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# SHAFT SITE 19B

CEQR No. 89-117Q

NEW YORK CITY  
DEPARTMENT OF  
ENVIRONMENTAL PROTECTION  
CITY TUNNEL NO. 3, STAGE 2

ARCHAEOLOGICAL  
ASSESSMENT  
REPORT

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HISTORICAL  
PERSPECTIVES INC.



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ARCHAEOLOGICAL ASSESSMENT REPORT  
NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
CITY TUNNEL NO. 3, STAGE 2: WATER SHAFT 19B  
CEQR NO. 89-1770

Prepared

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## I. INTRODUCTION

As part of the City Environmental Quality Review process for the proposed construction of a concrete shaft at 5001-5301 Grand Avenue in Queens (CEQR #89-117Q), the New York City Department of Environmental Protection is responsible for an archaeological assessment of the site based on available soil borings and boring location plans. Figures 1 and 2 are locational maps of the Project Area. According to a letter from Jeremy Woodoff (11/21/88), the New York City Landmarks Preservation Commission (LPC) is concerned that the Water Shaft 19B Site "has potential to yield Native American remains."

Current plans for the shaft construction entail limited subsurface impact to Block 2610. As proposed, the forty-foot diameter shaft will be topped by a partially buried concrete chamber 70' x 35'. According to Mr. Walter Fitzpatrick of the Bureau of Water Supply and Wastewater Collection (1/17/89), the primary impact zone has been determined to be a 150' x 90' plot fronting on Grand Avenue (Figure 1). Only minor construction-related activities (vehicular traffic and temporary construction offices) will affect the remainder of the lot.

The following assessment, completed by Historical Perspectives, Inc., addresses the expressed concern for prehistoric sensitivity at the Shaft 19B Site. As detailed below, our evaluation is based in part on two recently completed borings, the only available site-specific subsurface data. In addition, an overview of the site's history and development is included.

There is substantial evidence of a prehistoric presence in the immediate neighborhood of the Shaft 19B Site. There is no question that the Project Area would have been an attractive location for Native American exploitation. It is very possible that the site was, at one time, part of a shellfish procurement/extraction station. To date, the site has not experienced severely destructive impacts to its potentially sensitive pre-twentieth century subsurface integrity. However, the soil boring data indicates that any possible culture-bearing stratum lies deeply buried beneath landfill and the current water table. In consideration of the extreme difficulties of archaeological testing under such conditions we do not recommend archaeological fieldwork be undertaken prior to the construction of the water shaft. However, we do recommend that an archaeologist be on site during the initial stages of the water shaft excavations to monitor the work according to a research program designed in consultation with LPC and the project managers.

## II. SITE DESCRIPTION

Shaft 19B Site is part of the Embayed Section of the Coastal Plain that extends along the Atlantic Ocean from North Carolina to Cape Cod. More than half the Plain is less than 100 feet in elevation and the Embayed Section lies underwater, with Long Island, formed by glacial moraines, as an exception (Eisenberg 1978:7).

Much of Long Island was glaciated during the Wisconsin episode of the Pleistocene. Deglaciation of the Project Area probably occurred between 15,000 and 16,000 years ago. The post-glacial environment was characterized by a spruce-pine forest, slowly giving way to a mixed hard-wood forest. Sea levels rose slowly as the environment warmed. Western Long Island slowly became covered with a mixed hard-wood forest, along with salt marshes, estuaries and bays. Diverse communities of plant and animal life established themselves in the rich environment as the warming process continued. By 3,000 years ago the southern New York coastline had reached the formation encountered by the first European settlers in the seventeenth century.

The earliest available maps and accounts of western Long Island and Queens depict the Project Area as part of the Maspeth and Newtown Creek estuary system (Figure 3). Referred to as the Cripple Bush, "the large swamp that spread out around the Bushwick shoreline, over toward Greenpoint and also around Maspeth Creek" was the largest swamp in Queens at the time of colonization (Stankowski 1977:16). There were several sizeable fresh water ponds in the area, including Scudder's (Scuttors) Pond that may have been approximately four blocks to the east of the Project Area (Stankowski 1977:16; Figure 4)

An 1891 contour map of Queens depicts the general project area as low-lying marshland. At that time one thin strip of irregularly-shaped solid land extended between Maspeth Avenue and Grand Avenue at what is approximately the shaft site block (Figure 5). This same topography is shown more clearly on the Queens Topographic Bureau's 1910 Final Maps, Section 13. As can be seen on Figure 6, between Maspeth and Grand and between 55th and 53rd Avenues the land rises from below a 5 foot elevation to small areas of 5, 10, and 15 foot elevations. Fifty-seventh Street appears to be the western edge of a solid, extended rise above the 5' elevation as well the immediately north of the eastern end of Maspeth Avenue. As will be detailed in the following sections, the Project Area was extensively filled during the early years of this century.

It is difficult to discern on today's artificial landscape the Project Area's low-lying, marsh conditions of earlier times. Currently, the relatively level, asphalt-surfaced site is used in part as a (fenced) Department of Sanitation storage/parking field and hosts a one-story metal-roofed shed fronting on Grand Avenue. See the Project Area 1988 Photographs 1 - 4.



### III. SITE HISTORY

#### Prehistoric Overview<sup>1</sup>

The prehistoric archaeological record of the north shore of western Long Island can be divided into four blocks of time: the Paleo-Indian Period (c. 13,000 - 10,000 years ago), the Archaic Period (c. 10,000 - 2,700 years ago), the Woodland Period (c. 2,700 - 500 years ago), and the European Contact Period (c. 500 - 300 years ago). To understand how Native Americans, during various time periods, exploited different environmental niches (e.g., an estuarine marshland bordering a stream, which is known to have been the Project Area's specific configuration at one time), it is necessary to understand each of these time periods and the settlement patterns associated with them.

#### Paleo-Indian Period (c. 13,000 - 10,000 years ago)

The Paleo-Indian Period encompasses the time period of the final disappearance of Pleistocene glacial conditions from the Northeast and the establishment of more modern Holocene environments. Tool kits of Paleo-Indian groups were oriented toward the procurement and processing of hunted animal resources, megafauna now extinct. A preference for high quality lithic materials has been noted and careful resharpening and maintenance of tools was common. The characteristic artifact of the Paleo-Indian Period is the fluted point. No fluted points have been securely associated with a site provenience in Queens County (Saxon 1978:252; personal communication: Edward Platt, 4/26/88, William Asadorian, 5/2/88 and Samuel Yeaton, 5/2/88). Paleo-Indians, apparently living in small, highly mobile groups, would not have left very much evidence of their activities. Adding to the difficulty of identifying such low profile resources is the rise in the sea level since 10,000 years ago, roughly 75 to 80 feet.

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<sup>1</sup> The following prehistoric period data is taken in large part from two manuscripts prepared by Historical Perspectives, Inc.: Betsy Kearns and Cece Kirkorian, "Phase 1A Archaeological Sensitivity Report, Resource Recovery Project, Maspeth Site," 1986. Ms on file with Parsons Brinckerhoff Quade & Douglas, Inc., New York; and, Betsy Kearns, Cece Kirkorian, Richard Schaefer, and Vincent Seyfried, "Phase 1A Archaeological Assessment Report, Department of City Planning, Site 4: West Astoria, CEQR 87-201 Q," 1988. Ms on file with the NYC Dept. of City Planning.

### Archaic Period (c. 10,000 - 2,700 years ago)

By about 7,000 years ago the modern distributions of both flora and fauna had been achieved. Environmental changes immediately before and after this stabilization are reflected in the Native American culture of the time, referred to as the Archaic. The Archaic Period is characterized by a series of adaptations to the newly emerged full Holocene environment. During this post-glacial time the melting ice no longer poured large amounts of meltwater into local rivers and streams, allowing the growth of marsh areas and mud flats.

The archaeological record does present a profile of the Archaic culture: small, multi-component sites usually situated on tidal inlets, coves, and bays, particularly at the heads of the latter, and at fresh water ponds on islands along the New York coastline. By the Late Archaic stage, coastal sites with the exploitation of shellfish resources are heavily represented (Kearns and Kirkorian 1986:9). The Late Archaic Wading River complex, based on four archaeological sites on the north shore of Suffolk County, was found on the edge of a salt marsh, on the dry ground that ranges from only 2 to 7 feet above mean high water (Wyatt 1982:71).

### Woodland Period (c. 2,700 - 500 years ago)

A pronounced warm and dry period set in and lasted from c. 5,000 to 3,000 years ago and the Woodland Period can be correlated with this dramatic shift in local climates and environments. Continued sea level rise also made many areas bordering Long Island Sound the sites of large brackish marshes which were especially high in productivity. Important areas for settlement included the major river floodplains and estuarine marshes.

The archaeological evidence from Woodland Period sites indicates a strong preference for large scale habitation sites to be within very close proximity to a major fresh water source, e.g., a river, a lake, an extensive wetland, and smaller scale extractive-functioning sites to be situated at other resource locales, e.g., quarrying sites, butchering stations, shell gathering localities. During this Period plant and processing tools became increasingly common and seem to indicate an intensive harvesting of wild plant foods that may have approached the efficiency of horticulture, which itself appeared during the second half of the Period. The advent of horticulture is tied in with the introduction of ceramic containers which allowed for more efficient cooking of certain types of food and may also have functioned as storage for surplus food resources.

### European Contact Period (c. 500 - 300 years ago)

Anthropologists and linguists agree that when Europeans arrived

in the Queens area the Native Americans were Munsee-speaking Delaware Indians. The impact of the European colonization drastically altered the life-styles of Native Americans. With the introduction of metal and glass, aboriginal tools and artifacts were slowly replaced. The shoreline location for late prehistoric sites suggests that it is an extension of the settlement patterns utilized during earlier periods. Alternative hypotheses suggest that the desire to produce wampum for economic exchange resulted in many Long Island groups settling year round along the coast. It is also thought that this same motivation may have been the reason for the adoption of maize as a stable resource base. Wampum manufacturing sites have been reported from the western part of the island (Ceci 1982:9).

Daniel Denton reported, in 1660, that the diseases introduced by the white men had already reduced the Indian population in this area of Long Island from six to two villages. As described by Denton, the Native Americans at this time lived principally by hunting, fishing, fowling and the cultivation of corn. He reported that the Indians re-located their "small moveable Tents" two or three times a year going to their principle quarters where they plant their corn, hunt, and fish (Denton 1902:45).

Archaeologists not only rely on past environmental components to assess site potential but they also rely on tales of "Indian relics," ethnographic accounts such as Denton's quoted above, and published archaeological reports. The Native American presence in Queens has been re-constructed through a compilation of these sources.

Writing in the mid-nineteenth century, Riker reported that "a scattering of Indians remained for a number of years, some of whom had their wigwams at Mespeth Kills" (Riker 1852:73). Riker continued:

The rude implements which they used in the pursuits of peace and the prosecution of war, are the only existing mementoes of the red men of Newtown. These consist chiefly of stone axes and arrowheads, and arrows of reed. The late Judge Furman, of Maspeth, had a handsome collection of them, procured in that neighborhood (Riker 1852:73).

It is most probable that Furman recovered at least a portion of his collection from his own estate that stretched from Maspeth Creek south to the Bushwick line and east to Maspeth Village, including the Shaft 19B Site.

Reginald Bolton's early twentieth century research on the Indian past of New York City reported that at the time of European influx the Rockaway Chieftaincy stretched diagonally across Long

Island from the East River to Jamaica Bay. He placed large Indian villages along the Newtown Creek inlet and in Maspeth.

Maspeth creek, which extends in a northeasterly direction between the Laurel hill and Linden hill sections as far as Maspeth, perpetuates the native name of the entire inlet, and was probably applied to the native station as well.

The position of that settlement is indicated by the discovery from time to time of native artifacts upon the Maspeth hills. The situation also appears to have been desirable for native residence, as the creek provided fresh water at its source, and the elevation afforded a wide view over surrounding country. A village-site might have been looked for in the vicinity of Borden avenue and Willow avenue. [Borden Avenue is slightly more than one mile northwest of the Shaft 19B Site.] Neighboring territory lying south and east of this station was desirably sloping and well-drained land upon which the native doubtless had their cultivated clearing (Bolton 1922:174; see Figure 7).

Robert Grumet's more recent research into the verification of Indian sites and names in New York City states that although a "wigwam at Mashpathkills" was noted in July of 1669 and past investigators have suggested that Maspeth was also the name of a Canarsee division that had its settlements scattered above the wetlands of Newtown Creek the existence of such a division or village at Maspeth has not been revealed in the surviving documentation (Grumet 1981:29). Instead of an established village there could very well have been a concentration of temporary and seasonal specialized procurement camps on the hillocks bordering the confluence of the two streams, that is, the Indians were collecting shellfish and other aquatic food resources in the area. Grumet does place Indian planting fields in the study area between Grand Avenue and Maspeth Avenue and an Indian trail along the path of Grand Avenue which borders the Shaft 19B Site (Grumet 1981:71; Figure 8).

The Archaeological History of New York, published in 1920, noted "a village site at the head of Newtown Creek" and labeled it as Queens County No. 13 (Parker 1920). It is very possible that Parker's identification of this village site was dependent upon the same nineteenth century sources that guided Reginald Bolton and does not represent a separate resource.

Ralph Solecki, retired Columbia University professor active in Queens archaeology since the 1930s, has mapped many of the sites that he knows were extant in the Borough of Queens prior to the

1940s. As can be seen on Figure 9, Solecki and the Committee on American Anthropology of the Flushing Historical Society identified a concentration of prehistoric activity fronting on the confluence of the Newtown and Maspeth Creeks. More precisely, Solecki stated that "A large site was situated near the Furman burial plot on Maspeth Creek, an arm of Newtown Creek." The burial plot is approximately 1,250 feet north of the Project Area. Lithic materials were collected from this then vacant land by Solecki, his associate Stan Wisniewski and Michael Sarmuksnis. Their collection field, the sandy knolls among the low-lying land on either side of Shanty Creek, a now extinct watercourse approximately 2000 feet northwest of the Project Area, was being filled and graded at the time of their field visits. These investigations and findings have been summarized by Wisniewski:

The region between Maspeth Avenue and the creek to the north [Maspeth Creek], and the sloping ground south of Maspeth Avenue produced hundreds of artifacts when Ralph Solecki and I visited the area in the early 1930s. At that time, Maspeth Avenue cut through a sandy embankment in this vicinity, and seemingly terminated at the on going dumping that was taking place on the swampy ground east of Furman's Island. [The filling in of the Shanty Creek marsh northwest of the Shaft 19B Site.] A variety of Archaic type projectile points, as well as knives and scrapers, surfaced during the several years we explored this area. A small shell midden existed on a bluff south of Maspeth Avenue, and a small pit of oyster shell was excavated on a slope north of the Avenue, none of which, to my knowledge, produced anything of significance. Only two small ceramic sherds of Indian origin were found during this period - indication of a rather short occupation by the Woodland Period people. A round, well worn grinding stone indicates the presence of agriculture in the area. A notched stone adze and a broken gouge were signs that dugouts were made and used in the nearby creek waters (Wisniewski 1986:14).

