

**ARCHAEOLOGICAL ASSESSMENT
FOR THE RECONSTRUCTION OF
FORT WASHINGTON PARK
FROM 145TH STREET TO DYCKMAN STREET
ALONG THE HUDSON RIVER
BOROUGH OF MANHATTAN, NEW YORK**

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1. INTRODUCTION

This report provides an archaeological assessment of plans for reconstructing portions of Fort Washington Park from 145th Street to Dyckman Street along the east side of the Hudson River in the Borough of Manhattan in New York City (Figures A.1 and A.2). This work has been performed by Hunter Research, Inc. working as a consultant to Stantec, prime contractor to the New York City Department of Parks & Recreation, in support of Stantec's preparation of an Environmental Assessment Statement for the park reconstruction project. Archaeological assessment is required in this instance as per sections of the City Environmental Quality Review (CEQR) Technical Manual which call for definition of sensitive archaeological areas that might potentially be affected by project actions. The CEQR Technical Manual serves as the City of New York's guidance document for project compliance with the New York State Environmental Quality Review Act (SEQRA). Archaeological review agencies are the New York City Landmarks Preservation Commission and the New York State Office of Parks, Recreation and Historic Preservation.

2. METHODOLOGY

Background research and fieldwork were conducted at various times between late February and mid-September 2008. Analysis and preparation of this report were carried out between early August and mid-October 2008. The bulk of this work was performed by Richard Hunter, Principal Archaeologist, Damon Tvaryanas,

Principal Historian/Architectural Historian, Cheryl Hendry, Historian, and Frank Dunsmore and Marjan Osman, Graphics Specialists.

The main emphasis of background research was placed on the examination of historic maps and consultation of agency files and published secondary sources. No primary archival research was carried out. Historic maps and secondary sources were compiled from various repositories, notably the New York Public Library, the New-York Historical Society, the New York City Department of Parks & Recreation, the Library of Congress, the National Archives and other university and public libraries in the New York/New Jersey metropolitan region. Much of this research was conducted on-line, although most New York City/New Jersey repositories were also visited in person. Key agencies contacted during the course of this research were the New York City Landmarks Preservation Commission, the New York City Department of Parks & Recreation and the New York State Office of Parks, Recreation and Historic Preservation. A list of bibliographic sources consulted is appended to this report, divided into two sections: an alphabetically arranged listing of books, articles and reports; and a chronologically organized listing of maps and images.

An extraordinary wealth of mapping survives for the Borough of Manhattan, ranging in date from the early 17th century to the present. So far as historic map coverage of the Fort Washington Park project area is concerned, it was impractical to analyze in detail every available map. Instead, a selection of the most informative maps was selected for analysis, specifically those relating to the Revolutionary War era and those for the period *circa* 1850-1940. The following maps were analyzed in detail:

Military Map of New York Island, unfinished. Circa 1776.

Sauthier, Claude Joseph. 1776. *A map of part of New-York Island showing a plan of Fort Washington, now call'd Ft. Knipphausen with the rebels lines on the south part, from which they were driven on the 16th of November 1776 by the troupes under the orders of the Earl of Percy.*

Sauthier, Claude Joseph. 1776. *A tracing relating to Fort Washington or Knyphausen.*

Fort Washington and the North Part of New York Island. Circa 1776. In The Writings of George Washington: being his Correspondence, Addresses, Messages, and Other Papers, Official and Private, Selected and Published from the Original Manuscripts.

Nord de l'Ile de New-York. Circa 1781.

King's Bridge Section. 1860. Copied from the preliminary map of the Commissioners of Washington Heights.

Fort Washington Section. 1860. Copied from the preliminary map of the Commissioners of Washington Heights.

Dripps, Matthew. 1867. *Plan of New York City from the Battery to Spuyten Duyvil Creek.*

Taylor, Will L. 1879. *The City of New York.*

G.W. Bromley & Co. 1916. *Atlas of Manhattan, City of New York.*

G.W. Bromley & Co. 1925. *Land Book of the Borough of Manhattan, City of New York.*

G.W. Bromley & Co. 1934. *Manhattan Land Book.*

City of New York Department of Parks, Topographical Division. 1936. *Topographical Map, Portion of Fort Washington Park, Boro. Of Manhattan. Sheets M-T-28-101, 105, 107 and 111.*

Copies of these maps are appended to this report (see below, Figures A.5-A.16) and more detail of their provenance is provided in the attached list of map references. Using AutoCAD Civil 3D 2009 software, potential archaeological resource information shown on these maps (and additional resource data referenced in other sources) was tabulated and superimposed on to modern aerial photographic base mapping provided by Stantec (Figures A.3a-b and Table C.1).

The tabulated and mapped resource data were used as the basis for archaeological fieldwork. The fieldwork task involved two day-long inspections of the project area during which a visual analysis of the cultural landscape was undertaken with a view to assessing the likelihood of archaeological remains surviving below ground at specific resource locations. This work involved the annotation of maps and the taking of notes and digital photographs. No subsurface investigation was carried out. For the portion of the project area extending north of Dyckman Street, assistance was received in the field from Jose Baez, Forester, of the Natural Resource Group, City of New York, Department of Parks & Recreation.

There are several historic properties designated in the National Register of Historic Places that lie within or close to the Fort Washington Park project area:

The Chapel of the Intercession Complex and Trinity Cemetery (West 155th Street)

Audubon Terrace Historic District (West 155th and West 156th Streets between Broadway and Riverside Drive)

Jeffrey's Hook Lighthouse (The Little Red Lighthouse) (Fort Washington Park)

Fort Washington Site (Bennett Park)

Fort Tryon Park and the Cloisters (Broadway and Dyckman Street)

Archaeological resources associated with these properties do not lie within the park reconstruction project's anticipated area of potential effect. The only designated property actually within Fort Washington Park is the Jeffrey's Hook Lighthouse, which was relocated to its present site from Sandy Hook and therefore has no archaeological context.

3. ARCHAEOLOGICAL RESOURCE ASSESSMENT

3.1. Native American Archaeological Resources

At the time of European contact the northern portion of Manhattan Island was occupied by bands of Reckgawawanks, a Native American group closely related to the Wickquaesgecks, both of which belonged to the Algonquian-speaking Unami branch of the Delaware. The Reckgawawanks lived in sev-

eral villages and camps along the banks of Spuyten Duyvil Creek and the Bronx and Harlem Rivers, notably along the valley that extends south from Spuyten Duyvil between Inwood Hill and Marble Hill within present-day Inwood Park. Historical sources from the 17th century onward also indicate that Native Americans occupied fishing stations at key locations along the Hudson shoreline within the project area, whose existence was evidenced by shell heaps and finds of lithic tools and waste and pottery (Beauchamp 1900:106; Finch 1909a, 1909b; Parker 1922:626-629; Bolton 1924:1-14; Goddard 1978:213-224; Kraft 2001).

Three specific locations have been identified within the project area where previously documented Native American activity occurred (Figures A.3a-b and A.4; Table C.1 [Resources 30, 56 and 77]). These coincide with the three main places along the Hudson shoreline where sizable streams flow down from the interior into the river.

At the western end of 158th Street a small stream entered the Hudson at roughly the point where this street intersects with the West Side Highway. On the north bank of this confluence, where a small sandy beach once fronted on the Hudson River at the western end of Audubon Park, a shell midden [Resource 30] was recorded by Reginald Pelham Bolton in the early 1920s as follows:

“Along the high banks overlooking the Hudson River as far south as Audubon Park, at favorable places where shelter was afforded by rocks and trees, deposits of shells and black carbonized debris have been found which indicate the sites of fishing camps. One of these was situated on a knoll on the south side of 158th Street and Audubon Lane, and others have doubtless been buried

deep under modern changes of grade on the west side of the Heights” (Bolton 1924:5).

Owing to the extensive land modification that has occurred at this location since that time, much of it highway-related, it is unlikely that substantial intact archaeological remains will survive. On this basis, this site is considered to have only minimal archaeological potential. At most, park-related ground disturbance merits archaeological monitoring. Pre-construction archaeological testing is not feasible here owing to the preponderance of paved and built-on surfaces.

Moving northward, the next major landform where Native American activity has been documented, is the rocky promontory that juts out into the Hudson beneath the George Washington Bridge [Resource 56]. Known historically as Jeffrey’s Hook and Fort Washington Point, a small creek flowed into the Hudson on the south side of this headland. This setting appears to have served as a favored spot for fishing and perhaps was able to support a small camp. Native American use of this site was recognized by James K. Finch by at least 1909:

“Fort Washington Point: There is a small deposit of shells, on the southern edge of the point, in which the writer [Finch] found some small pieces of pottery and a few flint chips, thus proving its Indian origin. This was probably a summer camp as it was too exposed for winter use” (Finch 1909a:68).

Bolton, presumably drawing on Finch’s report, confirms the use of this location by Native Americans:

“... at Jeffrey’s Hook, now Fort Washington Point, arrow-points and deposits of shells and charcoal, with fragments of native pottery, have been

found, and evidence the long-time occupancy of the rocky headland as a fishing place” (Bolton 1924:5).

While the topography beneath the eastern end of the George Washington Bridge has changed substantially over the years, largely as a result of mid-19th-century railroad construction, park-related construction in the late 19th and early 20th centuries, the relocation and reconstruction of the Little Red Lighthouse in 1921, and the building of the bridge in the early 1930s, there still remains a reasonable potential for subsurface Native American archaeological resources in places where land alteration was minimal or involved fill-ing. This location, defined as extending roughly 500 feet north and south of the bridge, west of the Hudson River Railroad and inland of the pre-urban shoreline, is judged to be of moderate prehistoric archaeological sensitivity. Specifically, pockets of soil between rock outcrops, soil-filled cavities beneath rock ledges and large boulders, and, most importantly, filled land around the base of the promontory may contain Native American archaeological remains. If the park reconstruction project will entail ground disturbance in areas such as these more detailed archival study and archaeological testing are recommended to evaluate whether buried remains will be affected.

The third and best documented location where Native American activity has been documented within the project area is the expanse of flat land at the western end of Dyckman Street [Resource 77]. Early 20th-century New York archaeologists and antiquarians William M. Beauchamp, James K. Finch, Alanson Skinner, Arthur C. Parker and Reginald P. Bolton were all well aware of this locale. Finch provides the earliest explicit description of what he referred to as the “Inwood Station Site”:

“At the foot of Dyckman Street and Hudson River, there existed a large deposit of shells, most of which were

removed when the rocks on which they lay were blasted away for grading the street. A few arrow points and bits of pottery, as well as several Revolutionary objects, were found here. Part of the deposit is still left on the northern shore of the small bay just below Inwood station. There are photographs of this deposit in the [American] Museum [of Natural History]" (Finch 1909b).

In 1919 explorations led by Alanson Skinner for the Museum of the American Indian appear to have found stratified archaeological deposits and lithic materials possibly indicative of Native American activity extending back into the earlier Woodland and Archaic periods of human prehistory. Bolton summarizes the state of knowledge about this site shortly after Skinner's investigations:

"A specially favored spot for the native fisherman, as it was long after for his Colonial successors, was the "Little Sand Bay" at Tubby Hook, just south of Dyckman Street, on the east side of the Hudson River Railroad, where, though a ruinous fill of soil and stone has swamped the wild rocks that sheltered their rude huts, the interested visitor may stand today and view the same noble scene of flowing river and palisaded cliffs. At this place the Museum of the American Indian, Heye Foundation, opened in 1919 the most ancient and deep deposits of shells, and discovered deeply buried, very crude tools of probable great antiquity" (Bolton 1924:13).

The fact that archaeological investigations in 1919 were still able to find intact cultural deposits shows that this site had, in part at least, survived the land-altering actions of mid-19th-century railroad construc-

tion and subsequent shoreline and park development. Certainly the later construction of the Henry Hudson Parkway in the mid-1930s will have reduced the chances of present-day survival of archaeological remains, but the area between the northbound and southbound parkway carriageways, and ground south of Dyckman Street inland of the pre-urban shoreline, still may yield buried traces of Native American activity. For this reason the Dyckman Street area is considered to hold a moderate potential for yielding localized prehistoric archaeological resources. If the park reconstruction project will entail ground disturbance in this area, more detailed archival study and archaeological testing are recommended to evaluate whether buried remains will be affected. This investigative work may require the use of mechanical equipment and shoring to remove overburden and paved surfaces, and attain the necessary depth of study.

It is unlikely that other locations exist within the project area where prehistoric archaeological resources are preserved. While there are some other small runnels that flow down the western slopes of the island into the Hudson River between 145th Street and Spuyten Duyvil, there are few large expanses of flat land along the pre-urban shoreline and these are unlikely to have escaped disruption from railroad, road and park construction. Archaeological testing is mostly impractical in these areas. Periodic monitoring of deep park-related ground disturbing actions (where disturbance is in excess of two feet in depth) may be advisable in areas where a comparison of modern and pre-urban topography suggests there is a reasonable chance that earlier land surfaces could survive.

3.2. Colonial Period Archaeological Resources

Native American occupation continued intermittently along the Hudson shoreline deep into the 17th century and was interspersed by conflict with incoming

Dutch-American settlers. The principal land route through the northern end of Manhattan Island during the colonial period was the old Kingsbridge Road which roughly follows the course of present-day Broadway. The first Dutch-American farms and taverns were established along this route beginning in the 1630s and 1640s. A key early landowner, for example, was Jochem Pieter Kuyter, who arrived in New Amsterdam in 1639 and set up a large farm of roughly 400 acres centered on the modern-day 125th Street vicinity of Harlem. The hills extending north and west of Kuyter's property along the west side of the Kingsbridge Road, almost to Jeffrey's Hook, came to be known as Jochem Pieter's Hills. This tract, which corresponds to the southern portion of the project area, was subdivided in 1691. Prominent among the purchasers of these allotments was Jan Dyckman, who had already established himself further north on the island with extensive farmland acreage and a dwelling in the 204th Street area (Bolton 1924:83-87, 184-188).

Several generations of Dyckmans, along with the closely related Nagel family, effectively dominated land ownership at the northern end of the island from the late 17th century through into the mid-18th century. In 1767, the southern farm tract acquired from Kuyter was sold to John Watkins and continued in Watkins family ownership through the Revolutionary War era. Other Dyckman family properties further north continued in Dyckman ownership until after the war (Bolton 1924:105-109, 189-193).

Throughout the colonial period, the Hudson shoreline of Manhattan Island north of 145th Street to Spuyten Duyvil saw little or no agricultural usage. The steep and rocky hill slopes and mostly inaccessible riverbank likely remained wooded, and the principal activities in the project area were likely fishing, hunting and lumbering. Fishing probably will have focused on the promontory later known as Jeffrey's Hook and the area of flat land at the foot of modern Dyckman

Street, an area that came to be known as Tubby Hook. Hunting will have occurred throughout the hills, while the felling of trees probably will have occurred initially close to established farms and along roads and farm lanes.

From an archaeological standpoint, evidence of fishing, hunting and lumbering will be sporadic and difficult to find, although traces may be expected in the same locations as those defined as having prehistoric archaeological potential, i.e., at the mouths of the streams entering the Hudson. Some minor structures, such as sheds, shacks and fish-processing facilities, perhaps stood in these areas, but no clear evidence has so far been found in the documentary record for permanent dwellings. For this reason, no archaeological sites of the colonial period are itemized in the summary of resources provided in Table C.1. To the very limited extent that archaeological resources of the 17th and early to mid-18th centuries may exist in the project area, these can be addressed concurrently with the potential for prehistoric archaeological resources.

3.3. REVOLUTIONARY WAR ERA ARCHAEOLOGICAL RESOURCES

3.3.1. Context:

The northern portion of Manhattan Island figured prominently in Revolutionary War action in the fall of 1776 and continued to be fortified by the British until the cessation of hostilities in 1781. In the late summer and fall of 1776 American forces erected a complex system of defenses across the island to the north of the village of Harlem in anticipation of a British advance up the Hudson Valley. A series of three main east-west fortifications was erected between what would be today's 140th and 163rd Streets. Other outlying defenses were established immediately to the south along roadways and overlooking the Harlem River. Behind this network of earthworks, redoubts and bat-

teries, on the high point of the island between modern 180th and 183rd Streets, lay Fort Washington where the Continental Army established its main defensive position. In addition to having a commanding view of the surrounding hills and roads, Fort Washington, in combination with Fort Lee on the New Jersey side of the Hudson, aimed to control the movement of ships moving upriver. Jeffrey's Hook, on the point beneath the Manhattan end of the George Washington Bridge, played an important role in Fort Washington's control of the Hudson River. Other American defensive positions were also established on hilltops to the north of Fort Washington, notably those later re-used by the British for Fort Tryon and Fort George (Figures A.5-A.8).

The Continental Army's attempts at defending New York City, Manhattan and the Lower Hudson Valley from the British ultimately proved futile. British and Hessian forces under the command of General William Howe won a succession of victories during the fall of 1776 – the battles of Long Island (Brooklyn Heights) in August, Harlem Heights in September, Throgs Neck and White Plains in October – which pushed the Americans ever northward away from the city and harbor. On November 16, Fort Washington itself finally fell as vastly outnumbered American troops were overwhelmed by British and Hessian forces. Some 2,800 American troops were killed or captured, a devastating defeat for General Washington's Continental Army, which then withdrew across the Hudson, surrendered Fort Lee and began the long retreat through New Jersey. The loss of Fort Washington arguably represented the low point for the patriotic cause in the Revolutionary War (Bolton 1924:221-272; Fischer 2004:81-114).

In the years that followed, the British re fortified the northern part of Manhattan Island with the emphasis now being placed on defending loyalist-controlled New York City from American attack from the north as opposed to the American effort at preventing the

northward advance of the British up the Hudson Valley. The British system of defenses in the Fort Washington area took on a somewhat different character and centered on a pair of forts – Fort Tryon and Fort Laurel Hill (Fort George) – linked by earthworks, behind which, to the south, rose Fort Washington, now renamed Fort Knyphausen. North of Forts Tryon and Laurel Hill, redoubts were established on Cox's Hill overlooking the western outlet of Spuyten Duyvil and on the hill overlooking the Kingsbridge crossing to the Bronx (Figure A.9). Up until 1783, when the British finally evacuated New York, this defensive system effectively controlled the northern land approaches to the city and the area saw little military action beyond the occasional raid and skirmish (Bolton 1924:279-354).

3.3.2. Detail:

According to Reginald Pelham Bolton's *Washington Heights, Manhattan, Its Eventful Past* (1924:139), the Revolutionary War defenses of Jeffrey's Hook were mainly intended to protect and support a "chevaux-de-frise" constructed by the Continental Army across the Hudson to bar the passage upriver of British naval forces. It was feared that the substantial might of the British Navy would be used to control the Hudson River or to effect a landing of troops that could compromise the defenses of either Fort Washington or Fort Lee. Constructed in 1776 under the supervision of General Israel Putnam, the chevaux-de-frise was a barrier that consisted of a line of obstructions laid across the width of the river between Jeffrey's Hook, just below Fort Washington, and a redoubt on the Palisades just north of Fort Lee. These obstructions included several ships sunk at intervals across the 3,000-foot-wide channel with floating chains of large logs spanning the spaces between the hulks. Additional obstruction was provided by large, specially constructed, pointed timber structures sunk on

to the river bed. A channel, covered by cannon fire from both sides of the river, was left clear to permit the passage of American ships.

Bolton states that a small battery in the form of a “demi-lune” stood on the extreme point of Jeffrey’s Hook. The profile of the promontory has been considerably altered since the Revolutionary War period through the deposition of fill, but traces of the demi-lune were still apparently visible in the early 20th century (Plate B.1). Also according to Bolton, “on the rocky height back of the lane leading to the shore” was a “Rifle Redoubt” used by “American sharpshooters in picking off the crews of the British frigates and their tenders when they forced their way past the Point” (Bolton 1924:139).

Both fortifications appear on manuscript maps produced in 1776 by the cartographer Claude Joseph Sauthier (Figures A.6 and A.7), while three other maps of the Revolutionary War period also show the redoubt (Figures A.5, A.8 and A.9). Sauthier’s maps suggest that Bolton was relatively accurate in his description of the hook’s defenses. According to Paul K. Walker’s *Engineers of Independence: A Documentary History of the Army Engineers in the American Revolution, 1775-1783* (1981:142), the redoubt at Jeffrey’s Hook was laid out by Antoine Felix Wuibert de Mézières, a French engineer serving as a volunteer in the Continental Army who was captured by the British during their assault on Fort Washington later that year. According to Walker, its main purpose was to defend the westernmost edge of the American position at Fort Washington and to be an outworks from which rebel forces could retreat if under serious attack.

Both fortifications at Jeffrey’s Hook undoubtedly saw action at least twice. The first incident occurred on August 16, 1776 when two British frigates, the *Phoenix* and the *Rose*, sailed downstream through the chevaux-de-frise. The two ships had been stationed

upriver prior to the construction of the obstacle across the Hudson River and had been recalled to take part in the British invasion of Long Island. The two ships navigated their way south through the chevaux-de-frise with little difficulty but were exposed to fire from the combined defenses of Fort Washington and suffered some damage. Captain James Wallace, the commanding officer of the *Rose* specifically stated that “We past the Chiver’friezes, within Musquet Shot of the Rebel Battery on the Eastern Shore” (Diamant 2004:53).

On October 9, a British detachment of three ships was sent north through the chevaux-de-frise to cut the Continental Army’s supply and communication lines. The three ships were the *Phoenix*, the *Roebuck* and the *Tartar*. Their passage through the chevaux-de-frise was aided by a local informant who had offered to guide the small flotilla through the passage left open in the barrier. The three-ship flotilla passed through the obstruction in about 20 minutes but was heavily damaged by cannon fire. Captain Andrew Snape Hamond of the 44-gun frigate *Roebuck* noted that ships sailed “within 40 yards of the Muzzles of the Enemy’s Guns in the Batterys of Fort Washington-amidst the fire of 100 cannon from both sides of the River.” He also noted that the fire from the “Jersey shore was by far the most damaging” (Diamant 2004:61).

Following the fall of Fort Washington on November 16, 1776, the “Rifle Redoubt” was apparently occupied by British forces. On November 21, 1780, George Washington, presumably contemplating an offensive move against the British position at Fort Mifflin (as Fort Washington had been renamed by the British), ordered the commander of his corps of engineers, Lieutenant Colonel Jean Baptiste Gouvion to survey the British defenses surrounding the fort (George Washington to Jean B. Gouvion, Order, November 21, 1780). Gouvion’s report apparently has not survived but it must have stated that a sentry detachment was posted in the fortifications on Jeffrey’s Hook and that

its presence would complicate any attack. This can be deduced because on November 28, 1780, the Marquis De Lafayette noted in a letter to George Washington that he, Lafayette, had observed “the fatal sentry, alluded to by Colonel Gouvion, on an upper battery of Jeffrey’s Hook” (Gilbert Du Motier Lafayette to George Washington, Letter, November 28, 1780). By identifying the sentry’s location as being on an “upper battery,” Lafayette would seem to have been indicating by implication that both defensive positions were still in place at that date.

