

Newtown Creek Combined Sewer Overflow (CSO) Storage Tunnel Project

**PART OF BLOCK 2520, LOTS 6, 22, AND 30 AND BLOCK 2508, LOT 1
BOROUGH OF QUEENS, QUEENS COUNTY, NEW YORK**

Phase 1A Archaeological Documentary Study

Prepared for:

New York City Department of Environmental Protection
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Management Summary

SHPO Project Review Number: 25PR01615

LPC Project Review Number: 37458

Involved Agencies: New York City Department of Environmental Protection
New York State Department of Environmental Conservation

Phase of Survey: Phase 1A Archaeological Documentary Study

Location Information

Study Area Location: Part of Block 2520, Lots 6, 22, and 30 and
Block 2508, Lot 1

Minor Civil Division: 08101
County: Queens

Survey Area

Length: Approximately 1,200 feet

Width: Approximately 50 feet

Area: Approximately 3 acres

USGS Quadrangle Map: Brooklyn

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A. INTRODUCTION

The New York City Department of Environmental Protection (DEP) is undertaking the Newtown Creek combined sewer overflow (CSO) Storage Tunnel Project (the “Project”). The Project involves the design and construction of a CSO storage tunnel and related infrastructure to reduce the volume of CSOs¹ entering Newtown Creek (see **Figure 1**).² Newtown Creek, located on the border of Brooklyn and Queens, is a tidal creek that flows into the East River. Under typical wet weather conditions, 20 CSO outfalls discharge to Newtown Creek. More than 90 percent of the total CSO discharge to Newtown Creek, however, is from the four largest CSO outfalls: Bowery Bay (BB)-026, Newtown Creek Brooklyn (NCB)-015, NCB-083, and Newtown Creek Queens (NCQ)-077 (see **Figure 2**).

As part of an Order on Consent to reduce CSOs, DEP prepared the Newtown Creek CSO Long-Term Control Plan (LTCP), which the New York State Department of Environmental Conservation (NYSDEC) approved in June 2018. Pursuant to the CSO Order on Consent and the LTCP (and recently approved modifications to the LTCP-recommended project), DEP is proposing a 3.26-mile-long tunnel with storage volume of 50 million gallons (MG) to intercept overflow at the four largest CSO outfalls. The Proposed Project includes construction of diversion facilities for the four outfalls to convey wet-weather flows to the tunnel, a gravity diversion sewer to connect the diversion facility at outfall BB-026 to the tunnel, and a tunnel dewatering pump station (TDPS) and discharge pipe to convey stored CSOs to the Newtown Creek Wastewater Resource Recovery Facility (WRRF), located in the Greenpoint neighborhood of Brooklyn.

The Proposed Project is a major capital project that requires site selection and acquisition of real property approvals to facilitate acquisition and/or leasing of property, as well as mapping of surface and subsurface easements. Construction of the above- and below-grade structures, conveyance sewers, and the tunnel would require the lease or acquisition of several parcels, along with mapping subsurface tunnel easements on properties along the proposed tunnel alignment. Surface easements would also be required for certain diversion facilities and conveyance infrastructure.

B. PROJECT DESCRIPTION

The Proposed Project includes the construction of a 50-MG CSO storage tunnel along with the TDPS, diversion chambers, drop shafts, conveyance sewers, outfall structures, and odor control systems to control CSO discharges from outfalls BB-026, NCB-015, NCB-083, and NCQ-077.

¹ CSOs occur when wet weather flows exceed the capacity of the dry weather flow regulators and combined sewage enters a receiving waterbody.

² The proposed tunnel alignment depicted on **Figure 1** includes potential alternative designs that are currently under consideration.

During wet-weather events, the CSO storage tunnel would divert and store CSOs from the combined sewer system at the four outfall locations, which currently discharge to Newtown Creek. The CSOs stored in the tunnel would be pumped to the Newtown Creek WRRF for treatment after the wet-weather event.

The proposed CSO storage tunnel would be approximately 26 feet in outer diameter and at a depth ranging from 80 to 130 feet below existing ground surface. The tunnel mining operation would start in bedrock at the TDPS site then transition to a mixed-face condition before ending in soil. The downstream terminus of the tunnel is located at a site at the end of Kingsland Avenue in Brooklyn (on the southern side of the Creek) near Whale Creek and the Newtown Creek WRRF; this site is controlled by the New York City Department of Sanitation (DSNY). This site would contain a TDPS that would operate on an intermittent basis following wet-weather events to remove the stored combined sewage from the tunnel, as well as removing inflow and infiltration in the tunnel as needed during dry weather, when the Newtown Creek WRRF has capacity to receive tunnel dewatering flows. The TDPS may also operate at the beginning of a storm to remove flow from the tunnel when the Newtown Creek WRRF has capacity, thereby maximizing the CSOs diverted and stored during a wet-weather event. Wet-weather events requiring TDPS operation are anticipated to occur between three and seven times per month.

PROPOSED TUNNEL ALIGNMENT

The tunnel will be constructed at depths ranging between 80 and 130 feet below existing ground surface. From the TDPS on the south side of Newtown Creek, tunnel construction would follow an alignment east under Newtown Creek into the Blissville neighborhood of Queens. At this location north of Newtown Creek, a new gravity diversion sewer would be constructed to connect outfall BB-026 to the tunnel. The gravity diversion sewer is described in detail below. The tunnel alignment would continue south and east along Review Avenue, underneath the supports of the Kosciuszko Bridge toward the Maspeth neighborhood of Queens, where it would connect to outfall NCQ-077. From outfall NCQ-077, the tunnel alignment would curve south and then west into Brooklyn, to connect to outfall NCB-083. The tunnel alignment would continue south and connect to outfall NCB-015, located near the English Kills. The tunnel would be constructed at a constant slope to allow gravity flow from the eastern extent of the tunnel at outfall NCB-015 toward the TDPS site.

PROPOSED GRAVITY DIVERSION SEWER ALIGNMENT

Beginning at the BB-026 outfall, the new gravity diversion sewer would run along 47th Avenue and 30th Street, to Borden Avenue, where it would run west and south to connect to the Borden Avenue Pump Station. This initial section of the gravity diversion sewer would be constructed prior to the completion of the tunnel, and would allow for diversion of CSO flows from BB-026 in the interim period before the tunnel is operational: CSOs would be stored in the gravity diversion sewer during a wet-weather event, and then removed from the gravity diversion sewer by the pumping facility and conveyed to the Bowery Bay WRRF. Modifications would be made to the Borden Avenue Pump Station to connect to the gravity diversion sewer. From the Borden Avenue Pump Station, the gravity diversion sewer would run south along Review Avenue, and would connect to the tunnel at a drop shaft to be constructed near the Creek at the end of 36th Street. Once the tunnel and drop shaft are complete, CSO flows would be diverted from the Borden Avenue Pump Station and conveyed to the tunnel.

PROPOSED FACILITIES

Facilities would be constructed at outfalls BB-026, NCQ-077, NCB-083, and NCB-015 to divert flow from the outfalls to the tunnel. During a wet-weather event, combined sewer flows that exceed the capacity of the existing dry weather regulator would flow into the diversion chamber at each facility, and would then be conveyed from the diversion chamber to the conveyance conduits. The conveyance conduits would deliver wet-weather flow to the approach channel and drop shaft, which would connect to the tunnel. The diversion facilities at NCQ-077, NCB-083, and NCB-015 would include ventilation systems at the drop shafts to manage airflow in the tunnel, including odor control systems (the facility at BB-026 would not need odor control because the connection would be through an approach channel and adit, which would limit air exchange). The existing outfalls at NCB-015 and BB-026 would be modified by removing the existing bending weirs and flap gates; at all four diversion facilities, new outfall structures, including bending weirs and flap gates, would be constructed downstream of each diversion chamber to allow overflow to discharge to Newtown Creek when the tunnel is full or when flow rates exceed the facilities' maximum design flow rates. In addition, at the TDPS, a discharge pipe would be constructed along Kingsland Avenue and Greenpoint Avenue to connect the TDPS to the Newtown Creek WRRF. Finally, at the TDPS and the NCB-015 site, tunnel overflow structures would be constructed to mitigate risks of flooding associated with surge or a transient wave within the tunnel when it is filling.