This collection locus, north and northwest of the Project Area, is confirmed by a review of Solecki's site photographs, held by The Long Island Division of the Queens Borough Public Library (Merrick Avenue, Jamaica). Further intensive fieldwork of the elevated knolls dotting the low-lying Furman's Island area [northwest of the Project Area] was halted by the continued filling of the shoreline (Solecki, personal communication, 4/28/86).

Remains of a Contact Period site were recovered by Dr. Solecki in this same Maspeth Creek area, less than 900' north of the Project Area. As reported in the Journal of the Washington Academy of Sciences, a seventeenth century fireplace and associated artifacts were excavated 30' south of Maspeth Avenue between Maspeth Creek and the now extinct Shanty Creek "in line with Milton Street" [56th Street] (Solecki 1948:327). In and around the buried yellow brick and "flagstone" fireplace were found both Native American and Colonial materials, including "two pieces of reddish-clay pipe bowls, which seem to have been fashioned in crude imitation of the European Kaolin pipes," red and black flint debitage, a "broken reject artifact of black flint," kaolin pipestems, gunflint, hand-wrought nails, and blue ceramic sherds (Solecki 1948:327). The location of this Contact Period site corresponds to the elevated strip of land that stretched between Maspeth Avenue and Grand Avenue as seen on the 1891 contour map and discussed in the Site Description section (Figure 5).

Inquiries directed to the New York State Museum yielded information only on site #4536, a prehistoric site roughly located at the eastern terminus of Maspeth Avenue, directly north of the Project Area. This site location has not, however, been field verified by the Museum and is derived from Parker's imprecise Queens County #13 citation. See Appendix 1.

The New York State Office of Parks, Recreation, and Historic Preservation responded to our request for a site file search noting one historic site within the one mile search area: A081-01-0108, the Onderdonck House situated near the Brooklyn Queens boundary.

## Historical Overview<sup>2</sup>

The first Europeans to inhabit that part of Long Island now known as Queens were fur traders under the administration of the Dutch West India Company who came in the early years of the seventeenth century. But toward the middle of that century the lands were opened to settlement by both Dutch and English. In 1642 "Reverend Francis Doughty received a patent to Mispot or English Kills ["Kill" is the Dutch word for a small stream or tidal inlet] at the head of Newtown Creek" (Queens Borough Library, Bulletin #650, 1939). Doughty was granted 14,000 acres "including practically all of the present Long Island City and Newtown" which would have included the Shaft 19B site (Von Skal 1908:24). After a dispute with Governor Kieft, Doughty resettled in Flushing (Von Skal 1908:24). In 1643 the displaced local Indians attacked the settlement at Maspeth and the European settlers fled to Manhattan (Erlich 1979:8).

As mapped during this seventeenth century period, and into the nineteenth century, the Shaft site was part of a low-lying marshland bordering Maspeth Creek, a tributary of Newtown Creek. Newtown Creek opens into the East River and is now part of the boundary between Queens and Brooklyn. Currently the project site is part of the neighborhood area labeled Maspeth, which does correspond to the original Doughty village. Maspeth "is derived from both the English and Dutch versions of Mespachtes or Maspehtes, which approaches the idiom of the aborigines. The names 'Mespat' and 'Mispat' appear in seventeenth century writings and maps (Grumet 1981:28-29).

The ownership and control of the Maspeth Kills meadows was hotly contested between local villages during the seventeenth century as

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<sup>2</sup> The following historical period data is taken in large part from a manuscript prepared by Historical Perspectives, Inc.: Betsy Kearns and Cece Kirkorian, "Phase 1A Archaeological Sensitivity Report, Resource Recovery Project, Maspeth Site," 1986. Ms on file with Parsons Brinckerhoff Quade and Douglas, Inc., New York. Vincent Seyfried, contributing author to the 1986 report and to this report, is author of the seven volume The Long Island Railroad, a Comprehensive History, B.R.T. Trolley Lines in Queens County, 300 Years of Long Island City, Queens, a Pictorial History, and served as a consultant on the recently published A Research Guide to the History of the Borough of Queens. Mr. Seyfried has personally indexed over 1200 early twentieth century photographs of Queens as well as 35 years of news articles pertinent to the development of the borough.

the salt hay harvested from the low land was valuable animal fodder (Stankowski 1977:4). One of the earliest individual landowners in the area of the Shaft site was James Way, an Englishman, who settled at the "English Kills" about 1650 (Riker 1852:82).

The Way farmhouse, located just north of what is now Maspeth Avenue and west of the LIRR tracks, became part of the Mott family holdings which were eventually sold to the Furman estate in 1815 (Riker 1852:378). Garritt Furman was a successful lawyer and bought the Maspeth site as part of a 119 acre tract for his summer retreat. His holdings stretched from the original Way house east to Maspeth Village and south to the Brooklyn line, encompassing the Shaft site (Figure 10). At approximately 56th Street (earlier known as Milton Street) and Maspeth Avenue, Furman erected an imposing Federal style mansion (Figure 11). The location of this residence corresponds to a natural elevation - the southerly extension of the knoll just north of Maspeth Avenue (Figure 5).

In April 1836 Judge Furman laid out and opened Maspeth Avenue to serve as a means of approach to this mansion, hitherto accessible only by water. The new road ran from the junction of 58th Street and Maurice Avenue westward over marshy ground to the creek shore. The new road was also a commercial venture: The Maspeth Avenue and Toll Bridge Company. A bridge, resting on stone piers, was erected over Newtown Creek and the road was continued on the Brooklyn side; a toll was collected at the bridge (Stankowski 1977:31).

William Furman inherited the Maspeth property upon his father's death in 1848. William, Supervisor of the Town of Newtown for the years 1845-1855, made the family estate nationally famous by laying out a fish hatchery on his land south of Maspeth Avenue and immediately west of his residence. He dug new channels in the low land and directed the water from numerous springs in the area into the channels. In its final form, the trout hatchery took the shape of the letter S drawn twice and connected end on end. Furman tried to make the spawning race as "natural" as possible by duplicating mountain conditions and scenery. Every effort was made to screen off the stream from invading water rats and human poachers. By 1879 the Maspeth Trout hatchery was nationally known and Furman became famous as the leading exponent of natural breeding. During this period the influx of visitors was often more than Furman could accommodate, and he began to discourage parties of the curious who came out on the horse cars from Brooklyn and used his estate as a picnic ground and sight



seeing attraction.<sup>3</sup> The Maspeth hatchery fell into decline during the 1880s and was abandoned at Furman's death in 1893. On the 1915 Hyde Atlas it is possible to see the remnants of these channels, Figure 12.

Another wealthy and prominent neighbor of the Furmans was James Maurice, a lawyer, State Assemblyman, and United States Congressman. In October 1840 he bought eight acres of land from the Furmans and built a mansion on the south side of Maspeth Avenue on approximately the block between the "mapped" 53rd and 54th Streets, directly north of the Project Area. The location of his mansion can be seen on Dripps 1852 survey, Figure 10. After Maurice's death in 1884 his home was demolished.

In 1869 the Shaft site area became suddenly more accessible and open to the outside world. The South Side Railroad which had been operating for two years between Patchogue and a Brooklyn terminal on Bushwick Avenue bought the right of way of the New York and Flushing Railroad between Laurel Hill and Long Island City along the bank of Newtown Creek. In that year the South Side built a one-mile connection from its own track in Maspeth along the eastern edge of the Furman tract at 57th Street, across the old town dock at Maspeth Creek and along the north bank of the creek to a junction at Laurel Hill. The railroad tracks came within eighty feet of Furman's mansion. He sued the railroad company for damages, receiving a \$2250 award.

By 1876 the Maspeth bridge over Newtown Creek had become dangerously dilapidated and the Brooklyn authorities ordered the bridge closed and dismantled. This left Maspeth Avenue a dead-end street. In the same year Grand Street in Brooklyn was extended over the creek into Queens County, striking the old turnpike road in Maspeth village. All the commercial traffic was now diverted over the new Grand Street Extension to the south of Furman's land and bordering the shaft site. The trolley line was started on Grand Avenue, initially as a horse car line of the Grand Street and Newtown Rail Road.

The east end of the Furman tract, including the shaft project block, was sold by the family in 1899 to Lowell M. Palmer, a Brooklyn developer who planned to transform the acreage into an industrial park. He organized a syndicate consisting of himself, the Havemeyer sugar trust, and Cord Meyer Jr., a wealthy real estate investor, to finance the necessary improvements to the

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<sup>3</sup> The description of the hatchery enterprise was compiled by Vincent Seyfried from the following newspaper accounts: Hempstead Inquirer, June 5, 1868; Brooklyn Times, July 20, 1868 and February 5, 1870 and July 30, 1872.

meadow land. Palmer realized that Maspeth Avenue as a through highway was a dead issue and that the industrial park would have to be served from Grand Avenue a third of a mile south of Maspeth Avenue. His most marketable asset was the freight tracks of the Long Island Rail Road running along his property on the east for over 1800 feet. The 1903 and 1908 E. Belcher Hyde Atlases show this Palmer acreage, Figure 13. The Belgian block 57th Street roadbed and the LIRR crossing can be seen on a c.1923 photograph, Figure 14.

The Queens Topographical Bureau had completed its mapping of the Maspeth area in 1908 and had laid down "paper" streets and assigned block numbers (Figure 6). In March 1911 the syndicate petitioned the city to exempt the Palmer tract from proposed street opening proceedings for at least 53rd and 54th Streets so that the site would not be cut up into slices and made unusable as an industrial park. In June 1912 the three partners appeared personally before Borough President Connolly and persuaded him to make the desired concessions by painting a glowing picture of the projected terminal. Their plans estimated a \$10,000.00 expense for filling and railroad sidings.

World War I slowed the development of the site. However, in the early 1920s the Palmer Waterfront, Land & Improvement Company renewed its efforts to attract tenants. In the summer of 1925 the Long Island Rail Road was induced to lay team and yard tracks from its Montauk Branch at 57th Street into the tract between Maspeth Avenue and Grand Avenue. These approach tracks fanned out into 14 spurs designed to service industrial plants, a small number of which had located along the Grand Avenue frontage. This team track yard can be seen on Figure 15, covering the major part of the Shaft site. Requests for construction plans, photographs, surveys, borings, acquisition lists, damage maps, etc. were directed to the corporate offices of the Long Island Rail Road. Jim Burns of the Jamaica office kindly searched the archival files for material relevant to the Grand Avenue team yard. He was unable to locate any information (Jim Burns, personal communication, 2/6/89). Vincent Seyfried, Historian for the LIRR, was also interviewed regarding specific data on this team track yard (V. Seyfried, personal communication, 1/26/89).

Shortly after this spur installation the Queensboro Chamber of Commerce published a glowing report, "Maspeth Developing as Important Industrial Section", on the positive attributes of the site area, including a list of established businesses and roadways (Figure 16). At this time, although neighboring parcels had been developed, the Shaft 19B Site only supported the spur tracks and vacant land. The next decade brought rapid construction to the industrial park, including the Star Corrugated Box Co., the

Circle Wire & Cable Co., and the Turner Construction Co. The Atlantic and Pacific Tea Co. (the "A & P") occupied the one- and two-story warehouse immediately east of the Site. But, the Project Area hosted only team spur tracks and a small one-story frame structure situated on the Grand Avenue frontage. By 1940 the Aluminum Company of America occupied the large, irregularly-shaped tract immediately west of the Project Area - currently Lot 118 occupied by a warehouse and the M & J Die Co. In 1955 this same structure was occupied by the A & P Tea Co. Also by 1955, the earlier A & P structure, to the east of the Project Area, housed the Great Eastern Packing & Paper Stock Co. This structure is extant, Photograph 3. At the same time the Project Area remained a freight yard.

There are no construction/alteration/demolition records for the Project Area in the Borough's Building Department Blocks and Lots Files. However, by 1955 the Hyde Atlas (Ward II Plate 28) does show, in addition to the spur tracks, three small one-story structures along Grand Avenue - 1 frame, 1 brick, and one non-coded. The team tracks were removed and the Project Area, now designated as Lot 119, was paved with asphalt and became, in part, a parking field for the Department of Sanitation.

It is most likely that the team tracks and the subsequent small scale buildings erected on the site are post-landfill and, therefore have had no intrusive impacts on any possible deeply buried prehistoric resources.

#### IV. SITE POTENTIAL FOR PREHISTORIC RESOURCES

There is substantial evidence of a prehistoric presence in the immediate neighborhood of the Shaft 19B Site. However, it has been impossible to precisely locate on the modern landscape Bolton's village site and references to artifacts from the Maspeth Hills are not geographically definitive. The Solecki and Wisniewski sites were found just north of the Project Area on terrain similar to the pre-1900 topography of the DEP site.

Located as it is near a possible prehistoric/contact settlement and within a marsh, meadow and mud flats biome, the Project Area would have been a good location for temporary, special purpose camps. The New York State Museum has determined the Project Area has a "higher than average probability of producing prehistoric archaeological data" (B. W., personal communication, 1/9/89). This evaluation, reprinted in full in Appendix 1, is based on two factors:

A recorded site is indicated some distance away but due to the margin of error in the location data it is possible the site actually exists in or immediately adjacent to the location.

Probability rating is based on the assumed presence of intact original deposits, possibly under fill, in the area. If near water or if deeply buried, materials may occur submerged below the water table.

The Shaft 19B Site could provide crucial information on prehistoric culture, chronology, lifeways, early Indian-white relations and general processes of cultural change - filling in the lacunae in the archaeological record for southern New York, and in the sometimes contradictory and sometimes biased accounts of the early historic European writers (Kearns, et al 1987:23).

## V. SOIL BORING ANALYSIS

Used for archaeological purposes, soil borings can provide a kind of remote sensing to predict possibilities of what may lie below ground surface. An archaeological analysis of soil boring data to determine the depth of fill, presence/absence of a peat lens, water table level, and the presence/absence of anomalies that might be indicative of cultural remains and/or the destruction of such resources was specified by LPC.

