen
Moor
Heath
Tundra
Glacier
Iceberg
Volcano
Earthquake
Tsunami
Hurricane
Tornado
Blizzard
Drought
Flood
Famine
Plague
War
Peace
Love
Hate
Fear
Joy
Sorrow
Anger
Envy
Greed
Pride
Sloth
Gluttony
Lust
Wrath

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