C. PROPOSED PROJECT SITE

To facilitate the Proposed Project, DEP must lease or acquire several parcels located near the four outfalls to construct diversion facilities that would convey flow to the proposed CSO storage tunnel; each diversion facility would include a diversion chamber, outfall structure, conveyance conduits, approach channel, and drop shaft (see **Figures 3a through 3h**).³ DEP must record permanent surface and subsurface easements on parcels along the proposed tunnel alignment for security concerns and long-term maintenance. Temporary surface easements are also necessary to facilitate construction staging areas on select diversion facility properties. The parcels that could potentially be affected by the surface easements or tunneling are identified in **Table 1-1**.

³ The TDPS, which would convey stored CSOs to the Newtown Creek WRRF, would be located on a City-owned parcel; therefore, property leasing/acquisition is not required for this facility.

Table 1-1
List of Parcels Possibly Affected by the Proposed Project

Parcel BBL	Project Component	Parcel BBL (cont'd)	Project Component (cont'd)
3025080001	Surface Easement and Tunnel Alignment	4026030001	
3029740162		4026100530	
3029740170		4026100550	
3029480085		4026110093	
4025750026		4026110095	
4025750225		4026110096	
4025750240	Surface Easement	4026110102	
4001150056	Surface Easement, Gravity diversion sewer	4026110110	
4001150086	Surface Easement, Gravity diversion sewer	4026110121	
4001150150	Surface Easement and Tunnel Alignment	4026110126	
Streetbeds along 35th Street, Review Avenue, 30th Street, and 40th Avenue	Gravity Diversion Sewer	3029580001	Tunnel Alignment
3025170027	Tunnel Alignment	3029580014	
3025170035		3029580015	
3029480013		4025190100	
3029520001		4025520099	
3029530001		4026030150	
3029530110		3025170014	
3029570006		3029570001	
3029570008		3029740112	
3029570012		4025200001	
3029570014		3029480012	
3029570023		3029500001	
3029620001		3029500007	
3029620011		3029510001	
3029620015		3029510045	
3029740051		3029670001	
3029740105		3029670050	
4002940001		3029740001	
4002940200		4003120017	
4002940251		4003120316	
4002940280		4003120330	
4025080001		4003120343	
4025190001		4025200052	
4025190150		4025210001	
4025200006		4025210040	
4025200022		4025210100	
4025200030		4025290001	
4025200060		4025290010	
4025260050		4025290020	
4025270002		4025290030	
4025270003		4025290042	
4025270005		4025520045	
4025280001		4025520069	
4025290040		4025520124	
4025520024		4025750036	

Table 1-1 (cont'd)

List of Parcels Possibly Affected by the Proposed Project

Parcel BBL	Project Component	Parcel BBL (cont'd)	Project Component (cont'd)
4025750040	Tunnel Alignment	4025520075	Tunnel Alignment
4025750140		4025540055	
4025750160		4025750018	
4025290070		4025750170	
4025290071		4026030130	
Notes: The tunnel alignment, as depicted on Figures 1, 2, and 3 , includes potential alternative designs that are currently under consideration. See Figures 3a through 3h .			

D. ENVIRONMENTAL REVIEW AND DEFINITION OF PHASE 1A STUDY AREA

The Proposed Project will be reviewed for potential impacts on the surrounding environment, in accordance with the New York State Environmental Quality Review Act (SEQRA), City Environmental Quality Review (CEQR), and the Uniform Land Use Review Procedure (ULURP). Pursuant to CEQR, DEP initiated consultation with the New York City Landmarks Preservation Commission (LPC). In comment letters dated September 26, 2024 and February 25, 2025, LPC determined that of the sites that may be affected by the construction of the proposed tunnel, Block 2520, Lots 6, 22, and 30, and Block 2508, Lot 1 and the adjacent streetbeds of Review Avenue⁴ and Laurel Hill Boulevard are potentially archaeologically significant for archaeological resources associated with Calvary Cemetery and requested the preparation of a documentary study, i.e., a Phase 1A Archaeological Documentary Study ("Phase 1A Study"), for those areas. In comments issued through the New York State Cultural Resource Information System on February 25, 2025, SHPO requested a Phase 1A Study of the Block 2520, Lots 6, 22, and 30 and Block 2508, Lot 1/the Phase 1A Study Area as described previously. LPC and SHPO determined that they have no further archaeological concerns for the remainder of the parcels presented in **Table 1-1**. The Phase 1A Study Area therefore includes that portion of the tunnel alignment that extends through Block 2520, Lots 6, 22, and 30 and Block 2508, Lot 1 and the adjacent streetbeds as shown on **Figure 4**.

E. RESEARCH GOALS AND METHODOLOGY

This Phase 1A Study of the Study Area was designed to satisfy the requirements of LPC's *Guidelines for Archaeological Work in New York City* (2018); the New York State Office of Parks, Recreation and Historic Preservation's (OPRHP) *Phase I Archaeological Report Format Requirements* (2005) and the New York Archaeological Council's (NYAC) *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State* (1994, adopted by OPRHP in 1995). The Phase 1A Study documents the development history of the Study Area and its potential to yield archaeological resources, including both precontact (Indigenous) and historic cultural resources.

⁴ As a result of a follow-up conversation with LPC, it was determined that given the depth of the proposed tunnel below Review Avenue and the significant difference in grade between the adjacent cemetery and the road surface, that portion of the streetbed did not need to be included in the Phase 1A Study Area.

This Phase 1A Study has four major goals: (1) to determine the likelihood that the Study Area was occupied during the precontact and/or historic periods; (2) to determine the effect of subsequent development and landscape alteration on any potential archaeological resources that may have been located within the Study Area, including human remains associated with Calvary Cemetery; (3) to make a determination of the Study Area's potential archaeological sensitivity; and (4) to make recommendations for further archaeological analysis, if necessary. The steps taken to fulfill these goals are explained in greater detail below.

The first goal of this documentary study is to determine the likelihood that the Study Area was inhabited during the precontact and/or historic periods and identify activities that may have taken place in the vicinity that would have resulted in the deposition of archaeological resources. Documentary research included a review of historical conveyance records; census records; and historical directories.

The second goal of this Phase 1A Study is to determine the likelihood that archaeological resources could have survived intact within the Study Area after development and landscape alteration (e.g., erosion, grading, filling, etc.). Potential disturbance—associated with paving, utility installation, and other previous construction impacts—was also considered. As described by NYAC in its *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections in New York State*, published in 1994 and subsequently adopted by OPRHP:

An estimate of the archaeological sensitivity of a given area provides the archaeologist with a tool with which to design appropriate field procedures for the investigation of that area. These sensitivity projections are generally based upon the following factors: statements of locational preferences or tendencies for particular settlement systems, characteristics of the local environment which provide essential or desirable resources (e.g., proximity to perennial water sources, well-drained soils, floral and faunal resources, raw materials, and/or trade and transportation routes), the density of known archaeological and historical resources within the general area, and the extent of known disturbances which can potentially affect the integrity of sites and the recovery of material from them (NYAC 1994: 2).

The third goal of this study is to make a determination of the Study Area's archaeological sensitivity. As stipulated by NYAC standards, sensitivity assessments should be categorized as low, moderate, or high to reflect "the likelihood that cultural resources are present within the project area" (NYAC 1994: 10). For the purposes of this study, those terms are defined as follows:

- Low: Areas of low sensitivity are those where the original topography would suggest that precontact period archaeological sites would not be present (i.e., locations at great distances from fresh and saltwater resources), locations where no historic period activity occurred before the installation of municipal water and sewer networks, or those locations determined to be sufficiently disturbed so that archaeological resources are not likely to remain intact.
- Moderate: Areas with topographical features that would suggest Native American occupation, documented historic period activity, and with some disturbance, but not enough to eliminate the possibility that archaeological resources are intact on the Study Area.

- High: Areas with topographical features that would suggest Native American occupation, documented historic period activity, and minimal or no documented disturbance.

The fourth and final goal of this study is to make recommendations for additional archaeological investigations where necessary. According to NYAC standards, a Phase 1B Archaeological Investigation is generally warranted for areas determined to have moderate or higher sensitivity. Archaeological testing is designed to determine the presence or absence of archaeological resources that could be impacted by a proposed project. Should they exist on the Study Area, such archaeological resources could provide new insight into the precontact period occupation of Queens, the transition from Native American to European settlement, or the historic period occupation of the Study Area or its historical use as a cemetery.