A number of months later, Washington, bolstered by the presence of the French Army, was again considering a major assault on the British in New York. On July 18, Washington, in the company of Jean-Baptiste Donatien de Vimeur, Comte de Rochambeau, Commander of the French forces in America, Pierre François de Bévillie, the French Army’s Quartermaster General, Jean Nicolas, Vicomte Désandroüins, Commander of the French Corps of Engineers and General Chevalier Louis Lebègue dePresle Duportail reconnoitered the British defenses from the west bank of the Hudson River. In the notations he made in his personal diary for that day, Washington described the British defenses at Jeffrey’s Hook:

“about the center of the Ground leading to Jefferys Rock or point a Guard mounts. It appears to be no more than a Sergeants guard with one centry in front where there is a small Work—the guard House standing within. These are all the guards and all the security I could discover upon the No. River—on the right flank of the Enemy. The Shore from Jeffreys rock downwards, was quite open, and free—without Hutts of any kind—Houses or Troops—none being encamped below the heights” (Jackson 1978:394).

Washington and his French allies soon abandoned any plans of assaulting New York City and the fortifications of Jeffrey’s Hook no longer played any significant role in the history of the Revolution. Presumably they were occupied until the last British troops withdrew from New York in November of 1783. The Revolutionary War history of Jeffery’s Hook was not, however, forgotten. In 1859, for instance, *The Knickerbocker or New-York Monthly Magazine* in a September issue dedicated to “Stories and Pictures of the Hudson” included an illustration of the remains of the old redoubt at Jeffrey’s Hook (Plate B.2). In 1910, an inscribed stone monument was erected on the northwestern corner of the rifle redoubt by the Fort Washington Chapter of the Daughters of the American Revolution (D.A.R.). Bolton included a photograph of the monument in his *Washington Heights, Manhattan, Its Eventful Past*, published in 1924 (Plate B.3). The Fort Washington Chapter of the D.A.R. was disbanded on October 12, 1960 (Renner 1998).

The footprint of the redoubt, to the extent that it survived in the early 20th century, and the location of the memorial erected by the D.A.R., are shown on the topographic survey of Fort Washington Park prepared in 1936 (Figure A.16b). The fact that the footprint of the redoubt as shown on Revolutionary War era maps and the topographic survey of 1936 correspond so closely suggests that the earthwork mounds documented by the survey of 1936 were almost certainly actual surviving remains and not reconstructions undertaken by the D.A.R. or others. Although the remains of the rifle redoubt clearly survived and were well known in the first quarter of the 20th century, no mention of the survival of any physical remains related to the smaller gun emplacement on the point of the Jeffrey’s Hook formation is documented in any sources consulted during the current research efforts.

Archaeological Assessment:

The potential for remains of four specific Revolutionary War-related archaeological resources at Jeffrey's Hook or Fort Washington Point is at issue: the chevaux-de-frise [Resource 58]; the demi-lune [Resource 59]; the rifle redoubt [Resource 60]; and the D.A.R. monument [Resource 61].

The likelihood of remains of the chevaux-de-frise [Resource 58] surviving close to shore appears slight, mostly because ships would not have been able to navigate the river at shallow depths close to Fort Washington Point and would anyway have been exposed to fire from the demi-lune and redoubt. The scuttled vessels and other obstacles placed across the river will likely have been positioned further offshore. Traces of the chevaux-de-frise may conceivably survive on the river bed more than 50 to 100 feet west of the point, continuing across the river. To identify such remains would require the services of an underwater archaeologist and remote sensing and diving equipment. Planned park improvements are unlikely to have any effect on any remains of the chevaux-de-frise, should these even survive.

Because of mid- and later 20th-century alterations to the landscape and topography around Fort Washington Point it is difficult to pinpoint with certainty the site of the cannon emplacement or demi-lune [Resource 59]. Cutting and filling for the Hudson River Railroad and Fort Washington Park, site preparation for the relocation of the Little Red Lighthouse, and the construction of the George Washington Bridge have all affected the configuration of the point. Correlation of Revolutionary War era maps (Figures A.5-A.9) with the City of New York Department of Parks topographical maps of 1936 (Figure A.16b) and early 20th-century photographs (Plate B.1), coupled with field observation, suggest that the demi-lune was positioned close to the site of the Little Red Lighthouse and the piers supporting the towers at the eastern end of the George

Washington Bridge. It is unlikely that archaeological remains of the demi-lune have survived the extensive land alteration noted above. While the proposed park improvements should not encounter archaeological remains of the demi-lune, it is recommended that the site of this critical feature of the Fort Washington defenses be acknowledged through historic interpretive treatment (see below, Section 5).

Visible traces of the American rifle redoubt [Resource 60] still survive in the present-day landscape. These are to be found on the west-facing brow of the rocky knoll lying immediately west of the Hudson River Railroad, just north of (and partially beneath) the elevated westbound carriageway of the George Washington Bridge. The area is presently covered with trees, saplings and undergrowth, but the shape of the earthwork that wrapped around northern, western and southern edges of the knoll is still just discernible as an eroded linear berm-like feature. The entire summit of this knoll should be considered archaeologically sensitive and the redoubt is historically significant as one of the few remaining visible elements of the Fort Washington defensive system. Any park landscaping plans on this form should be driven by the need to protect and interpret this historic feature. Further discussion of historic interpretive opportunities relating to the redoubt is presented below in Section 5.

Still in place at the northwestern corner of the rifle redoubt is the D.A.R. memorial erected in 1910 [Resource 61]. Although obscured by trees and undergrowth, and somewhat the worse for wear, the principal stone block of the monument, a rough boulder with the carved inscription "AMERICAN REDOUT 1776", still stands on a base of smaller cemented boulders (Plates B.4 and B.5). Attached to the base on the east side is a second boulder of moderate size, graffiti-spattered, with the weathered remains of another inscription "FORT WASHINGTON CHAPTER D.A.R. 1910" (Plate B.6). The three-tread stair of slabs and cemented stone, lined with small boulders,

that is visible in the historic photograph taken sometime between 1910 and 1924 (Plate B.3) is not obviously apparent today but may lie intact beneath the undergrowth and humus. This commemorative aspect of the rifle redoubt, almost a century old, has now acquired its own archaeological signature and should be regarded as a highly sensitive, integral component of the redoubt, deserving of restoration and historic interpretation.

Elsewhere within the project area, no archaeological traces are anticipated of the American defenses south of Fort Washington as these for the most part consisted of earthworks and redoubts erected on the hilltops and did not extend down to the shoreline. One minor outwork of Fort Tryon, an abattis, was positioned along the shoreline between Jeffrey's Hook and Tubby Hook [Resource 68]. This feature, essentially a barrier of brush and tree branches (possibly laid down in conjunction with a defensive ditch), was a very minor element in the British defensive system protecting the northern end of Manhattan Island. It is extremely unlikely to have any archaeological expression in the modern landscape and was probably obliterated during construction of the Hudson River Railroad.

3.4. Early Federal Period Archaeological Resources

Following the conclusion of the Revolutionary War, the northern end of Manhattan Island settled back into a period of largely agricultural land use anchored by farms ranged along the axial Kingsbridge Road. Extensive tracts of woodland likely remained in place, especially on the steep west-facing slopes overlooking the Hudson River. Within the project area, along the Hudson River shoreline, the principal activity was fishing, supported by a scatter of small landings and wharves. This pattern of land use persisted into the 1840s.

The main focus of fishing appears to have been at the foot of modern Dyckman Street where the so-called "Fishing Rock" projected into the Hudson at the mouth of "Little Sand Bay." References to the "Fishing Rock" occur as early as 1808 and by 1819 a concentration of fishermen's huts had accumulated here, the beginnings of a small village known as Tubby Hook (Bolton 1924:173). Tubby Hook also appears to have served intermittently as a ferrying point for trans-Hudson traffic from at least the Revolutionary War period onward (Renner 2003). Other fishing and landing locations likely included Jeffrey's Hook/Fort Washington Point and perhaps also the shoreline in the vicinity of West 158th Street where a point of land was the focus of much mid-19th-century on the river (see below).

In terms of archaeological remains dating from the late 18th and early 19th centuries, no specific resource locations of interest are identified in Table C.1 or on Figures A.3a-b and below-ground traces of fisheries and landings from this period are unlikely to have survived the destructive effects of later shoreline development. To the very limited extent that archaeological resources of the early federal period may exist in the project area, these can be addressed concurrently with the potential for prehistoric and colonial archaeological resources.

3.5. Mid- to Late 19th-century Archaeological Resources

By the second quarter of the 19th century, the steady expansion of New York City northward across Manhattan Island was causing a succession of large wealthy estates and mansions to be built over the farmland and wood lots of earlier settlers. This transition in land use took hold in the southern portion of the project area in the 1830s and 1840s and is exemplified in John James Audubon's founding of the estate known as "Minniesland," named for his beloved wife.

This property was established on former Duncan family farm property in 1840 and west of Broadway to the Hudson River between 155th and 158th Streets (Bolton 1924:110-113). Immediately adjoining to the south, between 153rd and 155th Streets, was Trinity Church Cemetery, laid out in 1843 with Audubon's strong support (WPA 1939:296). The foci of these estates and the cemetery were on the higher ground overlooking the river. From an archaeological standpoint, the only features of potential interest along the shoreline would have been the occasional dock and boat house, types of resources that are extremely unlikely to have a surviving below-ground expression today. Later shoreline development will almost certainly have removed traces of such features.

An interesting and very visible element of the landscape at the northern end of Manhattan Island in the mid-19th century was the telegraph tower that stood on Fort Washington Point. This critical communications pylon, one of the very first such structures of its type, was erected by the Magnetic Telegraph Company, founded by Samuel F.B. Morse, Alfred Vail, Leonard Gale and other key figures in the development of the magnetic telegraph (Greeley *et al.* 1872:1233-1249). The exact date when this tower was constructed is uncertain, but it was probably shortly after May of 1845 when the Magnetic Telegraph Company was incorporated, specifically to create a network of telegraph lines radiating out from New York City to Philadelphia, Boston, Buffalo and the Mississippi. Several illustrations included in "Stories and Pictures of the Hudson," published in the September 1859 issue of *The Knickerbocker or New-York Monthly Magazine*, show the tower perched near the tip of the point (Plate B.7). The article describes the tower thus:

"This locality is strongly marked by the tall mast which comes into most of the river-views here, like a huge phantom-ship stealing up behind the

hills. It is the spar which, with the help of another on the crest of the Palisades opposite, bears the telegraph wires across and above the wide waters" (*The Knickerbocker or New-York Monthly Magazine* 1859:227).

Today, traces of the iron straps that helped support the telegraph tower superstructure are still visible embedded in the schist bedrock directly beneath the George Washington Bridge [Resource 57] (Plates B.8 and B.9). The ironwork for the tower may well have been fashioned at Alfred Vail's Speedwell forge and furnace near Morristown, New Jersey. While in many ways little more than left-over curiosities (and a definite trip hazard to hikers), these artifacts provide a tangible link to a bygone communications technology and do have some intrinsic historical value. The park reconstruction project should seek to retain *in situ* this evidence of the telegraph tower and interpret these remains within the broader contexts of Fort Washington Point and communications technology.

For many years the telegraph tower at Fort Washington Point provided a single dominating reference point on the east side of the Hudson, but for more than a century this landmark has been absent from the viewshed. A far more radical and enduring effect on the Hudson River shoreline was exercised by the Hudson River Railroad [Resource 1]. Incorporated on May 6, 1847 as the New York & Hudson River Railroad Company, the Hudson River Railroad was opened from New York City to Peekskill on September 29, 1849. The line was fully completed between New York and Albany on October 1, 1851. Between 145th Street and Spuyten Duyvil, as a review of late 19th-century maps clearly indicates (e.g., Figures 10a-b, 11 and 12), the railroad hugs the shoreline closely. In some locations, for example, between 163rd and 172nd Streets, it was clearly built on fill; in others, notably at Sugar House Point, Fort Washington Point and Tubby Hook, it passed slightly inland. In the case of

Fort Washington Point, the line occupied a deep in the bedrock (Plates B.10 and B.11). Three stations were located within the project area at 152nd Street, Fort Washington and at Inwood (as the Tubby Hook area became better known) [Resources 20, 54 and 78]. Later in the 19th century, a major rail depot emerged at the southern end of the project area between 142nd and 145th Streets (French 1860:68; Jackson 1995:977; Renner 2001, 2007:36, 75, 85, 106, 109, 110, 112).

Over the past century and a half, while it follows essentially the same course as when it was originally built, the Hudson River Railroad has undergone numerous upgrades and expansions, and additional substantial filling has occurred along the rail corridor (cf. Figures 10a-b thru 16a-d). The rail cut at Fort Washington Point is still eminently recognizable (Plate B.11) and the scenic shoreline character of the route is still much in evidence from Fort Washington Point to Spuyten Duyvil (Plates B.12 and B.13). However, archaeologically speaking, the route holds little potential interest, except possibly in the vicinity of the depots and stations at Fort Washington and Inwood [Resources 54 and 78] and at the sites of some former rail-side buildings [e.g., Resource 67]. Surface evidence of railroad-related archaeological resources at these locations is not obviously apparent and proof of their existence would require mechanically assisted testing. In the context of the park reconstruction project, the Hudson River Railroad and its various components are of minimal archaeological concern, but could merit historic interpretive treatment (see below, Section 5).

On the heels of the railroad and rail depots came sporadic industrial development, wharves, docks, boat houses and clusters of houses and other buildings, notably at the foot of West 158th Street, Fort Washington and Inwood. At the southern end of the project area, between West 142nd and West 143rd Streets, the iron works of the Manhattan Iron Works Company was established on the landward side of the

railroad [Resources 3 and 4]. This facility was based around two furnace stacks, one 49 x 12 feet in plan, built in 1851, and the other, 49 feet x 13 feet, built in 1857. In the 1880s the factory produced pig iron suitable for foundry or milling use from magnetic ores shipped from the west shore of Lake Champlain and from hematite from the Catskills. The plant had a total annual capacity of 18,000 tons (American Iron and Steel Association 1884:6). Archaeological traces of this industrial site, if they survive, likely lie beneath the rail yards and landscaped western edge of Riverside Drive. The site lies beyond the southern limit of the park reconstruction project.

At the western end of West 158th and 159th Streets a sugar refinery was built on the point of land that subsequently became known as Sugar House Point [Resource 35]. This property was acquired by Dennis Harris around 1850 and within a couple of years a brick sugar factory, known as the New Congress Sugar Refinery, was erected. The business reportedly failed in 1857, but later maps of 1860, 1867 and 1879 continue to show a sugar manufacturing operation at this location (Figures 10a, 11 and 12). The factory buildings were pulled down in 1896 to make way for parkland, with the building materials supposedly being salvaged. Harris, as the original developer of this industrial site, was responsible for opening West 158th Street from Broadway to the Hudson River. A dock and related buildings established on the river at this point were used by Dennis Harris's brother, William, in the operation of a steamboat ferry service to Chambers Street [Resources 27-29] (Bolton 1924:114-115). No surface evidence of the sugar factory, dock or other buildings survives today in this location. Buried remains of the sugar factory may still exist beneath the fill that supports the existing park landscaping, but mechanically-assisted archaeological investigation would be necessary to clarify this potential. If deep ground disturbance, in excess of two feet, is planned here in the course of park reconstruction, carefully targeted archaeological monitoring is

recommended to further evaluate and document any archaeological resources relating to the sugar factory that may remain at this site. Evidence of the Harris dock and ferry operation is unlikely to have survived the construction of the West Side Highway; no further archaeological consideration of these resources is necessary.

During the mid- to late 19th century the small fishing village of Tubby Hook, with the stimulus of the nearby railroad, evolved into a minor focus of development as is evident on contemporary maps (Figure A.10b and A.12). Several houses were built along Inwood Street, as the lower portion of Dyckman Street was originally known, and the point of land lying west of the Hudson River Railroad supported commercial buildings, warehousing and a pier controlled by the Thompson family [Resource 79] (Plate B.14). There are no above-ground traces of the 19th-century buildings that once stood on Tubby Hook Point, or of the Inwood railroad station [Resource 78], and the footings of these buildings are likely to have been largely obliterated by early 20th-century development (Figures A.13-15 and A.16d; Plates B.15-19). If park reconstruction envisages deep ground disturbance in this area, in excess of two feet, limited archaeological monitoring is again recommended to further evaluate and document any archaeological resources that may remain.

Elsewhere along the shoreline the later 19th-century maps show a few other minor docks (at West 153rd, 155th, 163rd, 172nd, 208th, 210th and 217th Streets), with boathouses at West 153rd and possibly West 172nd Streets [Resources 24, 26, 37, 46, 48, 81, 83, 87 and 91] (Figures A.10a-b, A.11 and A.12). None of these features are considered to be of particular archaeological interest and their chances of below-ground survival are minimal at best.

Throughout the second half of the 19th century the land on the heights overlooking the Hudson River between 145th Street and Spuyten Duyvil continued to be subdivided and mostly taken up by wealthy estates and large institutional buildings. By 1879, the northward-advancing Manhattan street grid with its smaller lots anticipated for lower and middle-class homes had reached West 153rd Street (the southern margin of Trinity Cemetery) and there were a few other pockets of small lot subdivisions, notably along Kingsbridge Road and in the valley occupied by Inwood Street (Figure A.12). North of Trinity Cemetery, however, there ranged an extraordinary array of mansions and estates, interspersed with a few institutional buildings. From south to north may be seen the homes of numerous prominent New York families – Audubon, Wheelock, Knapp, Ward, Martin, Haven, Ingham, Hastings, Connolly, Bennett, Fisher, Sweetser, Chittenden, Hays – to name just a few between West 153rd and Inwood (Dyckman) Streets. Within this stretch, the main institutional properties were the asylum for the deaf and dumb on West 164th Street, the asylum for the blind on West 167th Street, and the Fort Washington French Institute on West 172nd Street. Also of note was the West End Hotel, perched on the slope just south of Fort Washington Point (Figures A.10a-b, A.11 and A.12). All of these properties lie well to the east of the project and present no archaeological concern.

North of Inwood (Dyckman) Street, along the western flank of Inwood Hill, a similar pattern of land use emerged, although the gentler slope leading down to the Hudson River resulted in several mansions being erected partway up the hillside. Five such properties can be recognized in 1860 and 1879 in the ownership of the Willet/Isham, Man/Brooks, White/Rivera, Thompson/Dovale and Thompson/McCreery families. The two southernmost estates (Willet/Isham and Man/Brooks) lie beneath the Henry Hudson Parkway and are unlikely to retain much in the way of any meaningful archaeological expression. The more

northerly three mansions, however, were all located within the portion of Inwood Hill Park that today lies between the southbound traveled way of the Parkway and the Hudson River Railroad [Resources 88-90] (Figures A.10b and A.12). It is notable that in 1860 two of the three mansions were in the hands of Joseph Thompson, who also owned substantial property elsewhere on Inwood Hill. This is presumably the same Thompson as, or a relative of, the Thompson owned the wharfage and other buildings on Tubby Hook Point. The two Thompson estates were still intact in 1925 (Figure A.14) and are just barely visible in aerial photographic views of 1924 and *circa* 1930 (Plates B.15 and B.16) (Bolton 1924:176).

A brief pedestrian survey of this portion of Inwood Hill Park suggests that despite park-related land alteration there in the 1930s there is still a strong possibility that archaeological remains of these mansions and their outbuildings still survive. Telltale depressions and scatters of building materials were noted in the undergrowth off the formal pathways within the park. There is a moderate potential for informative 19th-century archaeological data surviving at these sites which could reveal much about the material culture and physical character of these bygone estates. Park reconstruction planning for this area should include more detailed archaeological survey, including limited manual vegetation clearance and subsurface testing, in conjunction with further archival study. Ultimately, it may be appropriate to incorporate a historic interpretive component in the design of the park reconstruction (see below, Section 5).

3.6. Early to Mid-20th-century Archaeological Resources

Changes in 20th-century land use along the Hudson River shoreline between 145th Street and Spuyten Duyvil mostly hinged on a series of major public works projects set in motion by the City of New York.

These projects were predominantly transportation-based or recreation-based, or more simply put: drives and parks.

First came Riverside Drive, a scenic roadway built in segments that wound its way northward along the rim of hills overlooking the Hudson River from 72nd Street to Dyckman Street. By 1908 Riverside Drive reached as far north as 145th Street; within a few years this was linked to a pre-existing road between West 155th Street and Dyckman Street that had been in use since 1896 (Works Progress Administration 1939:284-289). The route of Riverside Drive lies immediately east of the project area; north of the George Washington Bridge it was incorporated into the Henry Hudson Parkway in the late 1930s (Figures A.13-A.16a-d).

Fort Washington Park was developed along a roughly parallel track to Riverside beginning in the 1890s and continuing through into the 1930s. The City of New York purchased the first property for the park in 1894 in the area around Fort Washington Point (Signe Nielsen, P.C. 1989:2-3), gradually expanding its area to both the north and south along the riverfront in the years following. Contemporary maps and aerial photographs provide snapshots of the park's extent over this period. By 1916, for example, the park stretched from West 172nd Street to West 184th Street, although the land lying on both sides of Riverside Drive, north of 184th Street as far as Dyckman Street, was also characterized as parkland (Figure A.13). By 1925, Fort Washington Park formally extended the whole way from West 158th Street to just short of Dyckman Street (Figure A.14).

Also by 1925 Inwood Park (today's Inwood Hill Park) was partially in existence, although at this time the park facilities consisted mostly of dirt paths, a few drinking fountains and open-air fireplaces scattered throughout the wooded hills amongst some of the older estates (Works Progress Administration 1939:305)

(Figure A.14; Plates B.15-B.16). Immediately to the south, on Fort Tryon Hill, lay the former estate of C.K.G. Billings, which had been acquired by John D. Rockefeller in 1917. While in Rockefeller hands the estate underwent a major restoration under the landscape design guidance of Frederick Law Olmsted, Jr., son of the designer of Central Park. In 1930 Fort Tryon Park was bequeathed to the City by Rockefeller and it was here, in 1938, that the Cloisters was built to house the extraordinary collection of medieval architecture, art and sculpture accumulated by the Rockefeller family (Works Progress Administration 1939:302-304).

Two massive transportation-based civil engineering projects in the 1920s and 1930s helped to integrate and frame the various parks along the west side of Manhattan Island between West 145th Street and Spuyten Duyvil. One project was the construction of the George Washington Bridge between 1927 and 1931. The eastern end of this bridge is anchored on Fort Washington Point (Plate B.17). The other project was the building of the Henry Hudson Parkway in 1934-37. This limited-access highway stretches from West 72nd Street to the Saw Mill River Parkway in Westchester County. Within the project vicinity the parkway runs parallel to and in places incorporates Riverside Drive between the George Washington Bridge and Dyckman Street. North of Dyckman Street the parkway cuts across the west side of Inwood Hill before crossing the Harlem River Ship Canal on a two-arch, two-deck span. The construction of the parkway across Inwood Hill effectively provided the impetus for improving and formalizing Inwood Hill Park (Works Progress Administration 1939:305; Renner 2007:67-92; Historic American Engineering Record HAER No. NY-334) (Plate B.18).

Scattered throughout both Fort Washington Park and Inwood Hill Park are remnants of earlier park improvement projects. At Fort Washington Point, for example, there are numerous open-air fire pits

on the overgrown rocky knoll beneath the George Washington Bridge. In the western portion of Inwood Hill Park, between the Hudson River Railroad and the Henry Hudson Parkway, old pathways and drainage features abound. While interesting in the context of the evolving parkscape, such features are of minimal archaeological importance. They hold little or no potential for yielding significant new information about park design that cannot be obtained from archival sources. No further archaeological evaluation of these early and mid-20th-century park features is considered necessary.