Soil boring information was sought through the Building Department Blocks and Lots Files, the General Service Administration/Subsurface Exploration Section, the Borough Topographic Bureau, and the Long Island Rail Road archives but none was located. Field logs on two Shaft 19B Site borings conducted in December 1988 by Warren George Inc. for the City DEP were supplied by Walter Fitzpatrick's office (Appendix 2).

The 1988 borings were taken within 150' of the Grand Avenue curb in the middle of the project lot (Lot 119). Each of the two soil borings noted an extensive overburden of fill. Andrew Silver, on-site geologist inspector for the City, added information from his field notes (personal communication, 1/12/89 and 1/26/89). A summary of the pertinent information follows:

Test Q19B - water hole  
5 - 7' wooden planks, solvent smell  
10 - 12' ash (man-made) layer  
15 - 17' black fine sand and clay with fibrous organics [note: This is not a peat lens.]

Test Q19B - A  
0 - 27' fill, sand  
[note: No peat lens recorded.]

Average water table: 8.8 - 9.2' below grade

The fill is well-graded and is apparently deposited directly on top of glacial deposits. Without grain analysis it is difficult to precisely say at what exact depth the fill ends.

Mr. Burns of the LIRR was queried on the presence of an ash layer at the old LIRR site. Coal and coal by-products were a plentiful and favored fill material earlier in this century and the rail crews often used excess ashes to clear snow off the tracks (personal communication, 1/26/89).

Consideration must be given to the adverse compaction impacts of the overburden mantle and the stationary railroad cars. There

is no definitive method to calculate the degree of impact on archaeological artifacts by 12 to 27' of fill but, according to Bernie Butler of the NY DOT Soils Division, underlying sandy or granular soil types, as on the Shaft 19 Site, do decrease compaction problems. Conversely; stationary heavy equipment (e.g., rail cars) creates more compaction problems than transient traffic (Mary Ivey, personal communication, 2/24/89). The current asphalt parking surface acts as an anti-compaction pad but the thickness of the asphalt layer, which is integral to the degree of protection it affords, is not known. Also not known is the impact of the parked Department of Sanitation trucks. We can only speculate that due to the apparent homogeneity of the landfill, any potential prehistoric resource stratum would have experienced some degree of compression but only limited vertical distortion.

## VI. CONCLUSIONS AND RECOMMENDATIONS

There is substantial evidence of a prehistoric presence in the immediate neighborhood of the Shaft 19B Site. There is no question that the Project Area (Block 2610, Lot 119) would have been an attractive location for a Native American camp. Data to help close the gap in the archaeological record of western Long Island's prehistoric past may very well lie beneath the surface of the project parcel. ~~Although the site has not experienced an extensive and/or intrusive construction history,~~ during the development of the area as an industrial park the site was greatly altered by the introduction of extensive amounts of landfill. So it must be accepted that any potential resources lie far below the current ground level and below the current water table.

The two borings indicate that the juncture between what the soils engineers classify as fill and presumably the pre-1900 surface is anywhere from 12 to 27' below grade. Ground water was encountered on an average at 8.8 - 9.2' below grade. This means that it is probable that archaeologists excavating the Shaft 19B Site would need a 12 - 27 foot deep trench, a trench which would be half full of water. If dewatering procedures were employed, there is still the major problem of disposal of the water continually filling the trench. Concomitant with dewatering would be the necessity to sheet the sides of the trench to prevent wall collapse.

In consideration of the extreme difficulties and expense of archaeological testing under such conditions, we do not recommend archaeological fieldwork be undertaken prior to the construction of the water shaft. However, we do recommend that an archaeologist be on site during the initial stages of the water shaft excavations to monitor the work to a depth of approximately 5 - 7 feet below the termination of the landfill. In consultation with LPC and the DEP project managers, the monitoring archaeologist would be responsible both for certain field procedures (such as examining the exposed soil profiles and backdirt, photo recording the excavation process, and soil screening when indicated) and for notifying the LPC archaeologist if prehistoric material is recovered.

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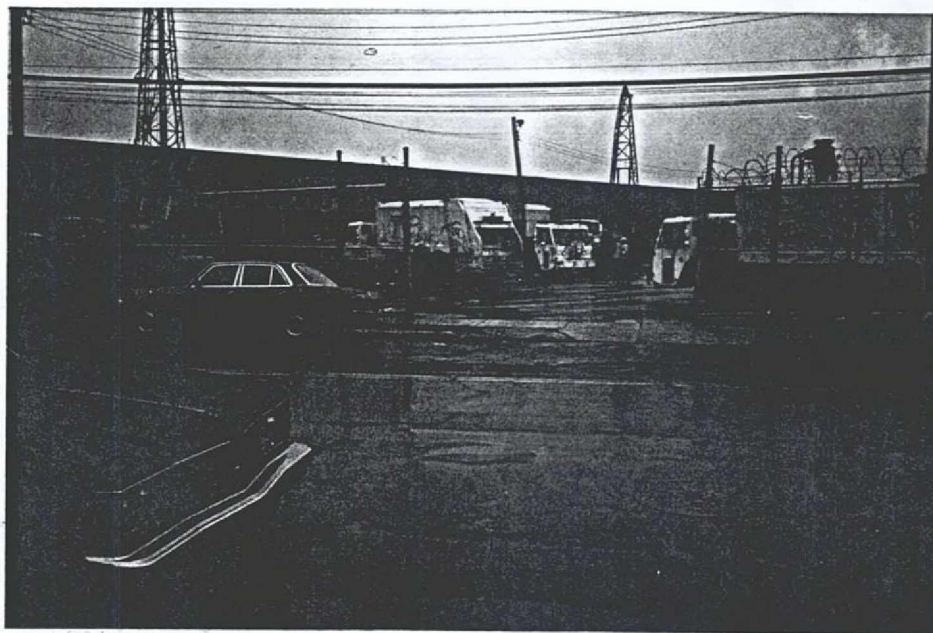
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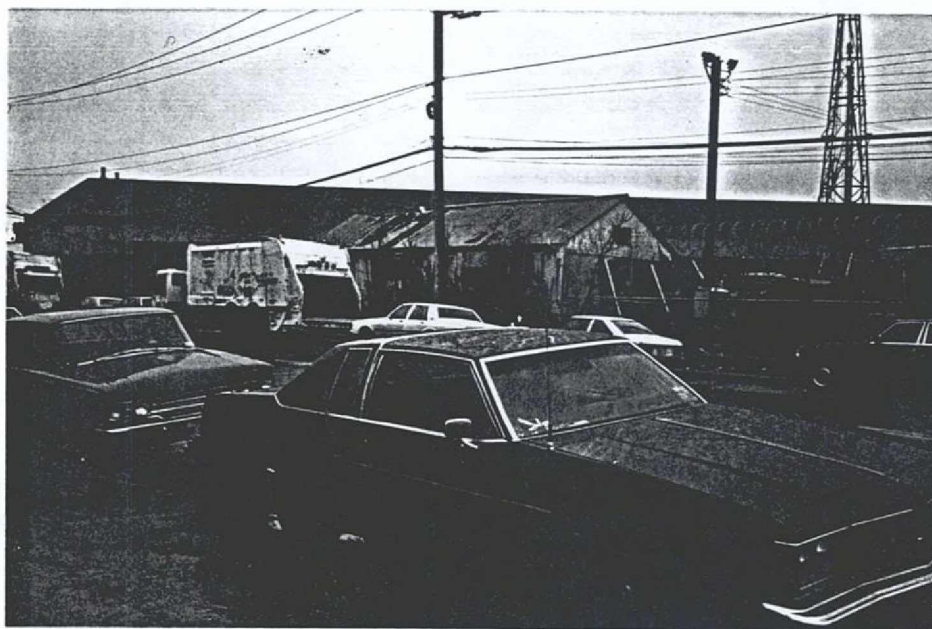
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## Photographs 1 and 2

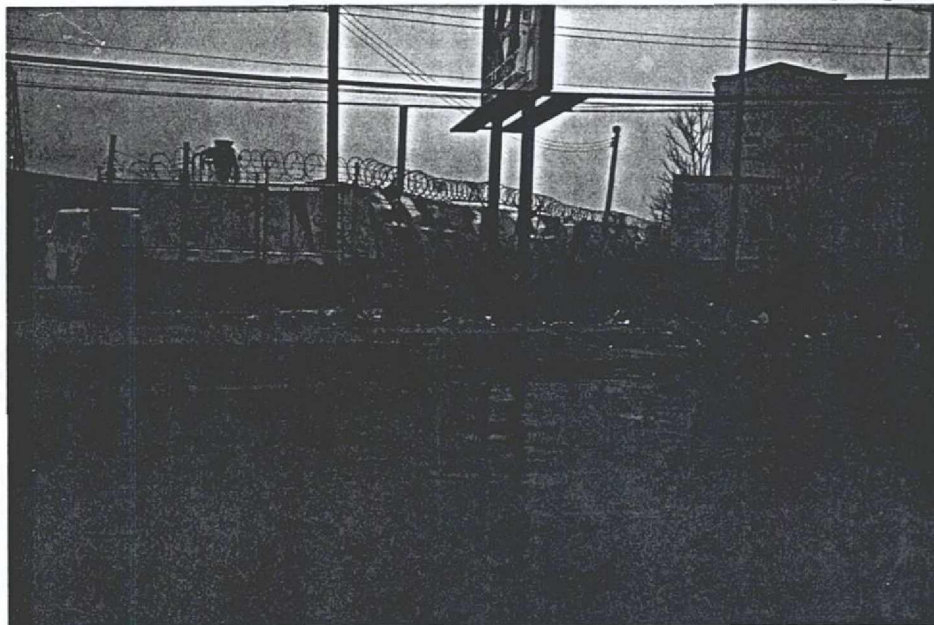


Photograph 1: Project Area Looking Southeast  
to Northwest from Grand Avenue Curb



Photograph 2: Southwestern Corner of Project Area  
(Frame Structure) From South Side of Grand Avenue

## Photographs 3 and 4



Photograph 3: Southeastern Corner of Project Area  
Looking South to North

Note the Janine Paper Box Co./Great Eastern Packing and Paper Stock Company structure on the right side of the project site.



Photograph 4:

Project Area

Soil Boring Being  
Conducted by  
Warren George Co.  
crew,  
12/23/88.

BROOKLYN QUADRANGLE  
 NEW YORK  
 7.5 MINUTE SERIES (TOPOGRAPHIC)

6255 IV SE  
 (FLUSHING)

12°  
 213 MILS

0°42'  
 12 MILS

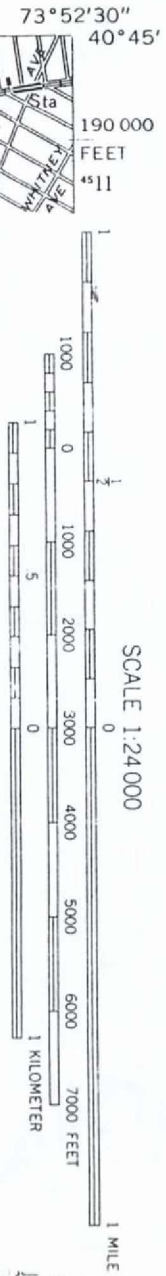
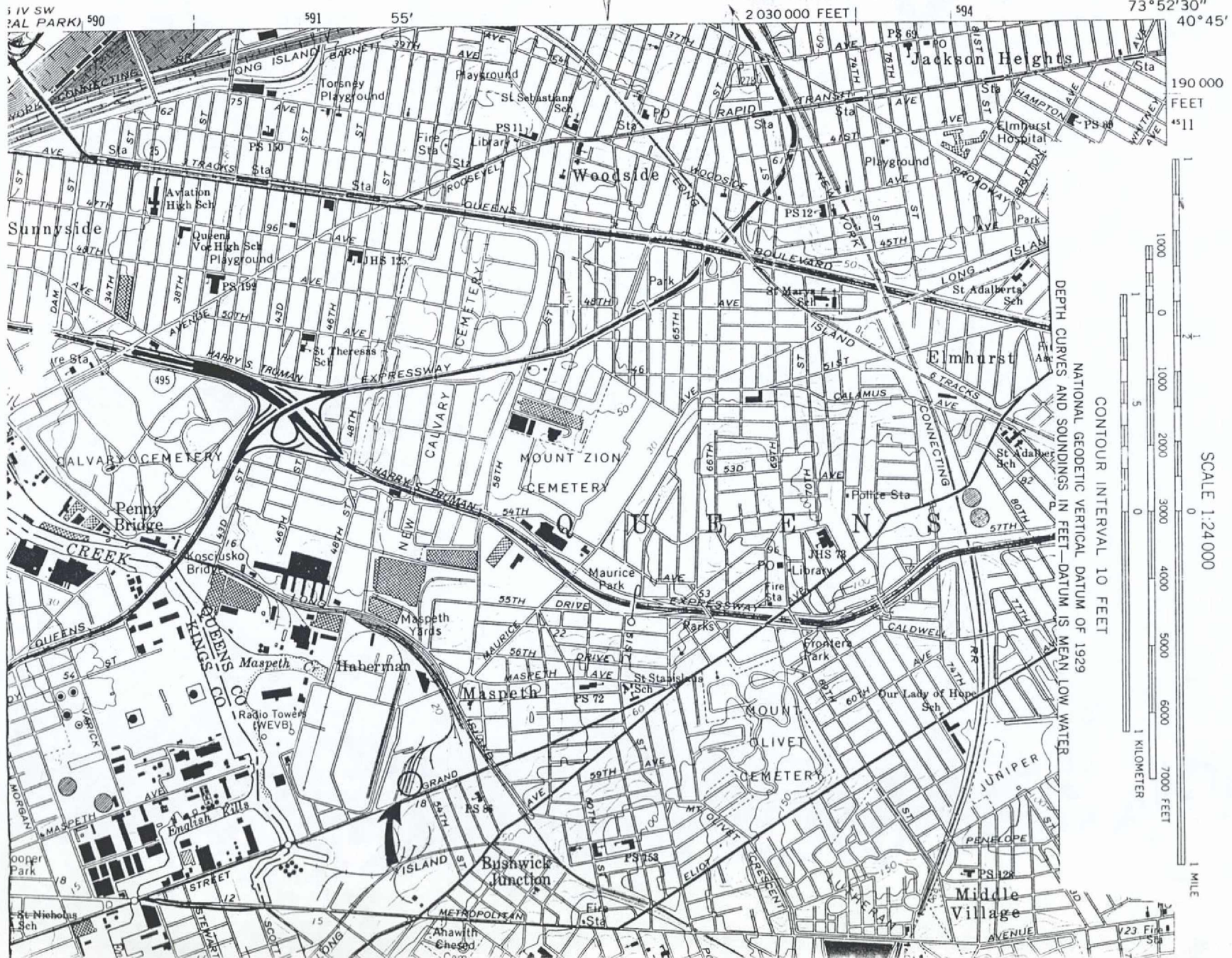
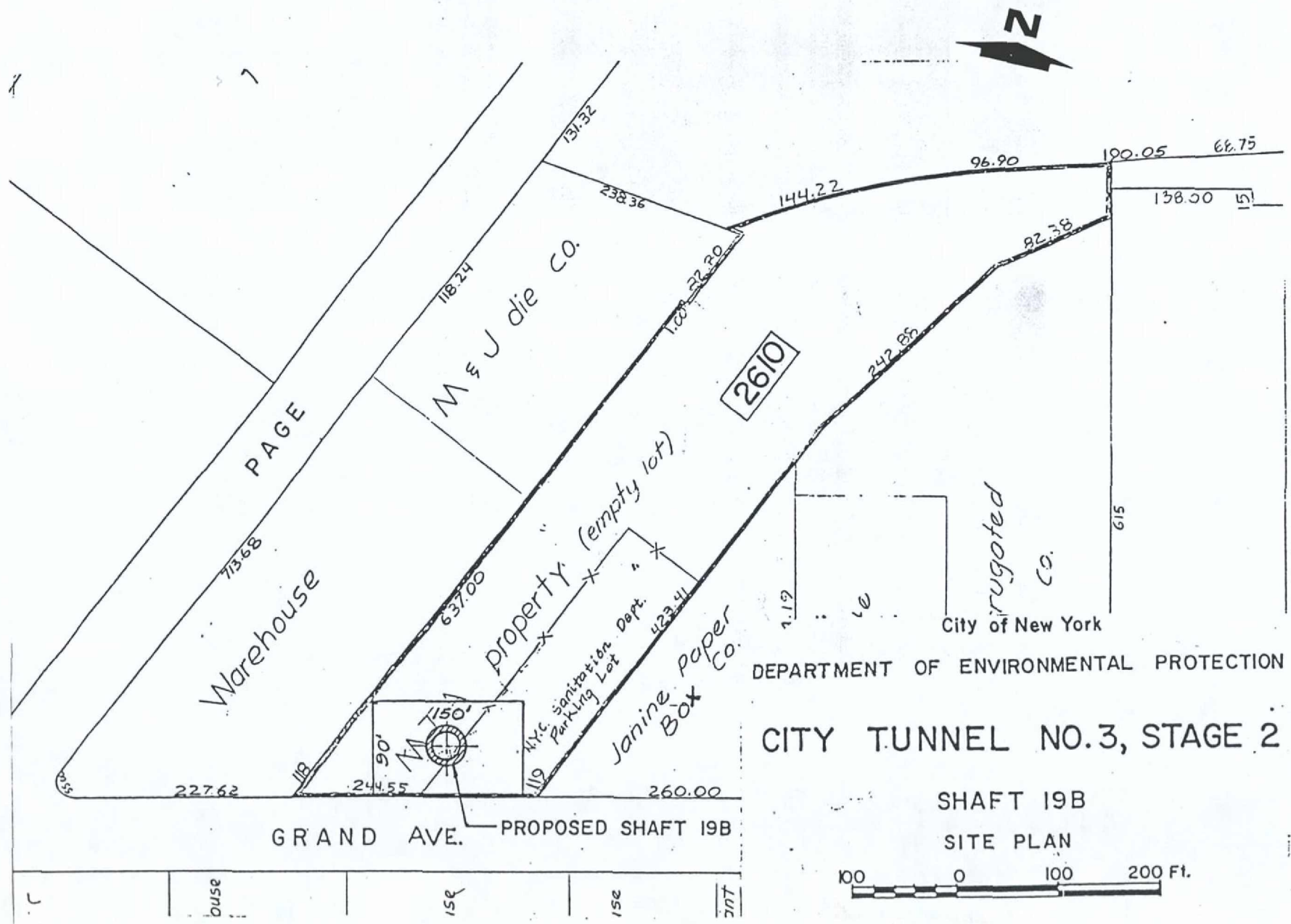