To satisfy the goals as outlined above, documentary research was completed to establish a chronology of the Study Area's development, landscape alteration, and to identify any individuals who may have owned the land or worked and/or resided there, and to determine if buildings were present there in the past. Data were gathered from various published and unpublished primary and secondary resources, such as historic maps, topographical analyses (both modern and historic), historic and current photographs (including aerial imagery), newspaper articles, local histories, and previously conducted archaeological surveys. These published and unpublished resources were consulted at various repositories, including the Main Research Branch of the New York Public Library (including the Local History and Map Divisions), the Library of Congress, and the Brooklyn Historical Society. Previously identified sites and previously conducted archaeological resources in the vicinity were collected from the files of OPRHP and the New York State Museum (NYSM). Information on previously identified archaeological sites and previous cultural resources assessments was accessed through the New York State Cultural Resource Information System (CRIS).

A. CURRENT CONDITIONS

The Study Area comprises four tax lots on the northern side of Newtown Creek. Block 2508, Lot 1 is occupied by Calvary Cemetery, a Catholic burial ground established in 1848. The Study Area includes a small area at the southeast corner of the cemetery north of the intersection of Review Avenue and Laurel Hill Boulevard, identified as Sections 5 and 5A on the cemetery's plot map (see **Photograph 1**). The portion of the cemetery included in the Study Area slopes down to the south and east and the ground surface within the cemetery is generally higher than that of the adjacent sidewalks on both its southern and eastern sides. The southern side that runs adjacent to Review Avenue is elevated above the grade of the adjacent sidewalk where the cemetery is lined with a large stone retaining wall. The elevated ground surface of the cemetery is 4 to 14 feet above that of the sidewalk of Review Avenue (see **Photograph 2**). The tunnel alignment would extend beneath this portion of the cemetery, which contains rows of graves, some of which have tombstones and some of which are unmarked. Two mature trees are located in this portion of the cemetery.

Block 2520, Lot 6 is located across Laurel Hill Boulevard opposite Calvary Cemetery at 34-02 Laurel Hill Boulevard (see **Photograph 3**). The parcel is owned by 34-02 LHB Realty, LLC and is developed with a two-story building with a cellar and an adjacent at-grade parking lot. It was constructed in 1963 and is currently occupied by a movie production company.

Block 2520, Lot 22 is situated to the east of Lot 6 at 34-40 Laurel Hill Boulevard and is owned by Papagiorgio Entertainment, LLC. The parcel is currently an undeveloped, unpaved lot with overgrown vegetation and is lined with a metal fence (see **Photographs 3 and 4**).

Block 2520, Lot 33, 34-52 Laurel Hill Boulevard, is located at the eastern end of the Study Area south of the intersection of Laurel Hill Boulevard and 56th Road (see **Photograph 4**). The parcel is owned by RLF III Laurel Hill Spe, LLC and it is currently developed with a one-story commercial/industrial building occupied by a business that sells compressed gasses and dry ice. The certificate of occupancy for the building on file with the Department of Buildings indicates that the building was constructed in 1983. The building is surrounded by paved parking areas; gas storage tanks are present on the property.

B. GEOLOGY AND TOPOGRAPHY

Long Island, including the modern Borough of Queens, is located within a geographical region known as the Atlantic Coastal Plain Physiographic Province. The Atlantic Coastal Plain tends to include flat, gently sloping land (Isachsen, et al. 2000). The Coastal Plain Deposits in the vicinity of the Study Area are associated with the Raritan formation, a composite of clay, silty clay, sand, and gravel formed during the Upper Cretaceous period between 97 and 66 million years ago (Fisher, et al. 1980; Isachsen, et al. 2000). Glacial till characterizes the surficial geology of the site (Cadwell 1989). This till was deposited by the massive glaciers that retreated from the area beginning at the end of the Pleistocene 1.6 million years before present (BP) and

extending through approximately 12,000 years BP. There were four major glaciations that affected New York City, culminating approximately 12,000 years ago with the end of the Wisconsin period. During the ice age, a glacial moraine bisected Long Island, running in a northeast-southwest direction through the center of what is now the borough of Queens (Isachsen, et al. 2000). The deposition of glacial till in the wake of the retreating glaciers resulted in the creation of sand hills across New York City and the deposition of large boulders known as glacial erratics. The Study Area is situated north of the moraine, and many of the large rocks used to construct the retaining walls that surround the cemetery were likely deposited in the area by glacial activity.

A USGS map published in 1889 indicates that the ground surface in the vicinity of the Study Area sloped down to the south and east within the cemetery and was generally level along the Newtown Creek waterfront to the southeast, in the vicinity of what is now Block 2520. Modern topographical information obtained from Light Detection and Ranging (Lidar) analysis as published by the City of New York in 2017⁵ indicates that the elevation of ground surface within the Study Area is generally similar to that observed in the late 19th century, before modern industrial development.

The portion of Calvary Cemetery included within the Study Area slopes down to the south and east between elevations of approximately 34 feet above the North American Vertical Datum of 1988 (NAVD88) near the western end of the Study Area to 14 feet NAVD88 near the eastern side of the Study Area adjacent to Laurel Hill Boulevard. The eastern portion of the cemetery is 2 to 4 feet above the grade of Laurel Hill Boulevard in the vicinity of the Study Area. The southern side that runs adjacent to Review Avenue is elevated above the grade of the adjacent sidewalk where the cemetery is lined with a large stone retaining wall. The elevated ground surface of the cemetery is 4 to 14 feet above that of the sidewalk of Review Avenue. Across the street within Block 2520, the ground surface of the parcel is generally level and is situated between 12 and 14 feet NAVD88.

C. HYDROLOGY

As the glaciers receded as described previously, the ensuing runoff created streams, rivers, and lakes as well as thick tracts of marshland in the low-lying areas along what is now Queens. Though now a modernized channel, Newtown Creek was historically a meandering creek of varying width that bisected and served as a natural boundary between Queens and Brooklyn. Coastal surveys prepared by C. Renard in 1837 and F. Hassler in 1844 (see **Figure 5**) depicts Newtown Creek prior to industrial development, and suggests that tracts of marshland historically lined its northern side in the vicinity of the Study Area. Throughout the 19th century, as the area became increasingly industrialized, Newtown Creek was modified to become a formal canal lined with bulkhead walls and railroad lines.

D. SOILS

The Web Soil Survey maintained by the United States Department of Agriculture (USDA)'s National Resource Conservation Service indicates that the Study Area is situated in an area characterized by two soil complexes. Within Calvary Cemetery, soils are characterized as the Greenbelt-Urban land complex, cemetery (GUBw). These well-drained soils are typically found in cemetery areas where loamy deposits have been used as fill material and where slopes

⁵ Issued by the New York City Department of Information Technology and Telecommunications (DoITT) in 2019.

range between 3 and 8 percent. Soils within Block 2520 have been characterized as Urban Land, Till Substratum (UtA). These soils are typically found in well-developed urban areas with slopes of 0 to 3 percent. The typical profiles of the soil types that make up this complex are summarized in **Table 2-1**.

Table 2-1
Project Area Soils

Series Name	Typical Soil Profile			Slope (%)	Drainage	Landform
	Level	Soil Horizon Depth (inches)	Soil Type			
Urban Land-Till Substratum	M	0 to 15	Cemented Material	0 to 3	n/a	Summit
	2^C	15 to 79	Gravelly Sandy Loam			
Greenbelt, Cemetery, Very Deep Water Table	^A	0 to 6	Loam	3 to 8	Well-drained	Summit, backslope, footslope
	^BA	6 to 14	Sandy Loam			
	^Bw1	14 to 28	Sandy Loam			
	^Bw2	28 to 35	Loam			
	^C	35 to 50	Loam			
Sources: USDA Natural Resources Conservation Service Web Soil Survey: https://websoilsurvey.sc.egov.usda.gov (accessed October 2024).						

A. PRECONTACT CONTEXT

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

PALEO-INDIAN PERIOD

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

ARCHAIC PERIOD

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

The rising sea levels and rapid development of the area, as well as the dominance of coniferous forests at that time generated a habitat ill-fit for human habitation (Boesch 1994), and few Early Archaic sites have been identified in New York City. Most of those have been located on Staten Island, including Ward's Point at the southwestern tip of the island; Richmond Hill; the H. F. Hollowell site; and the Old Place site. Sites such as Ward's Point—a domestic habitation location that due to lowered sea levels was originally inland—tend to be deep and stratified and

have yielded stone tools related to cooking, woodworking, and hide processing. The many years of constant occupation caused the artifacts to be deeply buried under more recent debris deposits (Cantwell and Wall 2001). However, at the Old Place Site, the only artifacts that were discovered—stone tool assemblages—were found at relatively shallow depths of around 42 inches or 3.5 feet (Ritchie 1980).