Turning finally to the various early to mid-20th-century structures that existed along the Hudson River shoreline, it is important to view these within the context of more than 150 years of filling and land reclamation commencing with the construction of the Hudson River Railroad and continuing through several phases of park and highway improvements. By far the most critical shoreline locale in the late 19th and 20th centuries lay at the foot of Dyckman Street where the earlier wharf was supplemented with a ferry terminal and boat basin. The New York and Englewood Ferry Corporation operated a trans-Hudson from this spot from 1915 until 1942 (Renner 2004). Maps show a simple dock running parallel to the riverbank in 1916, succeeded by a single ferry slip perpendicular to the river in 1925, and with a second slip being added by 1936. The number of buildings associated with the ferry increased greatly over this period and these were joined by a bathing pavilion, a canoe club and sanitation facilities [Resources 75 and 76] (Figures A.13, A.14 and A.16d; Plate B.19).

Today, the early 20th-century structures at the foot of Dyckman Street are no longer extant and the pier has been rebuilt. The shoreline is composed of thick deposits of fill, although one section of concrete foundation, probably the base for a dock, survives along the east side of the boat basin (Plate B.20). Beneath the fill, there is a moderate chance that traces of the

Dyckman Street ferry terminal and various nearby structures may survive. The archaeological value of such remains will lie mostly in the information that they can yield about shoreline construction practices. If park reconstruction actions will entail deep ground disturbance in excess of two feet in this area, archaeological monitoring is an appropriate approach to documenting any significant buried remains that may be encountered. The ferry terminal also merits consideration for historic interpretive treatment (see below, Section 5).

Extending south along the shoreline from the Dyckman Street ferry terminal for roughly 1,000 feet, and also intermittently between Fort Washington Point and West 147th Street (with concentrations between West 147th and West 155th Streets, and between West 163rd and West 169th Streets) were numerous boat-houses and docks, interspersed with the occasional bath house and bathing beach. Patronized chiefly by wealthy New Yorkers seeking pleasure on the river, these facilities were frequently organized as clubs. From south to north, the New York Motor Boat Club, the Fleetwing Yacht and Ship Building Corporation, the Cob Web Yacht Club, the Audubon Motor Boat Club, the Audubon Yacht Club, the Wells Boat Club, the Stevens Boat Club, the Knickerbocker Canoe Club, the Waverly Boat Club and the Fort Washington Yacht Club [Resources 6, 22, 23, 36 and 39-44] were ranged along the river front downstream of Fort Washington Point (Figures A.13-A.15; Plate B.17; Table C.1). Below Dyckman Street were the Interstate Boat Club, West's Boat House, the Spuyten Duyvil Boat Club/Inwood Canoe Club, the Weona Yacht & Canoe Club/Dr. George's Boat House and the Clifford Canoe Club and Unity Motor Boat and Canoe Club [Resources 69 and 71-74] ((Figures A.13-A.15 and A.16d; Plate B.18; Table C.1).

A flavor of the vibrancy of these boat clubs in the early part of the 20th century may be obtained from newspaper reports of their annual membership meet-

ings. The annual meeting of the New York Motor Boat Club, for example, was held on January 6, 1910. The club secretary reported that:

“the club is in a very prosperous condition and growing extremely rapidly, ninety-nine new members having been added in the year just past. An additional hundred feet of water front adjoining its old grounds have recently been secured by the club to provide adequate room for the growing number of its boats.

As a promoter of races the Motor Boat Club has been signally successful and conspicuous, having conducted a larger number of these contests in 1909 than ever before, and exceeding in number those of many other organizations. The New York to Albany race, held in July last, was very successful, and proved so popular that it will doubtless become as fixed on the schedule of motor boat events as the Bermuda, Marblehead, and Block Island races.

Under the auspices of the club the National carnival was held in September, and there was added to these events the special races that were a feature of the Hudson-Fulton Celebration” (*New York Times*, January 7, 1910).

No above-ground trace of these mostly private recreational facilities survives today and it would be difficult to assess their archaeological potential without the benefit of large-scale mechanically assisted sub-surface testing, an expensive and awkward prospect possibly necessitating the use of dewatering systems. It is likely that most of the buildings and docks were of timber construction, and most of the boathouses appear to have been erected on decks attached to piles

driven into the river bed. It is a reasonable assumption that park construction and improvement projects will have required demolition of these structures and perhaps also the salvage of building materials. Boats and canoes were most likely removed elsewhere. Archaeological investigation of such sites is unlikely to be rewarding from the standpoint of material culture remains and structural information. Yet, historically speaking, this category of resources is testament to a style of upper and middle class recreational living long since gone from Manhattan's western shoreline. On these grounds, at most, limited archaeological monitoring of deep ground disturbance in excess of two feet may be appropriate for the park reconstruction project. More beneficial perhaps would be the development of historic interpretive signage that stresses the visual aspect of this former use of the riverbank.

4. PRELIMINARY ASSESSMENT OF PROJECT EFFECTS

Since design work for the reconstruction of Fort Washington Park is still in its early stages and specific project actions are still being developed, only a generalized assessment of the effects of the project on archaeological resources is possible. This section of the report offers a brief assessment of potential archaeological issues within the project area proceeding from south to north.

There is an overall low potential for significant archaeological remains surviving in the segment of the project area between West 145th and West 155th Streets (Figure A.3a; Table C.1 [Resources 5-26]). Buried evidence may survive of the various early/mid-20th-century docks, boat houses, bath houses and other recreational features that lined this section of the Hudson River shoreline and perhaps also of the 152nd Street Station on the Hudson River Railroad. These structures were demolished to make way for

Fort Washington Park and their sites have been graded and filled. If park reconstruction activities in this area do not involve deep ground disturbance in excess of two feet below grade, there is unlikely to be a serious effect on archaeological resources. Deeper ground disturbance may encounter archaeological resources of potential interest and may need to include provision for archaeological monitoring and documentation.

The Sugar House Point segment of the project area between West 158th and West 161st Streets is of marginally greater archaeological sensitivity since there is some limited potential for surviving below-ground remains of Native American occupation, a mid-/late 19th-century sugar factory and steamboat dock, and early/mid-20th-century recreational features (Figure A.3b; Table C.1 [Resources 27-36]). Again, the creation of Fort Washington Park and the construction of the Henry Hudson Parkway have likely compromised the archaeological integrity of these resources. If park reconstruction activities are to involve ground disturbance in excess of two feet in this area archaeological resources of potential interest may be encountered. Pre-construction archaeological testing and/or archaeological monitoring during construction may be appropriate, depending on where the ground disturbance will take place.

The segment of the project area extending from West 163rd Street to the southern end of Fort Washington Point has an overall low potential for yielding significant archaeological remains. This stretch of shoreline was characterized mostly by boat houses and docks of late 19th- and early 20th-century vintage (Figure A.3b; Table C.1 [Resources 37-53]). These structures were demolished in the course of park and highway improvements and their sites have been graded and filled. If park reconstruction activities in this area do not involve deep ground disturbance in excess of two feet below grade, there is unlikely to be a serious effect on archaeological resources. Deeper ground

disturbance may encounter archaeological resources of potential interest and may need to include provision for archaeological monitoring and documentation.

Fort Washington Point is unquestionably the most archaeologically sensitive segment of the project area with potential for Native American, Revolutionary War, railroad-related and other 19th-century resources (Figure A.3c; Table C.1 [Resources 54-62]). Resources of particular concern are the sites of the American rifle redoubt, DAR memorial and Samuel B. Morse telegraph tower, which all still have visible expression in the landscape today. Remains of Native American camping activity, Fort Washington Station and the Ingham and Carman dwellings may also survive below ground. Park reconstruction actions in this area, depending on their location, extent and depth of disturbance, may need to be preceded by more formal archaeological survey, including detailed archival study, mapping and limited subsurface testing.

The long narrow stretch of shoreline between Fort Washington Point and the foot of Dyckman Street has an overall low potential for yielding significant archaeological remains. This segment of the project area was characterized mostly by boat houses and docks of early and mid- 20th-century vintage (Figures A.3c and d; Table C.1 [Resources 63-74]). If park reconstruction activities in this area do not involve deep ground disturbance in excess of two feet below grade, there is unlikely to be a serious effect on archaeological resources. Deeper ground disturbance may encounter archaeological resources of potential interest and may need to include provision for archaeological monitoring and documentation.

The area along the shoreline at the foot of Dyckman Street is of moderate archaeological sensitivity. Tubby Hook, as this location was formerly known, was a major focus of Native American fishing and camping activity; it also served as a landing place and fishing station well into the 19th century. The establishment

of Inwood Station on the Hudson River Railroad in the mid-19th century and the Dyckman Street ferry terminal in the early 20th century anchored later development in the area. Potential archaeological remains may survive from Native American activity and from the railroad and ferry terminal eras (Figures A.3d and e; Table C.1 [Resources 75-79]). Extensive land alteration has occurred since the mid-20th century in connection with the construction of the Henry Hudson Parkway and Inwood Hill Park and the removal of the ferry terminal and sanitation complex. Significant archaeological remains are unlikely to survive within two-foot depth of existing grade. If park reconstruction involves deeper ground disturbance, depending on where exactly such disturbance is to occur, this may need to be preceded by more formal archaeological survey, including detailed archival study, mapping and limited subsurface testing.

North of Dyckman Street to Spuyten Duyvil, the filled land west of the Hudson River Railroad has no archaeological potential, but the western slope of Inwood Hill was formerly the site of several late 19th-century estates that may still have archaeological expression, notably at the northern end of Inwood Hill (Figure A.3e; Table C.1 [Resources 80-92]). Reconfiguration of park features could have an effect on three of these estates [Resources 88-90]. If park reconstruction will involve ground disturbance in the vicinity of these resources, this may need to be preceded by more formal archaeological survey, including detailed archival study, mapping and limited subsurface testing.

5. HISTORIC INTERPRETIVE OPPORTUNITIES

This archaeological resource assessment has identified close to a hundred different locations of past land use activity (Figures A.3a-e; Table C.1). While most of these locations have no above-ground physical expression of their past use, and many are of mar-

ginal historic interest, there are several, irrespective of archaeological integrity, which merit consideration for historic interpretive treatment. For the most part, these locations would be served best by trail-side illustrated signage that is carefully integrated into the park design. One area, however – Fort Washington Point – has a complex and fascinating history of land use and events that extends far beyond the obviously visible present-day landmarks of the George Washington Bridge and the Little Red Lighthouse. Below, from south to north, are itemized ten key locations where archaeological and historical data can feed into a more sophisticated historic interpretive explication of the park's richly layered past.

Hudson River Railroad [Resource 1], 152nd Street Station [Resource 20], Fort Washington Station [Resource 54], Inwood Station [Resource 78]: the Hudson River Railroad is a physical thread for much of the history of the park and stimulated much of the commercial and industrial development that occurred along the shoreline, notably around the rail yard between West 140th and West 145th Streets and at the three station locations (West 152nd Street, Fort Washington and Inwood) within the project area; the railroad cut at Fort Washington Point is an impressive engineering feature.

Potential historic interpretive treatment: system of linked signage at key railroad locations noted above that explains railroad history; signs should incorporate historic maps and images keyed to the modern landscape.

Manhattan Iron Works [Resources 2 and 3]: industrial site, circa 1850-90, where ores shipped in by rail from upstate New York were processed into pig iron for use in local foundries and mills; the furnace stacks at this iron works were located in the vacant lot

between the Henry Hudson Parkway and the Hudson River Railroad rail corridor at West 142nd and West 143rd Streets.

Potential historic interpretive treatment: signage at iron works location; could be combined with system of railroad signage suggested above; signs should incorporate historic maps and images keyed to the modern landscape.

Boat Clubs and Riverfront Recreation, West 147th to West 155th Streets [e.g., Resources 6, 11, 16, 22, 23, 25]: series of early 20th-century riverfront recreational facilities consisting of docks, boat houses, bath houses and a bathing beach; the sites of these resources lie within the sliver of Fort Washington Park, west of the Hudson River Railroad, between West 146th and West 155th Streets.

Potential historic interpretive treatment: one or more historic interpretive signs along the riverfront; signs should incorporate historic maps and images keyed to the modern landscape.

Sugar House Point [Resources 27, 30, 31, 35, 36]: a focus of Native American and early historic fishing activity; the site of a sugar refinery and a steamboat ferry providing service to lower Manhattan in the second half of the 19th century; a boat club and swimming pool located here in the early 20th century; this location is between West 155th and West 158th Streets at the southern end of the long sliver of Fort Washington Park that extends south along the riverfront from Fort Washington Point.

Potential historic interpretive treatment: one or more historic interpretive signs along the riverfront; signs should incorporate historic maps and images keyed to the modern landscape.

Boat Clubs and Riverfront Recreation, West 163rd to West 168th Streets [e.g., Resources 38-44]: series of early 20th-century riverfront recreational facilities consisting of docks and boat houses; the sites of these resources lie within the long sliver of Fort Washington Park that extends south along the riverfront from Fort Washington Point between West 163rd and West 168th Streets.

Potential historic interpretive treatment: one or more historic interpretive signs along the riverfront; signs should incorporate historic maps and images keyed to the modern landscape.

Fort Washington Point [Resources 56-61]: from both an archaeological and historic interpretive standpoint this is the most critical location within Fort Washington Park; the rocky promontory lying west of the Hudson River Railroad, has been used by Native Americans and colonial Americans for camping and fishing; during the Revolutionary War American and British forces used the point as a defensive position in conjunction with Fort Washington/Knyphausen on the nearby heights; in the mid-19th century, Samuel Morse and others erected a telegraph tower on the point (possibly one of the first such towers to be erected in the United States); the point became one of the first components of Fort Washington Park in the 1890s and in 1910 the Daughters of the American Revolution (DAR) memorialized its Revolutionary War significance by erecting a monument at the site of the American rifle redoubt; the Little Red Lighthouse, formerly at Sandy Hook, was relocated here in 1921; since 1927-31 the point has supported the eastern end of one of New York City's most notable landmarks, the George Washington Bridge.

Today, aside from the Little Red Lighthouse and the George Washington Bridge, the rich history of Fort Washington Point is largely invisible and the promontory is overgrown and unkempt; the DAR memorial

and remains of the American rifle redoubt both still survive, but are not easily found or especially accessible; traces of the telegraph tower are embedded in the bedrock beneath the bridge; there are no obvious traces of Native American or early historic activity or of the demi-lune or chevaux-de-frise, although sporadic archaeological evidence may survive below ground.

Potential historic interpretive treatment: the least developed and potentially most important historic interpretive theme at Fort Washington Point is the use of this landform during the Revolutionary War; a trail complemented with trail-side historic interpretive signage should be opened up that connects the rifle redoubt to the tip of the point where the demi-lune and chevaux-de-frise were located and also to Fort Washington itself in Bennett Park; trail design should aim to increase accessibility but minimize the risk of damage to archaeological resources, especially in the immediate vicinity of the redoubt and DAR memorial; consideration should also be given to selective clearing of vegetation to open up views from the redoubt out across the Hudson River so that the siting of this military position can be better appreciated; DAR memorial and its setting should be restored to their original 1910 appearance.

Other elements of the history of Fort Washington Point, namely the Native American and early historic fishing and camping aspect, the telegraph tower, the early development of Fort Washington Park and the George Washington Bridge, can be the subject of signage much like that produced for the Little Red Lighthouse, although the locations of signs should be considered carefully in relation to the historical topics being addressed; signs should incorporate historic maps and images keyed to the modern landscape.

Boat Clubs and Riverfront Recreation, West 181st to West 186th Streets [Resources 63, 65 and 66]: series of early 20th-century riverfront recreational facilities consisting of docks and boat houses; the sites of these resources are located just north of Fort Washington Point.

Potential historic interpretive treatment: a single historic interpretive sign could be positioned at the upstream end of the Fort Washington Point promontory close to the site of Resource 63; sign should incorporate historic maps and images keyed to the modern landscape.

Boat Clubs and Riverfront Recreation below Dyckman Street [Resources 69-74]: series of early 20th-century riverfront recreational facilities consisting of docks and boat houses; the sites of these resources extend along the shoreline for roughly 1,000 feet downstream from the site of the Dyckman Street ferry terminal; this stretch of shoreline is formed on fill and lightly wooded, but still includes the club house of the Inwood Canoe Club, which provides a link to the period of more intense recreational activity here in the early/mid-20th century.

Potential historic interpretive treatment: one or more historic interpretive signs along the riverfront; signs should incorporate historic maps and images keyed to the modern landscape.

Tubby Hook Point and Dyckman Street Ferry Terminal [Resources 75-77 and 79]: Tubby Hook Point is second only to Fort Washington Point in historical and archaeological importance; this location was a major focus of Native American fishing and camping activity; fishing continued to be important here through the colonial period into the early 19th century; the point was an important landing site for trans-Hudson commercial river traffic in the later 19th

century, supplementing Inwood Station on the Hudson River Railroad; formal ferry service across the Hudson was in operation from 1915 into the 1940s; the ferry terminal and nearby Fort Washington and Inwood Hill parks stimulated further commercial and recreational development at the foot of Dyckman Street in the mid-20th century, along with sanitation facilities; the area remains a focus of boating and riverfront activity today in a somewhat reduced and informal manner.

Potential historic interpretive treatment: one or more historic interpretive signs along the riverfront to highlight the Native American use of this location and the history of the ferry terminal and 19th-century commerce; signs should incorporate historic maps and images keyed to the modern landscape.

Inwood Hill Estates [Resources 88-90]: the sites of three contiguous late 19th-century estates on the western flank of Inwood Hill between the Hudson River Railroad and Henry Hudson Parkway; archaeological traces of these estates are likely to survive in the undergrowth and below ground in this section of Inwood Hill Park.

Potential historic interpretive treatment: one or more historic interpretive trail-side signs; landscaping improvements could aim to increase the visibility of these sites without encouraging access and increasing the risk of damage to archaeological resources; signs should incorporate historic maps and images keyed to the modern landscape.

6. CONCLUSIONS AND RECOMMENDATIONS

The shoreline of the Hudson River from 145th Street to Spuyten Duyvil, including Fort Washington Park and its immediate surroundings, comprises land of variable archaeological sensitivity. Some portions

of the shoreline, notably Fort Washington Point, are of profound historical interest and have pockets of extreme archaeological sensitivity. Others, such as Tubby Hook Point and Sugar House Point, are also historically notable landforms possessing a somewhat lesser prospect of yielding significant archaeological remains. There are also several specific locations of potential archaeological interest, such as the alignment of the Hudson River Railroad, the sites of rail stations and depots, and the sites of late 19th-century estates on Inwood Hill.

Fort Washington Point was a focus of Native American fishing and camping activity and during the Revolutionary War supported outlying defenses related to Fort Washington, consisting of an American rifle redoubt, demi-lune and chevaux-de-frise. The remains of the redoubt are still evident in the landscape today beneath the George Washington Bridge and are marked by an inscribed stone memorial erected in 1910 by the Daughters of the American Revolution. The point was also the site of an early telegraph tower erected in the late 1840s by Samuel F.B. Morse, part of the original telegraphic network that linked New York to other east coast cities. Iron straps that supported this structure survive embedded in the rock outcrop. Archaeological traces may also survive of the Ingham and Carman dwellings and of the Fort Washington Station at the southern end of the deep cut for the Hudson River Railroad.

Tubby Hook Point, at the foot of Dyckman Street, was the site of extended Native American occupation (more intense than that evidenced at Fort Washington Point). In the colonial and early federal periods the point was the base for a fishing station and supported a landing. The Hudson River Railroad established Inwood Station here, while the Thompson family maintained wharfage and commercial buildings on the riverfront. In the early/mid-20th century, Tubby Hook was the site of the Dyckman Street ferry terminal, a sanitation plant and several shoreline recreational

facilities. Archaeological evidence is likely to be two feet or more below existing grade and may well be compromised by later land use in many areas.

Sugar House Point, on the shoreline between roughly West 155th and West 161st Streets, was another setting used by Native Americans and was the site of a sugar refinery and steamboat dock in the second half of the 19th century. Mid- and late 20th-century land alteration, mostly related to park and highway improvements, has likely reduced the archaeological potential here, but sporadic remains may survive at depths in excess of two feet below existing grade.

The Hudson River Railroad is an immensely important and influential feature in the development of Manhattan's cultural landscape. Its alignment has remained essentially unchanged over the years, although its trackage has been expanded and upgraded. Along its course within the project area, the cut through Fort Washington Point is a major industrial archaeological engineering work, while the sites of three rail station/depots at 152nd Street, Fort Washington and Inwood may retain a significant below-ground archaeological expression.

On the western slope of Inwood Hill, between the Hudson River Railroad and the Henry Hudson Parkway, are the sites of three late 19th-century estates within Inwood Hill Park which appear to hold some potential for archaeological remains. Two of these estates were originally associated with the Thompson family, prominent late 19th-century land owners in the Tubby Hook and Inwood Hill area. These estates are representative of a phase of upper and upper-middle class living that once prevailed along the western side of Manhattan Island from the mid-19th century through into the 1920s and 1930s.

In the early and mid-20th century long stretches of the shoreline were characterized by privately held recreational facilities, chiefly docks, boat clubs, yacht clubs, bath houses and bathing beaches. Now almost

entirely absent from the landscape and supplanted by public park infrastructure, these are of historical interest, reflecting a particular period and style of leisure pursuits along the west shore of Manhattan. These features are judged to be of minimal archaeological concern; later park and highway improvement projects have likely severely compromised their archaeological integrity. Mid- to late 20th-century land alteration along the shoreline has been considerable, involving substantial grading and filling which has obscured, buried and in some instances probably destroyed many elements of earlier cultural landscapes.

As the plans for reconstruction of Fort Washington Park are developed, it is recommended that improvements seek to protect, avoid and minimize ground disturbance at specific sites of archaeological concern on Fort Washington Point, Tubby Hook Point, Sugar House Point and Inwood Hill, and also along the Hudson River Railroad corridor. If project effects on such archaeological resources are unavoidable or are suspected, further archaeological study is recommended to evaluate more fully the significance of the resource and potential impacts. Further archaeological study would typically entail more detailed archival research, limited site clearing, field mapping and targeted manual subsurface testing. In some locations, mechanically assisted subsurface testing, possibly with provision for dewatering, may be necessary (e.g., in the Tubby Hook and Sugar House Point areas). In the event field testing is impractical for reasons of inaccessibility or extreme depth, consideration should be given to the incorporation of archaeological monitoring provisions into the park reconstruction contractor specifications.

This archaeological assessment also highlights the opportunity for historic interpretive treatment of several of the identified resources. In particular, the sites of Revolutionary War-era features on Fort Washington Point (the American rifle redoubt, demi-lune and chevaux-de-frise) deserve archaeologically

sensitive management and intelligent interpretation. Specifically recommended are improved trail circulation, limited clearance of vegetation, signage, resource protection (in the case of the redoubt) and linkage to other elements of the Fort Washington defenses, notably the fort itself in Bennett Park. Other historic interpretive opportunities, mostly involving the use of well-placed signage, are noted elsewhere within the project area (e.g., at Tubby Hook and Sugar House Point, on Inwood Hill, along the Hudson River Railroad and even for stretches of shoreline where boat clubs and recreational facilities were once concentrated.