Figure 1



DEPARTMENT OF ENVIRONMENTAL PROTECTION

# CITY TUNNEL NO.3, STAGE 2

SHAFT 19B  
SITE PLAN



Figure 2

Sidney Map, 1849.  
From the collection of V. Seyfried.

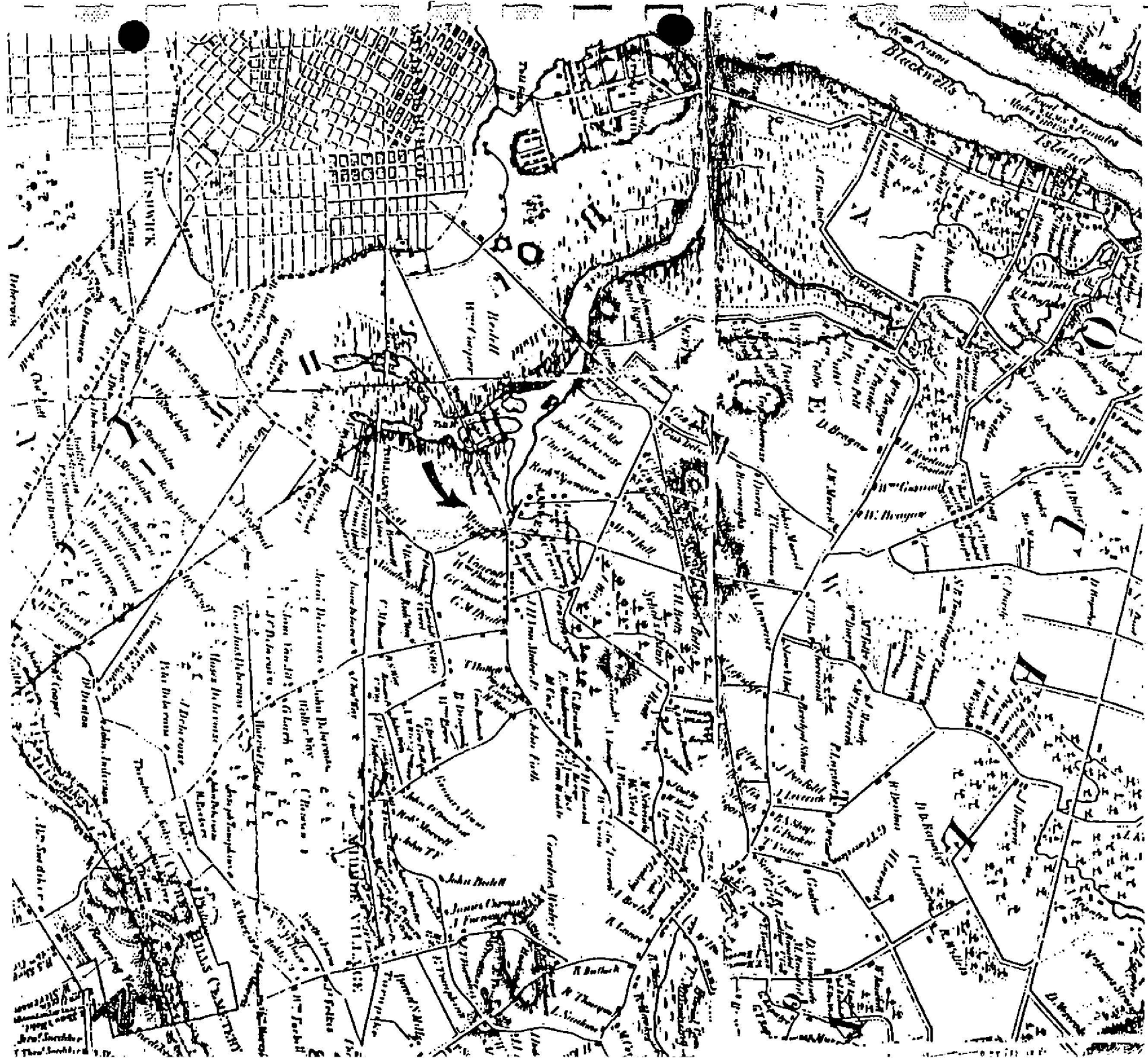
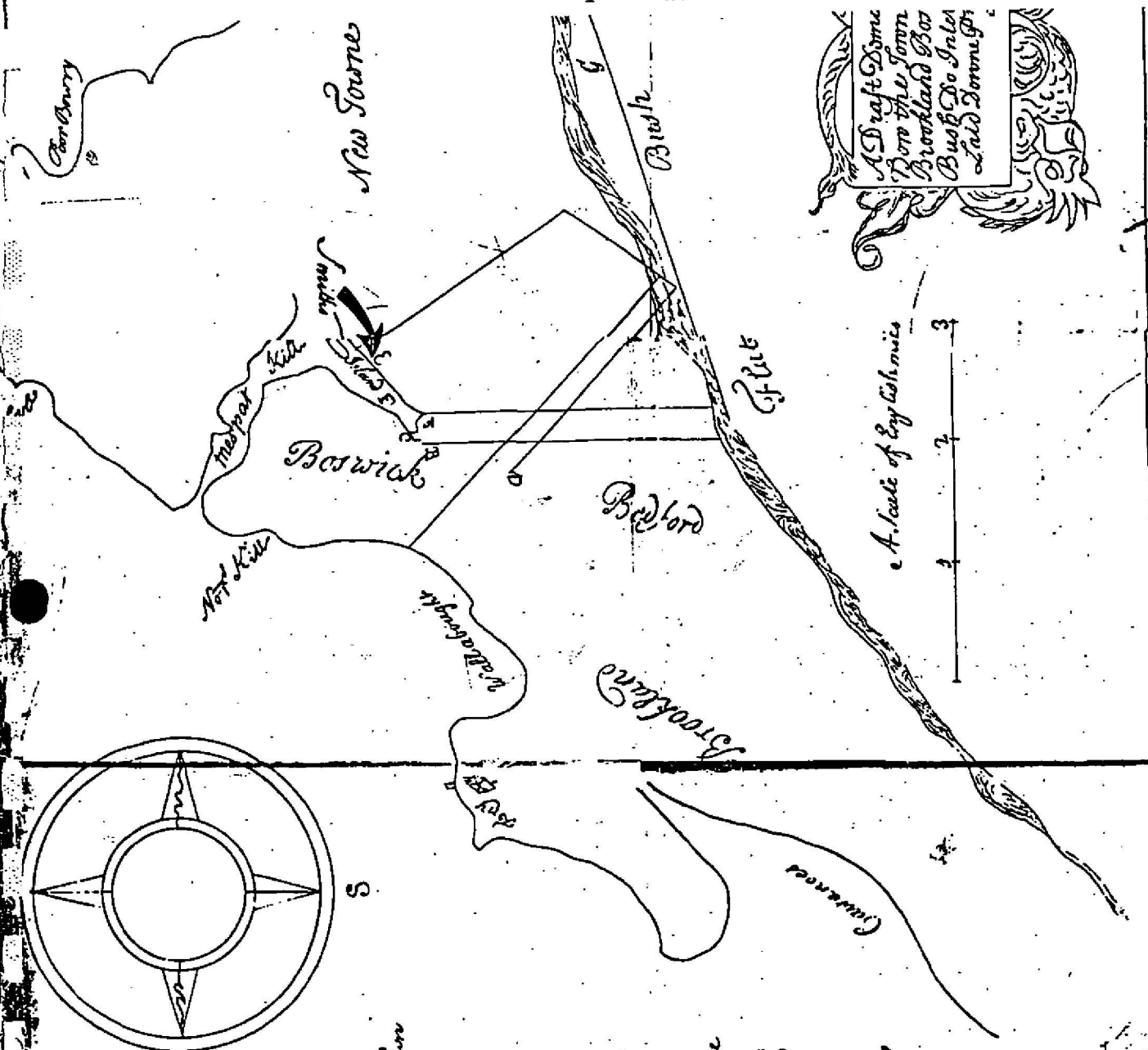


Figure 3

1694 Aug. Graham Survey.  
From the collection of V. Seyfried.

Figure 4



A The Place from whence  
I turn'd over of Cole  
Courtland &c

B The Place where  
Inhabitants of New Towne  
say there are 2000 Bounds  
always had from them from

C the fence of Hans Lawson  
D the Small Swamp named  
in Baswick Cabott

E Sectors Pond  
F the West Branch of Newick  
the Place where it is laid at

G Marks Tree laid between New Town  
Sumner & Flat Bush.

Pursuant to his  
Excellency's Warrant  
dated the 6th of July  
1692

I have surveyed the Bounds  
Limits of the Townes of New Towne  
Flat Bush Brookland & Baswick  
According to their Outset begin-  
ning with the East End of them so  
Therefore as the Draft above de-  
monstrates

Laid 9th 1694  
Aug. Graham  
Survey

COPY of an ALLEGED MAP mentioned on page 124 and now on file in the Sec. of State's office. All  
infringements of the original map are null and void. The bounds of the said four patents, all except the first, are dated in Oct. 1667. They are given.