There are also few Middle Archaic sites in the region. The majority of these tend to consist of large shell middens, which are often found near major watercourses such as the Hudson River, although stone points have also been found in such locations. These sites were in great danger of obliteration because of their proximity to the shrinking coastlines thousands of years ago. Unlike the Early and Middle periods, many Late Archaic sites have been found throughout the New York City area. Late Archaic habitation sites are often found in areas of low elevation near watercourses, and temporary hunting sites are often located near sandy areas (Boesch 1994).

Finally, many Terminal Archaic sites from all across the city have provided examples of what archaeologists call the “Orient” culture, which is characterized by long fishtail stone points and soapstone bowls. Extremely elaborate Orient burial sites have been found on eastern Long Island (Ritchie 1980).

WOODLAND PERIOD

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

The Woodland period ended with the arrival of the first Europeans in the early 1500s. At that time, divisions of the Munsee known as the Matinecock, Canarsee, and Rockaway occupied Queens (Boesch 1997). They entered the area towards the end of the Woodland period (Ibid). The greater area of Newtown, Queens was known to the natives as *Wandewenock*, meaning “the fine land between the long streams” (Armbruster 1914: 27). Newtown Creek was originally known as *Mespaetches* (Grumet 1981).

B. PREVIOUSLY IDENTIFIED NATIVE AMERICAN ARCHAEOLOGICAL SITES NEAR THE STUDY AREA

In general, Native American habitation sites are most often located in coastal areas with access to marine resources and near freshwater sources and areas of high elevation and level slopes of less than 12 to 15 percent (NYAC 1994). Further indication of the potential presence of Native American activity near a project site is indicated by the number of precontact archaeological sites that have been previously identified in the vicinity. Information regarding such previously identified archaeological sites was obtained from various locations including the site files of OPRHP and NYSM, and from published accounts.

As seen in **Table 3-1**, two previously reported archaeological sites have been identified within one mile of the Study Area in databases maintained by OPRHP and NYSM and accessed via CRIS or in published accounts. The sites were both identified by archaeologist Arthur Parker and about which limited information is known (1922). One of these sites, NYSM site 3613, comprised traces of Indigenous occupation documented along the northern shore of what is now the Greenpoint neighborhood of Brooklyn on the southern side of Newtown Creek. Portions of the Study Area are located within generalized areas of archaeological sensitivity as mapped by OPRHP in CRIS; however, these areas are related to the presence of historic period archaeological sites relating to Calvary Cemetery and other historic period burial places.

Table 3-1
Precontact Archaeological Sites in the Vicinity of the Study Area

Site Name/ Number	Site Type	Approximate Distance from Study Area	Additional Source Information
NYSM 4536 Parker Site 13 LPC Site 13	Village site; mapped in Bolton (1922) more than one mile northeast of the location mapped in CRIS	4,500 feet	Parker (1922)
Mespaetches LPC Site 28	Village site	7,000 feet	Bolton 1922
Contact Period Hearth Site LPC Site 46	Fireplace site containing Indigenous lithic artifacts and historic period artifacts	4,500 feet	Solecki (1948); Wisniewski and Solecki 2010
NYSM 3613	Traces of Occupation	2,150 feet	Parker (1922)
Sources: The New York State Cultural Resources Information System (CRIS); Boesch 1997			

NYSM site 4536, is a village site situated southeast of the Study Area near what was historically the eastern terminus of Newtown Creek in an area later known as the English Kill and the Maspeth Kill. This site is likely one of several sites along Newtown Creek that was associated with a Canarsee village known as Mispas, which was explored by archaeologists in the early 20th century and was found to contain Indigenous artifacts including stone axes and projectile points (Solecki 1948; Boesch 1997). Mispas was situated in the vicinity of Newtown Creek, or Mespaetches, meaning “bad water place,” a reference to the swampy areas that bordered the creek (Bolton 1922:173). Bolton (1922) maps the village site nearly one mile to the northeast of the location of NYSM site 4536; this location is identified as LPC Site 28 by Boesch (1997).

Archaeologists Ralph Solecki and Stanley Wisniewski excavated a Contact period site in the mapped location of NYSM site 4536. The site was situated on an eroding sandbank and comprised a 17th century yellow brick fireplace/hearth associated with what was interpreted as a former pine structure that had been destroyed by fire (Solecki 1948; Wisniewski and Solecki 2010). The hearth site contained Indigenous artifacts including lithic (flint or chert) flakes and European-American artifacts including clay pipe bowl and stem fragments, ordnance (lead buckshot representing at least four weapons and gunflints), buttons and military buttons (including those likely worn around the time of the War of 1812, but not the Revolutionary War), ceramics, iron nails, and brocks (Wisniewski and Solecki 2010).

Finally, NYSM Site 3613 is mapped in CRIS along much of the southern shore of Newtown Creek within what is now Greenpoint, Brooklyn. This site was initially identified as “traces of occupation” found in that general vicinity as reported by Parker (1922). Bolton (1922) maps a

small village site in this area more than one mile northwest of the Study Area; however, Wisniewski and Solecki (2010: 12) suggest that Bolton's location is incorrect. An archaeological investigation of Bolton's location by Wisniewski and Solecki revealed "a scatter of projectile points and flint knapping debitage...[but] nothing to match the variety and richness of the actual remains at the Maspeth Creek Site," which they excavated in ca. 1930 (ibid: 17).

A. EARLY COLONIAL HISTORY

The earliest colonizers along Newtown Creek came from different regions in Europe and their origins remain encoded on the landscape. Colonizers from the Netherlands settled near the body of water known as Dutch Kills located to the west of what is now Calvary Cemetery and colonizers from England settled near what is now known as the English Kills in the vicinity of what is now Maspeth (Armbruster 1912). These settlements were initially subject to the colonial outpost on Manhattan before Newtown became its own township in 1683 (ibid; Riker 1852). Richard Brutnall was one of the earliest English settlers in the area when he settled there in the early 1640s and later received a colonial patent for the land in 1643 (Armbruster 1912; Seyfried 1984).

Brutnall's property was later owned by William Herrick and then Thomas Wandell, who acquired and expanded the property following his marriage to Herrick's widow in 1659 (Armbruster 1912). Wandell's land holdings included the eastern half of what is now Calvary Cemetery as well as the majority of the modern neighborhood of Laurel Hill (Seyfried 1984). Wandell emigrated from England and arrived in colonial New York after living in Holland (Riker 1852). He is known for being a juror in the only known witchcraft trial to have occurred on Long Island, in which Ralph Hall and his wife were acquitted of all charges (Riker 1852; Foster 1876). Upon Wandell's death in 1691, he was buried in a family cemetery now located within the grounds of Calvary Cemetery, and his land holdings were inherited by his nephew, Richard Alsop (Armbruster 1912).

The Alsop family maintained a presence in the area through the mid-19th century, and the family cemetery in which many generations of the family were interred remains preserved within the limits of the Catholic cemetery that was later developed on the family's farm. Generations of Alsops—who were protestant—are buried in the cemetery (Foster 1876). A coffin plate bearing Wandell's name and date of death was exhumed during excavation for a new grave in later years (Riker 1852). Richard Alsop, who died in 1718, shared the house with his wife, Hannah Underhill Alsop, (d. 1757) and their eight children (Foster 1876; Harrington 1969). Their many descendants included John Alsop, a member of the Continental Congress; Mary Alsop, the wife of politician Rufus King; and Charles Alsop, the president of what is now Columbia University (Harrington 1969). The family was reportedly loyal to the British crown during the Revolutionary War and British troops were stationed in the vicinity of their farm (Foster 1876). However, many local residents signed loyalty oaths as a result of political pressure and Richard Alsop also filed for property damage caused by the British army, who seized from his farm cattle, horses, pigs, produce and crops, a bee hive, cooking pots and serving dishes, clothing, and building materials with a total value of more than 326 pounds (Riker 1852).