REFERENCES

BOOKS, REPORTS, ARTICLES AND PRIMARY SOURCES

American Iron and Steel Association

1884 *Directory to the Iron and Steel Works of the United States*. American Iron and Steel Association, Philadelphia, Pennsylvania.

Beauchamp, William M.

1900 Aboriginal Occupation of New York. *New York State Museum Bulletin* 32. Albany, New York.

Bolton, Reginald Pelham

1909 The Indians of Washington Heights. In *The Indians of Greater New York and the Lower Hudson*, edited by C. Wissler, pp. 77-109. *Anthropological Papers of the American Museum of Natural History* 3. New York, New York.

1924 *Washington Heights Manhattan: Its Eventful Past*. Dyckman Institute, New York, New York.

Burrows, Edwin G., and Mike Wallace

1999 *Gotham: A History of New York City to 1898*. Oxford University Press, New York, New York.

Cohen, Paul E. and Robert T. Augustyn

1997 *Manhattan in Maps 1527 – 1995*. Rizzoli International Publications, Inc., New York, New York.

Diamant, Lincoln

2004 *Chaining the Hudson: The Fight for the River in the American Revolution*. Fordham University Press, New York, New York.

Finch, James K.

1909a Aboriginal Remains on Manhattan Island. In *The Indians of Greater New York and the Lower Hudson*, edited by Clark Wissler. *Anthropological Papers of the American Museum of Natural History*, Volume III.

1909b Historical Notes on the Indians of Manhattan: Location of Archaeological Remains on Manhattan Island. In *The Indians of Manhattan Island and Vicinity*, by Alanson Skinner. American Museum of Natural History, New York, New York.

Fischer, David Hackett

2004 *Washington's Crossing*. Oxford University Press, New York, New York.

**ARCHAEOLOGICAL ASSESSMENT: THE RECONSTRUCTION OF FORT WASHINGTON PARK
FROM 145TH STREET TO DYCKMAN STREET ALONG THE HUDSON RIVER**

George Washington

1780 Order to Jean B. Gouvion, November 21, 1780. In *George Washington Papers at the Library of Congress, 1741-1799: Series 4, General Correspondence, 1697-1799*.

Gilbert Du Motier Lafayette

1780 Letter to George Washington, November 28, 1780. In *Correspondence of the American Revolution; Being Letters of Eminent Men to George Washington, from the Time of His Taking Command of the Army to the End of His Presidency*, Volume III, edited by Jared Sparks (1853).

Goddard, Ives

1978 Delaware. In *Handbook of North American Indians. Volume 15, Northeast* (edited by Bruce G. Trigger), pp. 213-239. Smithsonian Institution, Washington, D.C.

Greeley, Horace, Leon Case, Edward Howland, John B. Gough, Philip Ripley, F.B. Perkins, J.B. Lyman, Albert Brisbane, Rev. E.E. Hall *et al.*

1872 *The Great Industries of the United States*. J.B. Burr & Hyde, Hartford, Connecticut, and J.B. Burr, Hyde & Co., Chicago, Illinois and Cincinnati, Ohio.

Historic American Engineering Record

Henry Hudson Parkway (HAER No. NY-334).

Jackson, Donald (editor)

1978 *The Diaries of George Washington*. Vol. 3. University Press of Virginia, Charlottesville, Virginia.

Jackson, Kenneth T.

1995 *The Encyclopedia of New York City*. Yale University Press, New Haven, Connecticut.

The Knickerbocker or New-York Monthly Magazine

1859 "Stories and Pictures of the Hudson." *The Knickerbocker or New-York Monthly Magazine* Vol. LIV (September).

Kraft, Herbert C.

2001 *The Lenape-Delaware Indian Heritage 10,000 B.C. – A.D. 2000*. Lenape Books, Elizabeth, New Jersey.

"New York Motor Boat Club." *New York Times*, January 7, 1910.

Parker, Arthur C.

1922 The Archaeological History of New York State. *New York State Museum Bulletin* 235-238. Albany, New York.

**ARCHAEOLOGICAL ASSESSMENT: THE RECONSTRUCTION OF FORT WASHINGTON PARK
FROM 145TH STREET TO DYCKMAN STREET ALONG THE HUDSON RIVER**

Phillips, William B. (compiler)

1889 *Washington Heights. In the Past. In the Present. In the Future.* Washington Heights Taxpayers' Association, New York, New York.

Renner, James

1998-2004 Washington Heights & Inwood Online. www.washington-heights.us/history/archives

2007 *Images of America: Washington Heights, Inwood, and Marble Hill.* Arcadia Publishing, Charleston, South Carolina, Chicago, Illinois, Portsmouth, New Hampshire, and San Francisco, California.

Signe Nielsen, P.C.

1989 Summary Report: Fort Washington Park. Report prepared for City of New York Parks and Recreation.

Walker, Paul K.

1981 *Engineers of Independence: A Documentary History of the Army Engineers in the American Revolution 1775-1783.* Office of History, Headquarters, U.S. Army Corps of Engineers, Washington, D.C.

Works Progress Administration

1939 *New York City Guide.* Random House, New York, New York.

MAPS AND IMAGES

Vinckeboons, Joan

- 1639 *Manatvs gelegen op de Noot* [sic] *Riuier*. On file, Library of Congress, Geography and Map Division, Washington, D.C.

Davies, Thomas

- circa 1776-1812 A View of the Attack against Fort Washington and Rebel Redouts near New York on the 16 of November 1776 by the British and Hessian Brigades. In
I.N. Phelps Stokes Collection of American Historical Prints, Individual Prints, Drawings, Paintings and Maps in the Stokes Collection. On file, New York Public Library, New York, New York.

Fort Washington & vicinity

- circa 1776 On file, Library of Congress, Geography and Map Division, Washington, D.C.

Military Map of New York Island, unfinished

- circa 1776 On file, Library of Congress, Geography and Map Division, Washington, D.C.

Sauthier, Claude Joseph

- 1776 *A map of part of New-York Island showing a plan of Fort Washington, now call'd Ft. Kniphausen with the rebels lines on the south part, from which they were driven on the 16th of November 1776 by the troupes under the orders of the Earl of Percy*. On file, Library of Congress, Geography and Map Division, Washington, D.C.
- 1776 *A plan of the attack of Fort Washington, now Fort Knyphausen, and of the American lines on New-York Island by the King's troops, on the 16th of November 1776*. On file, Library of Congress, Geography and Map Division, Washington, D.C.
- 1776 *A tracing relating to Fort Washington or Knyphausen*. On file, Library of Congress, Geography and Map Division, Washington, D.C.

Fort Washington and the North Part of New York Island

- circa 1776 In *The Writings of George Washington: being his Correspondence, Addresses, Messages, and Other Papers, Official and Private, Selected and Published from the Original Manuscripts, edited by Jared Sparks. Ferdinand Andrews, Boston, Massachusetts.*

Sketth [sic] *of the Hessian attack on Fort Washington under General Knypehausen on the 16th November 1776*

- 1776 On file, Library of Congress, Geography and Map Division, Washington, D.C.

Sauthier, Claude Joseph

1777 *A topographical map of the northn. part of New York Island, exhibiting the plan of Fort Washington, now Fort Knyphausen, with the rebels lines to the southward, which were forced by the troops under the command of the Rt. Honble. W. Faden, London, England. On file, Library of Congress, Geography and Map Division, Washington, D.C.*

Map of defenses of New York Island from Fort Washington to Fort Independence, with redoubts, etc. planned between

circa 1777 On file, Library of Congress, Geography and Map Division, Washington, D.C.

Disposition of British troops, with fortifications north of Fort Knipehausen, i.e. Fort Washington to Fort Independence

circa 1778 On file, Library of Congress, Geography and Map Division, Washington, D.C.

Nord de l'Ile de New-York

circa 1781 On file, Library of Congress, Geography and Map Division, Washington, D.C.

“The British Headquarters Map”

circa 1782 On file, Public Records Office, London, England.

Bridges, William

1811 *This Map of the City of New York and Island of Manhattan, as laid out by the Commissioners appointed by the Legislature. On file, Library of Congress, Geography and Map Division, Washington, D.C.*

Eddy, John H.

1811 *Map of the Country Thirty Miles Round the City of New York. Prior & Dunning, New York, New York.*

Randel, John, Jr.

1811 *A Map of the City of New York by the Commissioners appointed by an act of the Legislature passed April 3rd 1807. On file, New York Public Library, New York, New York.*

1814 *The City of New York as laid out by the Commissioners with the surrounding country. On file, New-York Historical Society, New York, New York.*

1821 *The City of New York as laid out by the Commissioners with the surrounding country. On file, Library of Congress, Geography and Map Division, Washington, D.C.*

J.H. Colton & Co.

1836 *Topographical Map of the City and County of New-York, and the adjacent country. J.H. Colton & Co., New York, New York.*

Hayward, G.

1850 *Map of the City of New York, drawn for D.T. Valentine's Manual. G. Hayward, New York, New York.*

Dripps, Matthew

- 1851 *Map of That Part of the City and County of New-York North of 50th St.* M. Dripps, New York, New York.

Harrison, J.F., and T. Magrane

- 1853 *Topographical Map of New York City, County, and Vicinity showing old farm lines.* M. Dripps, New York, New York.

Hayward, G.

- 1856 Remains of Fort Washington N.Y. 1856. In Emmet Collection of Manuscripts Etc. Relating to American History, The Generals of the American Revolution, Volume 2: Nathaniel Greene. New York Public Library, New York, New York.

King's Bridge Section

- 1860 Copied from the preliminary map of the Commissioners of **Washington** Heights. On file, New York Public Library, New York, New York.

Fort Washington Section

- 1860 Copied from the preliminary map of the Commissioners of **Washington** Heights. On file, New York Public Library, New York, New York.

Dripps, Matthew

- 1864 *New York City, County, and Vicinity.* Drawn for Valentine's Manual. On file, New York Public Library, New York, New York.

Viele, Egbert L.

- circa 1865 *Topographical map of the City of New York: showing original water courses and made land.* Ferd. Mayer & Co., New York, New York. On file, Library of Congress, Geography and Map Division, Washington, D.C.

Dripps, Matthew

- 1867 *Plan of New York City from the Battery to Spuyten Duyvil Creek.* Matthew Dripps, New York, New York.

Beers, Frederick W.

- 1868 *Map of New York and Vicinity.* Beers, Ellis & Soule, New York, New York.

Ewen, Edward S. (compiler)

- 1873 *Map of the City of New York North of 155th Street showing the progress made in laying out streets, roads, public squares and places by the Commissioners of Central Park under Chap. 565 of Laws 1863 and of New Pier and Bulkhead Lines under Chap. 695 of Laws of 1867.* On file, Library of Congress, Geography and Map Division, Washington, D.C.

**ARCHAEOLOGICAL ASSESSMENT: THE RECONSTRUCTION OF FORT WASHINGTON PARK
FROM 145TH STREET TO DYCKMAN STREET ALONG THE HUDSON RIVER**

Taylor, Will L.

1879 *The City of New York*. Galt & Hoy, New York, New York.

Robinson, E., and R.H. Pidgeon

1884 *Atlas of the City of New York, Volume 2, embracing the Twelfth Ward*. E. Robinson, New York, New York.

G.W. & C.B. Colton & Co.

1885 *Map of New York City, Brooklyn, and vicinity showing surface & elevated railroads in operation and proposed*. G.W. & C.B. Colton & Co., New York, New York.

Orr, J.W.

circa 1889-1890 View from Fort Washington. In Emmet Collection of Manuscripts Etc. Relating to American History, The Generals of the American Revolution, Volume 2: Nathaniel Greene. New York Public Library, New York, New York.

Bromley, George W., and Walter S. Bromley

1891 *Atlas of the City of New York, Manhattan Island*. G.W. Bromley & Co., Philadelphia, Pennsylvania.

United States Geological Survey

1891 *Harlem, NY Quadrangle, USGS 15 Minute Series*. United States Geological Survey.

Bromley, George W., and Walter S. Bromley

1897 *Atlas of the City of New York, Borough of Manhattan*. G.W. Bromley & Co., Philadelphia, Pennsylvania.

United States Geological Survey

1897 *Harlem, NY Quadrangle, USGS 15 Minute Series*. United States Geological Survey.

Bird's-eye-view of Manhattan and adjacent districts, New York City

circa 1900 On file, Library of Congress, Geography and Map Division, Washington, D.C.

United States Geological Survey

1900 *Harlem, NY Quadrangle, USGS 15 Minute Series*. United States Geological Survey.

Borough of Manhattan, New York City from 152d Street to Morris Heights

1903 <http://www.bklyn-genealogy-info.com/Map/NY.1903.3.html>, accessed March 21, 2008.

Bromley, George W., and Walter S. Bromley

1911 *Atlas of the City of New York, Borough of Manhattan*. G.W. Bromley & Co., Philadelphia, Pennsylvania.

**ARCHAEOLOGICAL ASSESSMENT: THE RECONSTRUCTION OF FORT WASHINGTON PARK
FROM 145TH STREET TO DYCKMAN STREET ALONG THE HUDSON RIVER**

G.W. Bromley & Co.

1916 *Atlas of Manhattan, City of New York*. G.W. Bromley & Co., New York, New York.

City of New York

1924 New York City Aerial Photographs. City of New York, Board of Estimate and Apportionment, Office of the Chief Engineer, New York, New York. On file, New York Public Library, New York, New York.

G.W. Bromley & Co.

1925 *Land Book of the Borough of Manhattan, City of New York*. G.W. Bromley & Co., New York, New York.

Hagstrom Map Company

1928 *New York City...Manhattan*. <http://www.bklyn-genealogy-info.com/Map/1928.NYC.html>, accessed March 21, 2008.

G.W. Bromley & Co.

1930 *Land Book of the Borough of Manhattan, City of New York*. G.W. Bromley & Co., New York, New York.

Gottscho, Samuel H.

1932 Historic Photograph of the George Washington Bridge and New York Central tracks. Gottscho-Schleisner Collection, Library of Congress, LC-G612-18734. Library of Congress, Prints and Photographs Division, Washington D.C.

G.W. Bromley & Co.

1934 *Manhattan Land Book*. G.W. Bromley & Company, New York, New York.

Sperr, Percy Loomis

circa 1937 Historic Photographs of Fort Washington Park and Inwood. Photographic Views of New York City, 1870s-1970s. On file, New York Public Library, New York, New York.

City of New York Department of Parks, Topographical Division

1936 Topographical Map, Portion of Fort Washington Park, Boro. Of Manhattan. Sheets M-T-28-101, 105, 107 and 111. On file, New York City Department of Parks & Recreation.

Diversified Map Corporation

1964 *Street Map, New York City, prepared for American Oil Company*. Diversified Map Corp., St. Louis, Missouri. On file, Library of Congress, Geography and Map Division, Washington, D.C.

Appendix A

FIGURES

ARCHAEOLOGICAL ASSESSMENT: THE RECONSTRUCTION OF FORT WASHINGTON PARK
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Figure A.1. Location of Project Site (starred). Scale as shown.

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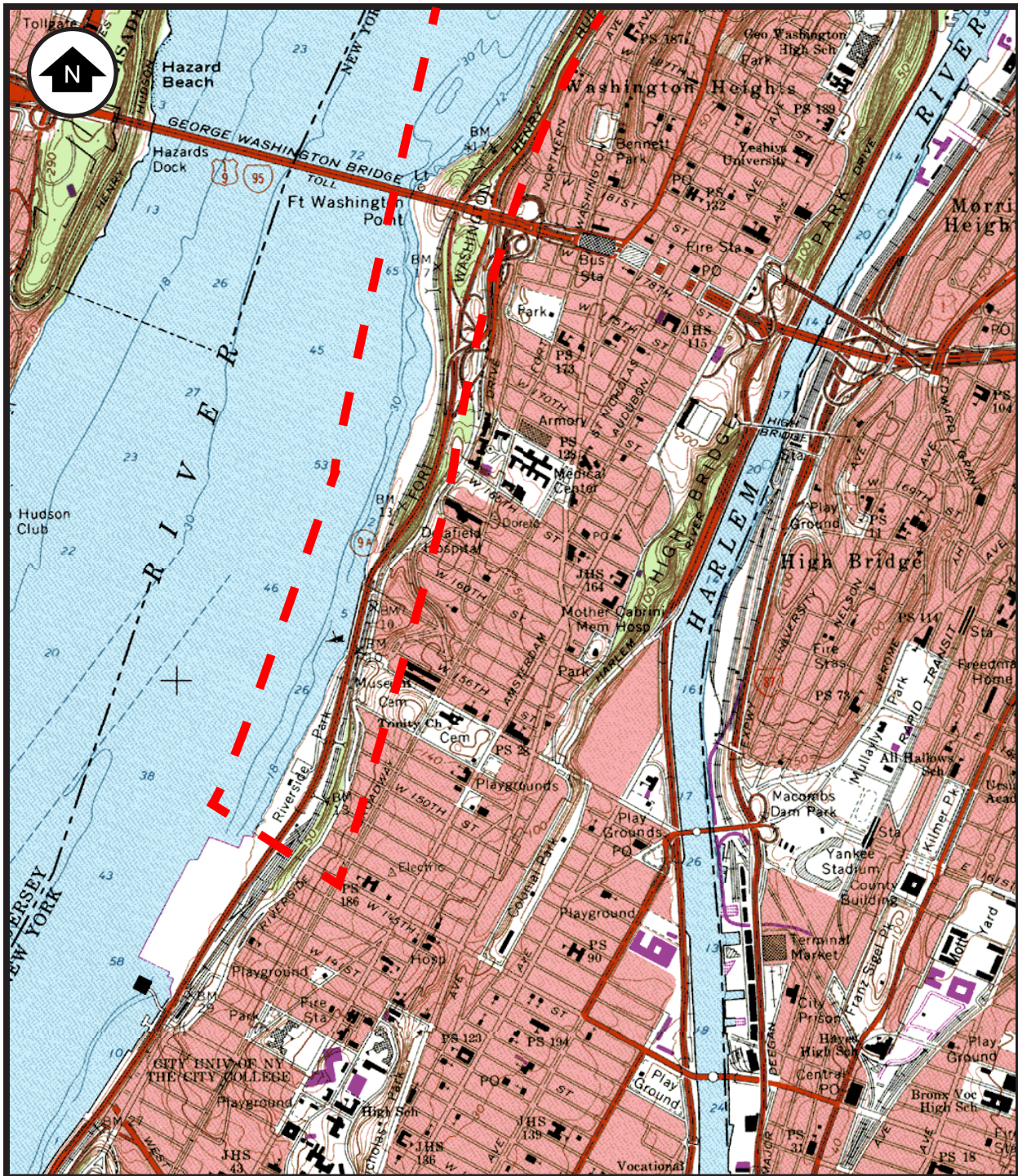


Figure A.2a. Detailed Location of Project Site (southern section). Source: USGS 7.5' Topographic Series, Central Park Quadrangle (1966 [photorevised 1979]). Project site outlined. Scale: 1 inch= 2000 feet.

ARCHAEOLOGICAL ASSESSMENT: THE RECONSTRUCTION OF FORT WASHINGTON PARK
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Figure A.2b. Detailed Location of Project Site (northern section). Source: USGS 7.5' Topographic Series, Central Park Quadrangle (1966 [photorevised 1979]). Project site outlined. Scale: 1 inch= 2000 feet.

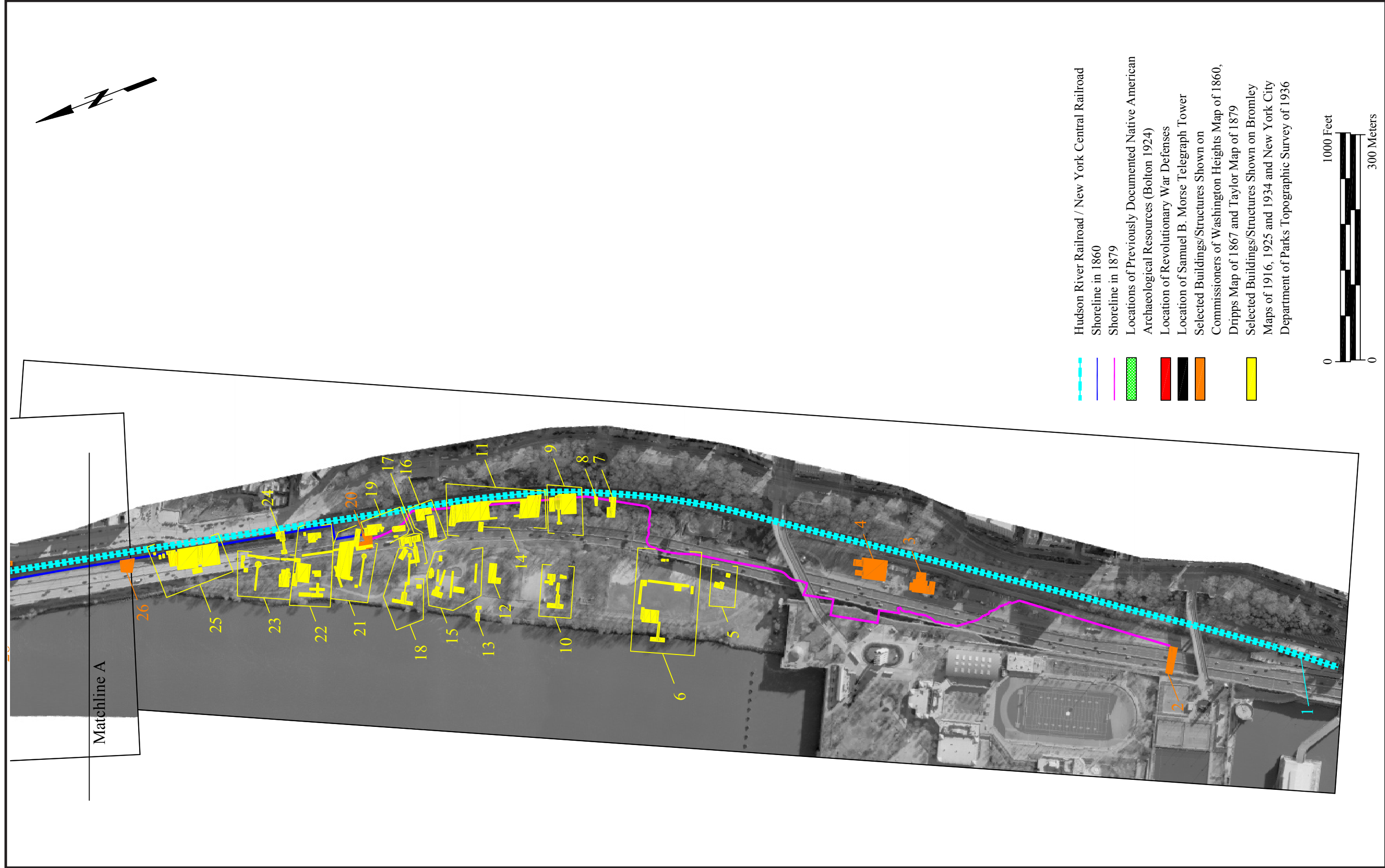


Figure A.3a. Archaeological Resource Map (southern section).