1891 Contour Map.  
From the collection of V. Seyfried.

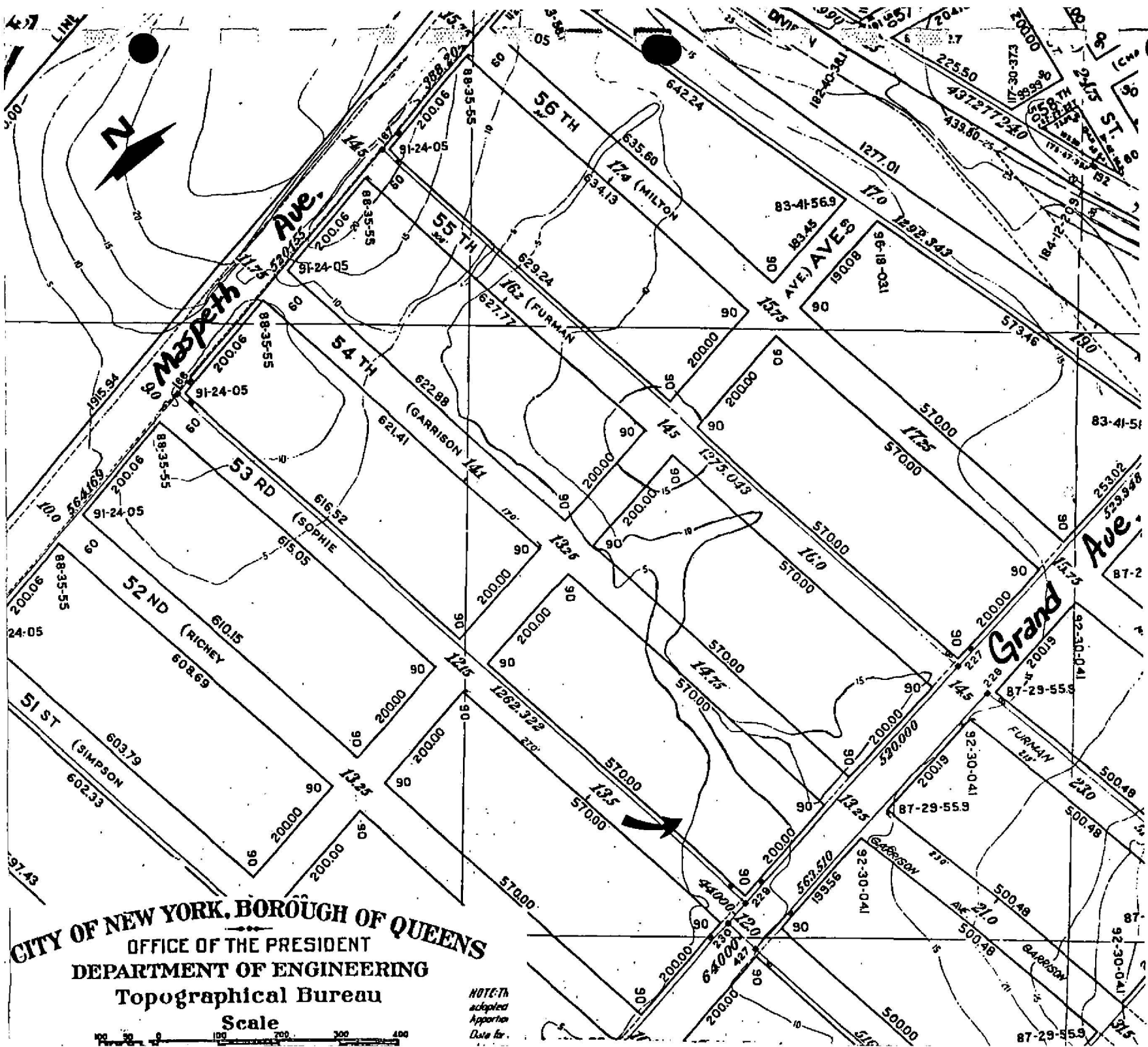


Figure 5



Final Maps of the Borough of Queens, 1910.  
From the collection of V. Seyfried.

Figure 6

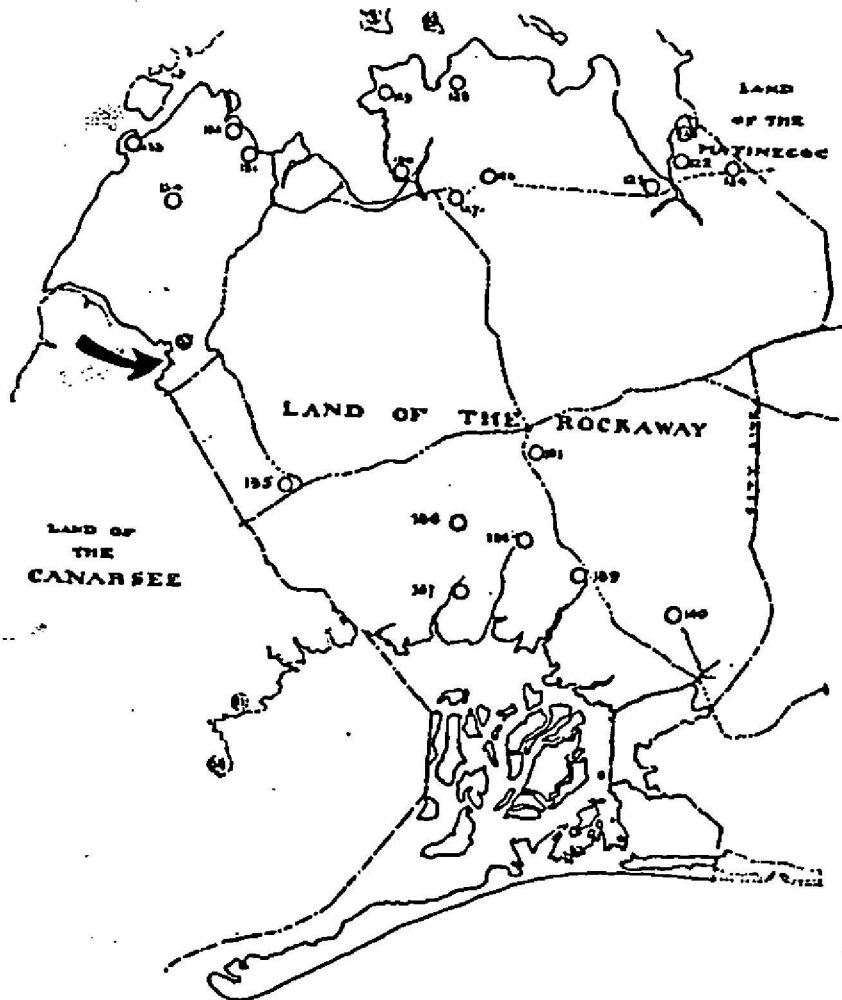


**CITY OF NEW YORK, BOROUGH OF QUEENS**  
OFFICE OF THE PRESIDENT  
DEPARTMENT OF ENGINEERING  
Topographical Bureau  
Scale

NOTE: The adopted heights are for Data for...

R. Bolton.  
Indian Sites in the Borough of Queens.

Figure 7



INDIAN SITES IN THE BOROUGH OF QUEENS

65. MASPAETCHES  
MASPETH

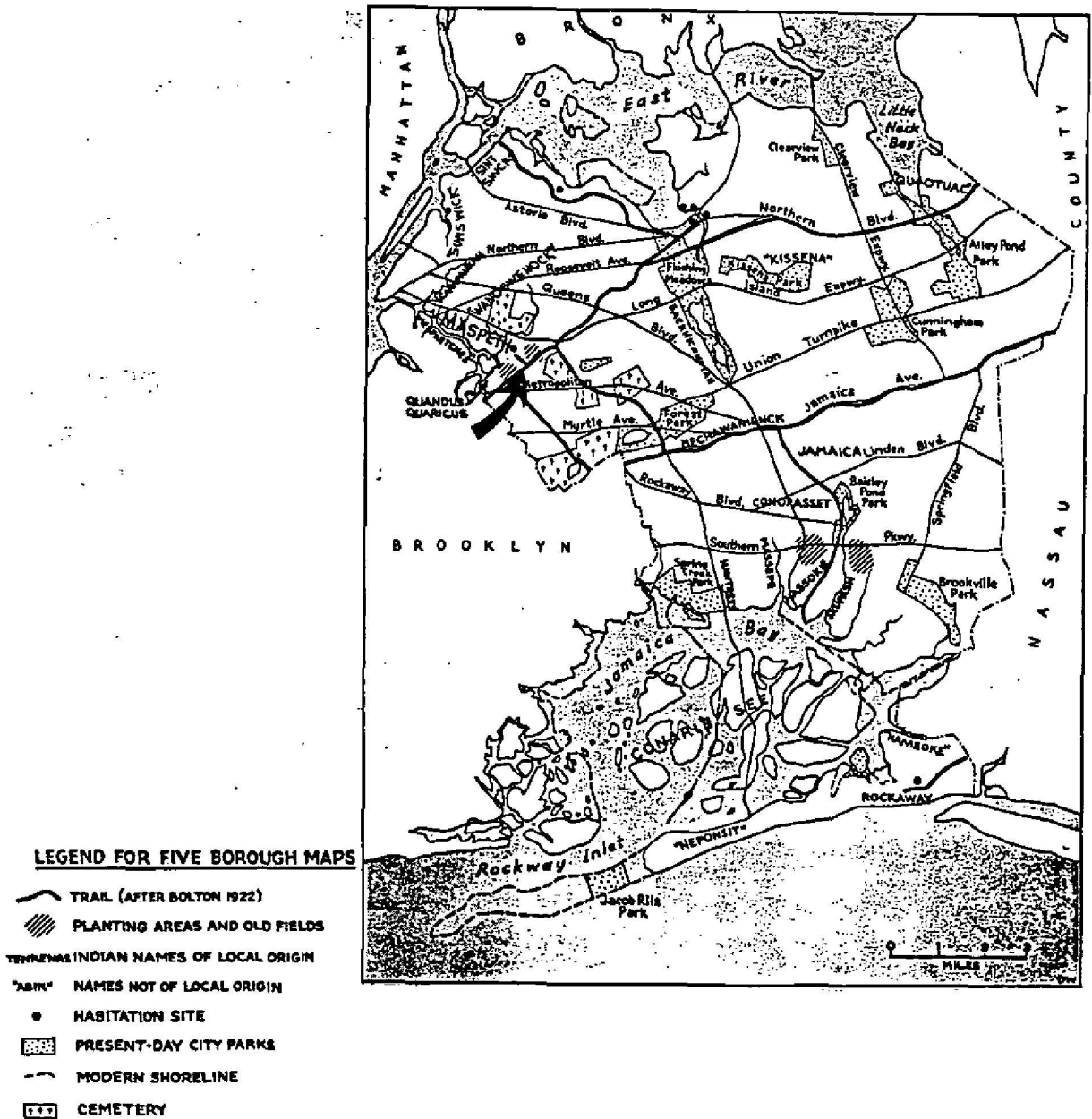
A village site near the head of Maspeth Creek, and east of Mount Zion cemetery, situated on rising ground overlooking the extensive marsh meadows bordering Newton Creek.

Grumet.

Figure 8

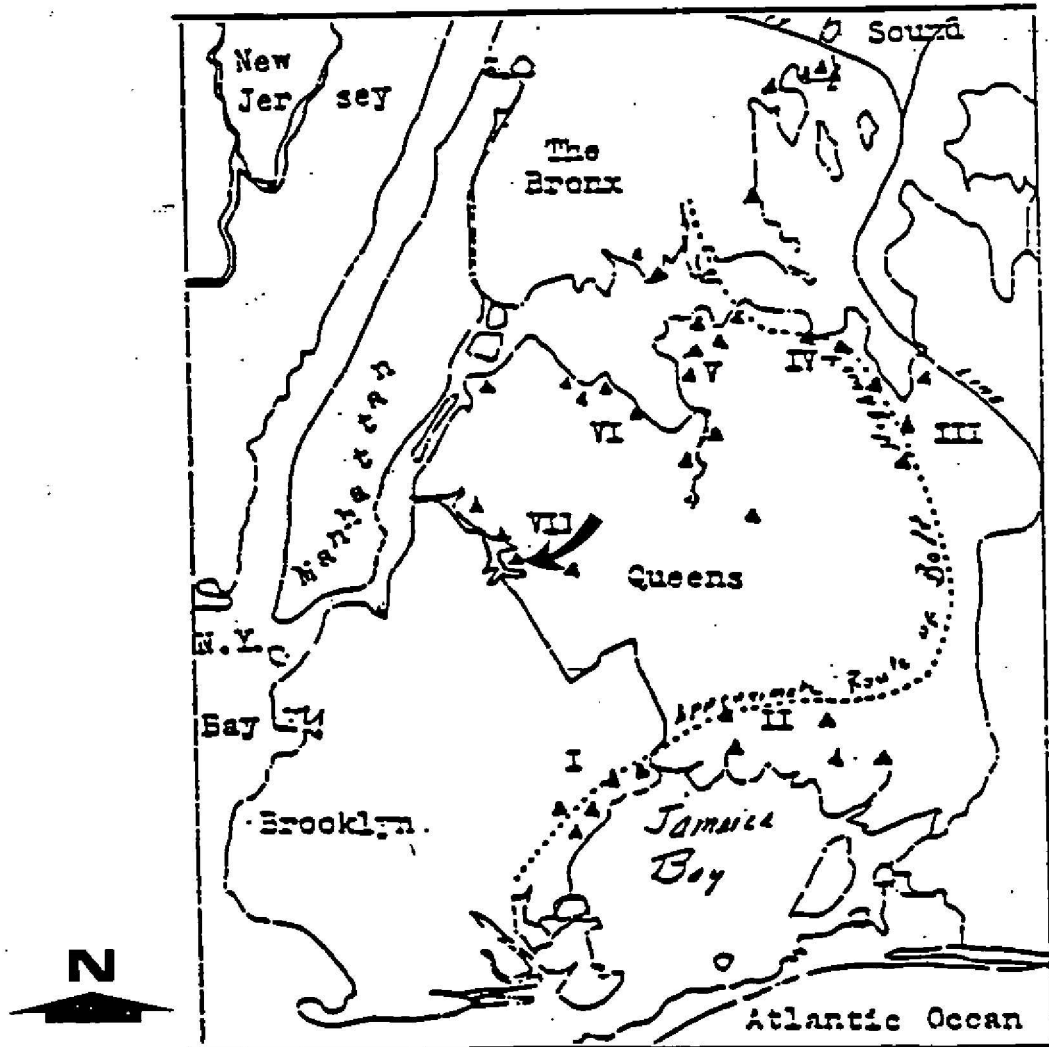
Indian Sites, Trails and Planting Fields in the Borough of Queens.

QUEENS / 71



R. Solecki.  
Indian Village Sites.

Figure 9



**INDIAN VILLAGE SITES:** Triangles on diagram indicate sites explored by Committee on American Anthropology of the Flushing Historical Society. Important locations described in accompanying article are numbered.

Tracing of:

MAP OF THE BOROUGH OF QUEENS SHOWING OWNERSHIP AS OF  
THE YEAR 1800

Office of the President, Topographic Bureau  
n.d.

repository: Queens Borough Public Library

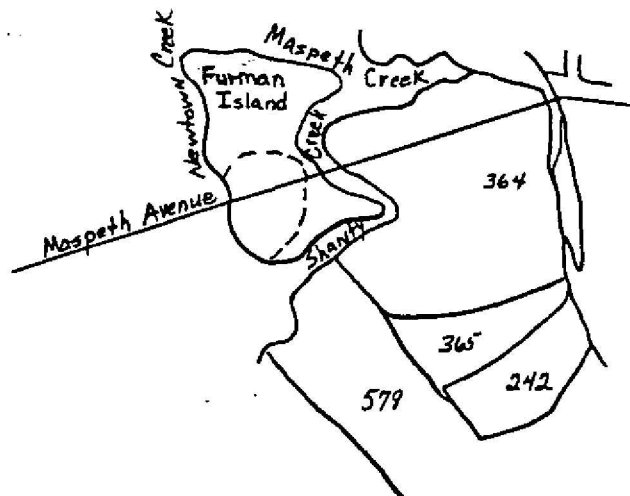
scale: 1" = 1/3 mile



364: Henry and Jane Mott to Garret Furman  
1815  
±119½ acres

242: J. Way to Thomas Folk  
1799

365: DeWitt Clinton, 1799, 40 acres



579: Jered Brower to Geo. DeBevoise  
1814  
50 acres

Garret Furman Mansion.