B. THE STUDY AREA IN THE 18TH AND 19TH CENTURIES

A house built by Wandell in 1665 would be occupied by members of the Alsop family for centuries and was destroyed in 1879 (Armbruster 1914). The area remained rural farmland through the 19th century but accessibility increased after the Penny Bridge was constructed to the south of the Study Area in 1836 (Munsell 1882). The 1837 Renard coastal survey, the 1844 Hassler coastal survey (see **Figure 5**), the 1852 Connor map, and the 1860 Walling map appears to depict the Alsop house in the vicinity of the Study Area and the 1852 Riker map identifies a house in that area as the “Old Alsop House.” These maps depict the house sitting along the waterfront to the west of a historical road that led to the former location of the Penny Bridge. This historical road appears to have crossed through the Study Area, possibly through what is now Block 2520. A ca. 1855 drawing of Calvary Cemetery by Endicott and Company (see **Figure 6**) depicts an old farmhouse in a similar location in the vicinity of what is now Block 2520, which is east of the historical south entrance to the cemetery. The house was situated to the west of an inundated wetland area and north of the railroad tracks, which crossed the wetlands on piles. Later maps depict similar wetlands within what is now Block 2520. As described in the following section, the Alsop family sold their land to the Catholic Church for the establishment of Calvary Cemetery in 1845.

The Study Area was situated near the border between the neighborhoods of Blissville and Laurel Hill, which grew to the west and east of Calvary Cemetery throughout the 19th century. The community of Blissville was founded in the early 1840s by Nezhiah Bliss, who resided in Greenpoint on the opposite side of Newtown Creek (Copquin 2009). The corridor along Newtown Creek was heavily industrial, and the waterfront areas of Blissville and Laurel Hill were developed with commercial and industrial development. By the mid-19th century, the Newtown Creek waterfront was less developed than the Brooklyn waterfront on the opposite shore, and as such, it became an attractive location for new industrial development, particularly in the area surrounding the Penny Bridge (Seyfried 1984). As industrial development grew, residential development increased to provide homes for the workers employed by the waterfront factories (Willis 1920).

C. CALVARY CEMETERY

Calvary Cemetery was founded by the Trustees of Saint Patrick’s Cathedral in 1848. Saint Patrick’s Cathedral was initially constructed on the site of what was formerly Saint Peter’s Church at the intersection of Mott and Prince Streets in Manhattan in 1801 (Stokes 1918; Inskeep 2000; Meade 2020). Following the construction of what is now known as Saint Patrick’s Cathedral beginning in the late 1850s, the church at Mott and Prince Streets became known as the Basilica of Saint Patrick’s Old Cathedral. The Old Cathedral was surrounded by a large churchyard that was used for the interment of human remains throughout the first decades of the 19th century.

Following decades of public health crises that were mistakenly attributed to the presence of cemeteries in the densely developed and crowded parts of lower Manhattan, increasingly strict laws governing human burial in urban areas were passed during the 19th century. In 1823, burials were banned in the area south of what are now Canal and Grand Streets, several blocks south of the Old Cathedral. In 1832, in response to burial bans in the area as well as the crowding of the cemetery at the Old Cathedral, the Trustees of Saint Patrick’s Cathedral purchased the block bounded by Avenue A, East 12th Street, First Avenue, and East 11th Street for use as a burial ground (Manhattan Conveyance Liber 288, Page 253; United States

Catholic Historical Society [USCHS] 1906). However, in 1838, the City of New York banned the use of burial grounds below the line of 14th Street in Manhattan (Meade 2020). As such, the Catholic church could no longer legally continue to use its burial places in Lower Manhattan.

Beginning in the 19th century, a cultural trend known as the “Rural Cemetery Movement” transformed how cemeteries were designed and used in urban areas (Sloan 1991; Meade 2020). In New York City, as the urban cemeteries in the densely crowded residential areas of Lower Manhattan were closed, large park-like burial grounds were rapidly opened outside of the urban core, starting with Green-Wood Cemetery, which opened in Brooklyn in 1838. The Trustees of Saint Patrick’s Cathedral purchased the land that would become the first portion of Calvary Cemetery—60 acres of land and 20 acres of marshland—from Ann Alsop in 1845 or 1846 for a cost of \$18,000 (Carthy 1947; Donovan 1961; Seyfried 1984).

The Alsop fam included a historical family cemetery that is now preserved within Calvary Cemetery to the north of the Study Area (Meade 2020). The conversion of the land from an undeveloped farm to a carefully designed rural cemetery required “extensive work in clearing, grading, and draining” (Carthy 1947: 76). The first burial occurred in August 1848 when 29-year-old Ester⁶ Ennis was interred within Section 1 of the cemetery to the north of the Study Area (Foster 1876; Seyfried 1983). Newspaper accounts reported that Ennis had died of a broken heart, and her grave became a tourist attraction within the new cemetery (Donovan 1961). The inundated meadow lots bordered Newtown Creek and were later sold to the Long Island Railroad (Seyfried 1983).

To make the cemetery accessible to Catholics living in Manhattan, the Church constructed a ferry house at the Penny Bridge and dredged the adjacent creek to allow steamboats to land at the water’s edge near the cemetery (Foster 1876). The Penny Bridge crossed Newtown Creek south of the Study Area, in the vicinity of what is now the Kosciuszko Bridge, and a deep railroad cut in that location was excavated in 1854 (Seyfried 1963). The cemetery was unable to recoup the enormous costs of maintaining the ferry line, and the line was closed in the late 19th century (Foster 1876). The original purchase was significantly smaller than the current limits of the cemetery. The 1852 Riker and 1852 Connor maps suggest that the cemetery was restricted to what is now the northeastern quadrant, in the vicinity of modern Sections 1 through 6. As shown on those maps, the Study Area was not included within the original boundaries of the cemetery. By the publication of the 1860 Walling map, the cemetery appears to have expanded to include that portion of Block 2508, Lot 1 that is included within the Study Area.

The ca. 1855 drawing of the cemetery (see **Figure 6**) depicts burials within the oldest sections of the cemetery, with nearly all visible tombstones located in the northern sections. That portion of the cemetery situated near the Study Area is depicted on the drawing as a hilly area with grass and trees. The Alsop family cemetery is shown within an otherwise unused portion of the cemetery. A large wall lined what was originally the eastern border of the cemetery along what is now Calvary Avenue—the cemetery path that separates Sections 4B and 6B from the remainder of the cemetery. A small wood-frame structure stood at the southern end of the wall, separating the cemetery entrance gate and an adjacent rail crossing. The 1858 Twiss map identifies the “Penny Bridge Depot” in the location of this building, and it may be depicted on the 1891 Wolverton atlas in the vicinity of Block 2520, Lot 6 (see **Figure 7**). A wooden fence lined the original southern and southwestern sides of the cemetery, a portion of which may have extended through the Study Area at the southern end of Section 5 of the cemetery.

⁶ Different sources identify her as Easter or Eliza Ennis.

In 1867, the sections of the cemetery as originally laid out were nearly full, and the church consecrated an additional 20 acres to expand the burial area (Seyfried 1983). The boundaries of the cemetery are depicted in a similar manner on the 1867 Beers atlas of Long Island. By that time, the cemetery had grown increasingly popular, leading the Catholic Church to expand it through the addition of three new, non-contiguous sections to the east. These three sections became collectively known as “New Calvary Cemetery” while that portion founded in 1848 became known as “First” or “Old” Calvary Cemetery. The segment known as Second Calvary Cemetery was opened in 1867, followed by Third Calvary in 1879 and Fourth Calvary in 1900 (Meade 2020). Additional land would continue to be added to the original cemetery even after the New Calvary sections were added. The cemetery was one of the most intensely used cemeteries for Catholics in New York City; transportation improvements were made throughout the second half of the 19th century to provide access to visitors and grieving family members, including the opening of the Penny Bridge train station in 1867 and in 1873, the establishment of a private horse car line that was expanded as an electric trolley line in the early 1890s (Seyfried 1963; Seyfried 1984).

A map of the cemetery prepared in 1876 suggests the cemetery comprised what are now Sections 1 through 8 of the cemetery with the exception of those portions of the cemetery located east of Calvary Avenue, now known as Sections 4B and 6B. Sections 9 and 10 had been purchased shortly before the production of the map, but were not yet laid out with burial plots (Foster 1876). The main entrance to the cemetery was relocated to this part of the cemetery, which was developed with an office building. The map suggests that the portion of Section 5—now known as Sections 5 and 5A, including a portion of the Study Area—was divided into burial plots but was not assigned row or range numbers, indicating that it may not have been used for burial by that time. Section 5 was situated on the opposite side of the cemetery from the main entrance, and as such was noted for “preserv[ing] the solemn quiet so much in keeping with the sacred character of the place” (Foster 1876: 54). A map of the cemetery prepared by W.H. McDonough in 1886 depicts Section 5 in the same manner. At that time, the southern boundary of the section was Bradley Avenue (formerly known as Old Dutch Kills Road), which historically crossed through the cemetery, separating Sections 1 through 5 from Sections 45 through 56.