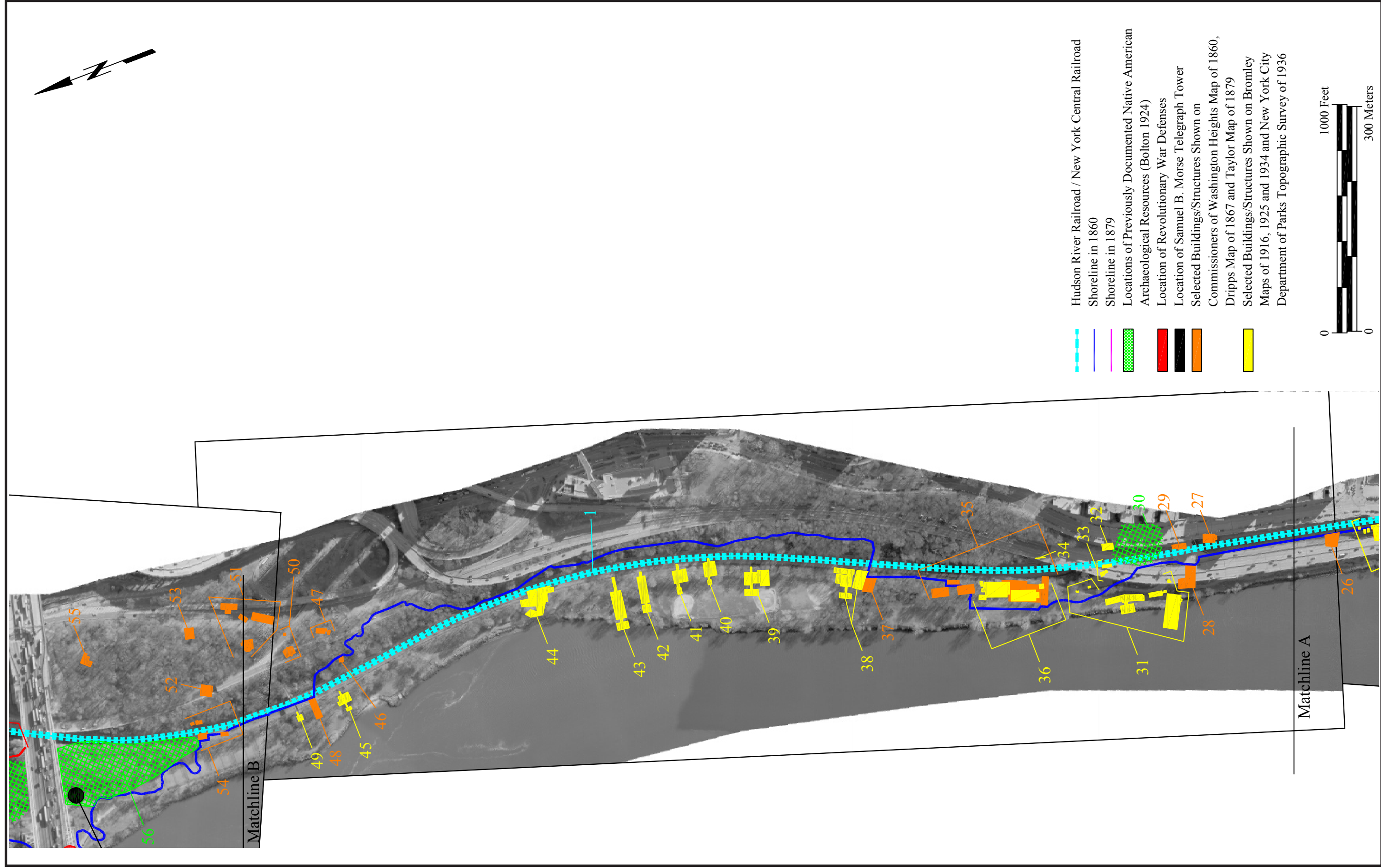


Figure A.3b. Archaeological Resource Map (south central section).

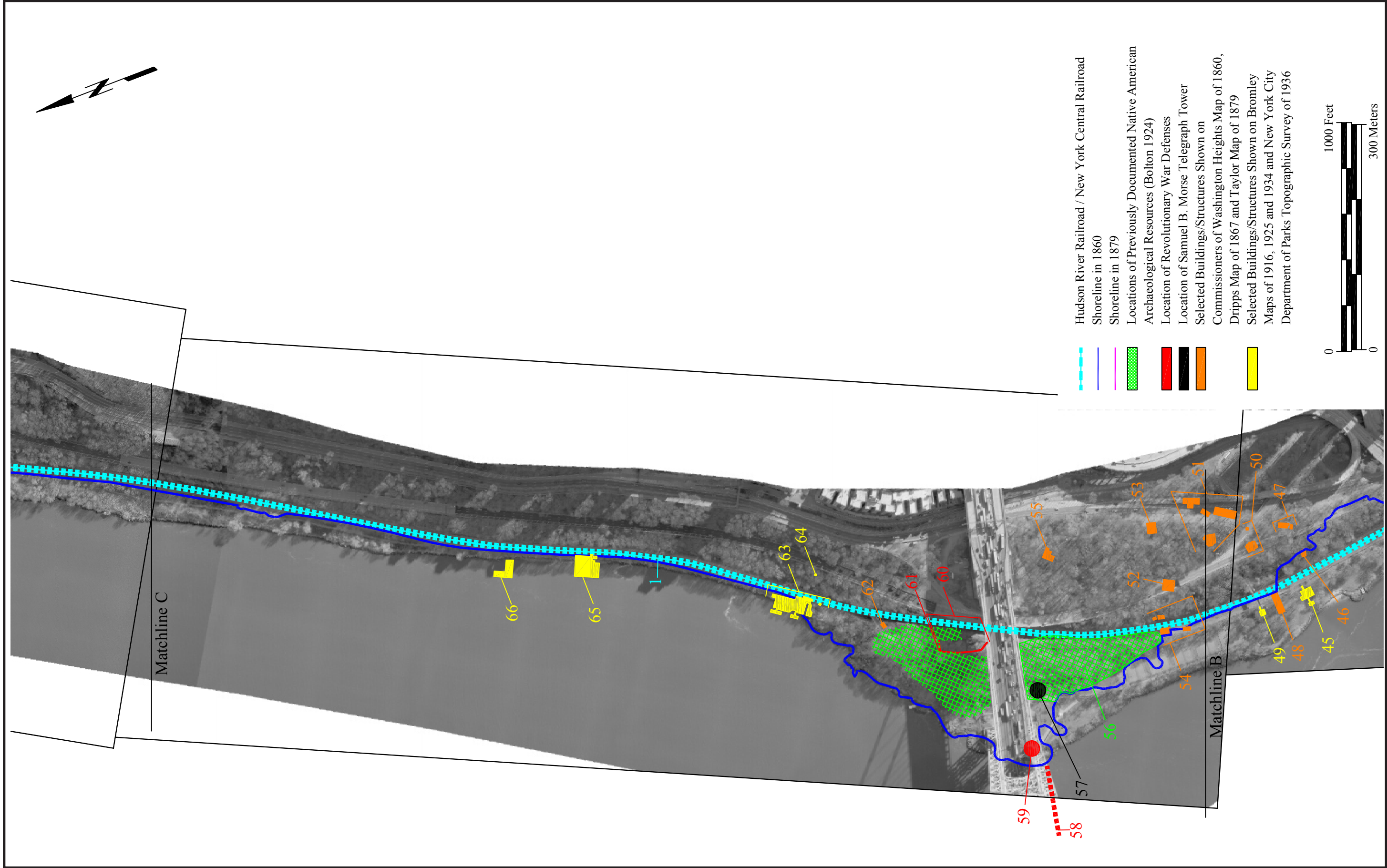


Figure A.3c. Archaeological Resource Map (central section).

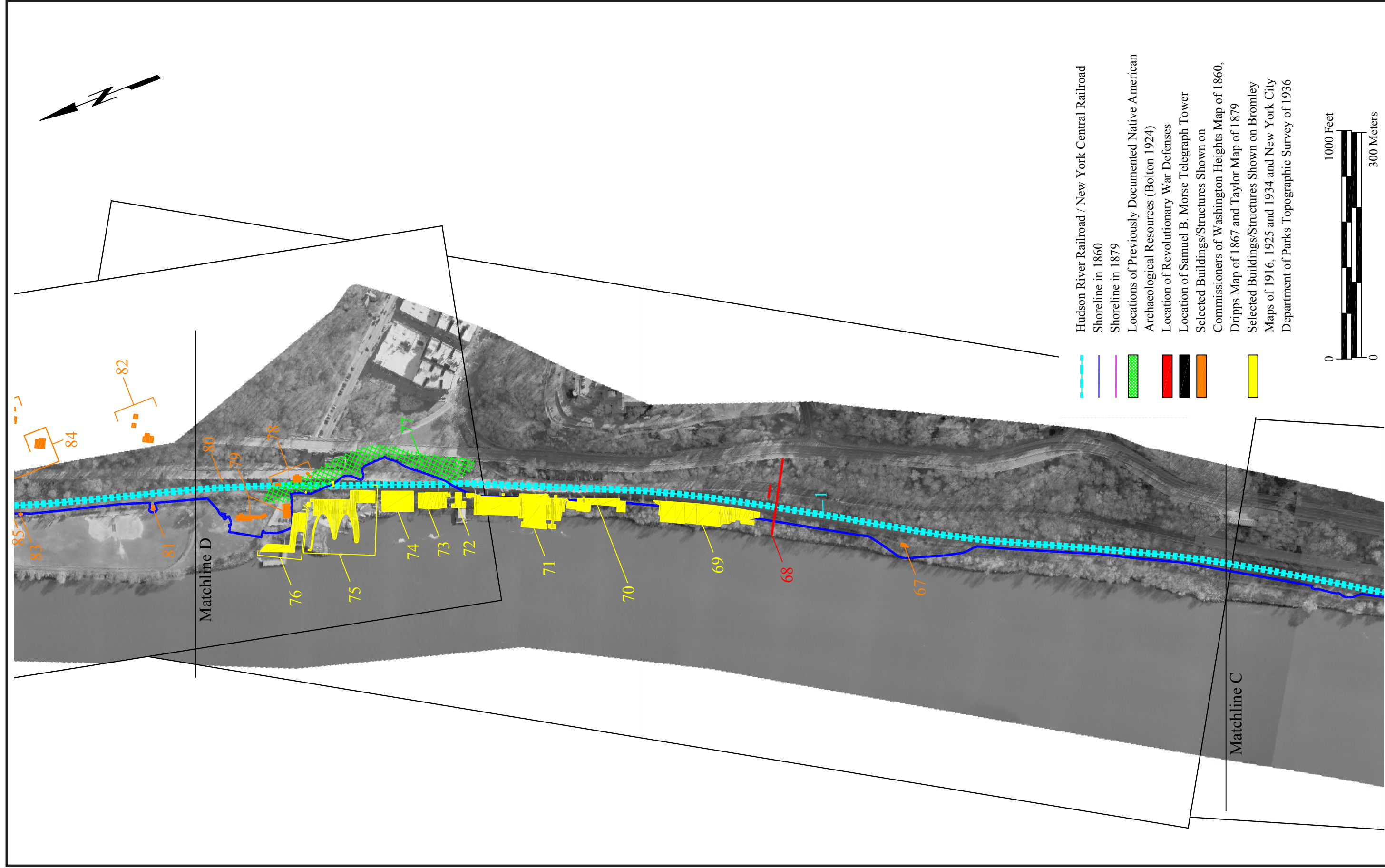


Figure A.3d. Archaeological Resource Map (north central section).

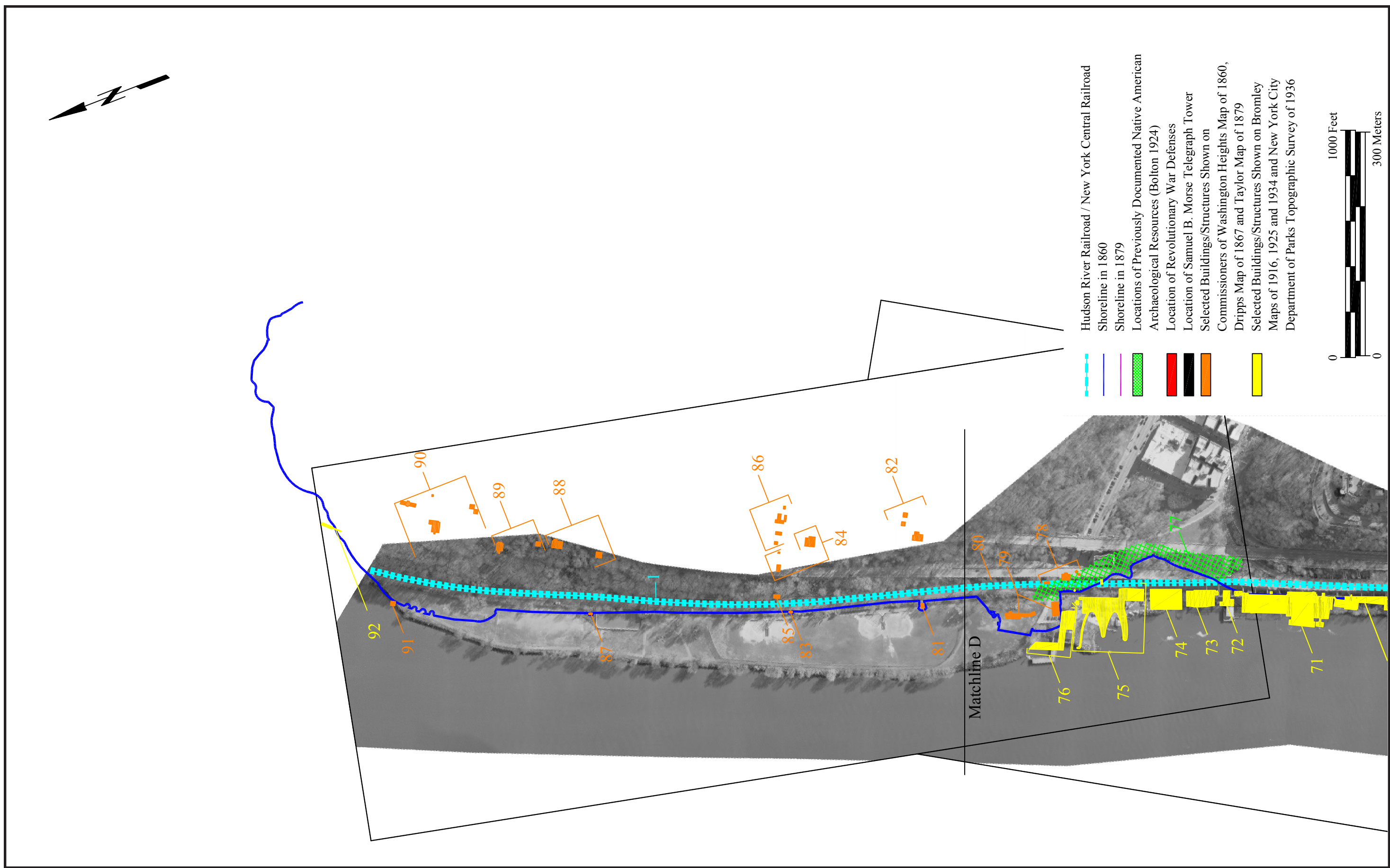


Figure A.3e. Archaeological Resource Map (northern section).

ARCHAEOLOGICAL ASSESSMENT: THE RECONSTRUCTION OF FORT WASHINGTON PARK
FROM 145TH STREET TO DYCKMAN STREET ALONG THE HUDSON RIVER

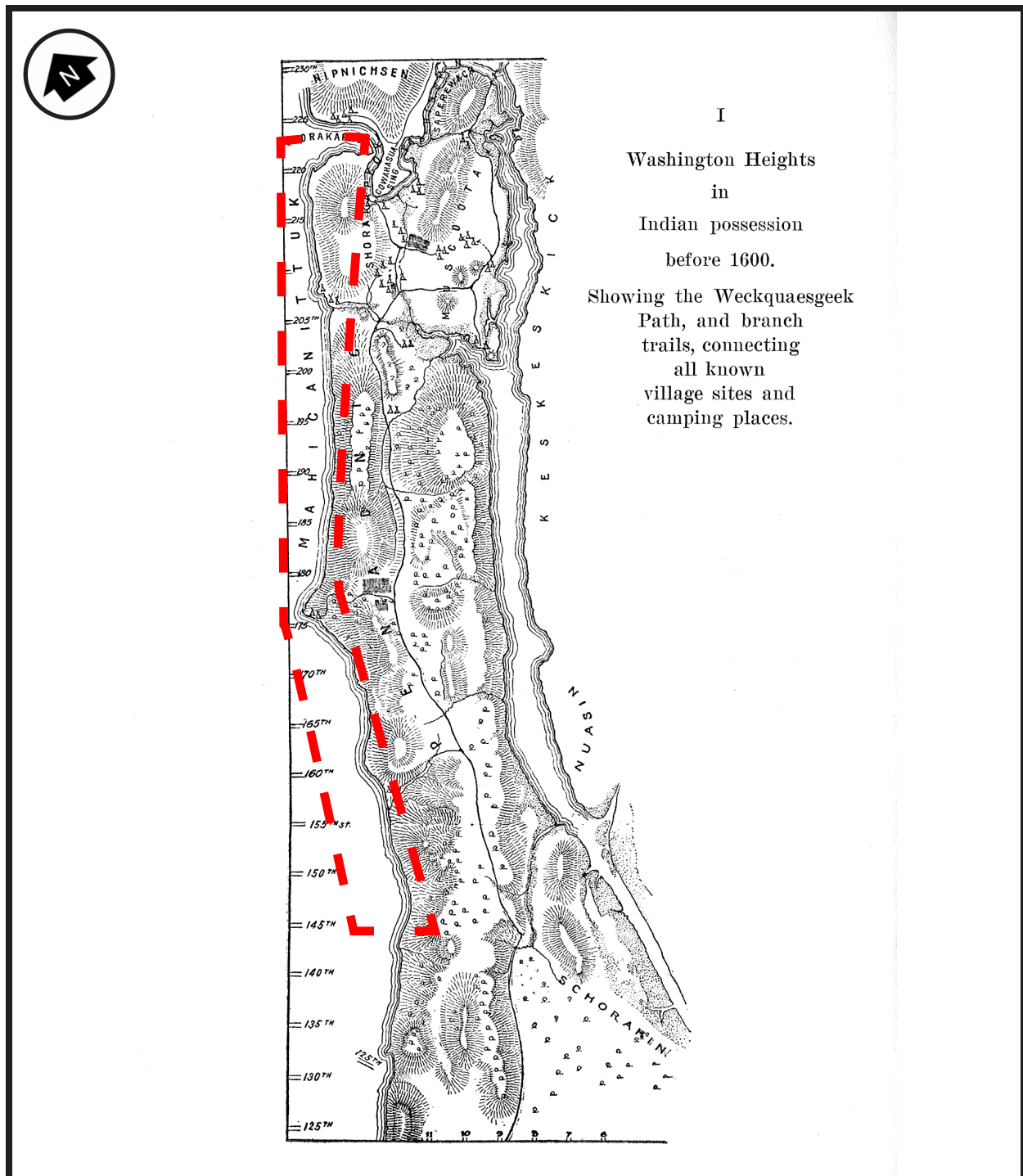


Figure A.4. "Washington Heights in Indian possession before 1600." Source: Bolton 1924:1 opp. Project site outlined. Scale: 1 inch= 3800 feet (approximately).

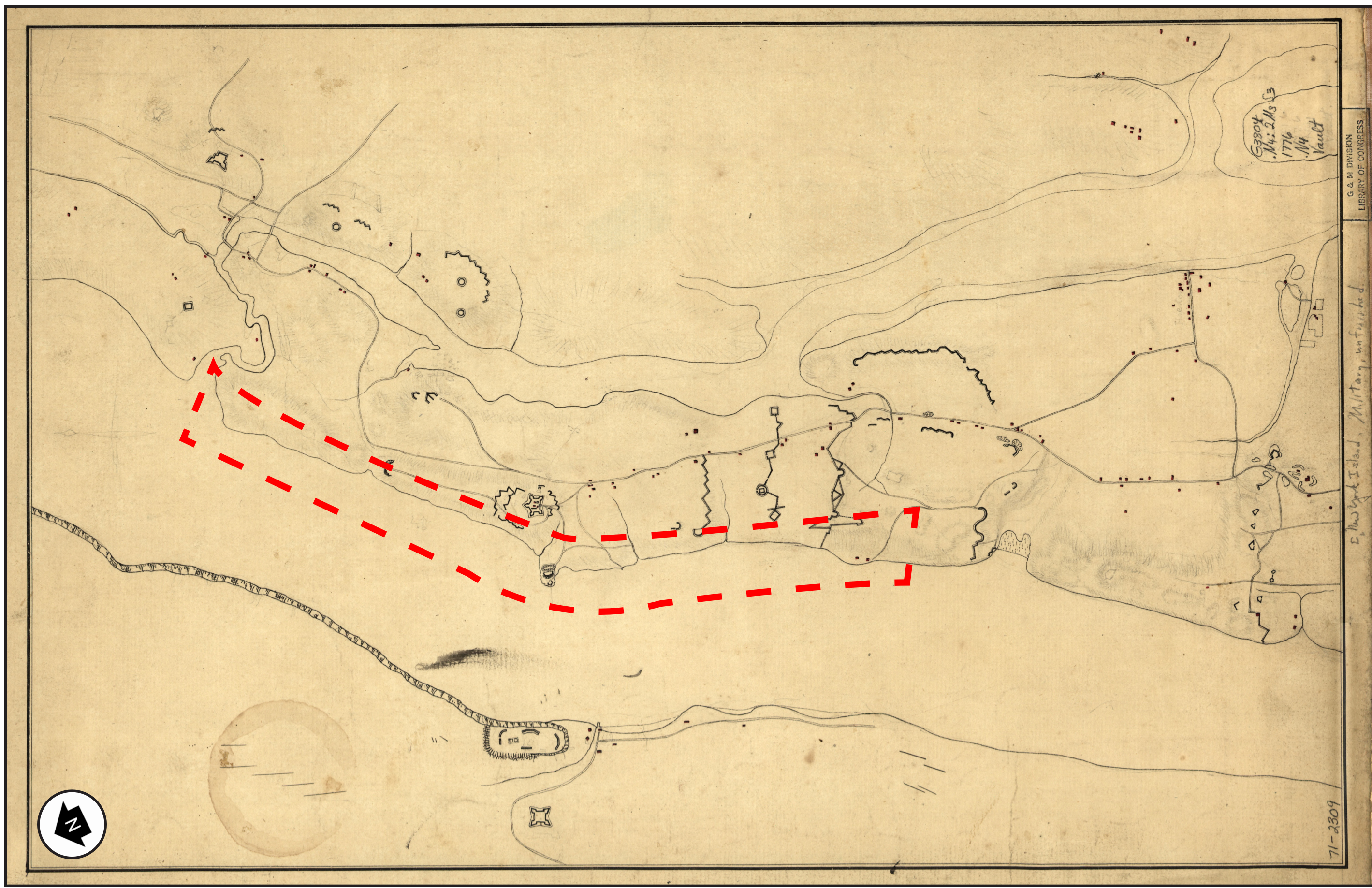


Figure A.5. Military Map of New York Island, unfinished. Circa 1776. Scale: 1 inch= 3000 feet (approximately). Project site outlined.