Location: north of Maspeth Avenue, west of the LIRR tracks.  
Built 1817-19, Razed October 1899

Illustration from Furman's published "Poems."  
From the collection of V. Seyfried.



Figure 12

1915 E. Belcher Hyde Atlas  
Newtown, Ward 2, Plate 14  
scale 160' = 1"  
Tracing.

Note probable water channels from Furman's hatchery business.

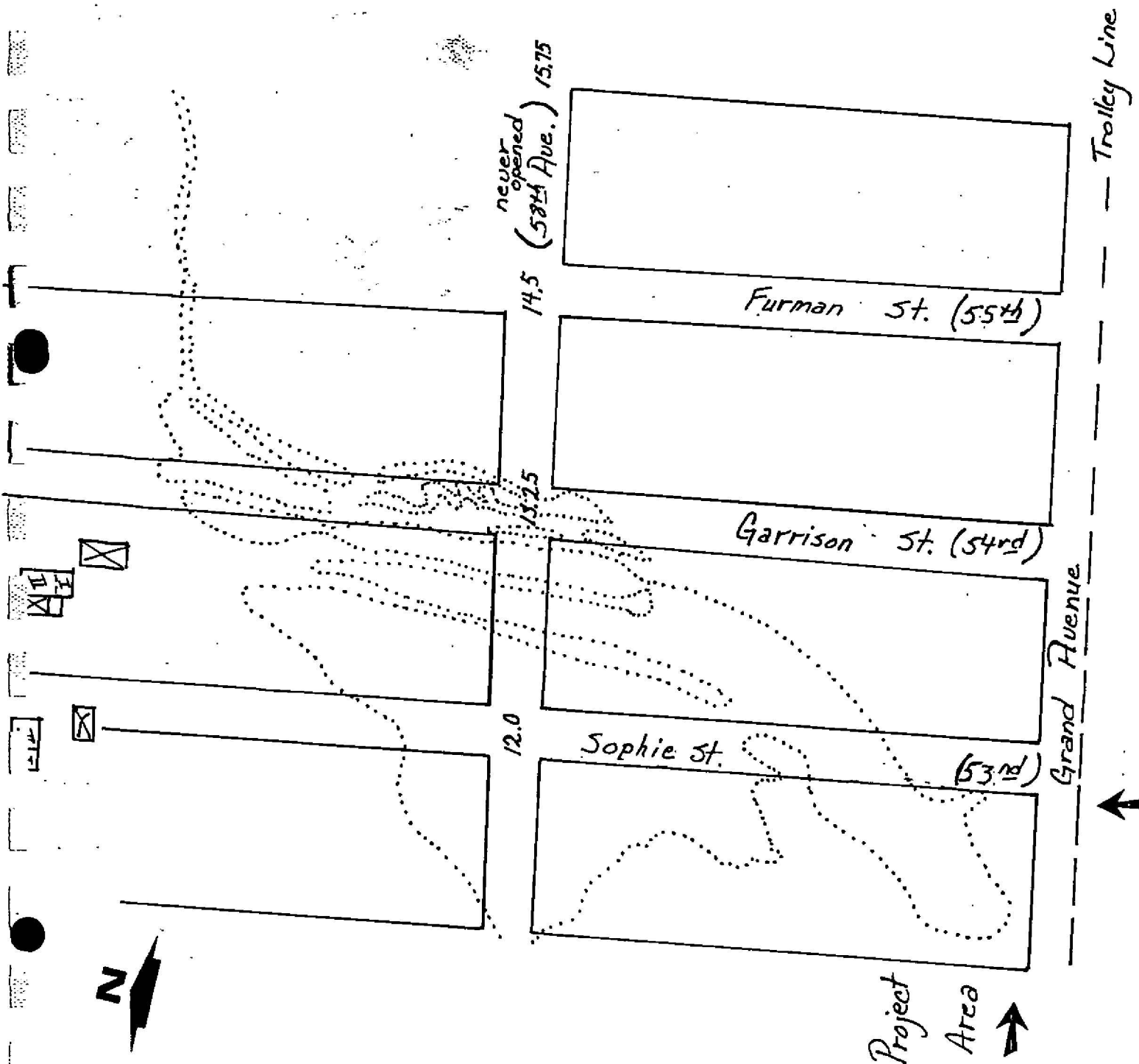




Figure 13

1903 E. Belcher Hyde Atlas  
1908 Atlas is identical for this area.  
Repository: collection of V. Seyfried.

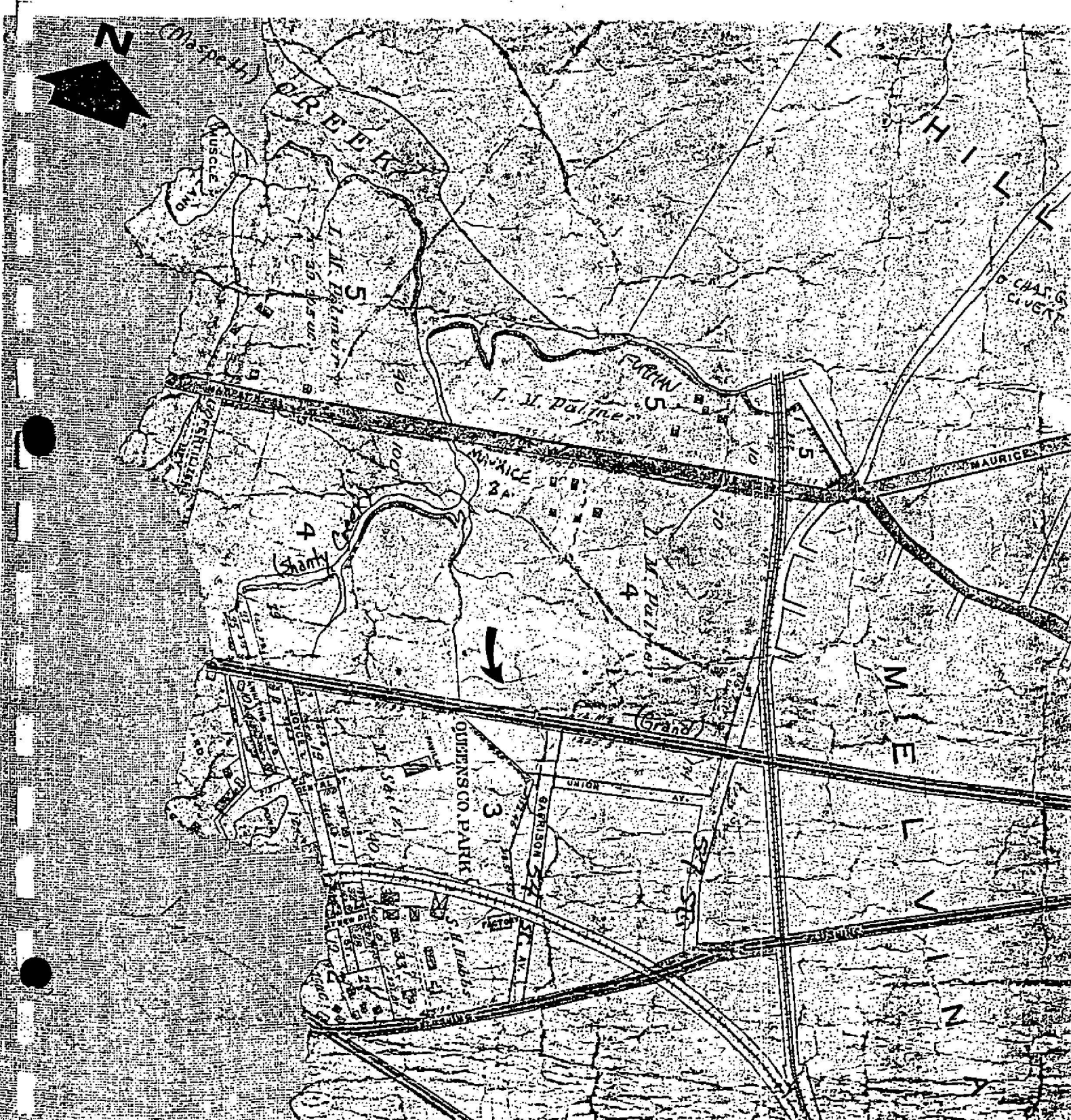
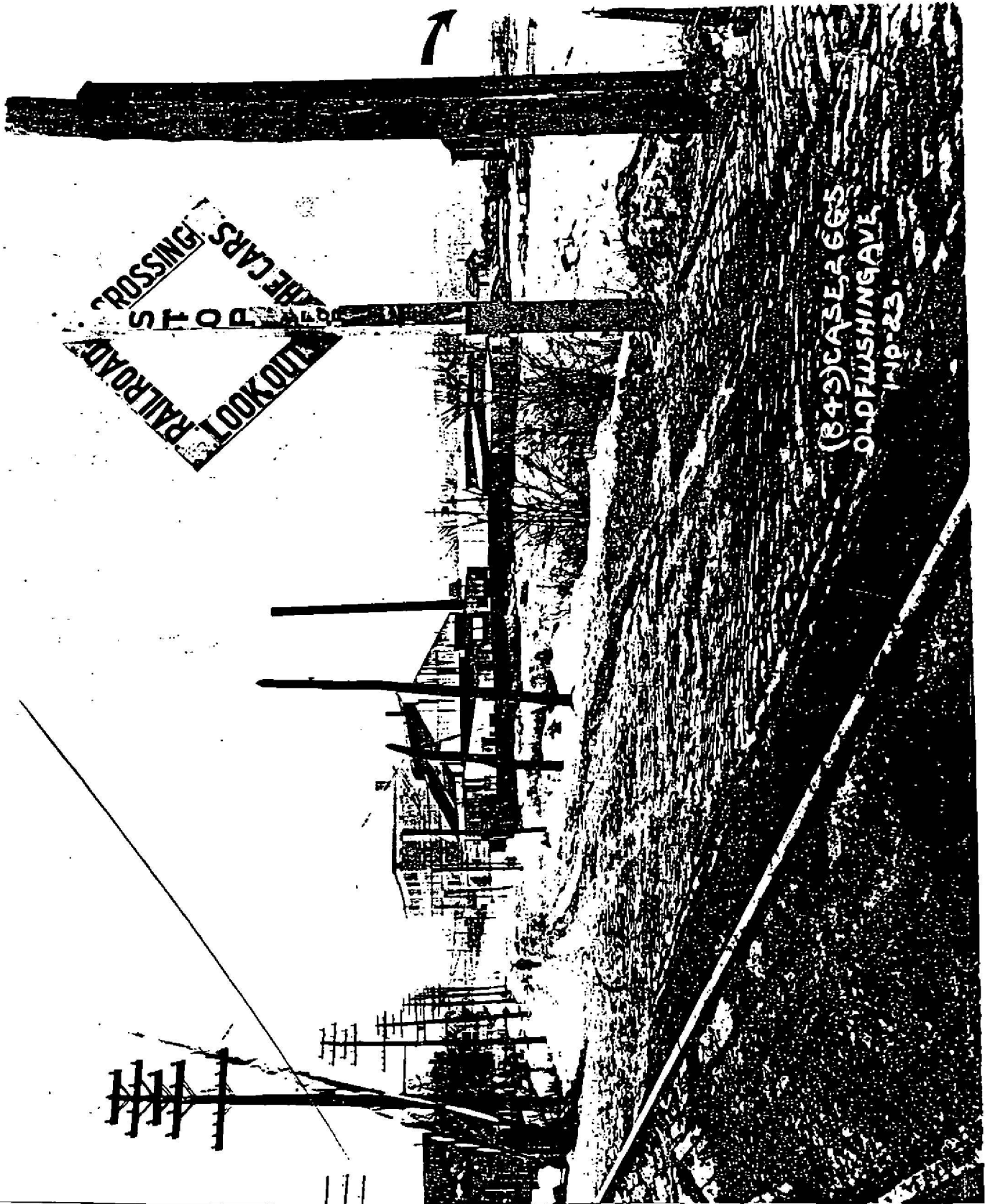
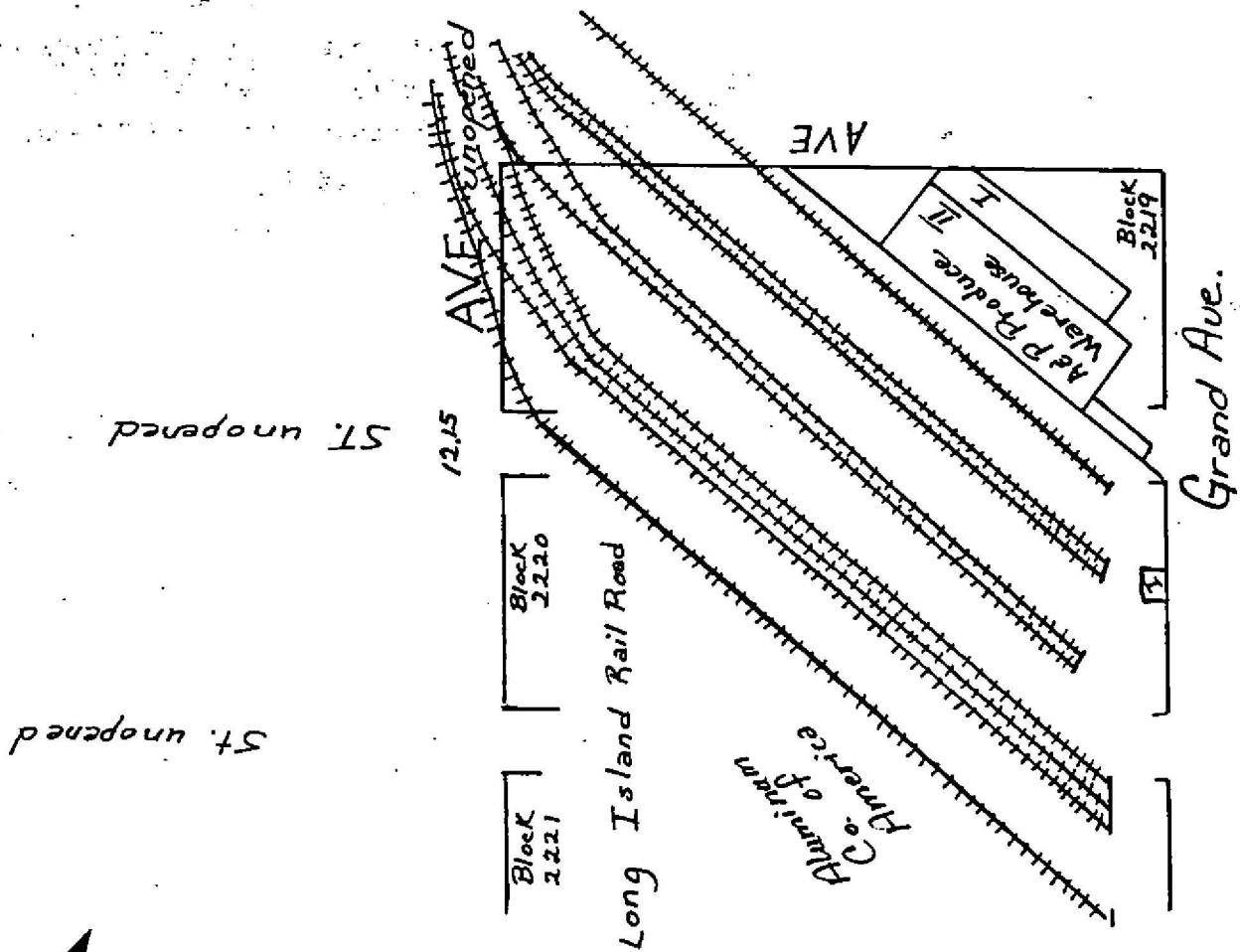


Figure 14  
Maspeth. View: southeast along the 57th St. roadbed, Old Flushing Ave., at the now-closed LIRR crossing. Grand Ave. intersection in the left center of photograph. Collection of V. Seyfried.