The 1891 Wolverton Map indicates that the southern boundary of the cemetery remained along the line of Bradley Avenue. However, the map reflects the expansion of the cemetery to the east of Calvary Avenue, to include what are now Sections 4B and 6B. That area is identified on the map as the property of the “Trustees of St. Patrick’s Cathedral” and as such, may not have been fully incorporated into the cemetery by that time. The portion of the Study Area situated on Block 2520, Lots 6, 22, and 30 is depicted as inundated marshland on plate 5 of the atlas within the area owned by the Trustees. Within what is now Lot 6, a small parcel is delineated that was developed with a wood-frame building, possibly the former Penny Bridge Depot as seen on older maps. However, a connecting plate showing the historical community of Laurel Hill suggests that the entire area was filled by that time, which is consistent with USGS maps published in 1889 and 1891. The southwestern portion of the modern cemetery located south and west of the former line of Bradley Avenue was divided into blocks and lots and was not yet part of Calvary Cemetery. The existing entry gate located to the north of the Study Area is depicted on a 1902 Sanborn map of the area.

By the late 1880s, Calvary cemetery had begun to acquire additional land south of Bradley Avenue and requested that the road be closed and the land ceded to the cemetery for the purposes of expansion (*Brooklyn Daily Times* 1889). The cemetery offered to improve Review

Avenue in exchange for receipt of the former streetbed (ibid). After more than a decade of discussing the plan, which was opposed by local residents, the Borough of Queens made plans to close Bradley Avenue and transfer ownership of the land to Calvary Cemetery in exchange for a portion of what would become the streetbed of Review Avenue (*Brooklyn Daily Times* 1901). As shown on the 1903 Ullitz atlas of Queens, Calvary Cemetery had purchased the land on the southern side of Bradley Avenue, and the elimination of the street would combine the old and new components of the cemetery (*Brooklyn Daily Times* 1904). However, the plan was initially vetoed by the mayor but was later proposed again, and the 1908 Ullitz and 1909 Bromley atlases depict the cemetery boundaries as they appear today, including the location of the former Bradley Avenue, though the latter map suggests that the cemetery had not yet used the new land for burials (*Brooklyn Daily Times* 1903). The stone wall that lines the southern side of the cemetery in the vicinity of the Study Area was therefore likely constructed in the late 19th or early 20th century. The exchange of land that allowed Review Avenue to be constructed and opened appears to have been situated west of the cemetery's Sections 5 and 5A in an area that had not yet been opened for burials. The irregular path of Review Avenue south of the cemetery and adjacent to Laurel Hill Boulevard appears to have been designed to extend south of the historical cemetery limits and avoid the area used for burials. A map produced by the Queens Topographical Bureau in 1955 to document proposed work to raise the street grade of this intersection indicates that Review Avenue is 60 feet wide immediately south of the cemetery within the Study Area and 80 feet wide along the cemetery's southern border northwest of the Study Area. It therefore does not appear that any portion of what is now the streetbed of Review Avenue was historically used for burials.

D. BLOCK 2520 IN THE 19TH AND 20TH CENTURIES

As described previously, the 1891 Wolverton atlas (see **Figure 7**) continues to depict the eastern portion of that portion of the Study Area included within Block 2520 as an inundated wetland while a small wood-frame building was located on a portion of what is now Lot 6. A Sanborn map published in 1898 depicts only the southern portion of the Study Area and the majority of the cemetery was not mapped. As shown on the map, that portion of the Study Area situated east of the former line of Bradley Avenue was included within Calvary Cemetery. A small area in the southwestern corner of Block 2520, Lot 6 is included on the map. The map indicates that that portion of the Study Area was occupied by "Riley Brothers Monuments" and was developed with several small wood-frame buildings. The firm of Riley Brothers, founded in 1883, manufactured and installed marble, granite, and stone grave markers and funerary monuments (*Standard Union* 1929). The Riley Brothers location at Calvary Cemetery was one of three operated by the company in Queens in the early 20th century (ibid).

The complex is depicted more clearly on the 1902 Sanborn map, which shows that portion of the Study Area on Block 2520, Lots 6, 22, and 30 in its entirety (see **Figure 8**). At that time, Lots 22 and 30 were undeveloped and a cluster of wood-frame buildings was located on the western end of Lot 6. Although no longer identified as a monument business, the buildings appeared to serve the same cemetery-related functions and included an office, a shed, two stone cutting buildings, and greenhouses. The 1903 and 1912 Ullitz atlases and the 1909 Bromley atlas depict this portion of the Study Area in a similar manner and identify it as part of Calvary Cemetery. The 1914 Sanborn depicts the area similarly, with the exception of the replacement of the former greenhouses and shed with smaller buildings elsewhere on what is now Lot 6. The 1915 Belcher-Hyde atlas depicts the same buildings but does not identify them as part of Calvary Cemetery.

It therefore appears likely that this portion of the Study Area was used for commercial purposes related to the funeral industry—specifically the manufacture of funerary monuments and the cultivation of plants and flowers used as grave offerings—but was not likely utilized for human interment. An image of the area taken by Eugene Armbruster in 1924⁷ may depict the small florist shop and greenhouse near the southwest corner of what is now Lot 6. The image shows an adjacent “monumental works” that sold grave markers and which was part of what Armbruster identified as “Blessers’s Stone Yard.” Two images of the general area taken by P.L. Sperr in 1936 depict two large, wood-frame structures on Lot 6 that are identified as part of the Riley Brothers monument and headstone production facility.⁸ An aerial photograph taken in 1924⁹ shows small buildings on Lot 6 and depicts the remainder of the Study Area as a storage yard, likely used for stockpiling the materials used for commercial headstone production.

The 1936 Sanborn map identifies the parcel now made up of Block 2520, Lots 6, 22, and 30 as part of a single industrial complex occupied by the Diamond Chemical Company. The map depicts two large, one- to two-story wood-frame industrial manufacturing facilities on what is now Lot 6: what the map describes as a “costic [sic] soda manufacturing facility” and warehouse and a sawdust warehouse connected to two large tanks used for the storage of iron and sawdust with long conveyor chutes connected to the buildings. These appear to be the same buildings seen in the 1936 photographs of the Riley Brothers facility. The complex also included a small building in the location of the former Riley Brothers Monuments office building; a small stone cutting shed; and a brick building along the southern lot line that was used as a water closet.

The 1950 Sanborn map (see **Figure 9**) continues to depict Lot 6 as the property of the Diamond Chemical Company, which had been redeveloped with new facilities covering much of the lot. The former sawdust warehouse remained in place and was expanded with a laundry bleach manufacturing and storage facility; a brick bottling facility; and a fire brick storage building. The former water closet building appears to have been repurposed for the storage of chlorine. The map is also the first to depict the subdivision of Lots 22 and 30. Lot 22 at that time was occupied by a building material company and was developed with several small wood-frame and iron storage buildings and an office. Lot 30 was developed with the coal yard of the Falconer Fuel Oil Company and was developed with a small, iron office building and coal storage bins. These facilities are depicted on a 1951 aerial photograph of the area.

The existing building on Lot 6 was constructed in 1963 and the building on Lot 30 was constructed in 1983.¹⁰ Aerial photographs taken in 1951 depict a large building at the southern end of Lot 22 that is not depicted on the 1950 Sanborn map. This building continues to appear on aerial photographs taken between 1996 and 2022 and it appears to have been demolished within the last two years.

⁷ <http://digitalarchives.queenslibrary.org/browse/newtown-florists-place-within-property-blessers-stone-yard>

⁸ <https://digitalcollections.nypl.org/items/510d47dd-74db-a3d9-e040-e00a18064a99>

⁹ <https://www.arcgis.com/apps/instant/media/index.html?appid=e011fd05a86a4c09bd0b91fbc387f3eb>

¹⁰ Some city records suggest this parcel was developed in 1930, but that is not consistent with Sanborn maps and aerial photographs.

A. CONCLUSIONS

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

PREVIOUS DISTURBANCE

The Study Area has experienced disturbance as a result of the construction and demolition of buildings, streets, railroad lines, and utilities. The area has also been subject to landscape modification associated with the transition of the area from rural farmland/wetland to a modern cemetery and industrialized urban neighborhood.