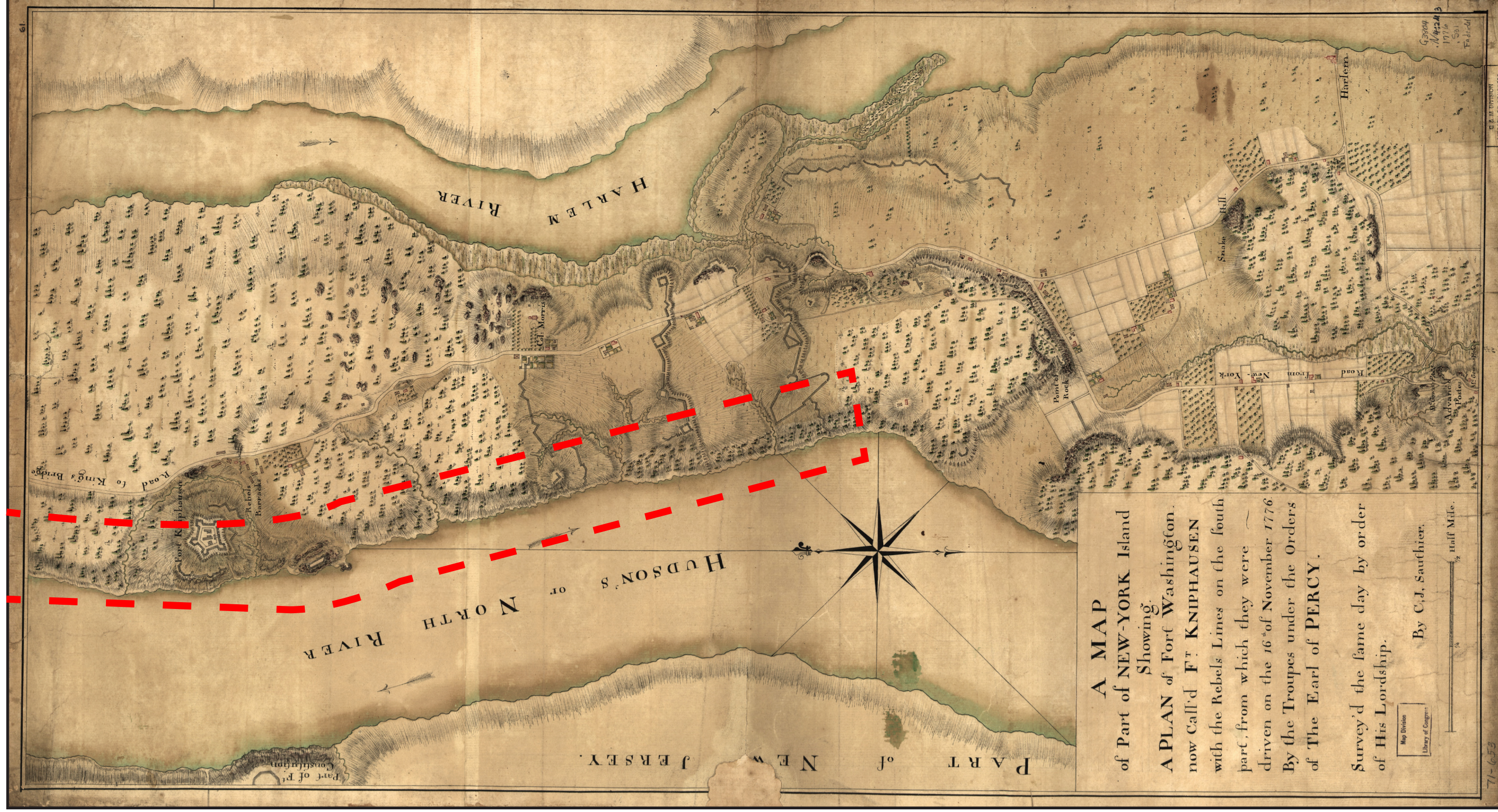


Figure A.6. Sauthier, Claude Joseph. 1776. A map of part of New-York Island showing a plan of Fort Washington, now call'd Ft. Knipphausen with the rebels lines on the south part, from which they were driven on the 16th of November 1776 by the troupes under the orders of the Earl of Percy. Scale as shown. Project site outlined.

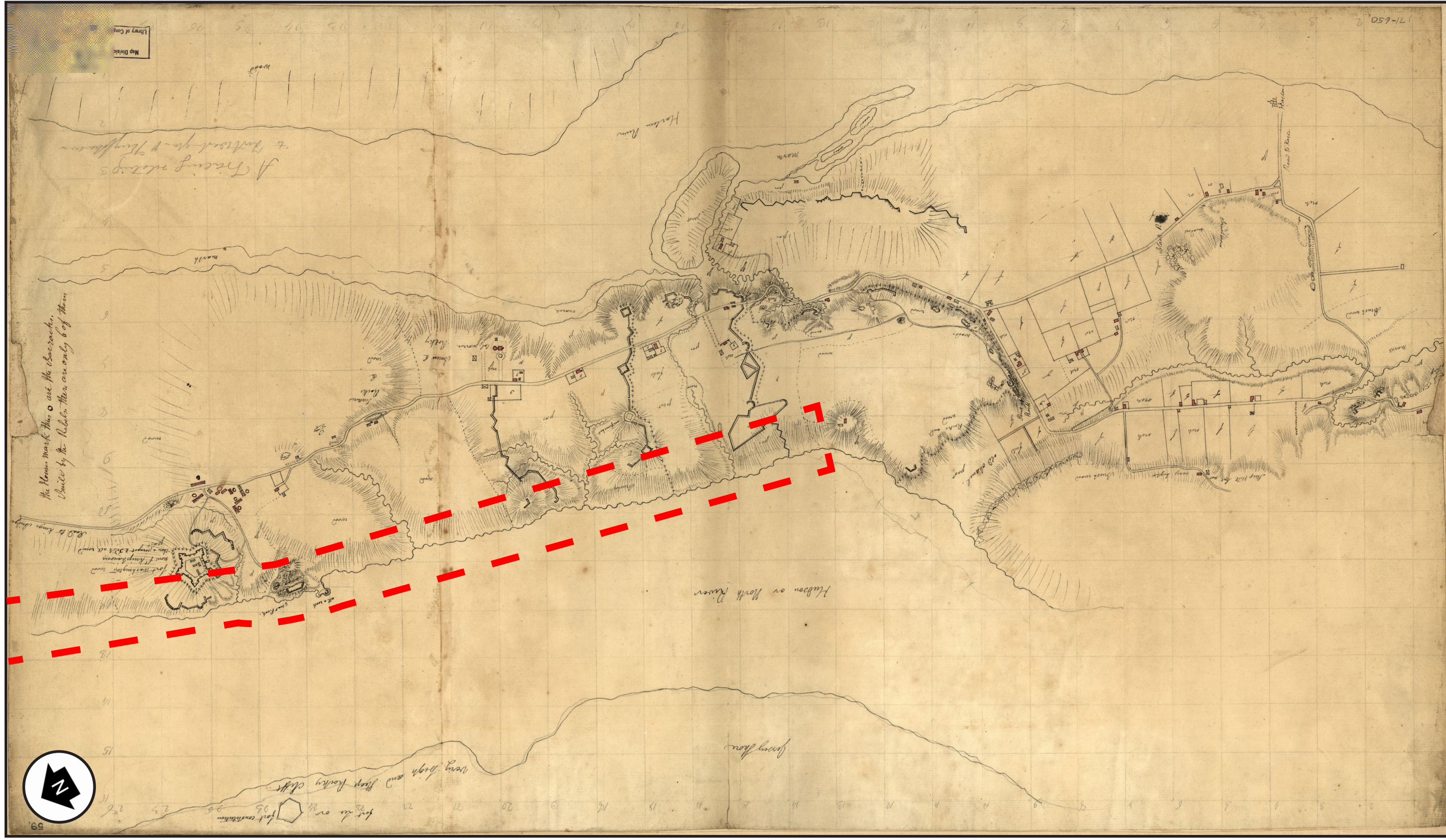


Figure A.7. Sauthier, Claude Joseph. 1776. A tracing relating to Fort Washington or Knyphausen. Scale: 1 inch= 2050 feet (approximately). Project site outlined.

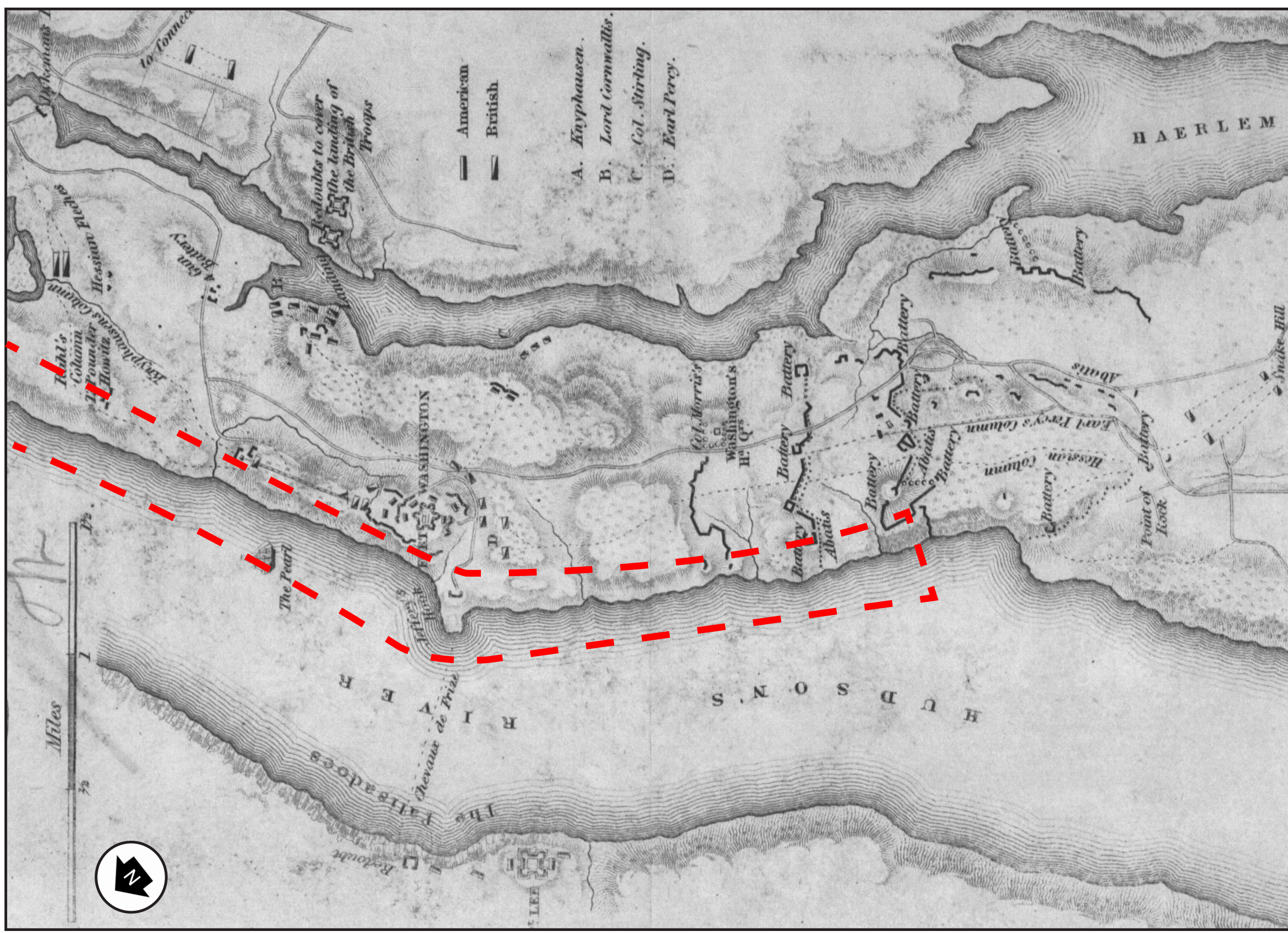


Figure A.8. *Fort Washington and the North Part of New York Island. Circa 1776. In The Writings of George Washington: being his Correspondence, Addresses, Messages, and Other Papers, Official and Private, Selected and Published from the Original Manuscripts.* Scale as shown. Project site outlined.



Figure A.9. Nord de l'Isle de New-York. Circa 1781. Scale: 1 inch= 1800 feet (approximately). Project site outlined.

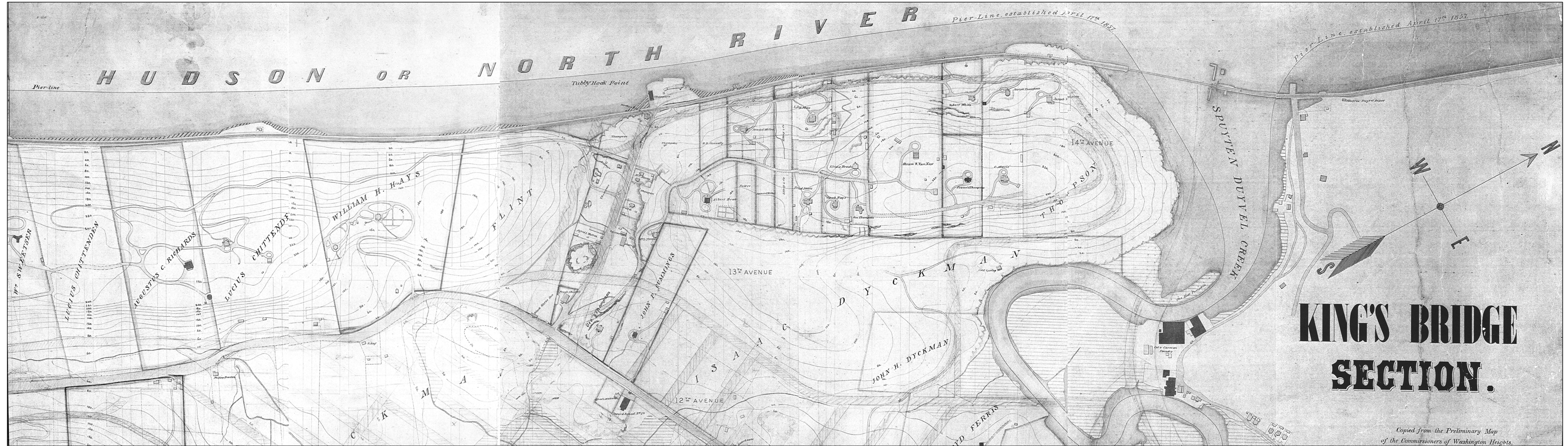


Figure A.10b. *Fort Washington Section.* 1860. Copied from the preliminary map of the Commissioners of Washington Heights.
Scale: 1 inch= 345 feet (approximately).

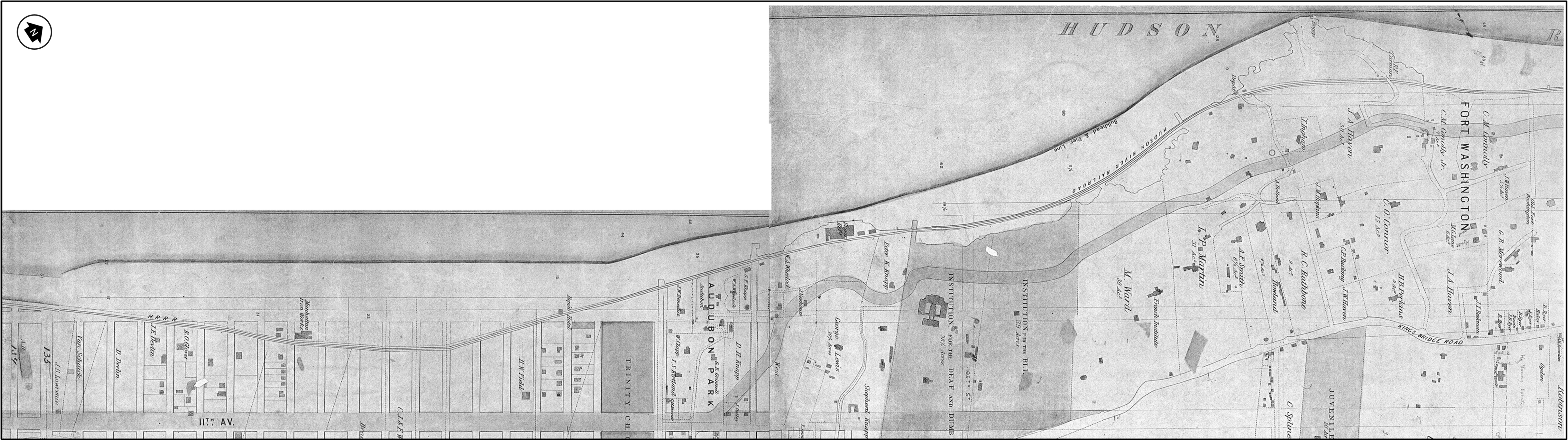


Figure A.11. Dripps, Matthew. 1867. *Plan of New York City from the Battery to Spuyten Duyvil Creek*. Scale: 1 inch= 400 feet (approximately).

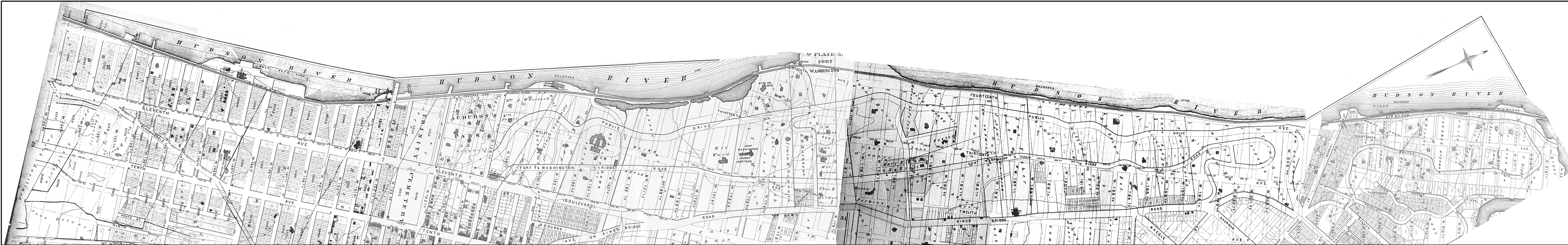


Figure A.12. Taylor, Will L. 1879. *The City of New York*. Scale: 1 inch= 385 feet (approximately).



Figure A.13. G.W. Bromley & Co. 1916. *Atlas of Manhattan, City of New York*. Scale: 1 inch= 445 feet (approximately).

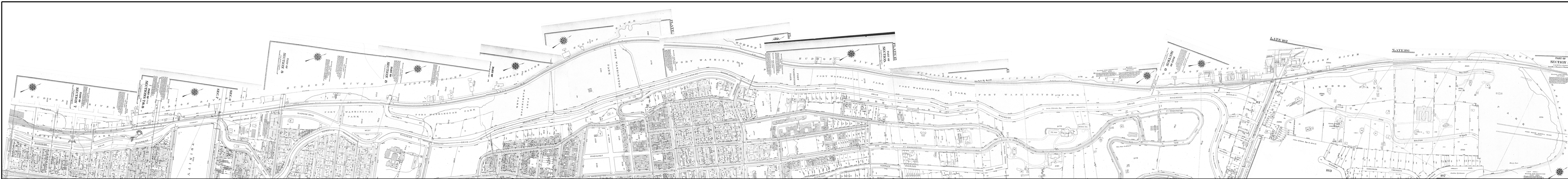


Figure A.14. G.W. Bromley & Co., 1925. *Land Book of the Borough of Manhattan, City of New York*.
Scale: 1 inch= 345 feet (approximately).

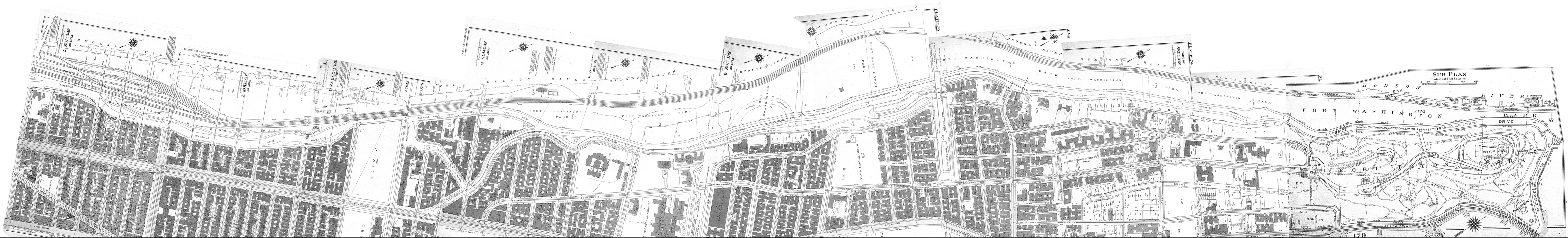
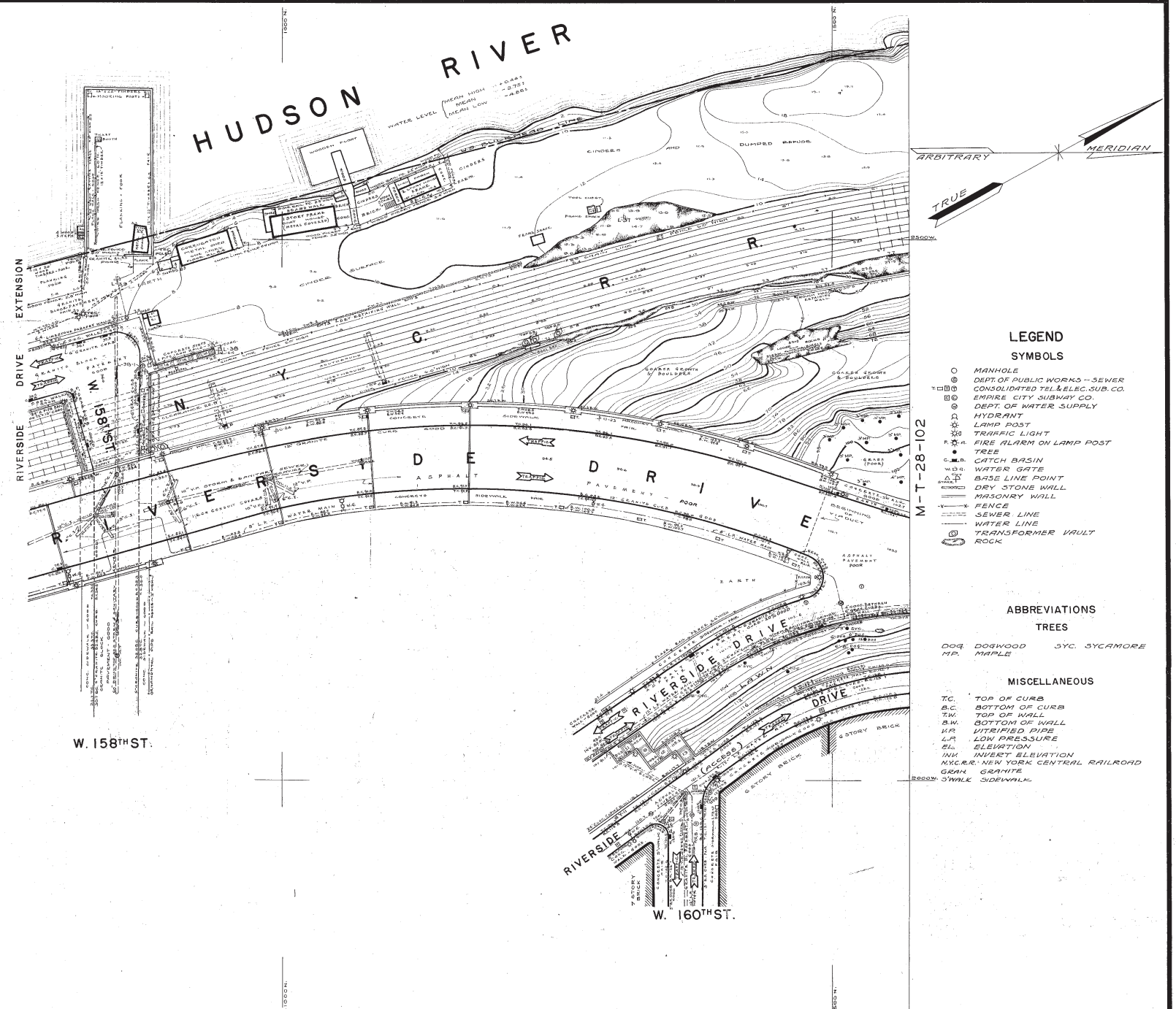
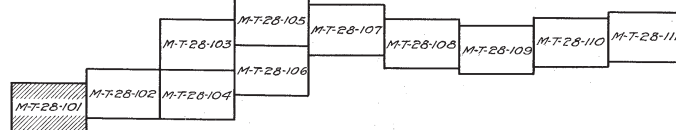


Figure A.15. G.W. Bromley & Co. 1934. *Manhattan Land Book*. Scale: 1 inch= 300 feet (approximately).