1929 E. Belcher Hyde Atlas, corrected to 1939.  
Note the old block numbers for the Project Area: 2220, 2219.  
Collection of V. Seyfried.



## Maspeth Industrial Section

(Continued from page 590)

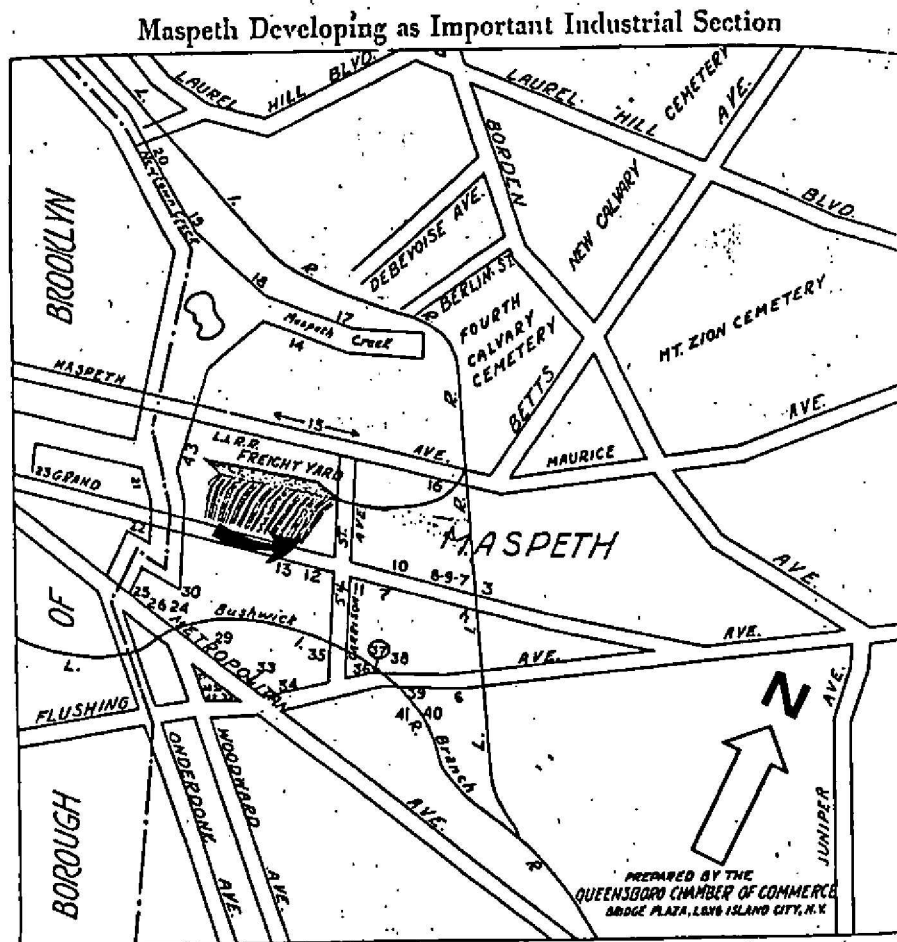
The Maspeth section is located near the geographical center of New York City, which makes it convenient for trucking to the wholesale and distributing center of Manhattan.

This section also enjoys the same freight rates as Long Island City and Jamaica, and Manhattan and Brooklyn.

Among the large tracts available are those owned by Palmer Waterfront Land and Improvement Company, with 150 acres and Cord Meyer Co., 100 acres. Negotiations are being conducted by the Palmer Company with a number of large concerns, one of them from New Jersey, to locate here.

Among the larger industries located in this section and shown on the accompanying map, and which are served by the new yard of the Long Island Railroad and Newtown and Maspeth Creeks, are the following. Their location and that of the large vacant tracts are indicated by numbers on the map:

- |  |                                    |
|--|------------------------------------|
| 1. Shevlin Engineering Co.                     | 21. Cross, Austin & Ireland        |
| 2. Brislin Lumber Co.                          | 22. Audley Clark & Co.             |
| 3. S. Mayer & Son                              | 23. William Wrigley, Jr.           |
| 4. William L. Koburger Co.                     | 24. Doran, Seely & Adams           |
| 5. Coyne & Delaney                             | 25. Cardinale Bros. & Co.          |
| 6. Dukeshire Steel & Forge Co.                 | 26. Louis Brock, Inc.              |
| 7. Star Corrugated Box Co.                     | 27. R. A. Bonime, Inc.             |
| 8. Turner Construction Co.                     | 28. H. C. Bohack, Inc.             |
| 9. Crane & Clark                               | 29. A. B. Shoup Co.                |
| 10. Steinberg & Dubin                          | 30. Jacob Rubin & Sons, Inc.       |
| 11. Metal Package Corporation                  | 31. Ideal Chair Co.                |
| 12. Vulcan Rail & Construction Co.             | 32. Alfred Bleyer & Co.            |
| 13. Liquid Carbonic Co.                        | 33. Richey, Brown & Donald         |
| 14. Palmer Waterfront Land and Improvement Co. | 34. Gleason-Tiebout Co.            |
| 15. Maspeth Coal Co.                           | 35. A. H. Hews Co.                 |
| 16. National Enameling & Stamping Co.          | 36. August Bode, Inc.              |
| 17. Nichols Copper Co.                         | 37. Metropolitan Pottery Co.       |
| 18. General Chemical Co.                       | 38. Robinson Clay Products Co.     |
| 19. Standard Oil Company                       | 39. Merrill Brothers               |
| 20. Louis Bossert & Co.                        | 40. Transcontinental Oil Co.       |
|  | 41. Metropolitan Sheet Metal Works |
|  | 42. Louis Theiss                   |
|  | 43. Cord Meyer Company             |



THE largest undeveloped industrial territory in New York City, with both rail and water facilities, is in the Maspeth section of Queens Borough, and has water frontages on both Newtown Creek and Maspeth Creek, and the Long Island Railroad running directly through.

This section is peculiarly adapted to the manufacturers of heavy products, who must have considerable area in order to provide for their one-story or other types of building; who require large storage space; who receive raw materials and ship finished products in large quantities, so that direct rail and water connections are necessary; and who must be near the distributing centers of Manhattan and the

facilities for coastwise or foreign shipping.

Both Newtown and Maspeth Creeks have a depth of twenty feet. The Long Island Railroad has recently built a new team track yard in this section for the handling of carload freight. The yard opened this month with a capacity of twenty-seven cars, and will eventually be enlarged to hold 500 to 700 cars.

The Long Island Railroad connects by float bridges with all railroads reaching New York Harbor. At Fresh Pond Junction, not far away, the lines of the Long Island join the New York Connecting Railroad, which passes over Hell Gate Bridge to the main line of the N. Y., N. H. & H. R.R. to points in New England.

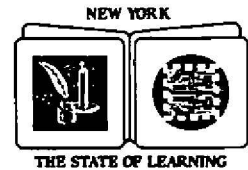
(Please turn to page 593)

Reprinted from QUEENSBORO MAGAZINE, pp. 590, 592, published by the Queensboro Chamber of Commerce. The number and size of the team tracks is not to scale. Collection of V. Seyfried.

Figure 16

Appendix 1

Correspondence with the New York State Museum



THE STATE EDUCATION DEPARTMENT / THE UNIVERSITY OF THE STATE OF NEW YORK / ALBANY, N.Y. 12230

NEW YORK STATE MUSEUM  
DIVISION OF RESEARCH AND COLLECTIONS

Please direct correspondence to:

NEW YORK STATE MUSEUM  
Prehistoric Site File  
Cultural Education Center, RM 3122  
State Plaza  
Albany, N.Y. 12230

Search Results:

Date: January 9, 1989

To: Cece Kirkorian  
Historical Perspectives Inc.  
P.O. Box 331  
Riverside, Connecticut 06878

Area Searched: Brooklyn 7.5', (see attached map).

In response to your request our staff has conducted a search of our data files\* for locations and descriptions of prehistoric archaeological sites within the area indicated above.

The results of the search are given below. Please refer to the NYSM site identification numbers when requesting additional information.

If specific information requested has not been provided by this letter, it is likely that we are not able to provide it at this time, either because of staff limitations or policy regarding disclosure of archaeological site data. Any questions regarding this reply can be directed to Philip Lord, Jr., at (518) 473-1503 or the above address, mark as Atten: Site File.

\*[NOTE: Our files normally do not contain historic period sites or architectural properties. Contact: The Survey Registration & Planning Unit, Office of Parks, Recreation & Historic Preservation, Agency Building #1, Empire State Plaza, Albany NY, at (518) 474-0479 to begin the process of collecting data on these types of sites.]

**RESULTS OF THE FILE SEARCH:**

The following sites are located in or within one mile of the project area:

See attached list.

Code "ACP" = sites reported by Arthur C. Parker in The Archeology Of New York, 1922, as transcribed from his unpublished maps.

SEARCH CONDUCTED BY: B.W. (initials)  
Staff, Office of the State Archaeologist

**EVALUATION OF ARCHAEOLOGICAL SENSITIVITY FOR PREHISTORIC (INDIAN) SITES**

Examination of the data suggests that the location indicated has the following sensitivity rating:

- HIGHER THAN AVERAGE PROBABILITY OF PRODUCING PREHISTORIC ARCHAEOLOGICAL DATA.
- AVERAGE PROBABILITY OF PRODUCING PREHISTORIC ARCHAEOLOGICAL DATA.
- LOWER THAN AVERAGE PROBABILITY OF PRODUCING PREHISTORIC ARCHAEOLOGICAL DATA.
- MIXED PROBABILITY OF PRODUCING PREHISTORIC ARCHAEOLOGICAL DATA.

The reasons for this finding are given below:

- A RECORDED SITE IS INDICATED IN OR IMMEDIATELY ADJACENT TO THE LOCATION AND WE HAVE REASON TO BELIEVE IT COULD BE IMPACTED BY CONSTRUCTION.
- A RECORDED SITE IS INDICATED SOME DISTANCE AWAY BUT DUE TO THE MARGIN OF ERROR IN THE LOCATION DATA IT IS POSSIBLE THE SITE ACTUALLY EXISTS IN OR IMMEDIATELY ADJACENT TO THE LOCATION.
- THE TERRAIN IN THE LOCATION IS SIMILAR TO TERRAIN IN THE GENERAL VICINITY WHERE RECORDED ARCHAEOLOGICAL SITES ARE INDICATED.
- THE PHYSIOGRAPHIC CHARACTERISTICS OF THE LOCATION SUGGEST A HIGH PROBABILITY OF PREHISTORIC OCCUPATION OR USE.
- THE PHYSIOGRAPHIC CHARACTERISTICS OF THE LOCATION SUGGEST A MEDIUM PROBABILITY OF PREHISTORIC OCCUPATION OR USE.
- THE PHYSIOGRAPHIC CHARACTERISTICS OF THE LOCATION ARE SUCH AS SUGGEST A LOW PROBABILITY OF PREHISTORIC OCCUPATION OR USE.
- EVIDENCE OF PRIOR DESTRUCTIVE IMPACTS FROM CULTURAL OR NATURAL SOURCES SUGGESTS A LOSS OF ORIGINAL CULTURAL DEPOSITS IN THIS LOCATION.
- THE PHYSIOGRAPHIC CHARACTERISTICS OF THE LOCATION ARE MIXED, A HIGHER THAN AVERAGE PROBABILITY OF PREHISTORIC OCCUPATION OR USE IS SUGGESTED FOR AREAS IN THE VICINITY OF STREAMS OR SWAMPS AND FOR ROCK FACES WHICH AFFORD SHELTER. DISTINCTIVE HILLS OR LOW RIDGES HAVE AN AVERAGE PROBABILITY OF USE AS A BURYING GROUND. LOW PROBABILITY IS SUGGESTED FOR AREAS OF EROSIONAL STEEP SLOPE.
- PROBABILITY RATING IS BASED ON THE ASSUMED PRESENCE OF INTACT ORIGINAL DEPOSITS, POSSIBILITY UNDER FILL, IN THE AREA. IF NEAR WATER OR IF DEEPLY BURIED, MATERIALS MAY OCCUR SUBMERGED BELOW THE WATER TABLE.
- INFORMATION ON SITES NOT RECORDED IN THE N.Y.S. MUSEUM FILES MAY BE AVAILABLE IN A REGIONAL INVENTORY MAINTAINED AT THE FOLLOWING LOCATION(S). PLEASE CONTACT:

COMMENTS:

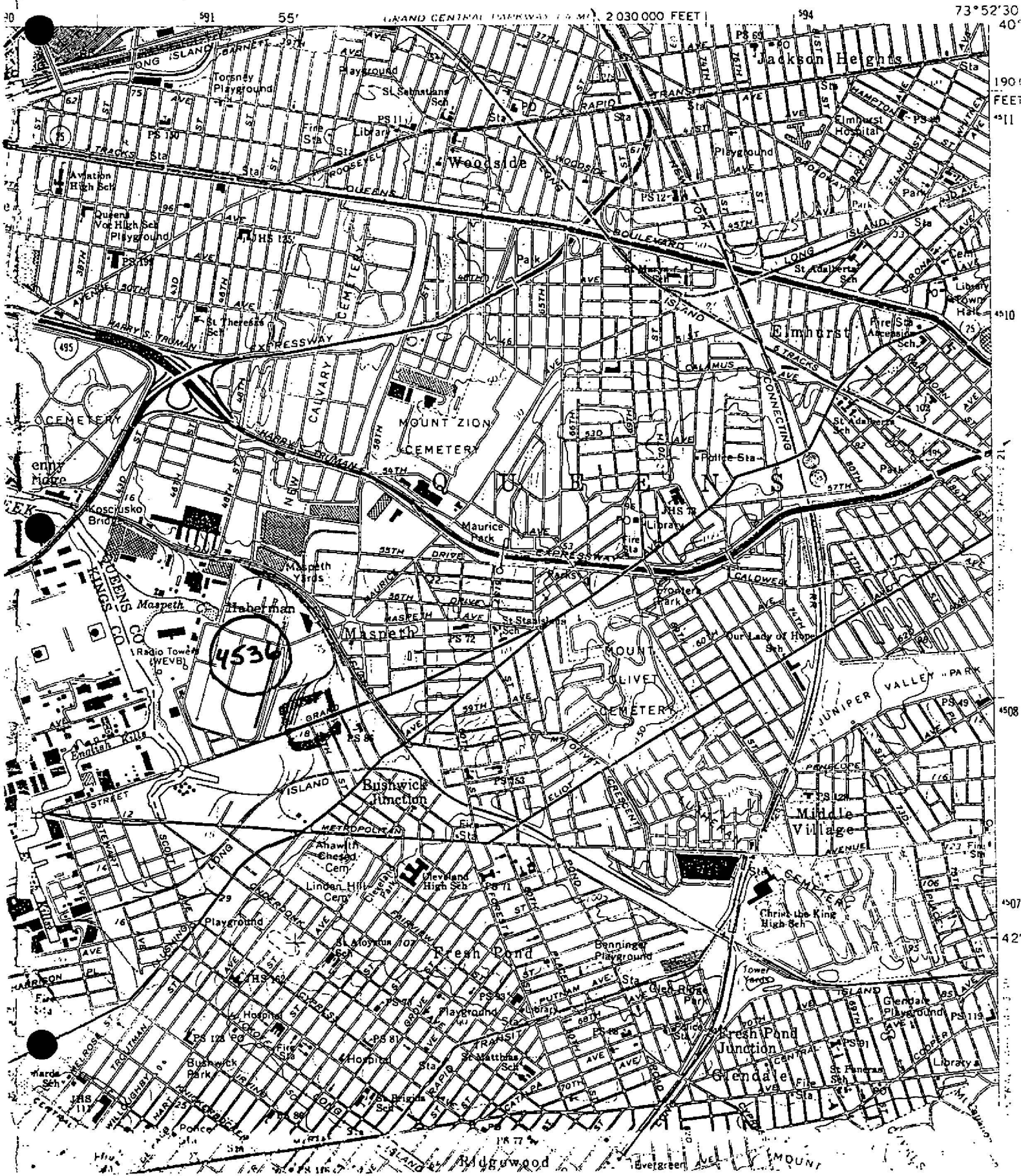
ARCHAEOLOGICAL SITE FILE SEARCH  
NEW YORK STATE MUSEUM  
CULTURAL EDUCATION CENTER  
ALBANY, NEW YORK

NYSM SITE #	OTHER SITE #'S	SITE NAME	TIME PERIOD	SITE TYPE	SOURCE OF DATA	15' QUAD NAME	7.5' QUAD NAME	REPORTER NAME	PROJECT NAME OR #
4536	ACP QUNS-13	NO INFO	NO INFO	VILL AGE		BROOKLYN	BROOKLYN	PARKER	NO INFO



Shaft Site 19B

BROOKLYN QUADRANGLE  
NEW YORK  
7.5 MINUTE SERIES (TOPOGRAPHIC)



Appendix 2

Soil Boring Locational Map and Field Logs

Express Inc.

National warehouse outlet

Warehouse

Warehouse

Grant basket

Station ca age

Sheet Metal Shop

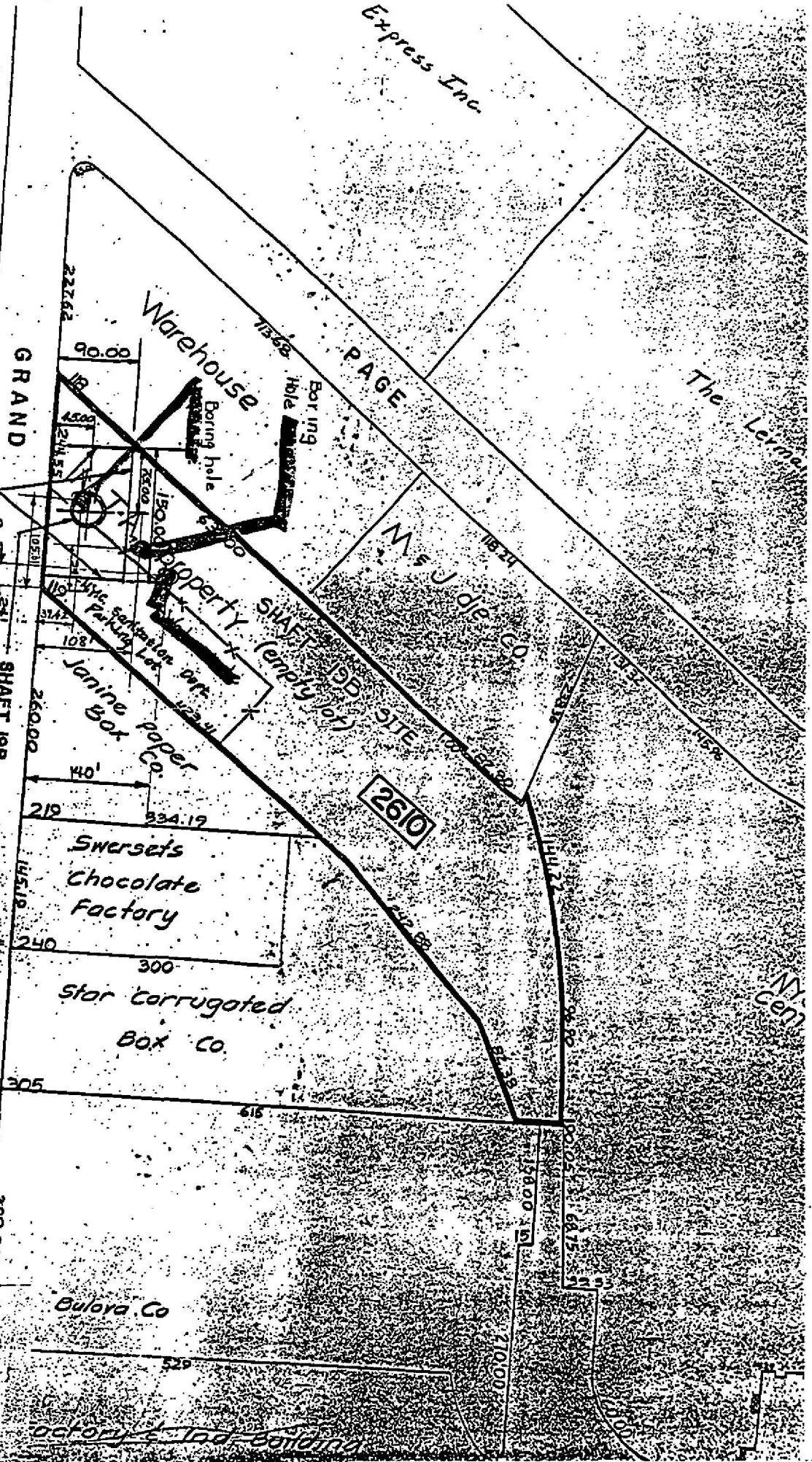
AVENUE

CITY TUNNEL NO. 3, S

DEPARTMENT OF ENVIRONMENTAL

CITY OF NEW YORK

SHAFT 19B REALTY MAP



BY WARREN GEORGE INC  
 UNDER C-550  
 BORING STARTED Nov. 22, 1988  
 BORING COMPLETED

BORING NO. Q19B-A

LOCATION GRAND AVE between Page Pl. & 54th

COORDINATES  
 N.....  
 E.....

MISCELLANEOUS	Working Days	Depth	Lbs	Days	MATERIAL
					SURFACE ELEV.....
					ROCK ELEV.....
		1	0		DEPTH IN EARTH 240.5
					DEPTH IN ROCK.....
					TOTAL DEPTH.....
					LEGEND
Sample #1 2" split spoon Depth from 5' to 7'	2	5			FILL - BLACK & brown sand with some MED. GRAVEL & clay WET Rel 25%
					LOST WATER <input type="checkbox"/>
					DYNAMITE USED <input type="checkbox"/>
		10			FILL - DARK BROWN-BLACK Clay some silt TRACE coarse sand & FINE GRAVEL Rel 25% WET
Sample #2 2" split spoon Depth from 10' to 12'					
		15			FILL - BROWN C to F gravel some clay Rel 15% WET
Sample #3 2" split spoon Depth from 15' to 17'					
		20			FILL - BROWN F Sand some GRAVEL Rel 30% WET
Sample #4 Depth from 20' to 22'					
		25			FILL - BROWN F Sand Tr Silt & GRAVEL & clay Rel 35% WET
Sample #5 Depth from 25' to 27'					
		30			
Sample #6 Depth from 30' to 32'					
		3	35		Brown C to F Sand with gravel & mica FLAKES Rel F... WET Boulder
Sample #7 Depth from 35' to 37'					
		4			NO SAMPLE Cobble in spoon tip
Sample #8 Depth from 41' to 41.8'					
		45			Brown coarse gravel trace M to C Sand Rel 45% WET
Sample #9 Depth from 45' to 47'					
		5			Brown C to F gravel some SAND Decomposed Rock mica Rel 45% WET
Sample #10 Depth from 50' to 52'					
		6	55		lt. Brown F to very C Sand trace gravel Rel 50% WET
Sample #11 Depth from 55' to 57'					
		60			lt. Brown gravel with some C to F Sand Rel 20% Very moist
Sample #12 Depth from 60' to 62'					
		65			

BY WARREN George, Inc. ---

BORING NO. Q19B-A

COORDINATES

UNDER C-550

LOCATION GRAND AVE. between PAGE PL. 354<sup>th</sup> ST.

N. ---

BORING STARTED Nov. 23, 1988

BORING COMPLETED ---

E. ---

MISCELLANEOUS	Working Days	Depth	Log	Sp. No.	MATERIAL	
Sample #13 3" split spoon Depth from 65' to 67'	6	66	3"	84	NO SAMPLE ALL GRAVEL N WASH	SURFACE ELEV. --- ROCK ELEV. --- DEPTH IN EARTH 240.5
Sample #14 Depth from 70' to 72'	7	70	3"	85	BROWN F+OC Sand + gravel WET	DEPTH IN ROCK --- TOTAL DEPTH --- LEGEND
Sample #15 Depth from 75' to 77'		75	3"	86	BROWN F+OC Sand + gravel WET	LOST WATER <input type="checkbox"/> DYNAMITE USED <input type="checkbox"/>
Sample #16 Depth 80' to 82'		80	3"	87	BROWN F+OC Sand, WET	Rec 100%
Sample #17 Depth 85' to 87'		85	3"	88	BROWN C+OF Sand + gravel WET	Rec 100%
Sample #18 Depth 90' to 92'		90	3"	89	BROWN F+OM Sand + gravel WET	Rec 60%
Sample #19 Depth 95' to 97'		95	3"	90	BROWN F+OM Sand, WET	
Sample #20 Depth 100' to 102'		100	3"	91	BROWN F+OM Sand + C Sand	Rec 100%
Sample #21 Depth 105' to 107'		105	3"	92	BROWN F+OM Sand + F gravel WET	Rec 50%
Sample #22 Depth 110' to 112'		110	3"	93	BROWN F+OM Sand + M gravel WET	Rec 70%
Sample #23 Depth 115' to 117'		115	3"	94	BROWN F+OM Sand + C. sand WET	Rec 90%
Sample #24 Depth 120' to 122'		120	3"	95	BROWN Sand + F gravel WET	Rec 90%
Sample #25 Depth 125' to 127'		125	3"	96	CHANGE LT GRAY STIFF DAMP CLAY + SILT PLASTIC Threads to < 1/8"	
Dec. 5, 1988		130				
Sample #26 Depth 130' to 132'	9	130	3"	97	LT GRAY STIFF DAMP CLAY 1 piece decomposed STONE	
		135				

BY WARREN George  
 UNDER C-550  
 BORING STARTED Dec. 23, 1988  
 BORING COMPLETED \_\_\_\_\_

BORING NO. Q19B-Water Hole

COORDINATES  
 N. \_\_\_\_\_  
 E. \_\_\_\_\_

LOCATION Grand Ave. Between Page Pl. & 54th St.

MISCELLANEOUS	Working Days	Depth ft	Core	MATERIAL	SURFACE ELEV. _____
Samples taken with 3" SPIT-SPOON 300lb. HAMMER dropped 30"		5			ROCK ELEV. _____
Sample #1 Depth from 5' to 7'	1		1/2	YELLOW BROWN GRAVELLY SAND SLIGHT SMELL (SOLVENT) DAMP REC 40%	DEPTH IN EARTH _____ DEPTH IN ROCK _____ TOTAL DEPTH _____
Sample #2 Depth from 10' to 12'	2	10	1/2	BLACK F SAND WITH CLAY AND ASH (MAN-MADE) WITH F GRAVEL WET REC 100%	LEGEND LOST WATER <input checked="" type="checkbox"/> DYNAMITE USED <input checked="" type="checkbox"/>
Sample #3 Depth from 15' to 17'		15	3/4	BLACK F SAND + CLAY WITH FIBROUS ORGANICS WET REC 25%	
Sample #4 Depth 20' to 22'		20	1/2	YELLOW BROWN FINE SAND TO GRAVEL + CLAY WET REC 35%	
Sample #5 Depth 25' to 27'		25	3/4	YELLOW BROWN FINE SAND WITH GRAVEL AND SOME CLAY WET REC 75%	