PRECONTACT SENSITIVITY ASSESSMENT

As described in **Chapter 3, “Precontact Archaeological Resources,”** the precontact sensitivity of project sites in New York City is generally evaluated by a site’s proximity to level slopes (less than 12 to 15 percent), watercourses, well-drained soils, and previously identified precontact archaeological sites (NYAC 1994). Four previously identified archaeological sites have been identified within one mile of the Study Area; these were situated in the areas surrounding Newtown Creek and the associated waterways known as Dutch Kills and English Kills. The Study Area was historically located in an area where a hilly landscape transitioned into a marshy waterfront. Therefore, it is likely that the Study Area was in the vicinity of short- or long-term Indigenous occupation sites or resource exploitation or production areas. However, given the disturbance that has occurred across the majority of the Study Area as a result of the construction and demolition of buildings, streets, paved ground surfaces, and associated subsurface infrastructure in the 19th and 20th centuries, the Study Area is determined to have no sensitivity for precontact period archaeological resources.

HISTORIC SENSITIVITY ASSESSMENT

The Study Area was included within a larger farm between the mid-17th and mid-19th centuries. It was associated with the Alsop family for many generations and the Alsop family farmhouse was located in close proximity to—and possibly within—the Study Area. In 1848, that portion of the Study Area included in Block 2508, Lot 1 became incorporated into one of the original sections of Calvary Cemetery. The large Catholic burial ground was established by the Trustees of Saint Patrick’s Cathedral in response to legislation forcing the church to close its burial places in Manhattan. The cemetery expanded in the late 19th and early 20th centuries and the southern entrance in the vicinity of the Study Area along Review Avenue was modified at that time. The portion of the tunnel alignment that is situated within the portion of the cemetery that contains burials would be drilled at depths ranging between 80 and 130 feet below existing

ground surface. Therefore, the locations where the subsurface impacts would occur are significantly deeper than the depths of any graves and would not have the potential to impact human remains associated with the cemetery.

That portion of the Study Area that is situated within Block 2050, Lots 6, 22, and 30 was part of the historical Alsop farm and may have been developed with a house and a rail depot in the 1850s. Maps dating to the 1870s through the 1890s depict the area as undeveloped with the exception of a small wood-frame building—possibly associated with the associated rail line—and partially inundated. In the late 19th and early 20th centuries, this area may have been part of Calvary Cemetery but does not appear to have been used for burials. Between at least the 1890s and the 1920s, buildings situated on this portion of the site were used for funerary-related activities such as the manufacture and sale of grave markers and monuments and the cultivation and sale of flowers. By the 1930s, the property was converted to industrial use and was developed with facilities used by a chemical manufacturing company and facilities that stored building materials and coal. The existing buildings on this portion of the Study Area were constructed in the second half of the 20th century and buildings formerly located on Lot 22 were recently demolished. While there are indications that Lots 6, 22, and 30 were historically associated with the former Alsop farm and could therefore have contained historical features such as privies, cisterns, and wells, these parcels have undergone extensive disturbance as a result of modern industrial development. Furthermore, the portion of the tunnel alignment that is situated within that portion of the cemetery that contains burials would be drilled at depths ranging between 80 and 130 feet below existing ground surface.

Therefore, the soil levels that would be impacted by the construction of the proposed tunnel have no sensitivity for archaeological resources dating to the historic period.

B. RECOMMENDATIONS

The soil levels within the Study Area that would be impacted by the construction of the proposed tunnel are determined to have no sensitivity for archaeological resources associated with the precontact and historic period occupation of the Newtown Creek area. The tunnel will be constructed by drilling at depths of 80 to 130 feet below the ground surface. Therefore, no further archaeological analysis is recommended.

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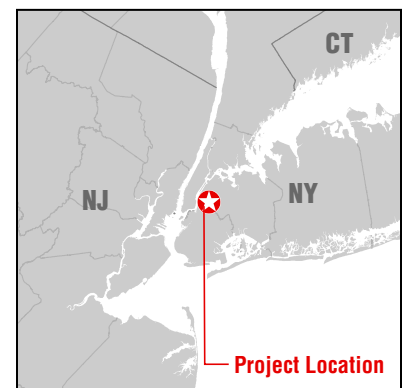
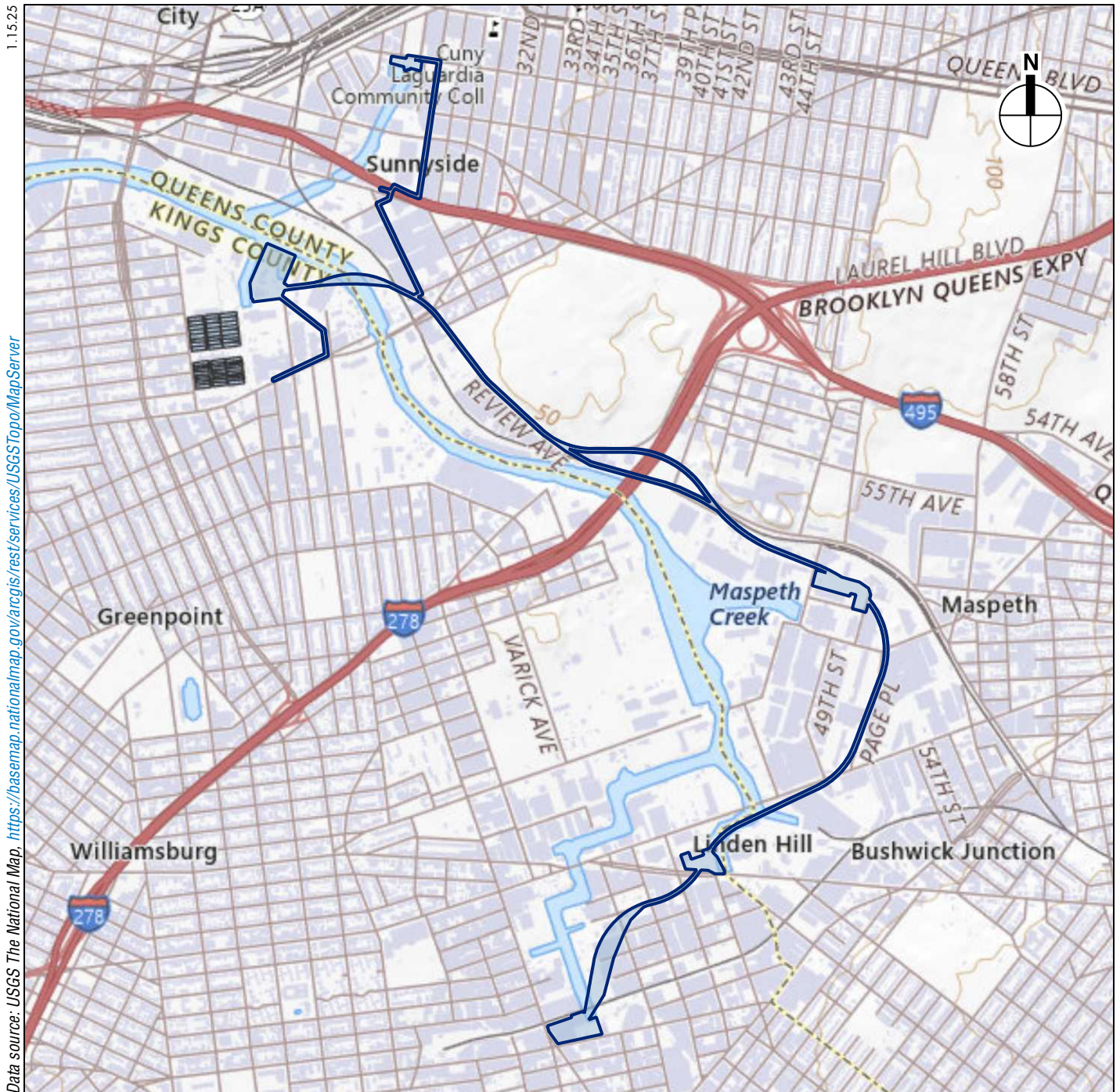
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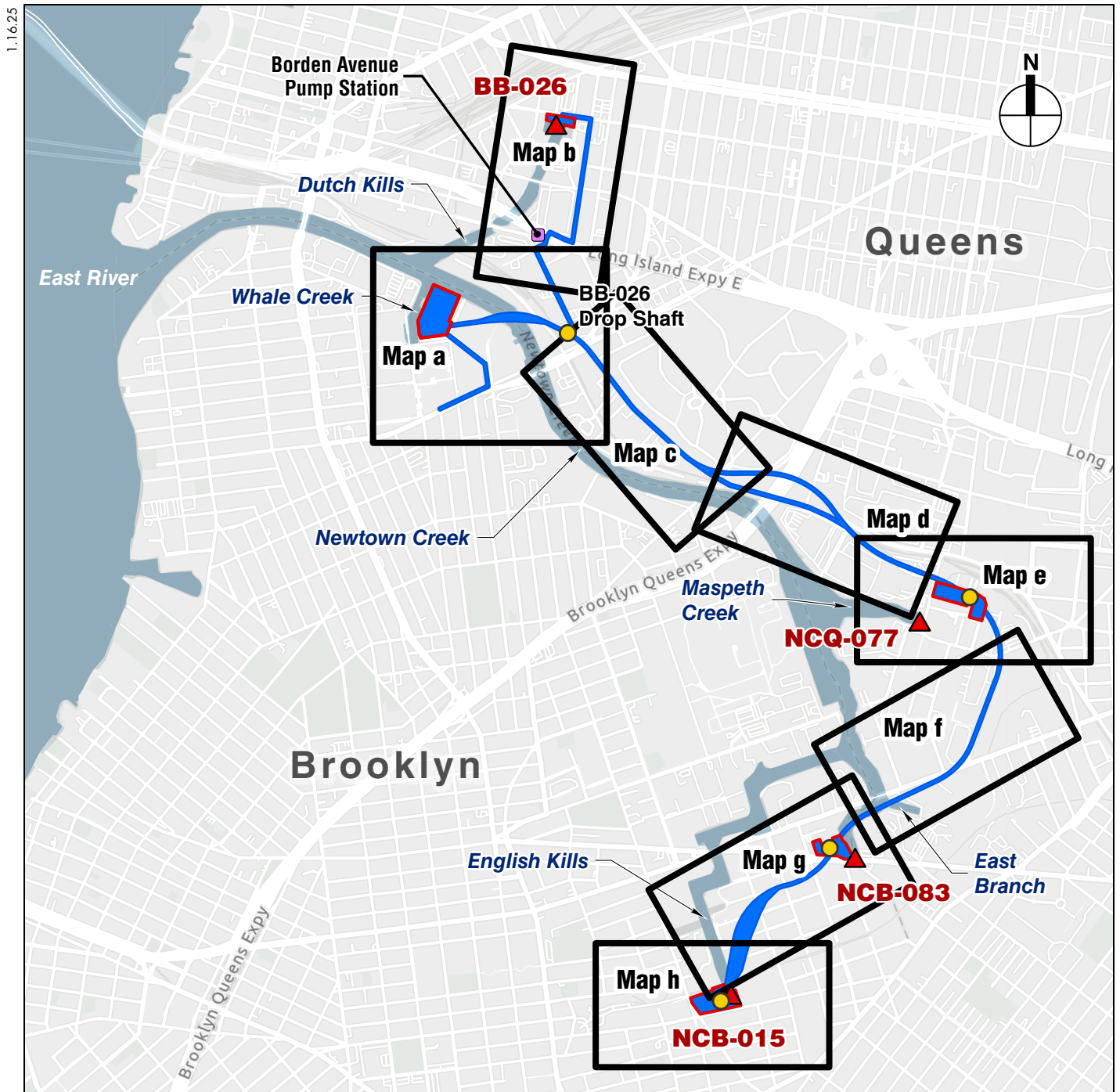
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Figures