TABLE OF COORDINATES

TRAVERSE POINT	COORDINATES
L-37	N 1310.65 W 2320.67
L-38	N 240.77 W 2337.46
L-39	N 248.87 W 2461.33
U-23	N 1268.37 W 2335.08
U-24	N 225.97 W 2323.32
Y-11	N 1304.27 W 1967.28
Y-12	N 1451.55 W 2071.05
L-38-1	N 874.60 W 2378.21

KEY PLAN



LEGEND SYMBOLS

- MANHOLE
- DEPT. OF PUBLIC WORKS - SEWER
- CONSOLIDATED TEL. & ELEC. SUB. CO.
- EMPIRE CITY SUBWAY CO.
- DEPT. OF WATER SUPPLY
- HYDRANT
- LAMP POST
- TRAFFIC LIGHT
- FIRE ALARM ON LAMP POST
- TREE
- CATCH BASIN
- WATER GATE
- BASE LINE POINT
- DRY STONE WALL
- MASONRY WALL
- FENCE
- SEWER LINE
- WATER LINE
- TRANSFORMER VAULT
- ROCK

ABBREVIATIONS

- TREES
- DOG DOGWOOD
- SYC. SYCAMORE
- MAPLE
- MISCELLANEOUS
- T.C. TOP OF CURB
- B.C. BOTTOM OF CURB
- T.W. TOP OF WALL
- B.W. BOTTOM OF WALL
- I.P. INTERIRED PIPE
- L.P. LOW PRESSURE
- EL. ELEVATION
- INV. INVERT ELEVATION
- N.Y.C.R. NEW YORK CENTRAL RAILROAD
- GRA. GRANITE
- SEW. SIDEWALK

ISSUE RECORD

DATE	BY	REMARKS
5-29-36	A.M.	COMPLETED DRAWINGS SUBMITTED
1-28-44	EE	FIELD CHECKED TOPO. REVISED

NOTES

ALL ELEVATIONS SHOWN ARE BASED ON THE DATUM OF THE OFFICE OF THE BORO. PRESIDENT OF MANHATTAN WHICH IS 2.750' ABOVE THE COAST AND GEODETIC SURVEY DATUM AT SANDY HOOK.
B.M. # 2105, EL. 107.072. Y-CUT ON TOP OF K.W. COOPER OF PLAT GRANITE LAMP BASE ON TOP OF WALL AT INTERSECTION OF EAST LINE OF RIVERSIDE DRIVE WEST AND IN LINE OF RIVERSIDE DRIVE CUT IS BETWEEN 160TH ST. AND 161ST ST. 38' SOUTH OF NORTH END OF WALL 4.34' ABOVE SIDEWALK.
DESIGN OF COORDINATES SHOWN HEREON IS THE INTERSECTION OF THE EAST SIDE OF SIDEWALK WHICH IS REFERRED TO AS MEDIAN & THE SIDE OF W. 158TH ST.
THE HOOKS GOOD, FAIR & POOR INDICATE CONDITION.
RAIL ELEVATIONS SHOWN ARE TOP OF RAIL.
CURB DIMENSIONS INDICATE WIDTH.

SURVEYED BY GUYATT, PERSACKER, O'NEILL - APR. 1935
DRAWN BY COLLARI, BROWN, URCHENKO
TRACED BY ALKOFF, FAGAN, SIMON, RIGGIO
CHECKED BY GEORGE WHYTE
FIELD CHECKED BY A. BROWN
TOPOGRAPHICAL ENGINEER - BOROUGH OF MANHATTAN
Chief Topographical Engineer

CITY OF NEW YORK
DEPARTMENT OF PARKS
TOPOGRAPHICAL DIVISION
TOPOGRAPHICAL MAP
PORTION OF
FORT WASHINGTON PARK
BORO. OF MANHATTAN
SCALE IN FEET
0 50 100
MAY 29, 1936

M-T-28-101

Figure A.16a. City of New York Department of Parks, Topographical Division. 1936. Topographical Map, Portion of Fort Washington Park, Boro. Of Manhattan. Sheets M-T-28-101. Scale as shown.

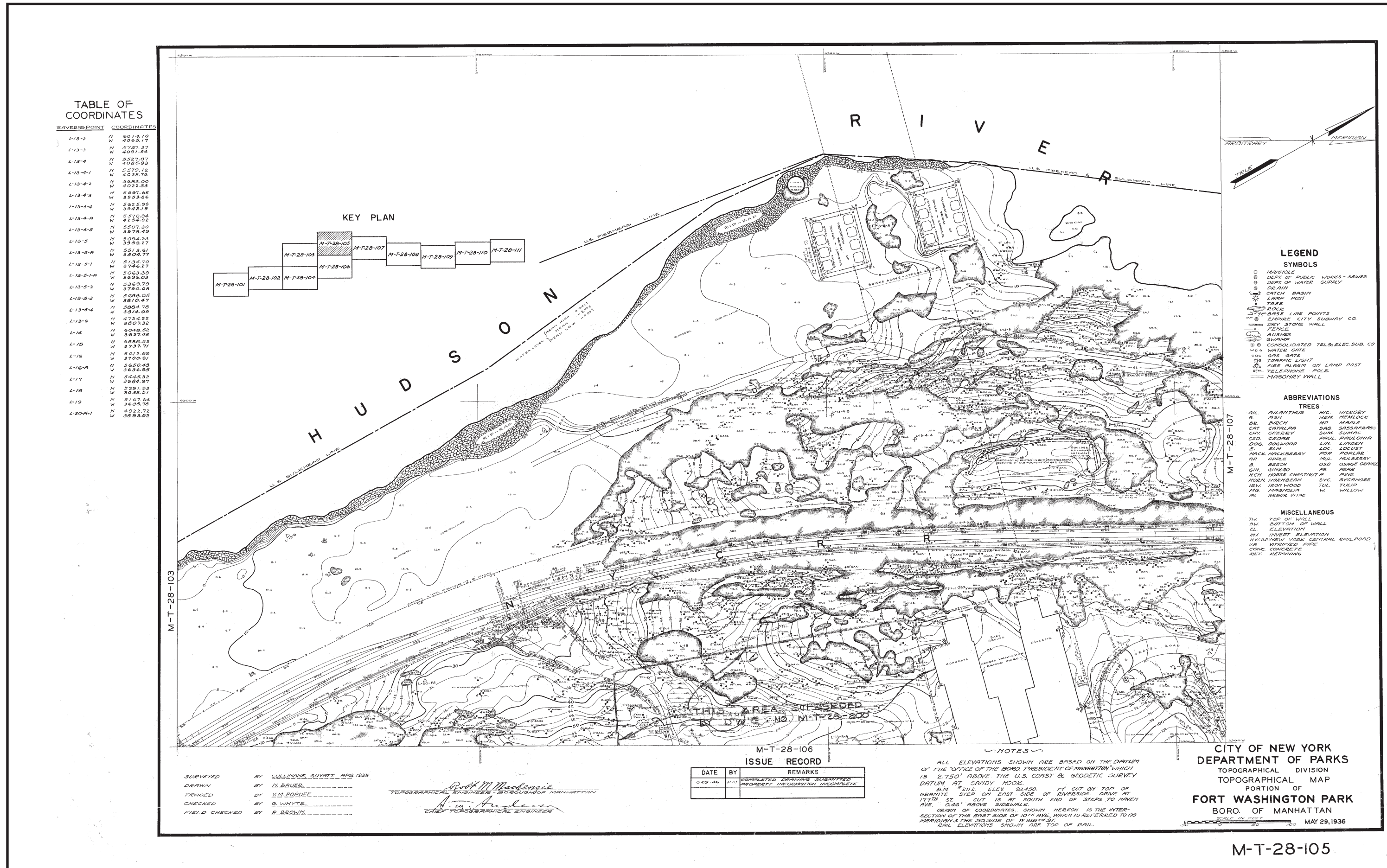
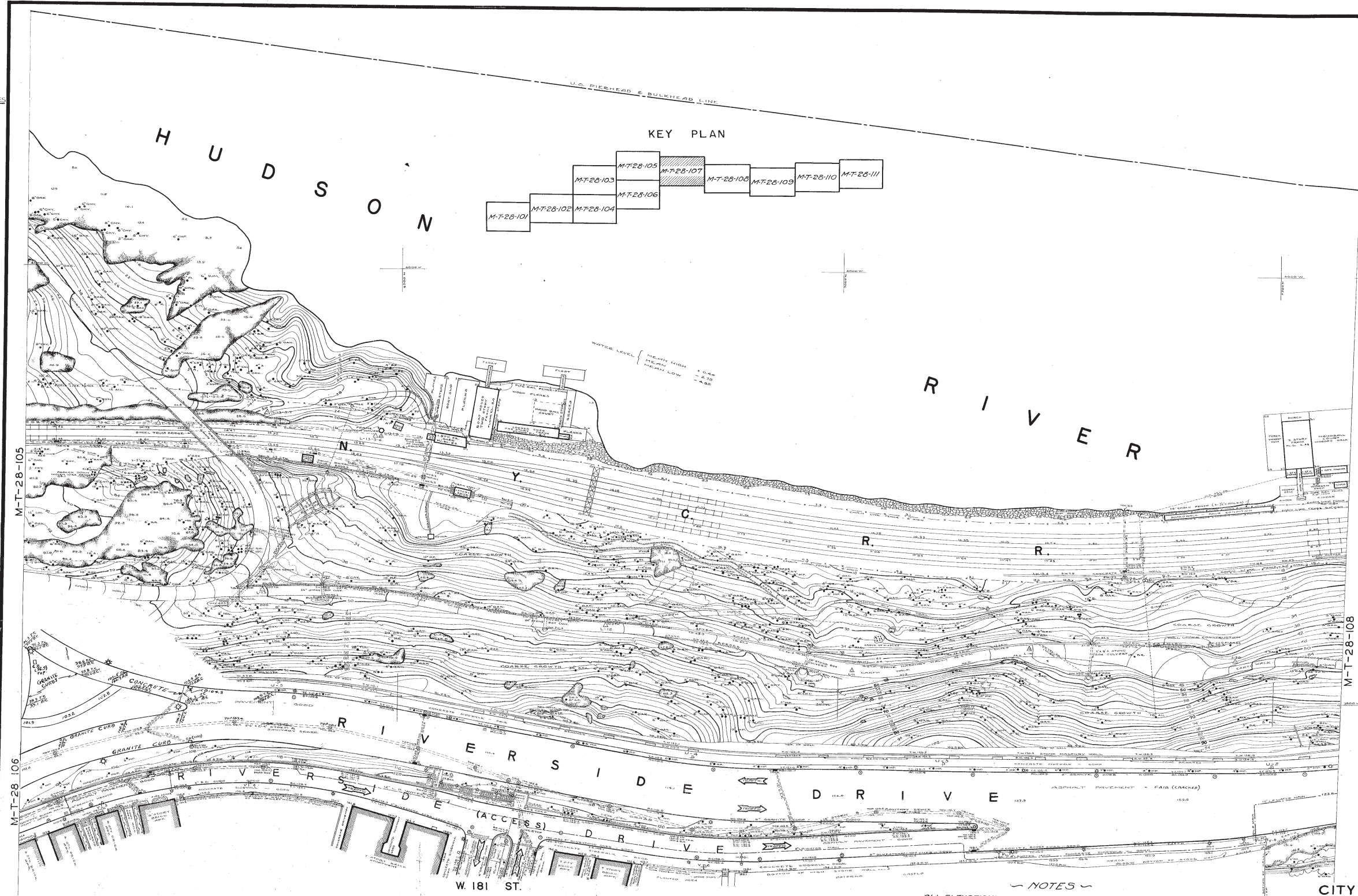


TABLE OF COORDINATES

TRAVERSE POINT	COORDINATES
L-9B	N 7454.02 W 3349.35
L-10	N 7419.14 W 3341.58
L-11	N 7016.50 W 3334.21
L-12	N 6737.91 W 3326.54
L-13	N 6345.07 W 3323.85
L-13-1	N 6307.93 W 3780.64
L-13-1-B	N 6477.50 W 3603.34
L-13-5-5	N 6211.59 W 3817.62
L-13-5-6	N 6472.19 W 3604.10
L-13-5-7	N 6347.51 W 3831.14
L-13-5-8	N 6271.07 W 3847.25
U-2	N 7459.41 W 3425.51
U-3	N 7122.73 W 3423.11
U-4	N 6855.77 W 3430.49
U-5	N 6363.92 W 3515.20
U-6	N 6155.65 W 3457.33
V-3	N 6161.77 W 3525.97
V-4	N 6331.52 W 3376.55
V-5	N 5624.53 W 3340.15
V-6	N 6851.56 W 3392.28
V-7	N 7201.15 W 3325.30
V-8	N 7492.34 W 3541.44
U-6 + 52.38	N 6741.17 W 3461.81



LEGEND

SYMBOLS

- MANHOLE
- DEPT. OF PUBLIC WORKS-SEWER
- EMPIRE CITY SUBWAY CO.
- DEPT. OF WATER SUPPLY
- DRAIN
- DRINKING FOUNTAIN
- LAMP POST
- TRAFFIC LIGHT
- FIRE ALARM
- FREE ALARM
- CONS. TEL. & ELEC. SUBWAY CO.
- CATCH BASIN
- WATER GATE
- GRASS GATE
- BAS. LINE POINT
- HEDGE
- DRY STONE WALL
- MASONRY WALL
- FENCE
- SEWER LINE
- WATER LINE
- ROCK
- BUSHES
- TRANSFORMER VAULT
- HYDRANT
- RIP-RAP

ABBREVIATIONS

TREES

A. ASH	LIN. LINDEN
AL. ALNANTHUS	LOC. LOCUST
AP. APPLE	MAP. MAPLE
B. BEECH	MUL. MULBERRY
BB. BIRCH	PAUL. PAULONIA
CAT. CATALPA	POP. POPULUS
CH. CHERRY	SAB. SABALPALE
DG. DOGWOOD	SYC. SYCAMORE
E. ELM	TUL. TULIP
GIN. GINKGO	W. WILLOW
HAC. HACKBERRY	AB. BITTER GUM
HIC. HICKORY	AB. APPLE

MISCELLANEOUS

TC. TOP OF CURB
AC. BOTTOM OF CURB
TH. TOP OF WALL
BN. BOTTOM OF WALL
VA. VERTICAL PILE
INV. INVERT ELEVATION
HP. HIGH PRESSURE
LP. LOW PRESSURE
NY.C.R. NY CENTRAL RAILROAD

SURVEYED BY GUYATT, HERMES, CROV. FEB. 1935
 DRAWN BY SANCHEZ, SCHEIN.
 TRACED BY POPP, ALEXANDER, MARTIN.
 CHECKED BY G. WHYTE.
 FIELD CHECKED BY R. BROWN.

Robt M. Mackenzie
 CHIEF TOPOGRAPHICAL ENGINEER

TOPOGRAPHICAL DIVISION, DEPARTMENT OF PARKS, CITY OF MANHATTAN

ISSUE RECORD		
DATE	BY	REMARKS
3-29-36	W.M.	COMPLETED DRAWING SUBMITTED
12-10-36	W.K.	PROPERTY INFORMATION INCOMPLETE
2-2-44	FF	REVEN REMOVED, RELOCATION OF OTHER ALONG RIVERSIDE DRIVE
		ALPH. PUT AND ACCESS ROAD PLETTED TOP W. OF RIVERSIDE DRIVE VOID

NOTES

ALL ELEVATIONS SHOWN ARE BASED ON THE DATUM OF THE OFFICE OF THE BORO. PRESIDENT OF MANHATTAN WHICH IS 2.250 FEET ABOVE U.S. COAST & GEODETIC SURVEY DATUM AT SANDY HOOK. EAST SIDE OF RIVERSIDE DRIVE AT PLACE LAFAYETTE, 1847 ST. 0.5 FT ABOVE SIDEWALK.

THE ORIGIN OF COORDINATES SHOWN HEREON IS THE INTERSECTION OF THE EAST SIDE OF 10TH AVE. WHICH IS REFERRED TO AS MERIDIAN & THE 50 SIDE OF W 181ST ST.

RAIL ELEVATIONS SHOWN ARE TOP OF RAIL.

GOOD, FAIR & POOR INDICATE CONDITION

CURB DIMENSIONS INDICATE WIDTH

CITY OF NEW YORK
 DEPARTMENT OF PARKS
 TOPOGRAPHICAL DIVISION
 TOPOGRAPHICAL MAP
 PORTION OF
FORT WASHINGTON PARK
 BORO. OF MANHATTAN

SCALE IN FEET
 0 30 60 120
 MAY 29, 1936

M-T-28-107

Figure A.16c. City of New York Department of Parks, Topographical Division. 1936. Topographical Map, Portion of Fort Washington Park, Boro. Of Manhattan. Sheets M-T-28-107. Scale as shown.

TABLE OF COORDINATES

TRAVERSE POINT	COORDINATES
R-1-D	N 13248.19 W 3540.56
R-2-D	N 12226.34 W 3725.56
R-3-D	N 12618.85 W 3725.36
R-4-D	N 12261.14 W 3715.28
MON. B	N 13442.53 W 3517.78
MON. F	N 13408.41 W 3675.85
MON. Y	N 13418.45 W 3661.57
H-1-A K-K-B	N 13436.88 W 3720.52
H-1-C	N 13530.17 W 4001.32
H-1	N 13404.51 W 3504.78
H-2	N 13163.26 W 3860.61
H-3	N 12010.16 W 3838.49
H-4	N 12725.62 W 3808.25
H-5	N 12504.45 W 3786.73
H-6	N 12256.69 W 3747.63
I	N 13268.99 W 3284.62
10	N 13041.76 W 3364.02
B	N 12023.77 W 3364.02
3-3	N 13361.84 W 3281.05
3-3-1	N 13501.54 W 3366.89
A	N 12846.92 W 3555.88
B	N 12560.55 W 3654.06
C	N 12075.00 W 3603.23
K-K-5	N 12085.41 W 3659.54
K-K-4-A	N 12236.85 W 3666.80
K-K-4	N 12336.86 W 3670.25
K-K-3-A	N 12462.83 W 3675.97
K-K-3	N 12587.87 W 3680.35
K-K-2	N 12992.24 W 3738.61
K-K-1	N 13332.92 W 3801.25
K-X	N 13542.21 W 3810.15

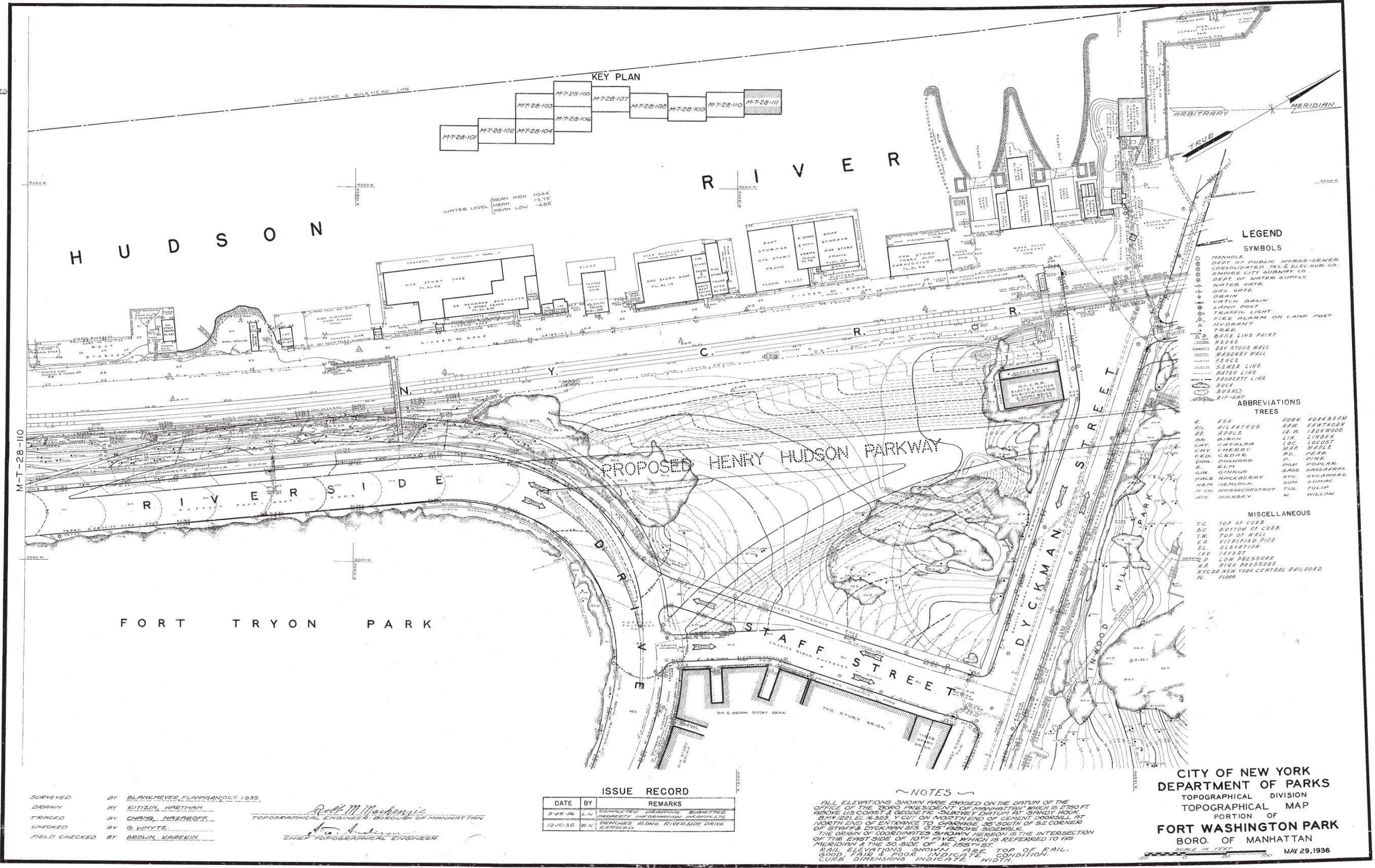


Figure A.16d. City of New York Department of Parks, Topographical Division. 1936. Topographical Map, Portion of Fort Washington Park, Boro. Of Manhattan. Sheets M-T-28-111. Scale as shown.

Appendix B

PLATES

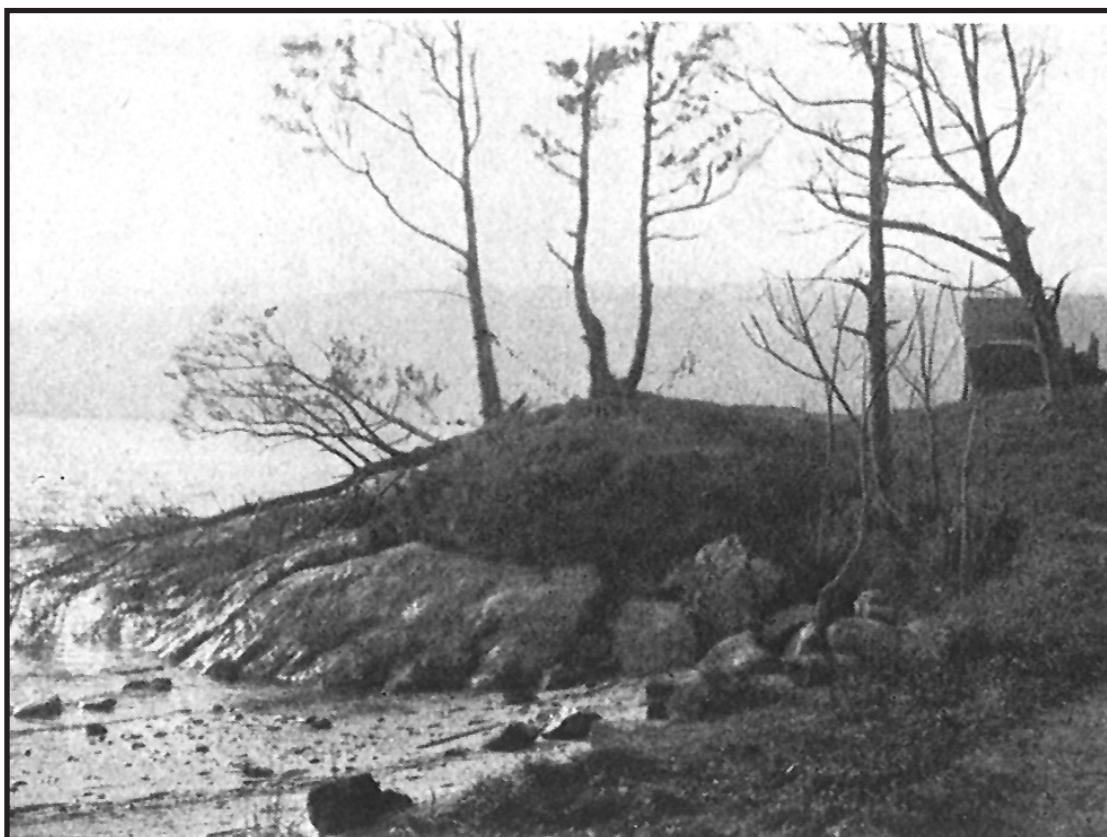


Plate B.1. Early 20th-century view looking northwest showing the site of the Revolutionary war-era cannon emplacement or demi-lune on Jeffrey's Hook [Resource 59] (Source: Bolton 1924:272 opp.).



Plate B.2. “Remains of the Redoubt at Jeffrey’s Hook” [Resource 60] (Source: “Stories and Pictures of the Hudson,” *The Knickerbocker or New-York Monthly Magazine*, September 1859), p. 231.



Plate B.3. View looking northwest showing the D.A.R. memorial erected at the northwest corner of the Revolutionary War-era American rifle redoubt in 1910. This photograph was taken sometime between 1910 and 1924 [Resource 61] (Source: Bolton 1924:272 opp.).



Plate B.4. Present-day view looking northwest showing the D.A.R. memorial erected at the Revolutionary War-era American rifle redoubt in 1910 [Resource 61] (Photographer: Damon Tvaryanas, October 2008) [HRI Neg. #08006/D3:039].



Plate B.5. Present-day view looking northwest showing the carved inscription “AMERICAN REDOUT 1776” on the principal boulder of the D.A.R. memorial erected at the Revolutionary War-era American rifle redoubt in 1910 [Resource 61] (Photographer: Richard Hunter, October 2008) [HRI Neg. #08006/D1:035].



Plate B.6. Present-day view looking northwest showing the carved inscription “FORT WASHINGTON CHAPTER D.A.R. 1910” on the boulder at the base of the D.A.R. memorial erected at the Revolutionary War-era American rifle redoubt in 1910 [Resource 61] (Photographer: Richard Hunter, October 2008) [HRI Neg. #08006/D1:033].



Plate B.7. “Rail-way Station at Fort Washington” (magnetic telegraph tower visible in back-ground) [Resources 54 and 57] (Source: “Stories and Pictures of the Hudson,” *The Knickerbocker or New-York Monthly Magazine*, September 1859), p. 226.



Plate B.8. View looking northwest showing location of telegraph tower at Fort Washington Point; iron bar embedded in bedrock visible at extreme right; underside of George Washington Bridge at top; Hudson River in distance [Resource 57] (Photographer: Richard Hunter, October 2008) [HRI Neg. #08006/D1:030].



Plate B.9. View looking southwest showing location of telegraph tower at Fort Washington Point; iron bar embedded in bedrock visible in foreground and beyond [Resource 57] (Photographer: Damon Tvaryanas, October 2008) [HRI Neg. #08006/D3:030].



Plate B.10. "Railway Cut at Fort Washington" [Resources 1 and 54] (Source: "Stories and Pictures of the Hudson," *The Knickerbocker or New-York Monthly Magazine*, September 1859), p. 237.

ARCHAEOLOGICAL ASSESSMENT: THE RECONSTRUCTION OF FORT WASHINGTON PARK
FROM 145TH STREET TO DYCKMAN STREET ALONG THE HUDSON RIVER



Plate B.11. View looking south from pedestrian bridge along the Hudson River Railroad through the cut at Fort Washington Point [Resource 1] (Photographer: Richard Hunter, October 2008) [HRI Neg. #08006/D1:041].

**ARCHAEOLOGICAL ASSESSMENT: THE RECONSTRUCTION OF FORT WASHINGTON PARK
FROM 145TH STREET TO DYCKMAN STREET ALONG THE HUDSON RIVER**



Plate B.12. View looking north from pedestrian bridge along the Hudson River Railroad from Fort Washington Point toward Inwood [Resource 1] (Photographer: Richard Hunter, October 2008) [HRI Neg. #08006/D1:045].

**ARCHAEOLOGICAL ASSESSMENT: THE RECONSTRUCTION OF FORT WASHINGTON PARK
FROM 145TH STREET TO DYCKMAN STREET ALONG THE HUDSON RIVER**



Plate B.13. View looking north along the Hudson River Railroad from Inwood Hill Park toward Spuyten Duyvil [Resource 1] (Photographer: Damon Tvaryanas, October 2008) [HRI Neg. #08006/D2:010].



Plate B.14. "Up the River from below Fort Tryon Station." This view shows the Hudson River Railroad, Inwood Station and buildings owned by the Thompson family all nestled at Tubby Hook Point [Resources 1, 78 and 79] (Source: "Stories and Pictures of the Hudson," *The Knickerbocker or New-York Monthly Magazine*, September 1859), p. 235.

ARCHAEOLOGICAL ASSESSMENT: THE RECONSTRUCTION OF FORT WASHINGTON PARK
FROM 145TH STREET TO DYCKMAN STREET ALONG THE HUDSON RIVER

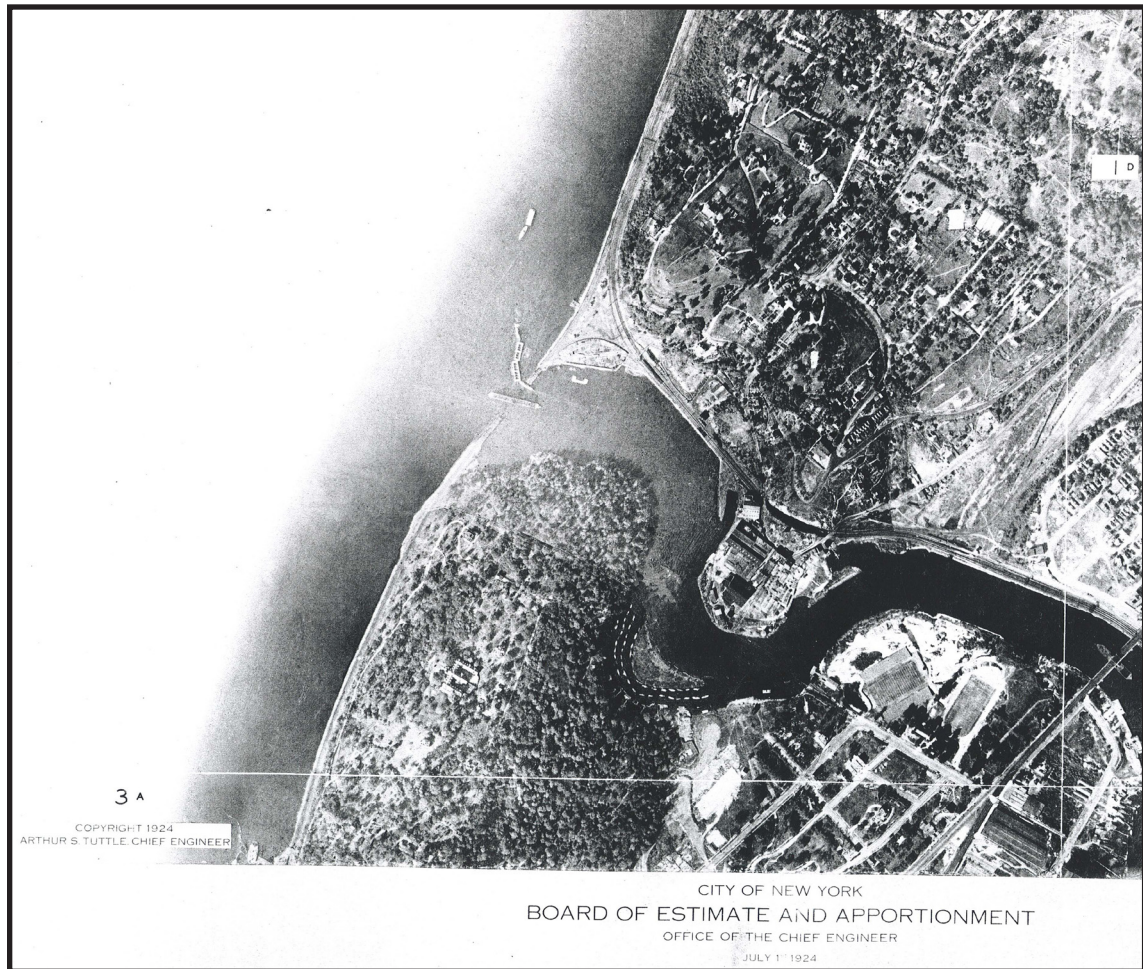


Plate B.15. Historic aerial photograph, 1924, of Inwood Hill; Hudson River and Hudson River Railroad at left; Spuyten Duyvil in center; note traces of late 19th-century estates at the north-western end of the west-facing hill slope [Resources 1, 89 and 90] (Source: City of New York 1924:Sheet 3A).



Plate B.16. Historic aerial photograph, *circa* 1930, looking east at Inwood Hill; Hudson River and Hudson River Railroad in foreground; Spuyten Duyvil at left; note traces of late 19th-century estates on the west-facing hill slope within the park in left center [Resources 1, 89 and 90] (Source: Renner 2007:106).



Plate B.17. Historic photograph, 1932, looking north northwest toward the George Washington Bridge from approximately 165th Street; Hudson River Railroad in foreground; along the shoreline from left to right are the Waverly Boat Club, the Fort Washington Yacht Club and a boathouse [Resources 1 and 43-45] (Source: Gottscho 1932).



Plate B.18. Historic photograph, *circa* 1937, looking northeast showing the construction the Henry Hudson Parkway in progress; note ranged along the riverfront, from bottom to top, the numerous boat clubs south of Dyckman Street, the Dyckman Street ferry terminal and pier, and the filled land soon to be incorporated within Inwood Hill Park [Resources 1 and 69-76] (Source: Sperr *circa* 1937).



Plate B.19. Historic photograph, *circa* 1937, looking northeast showing the Dyckman Street ferry terminal; the large building in the background is the Jewish Memorial Hospital [Resource 75] (Source: Sperr *circa* 1937).



Plate B.20. View looking east from the pier at the foot of Dyckman Street showing early 20th-century concrete footings of shoreline structures [Resource 76] (Photographer: Damon Tvaryanas, October 2008) [HRI Neg. #08006/D2:003].

Appendix C

TABLES

TABLE C.1. FORT WASHINGTON PARK, MANHATTAN - SUMMARY OF ARCHAEOLOGICAL RESOURCES							
Map ID #	Resource	Time Period	Closest Cross Street	Map References	Bibliographic References	Archaeological Potential	Historic Interpretive Potential
1	Hudson River Railroad (New York Central Railroad)	mid-19thc thru present		1860, 1867, 1879, 1916, 1925, 1934, 1936	French 1860:68; Jackson 1995:977; Renner 2001; Renner 2007:36, 75, 85, 106, 109, 110, 112	minimal	signage (?)
2	dock	late 19thc	W 138	1879		minimal	none
3	Manhattan Iron Works secondary building	mid-/late 19thc	W 142	1867, 1879	American Iron and Steel Assoc.	moderate	signage
4	Manhattan Iron Works foundry	mid-/late 19thc	W 143	1867, 1879	American Iron and Steel Assoc.	moderate	signage
5	boathouse (?)	mid-20thc	W 146	1934		minimal	none
6	New York Motor Boat Club	early/mid-20thc	W 147	1916, 1925, 1934	New York Times 1910	minimal	signage (?)
7	boathouse (?)	early 20thc	W 148	1916		minimal	none
8	dock	early 20thc	W 148	1916, 1925		minimal	none
9	boathouse (?)	early 20thc	W 148	1916, 1925		minimal	none
10	boathouse (?)	mid-20thc	W 148	1934		minimal	none
11	bath house and Manhattan bathing beach	early 20thc	W 149	1916, 1925		minimal	signage (?)
12	building	mid-20thc	W 150	1934		minimal	none
13	dock	mid-20thc	W 150	1934		minimal	none
14	building	mid-20thc	W 150	1934		minimal	none
15	scows and buildings	mid-20thc	W 150	1934		minimal	none
16	bath house and building	early 20thc	W 151	1916, 1925		minimal	none
17	dock with buildings	early 20thc	W 151	1916		minimal	none
18	dock with buildings	mid-20thc	W 151	1934		minimal	none
19	house boat, stand and building	mid-20thc	W 151	1934		minimal	none
20	depot and dock (152nd Street Station)	late 19thc	W 152	1860, 1867, 1879		minimal	signage (?)
21	dock, marine railways and buildings	mid-20thc	W 152	1934		minimal	none

22	Fleetwing Yacht and Ship Building Corp.	mid-20thc	W 153	1934		minimal	signage (?)
23	Cob Web Yacht Club	mid-20thc	W 153	1934		minimal	signage (?)
24	dock with buildings	early 20thc	W 153	1916, 1925		minimal	none
25	Washington Heights Bath	early 20thc	W 155	1916, 1925		minimal	signage (?)
26	dock	late 19thc	W 155	1860, 1867, 1879		minimal	none
27	Harris/Knapp building	late 19thc	W 158	1860, 1867, 1879		minimal	signage (?)
28	dock	late 19thc	W 158	1860, 1867, 1879		minimal	signage (?)
29	building	late 19thc	W 158	1860, 1867, 1879		minimal	none
30	Native American occupation focus	prehistoric	W 158	1924	Bolton 1924:5	minimal	signage (?)
31	docks, boathouses and buildings	mid-20thc	W 158	1936		minimal	signage (?)
32	building	early 20thc	W 158	1916		minimal	none
33	buildings	early/mid-20thc	W 158	1916, 1925, 1934		minimal	none
34	old foundation wall	mid-20thc	W 160	1936		minimal	none
35	New Congress Sugar Refinery/Lamont	late 19thc	W 161	1860, 1867, 1879		minimal	signage
36	Audubon Motor Boat Club and swimming	mid-20thc	W 161	1925, 1934		minimal	signage (?)
37	dock	late 19thc	W 163	1860, 1867, 1879		minimal	none
38	dock and boat houses	early 20thc	W 163	1916, 1925		minimal	none
39	Audubon Yacht Club	early/mid-20thc	W 165	1916, 1925, 1934		minimal	signage (?)
40	Wells Boat Club	early 20thc	W 165	1916, 1925		minimal	signage (?)
41	Stevens Boat Club	early/mid-20thc	W 166	1916, 1925, 1934	Renner 2007:85	minimal	signage (?)
42	Knickerbocker Canoe Club	early 20thc	W 167	1916		minimal	signage (?)
43	Waverly Boat Club	early/mid-20thc	W 167	1916, 1925, 1934	Renner 2007:85	minimal	signage (?)
44	Fort Washington Yacht Club	early/mid-20thc	W 168	1916, 1925, 1934	Renner 2007:85	minimal	signage (?)
45	boat house	early 20thc	W 172	1916, 1925	Renner 2007:85	minimal	none
46	boat house (?)	late 19thc	W 172	1860, 1867		minimal	none

47	carriage house (?)	late 19thc	W 172	1860, 1867		minimal	none
48	dock	late 19th/early	W 172	1860, 1867, 1879, 1916		minimal	none
49	boat house (?)	early 20thc	W 172	1916, 1925		minimal	none
50	dwelling/West End Hotel	late 19th/early	W 172	1860, 1867, 1879, 1916		minimal	signage (?)
51	dwelling and outbuildings	late 19th/early	W 173	1867, 1879, 1916		minimal	none
52	dwelling	late 19th/early	W 174	1860, 1867, 1879, 1916		minimal	none
53	building	late 19thc	W 174	1860		minimal	none
54	Hudson River Railroad depot and	late 19th/early	W 174	1860, 1967, 1879, 1916		moderate	signage
55	Ingham dwelling	late 19th/early	W 178	1860, 1867, 1879, 1916		moderate	signage (?)
56	Native American occupation focus	prehistoric	W 178	1924	Finch 1909a:68; Parker 1922:627;	moderate	signage
57	telegraph tower anchors	mid-19thc	W 178			none	signage
58	chevaux-de-frise	Revolutionary War	W 178	1776		minimal	trail and signage
59	demi-lune (cannon location)	Revolutionary War	W 178			minimal	trail and signage
60	American rifle redoubt	Revolutionary War	W 179	1776 (2), 1781, 1819,	Randel 1819; Phillips 1889:6;	high	trail and signage
61	D.A.R. monument	early 20thc	W 179	1936	Renner 1998	high	trail and signage
62	Carman dwelling	late 19thc	W 181	1860, 1867		minimal	none
63	boat house and docks	mid-20thc	W 181	1925, 1934, 1936	Renner 2007:36	minimal	none
64	springhouse	mid-20thc	W 181	1936		minimal	none
65	Dyckman Boat Club	mid-20thc	W 184	1925, 1934, 1936	Renner 2007:36	minimal	none
66	boat house	mid-20thc	W 186	125, 1934	Renner 2007:36	minimal	none
67	building (railroad-related?)	late 19thc		1860		moderate	none
68	abbatis (Fort Tryon outwork)	Revolutionary War		1781		minimal	trail and signage (?)
69	Clifford Canoe Club and Unity Motor Boat	mid-20thc		1934, 1936	Sperr c.1930; Renner 2007:110	minimal	none
70	boat house and dock	mid-20thc		1934, 1936	Sperr c.1930; Renner 2007:110	minimal	none
71	Weona Yacht & Canoe Club/Dr. George's	early/mid-20thc		1916, 1925, 1934, 1936	Sperr c.1930; Renner 2007:110	minimal	signage (?)

72	Spuyten Duyvil Boat Club/Inwood Canoe	early/mid-20thc		1916, 1925, 1934, 1936	Sperr c.1930; Renner 2007:109,	minimal	signage (?)
73	West's Boat House	early/mid-20thc		1916, 1925, 1936	Sperr c.1930; Renner 2007:109,	minimal	signage (?)
74	Interstate Boat Club	early/mid-20thc		1916, 1925, 1936	Sperr c.1930; Renner 2007:109,	minimal	signage (?)
75	Dyckman Street Ferry Terminal	early/mid-20thc		1916, 1925, 1936	Sperr c.1930; Renner 2007:89,	moderate	signage
76	bathing pavilion, pier and sanitation	early/mid-20thc		1916, 1925, 1936	Sperr c.1930; Renner 2007:110	moderate	signage
77	Native American occupation focus	prehistoric		1924	Beauchamp 1900:106; Finch 1909b; Parker 1922:626-629; Bolton 1924:7, 11, 13, 34 [opp.], 172, 177	moderate	signage (?)
78	Inwood Station	late 19thc		1860, 1879	Renner 2003	minimal	signage (?)
79	Thompson buildings	late 19thc		1860, 1879		minimal	signage (?)
80	gatehouse	late 19th/early		1879, 1916, 1925		minimal	none
81	dock	late 19th/early		1860, 1879, 1916, 1925		minimal	none
82	Willet/Isham dwelling ("Ursulian Terrace")	late 19th/early		1860, 1879, 1916, 1925		minimal	none
83	boat house with dock (?)	late 19thc		1860, 1879		minimal	none
84	Man dwelling and outbuildings	late 19th/early		1860, 1879, 1916, 1925		minimal	none
85	building	late 19thc		1860		moderate	none
86	dwelling and outbuildings	late 19th/early		1860, 1879, 1916, 1925		minimal	none
87	dock	late 19thc		1860		minimal	none
88	White/Rivera dwelling and outbuilding	late 19th/early		1860, 1879, 1916, 1925	Renner 2007:106	moderate	signage (?)
89	Thompson/Dovale dwelling and	late 19th/early		1860, 1879, 1916, 1925	Renner 2007:106	moderate	signage (?)
90	Thompson/McCreery dwelling and	late 19th/early		1860, 1879, 1916, 1925	Renner 2007:106	moderate	signage (?)
91	dock	late 19thc		1879		minimal	none
92	dock	early 20thc		1916, 1925		minimal	none