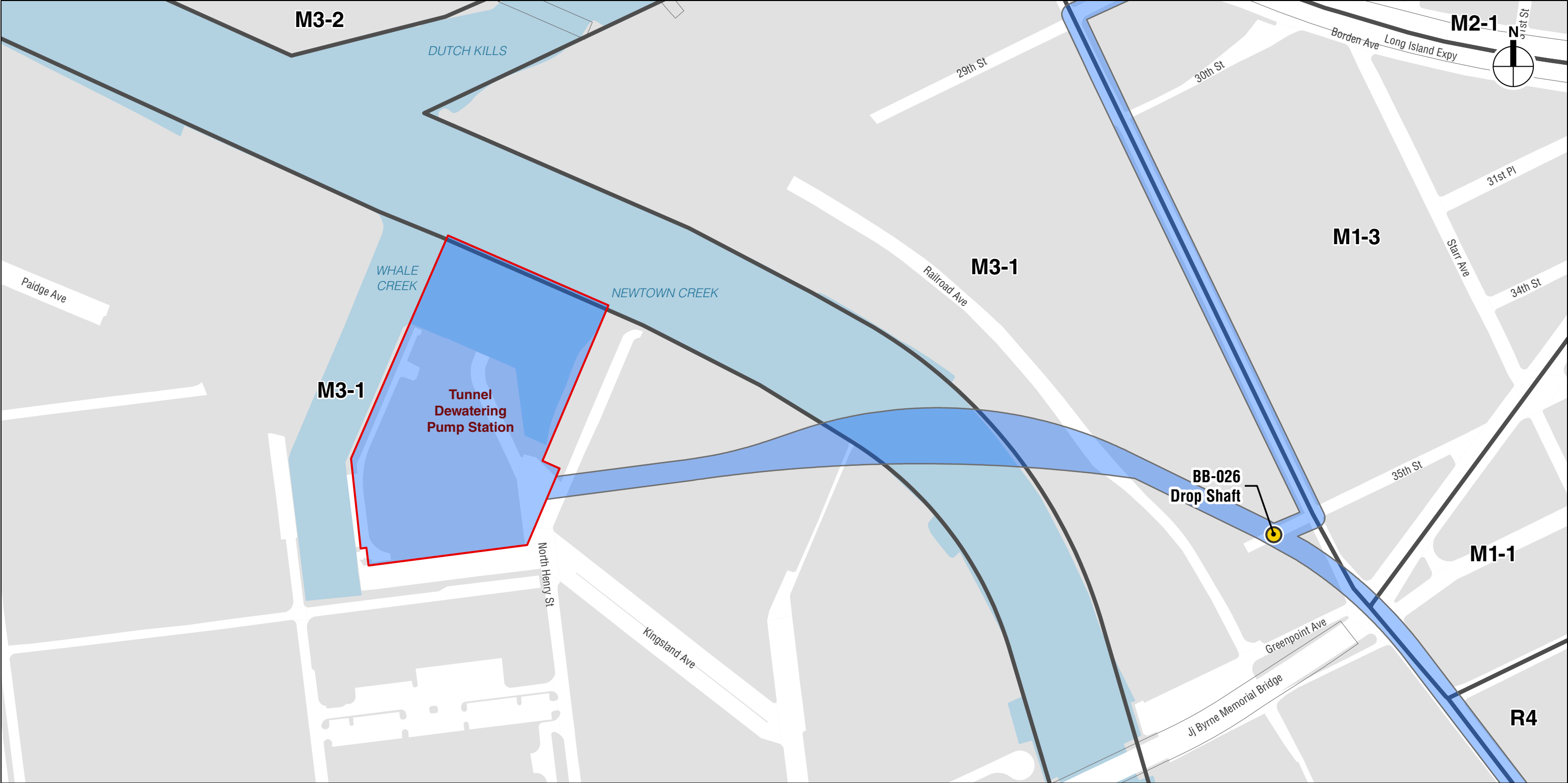


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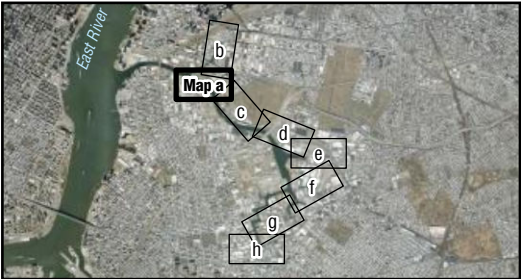
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|---|--|
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|  Approximate Drop Shaft Location | Brooklyn Block 2508, Lot 1 |
|  Outfall |  Diversion Facilities |
| | BB-026: Queens Block 115, Lots 56, 86, and 150 |
| | NCQ-077: Queens Block 2575, Lots 26, 225, and 240 |
| | NCB-083: Brooklyn Block 2948, Lot 85 |
| | NCB-015: Brooklyn Block 2974, Lots 162, and 170 |

Project Limits and Diversion Facilities

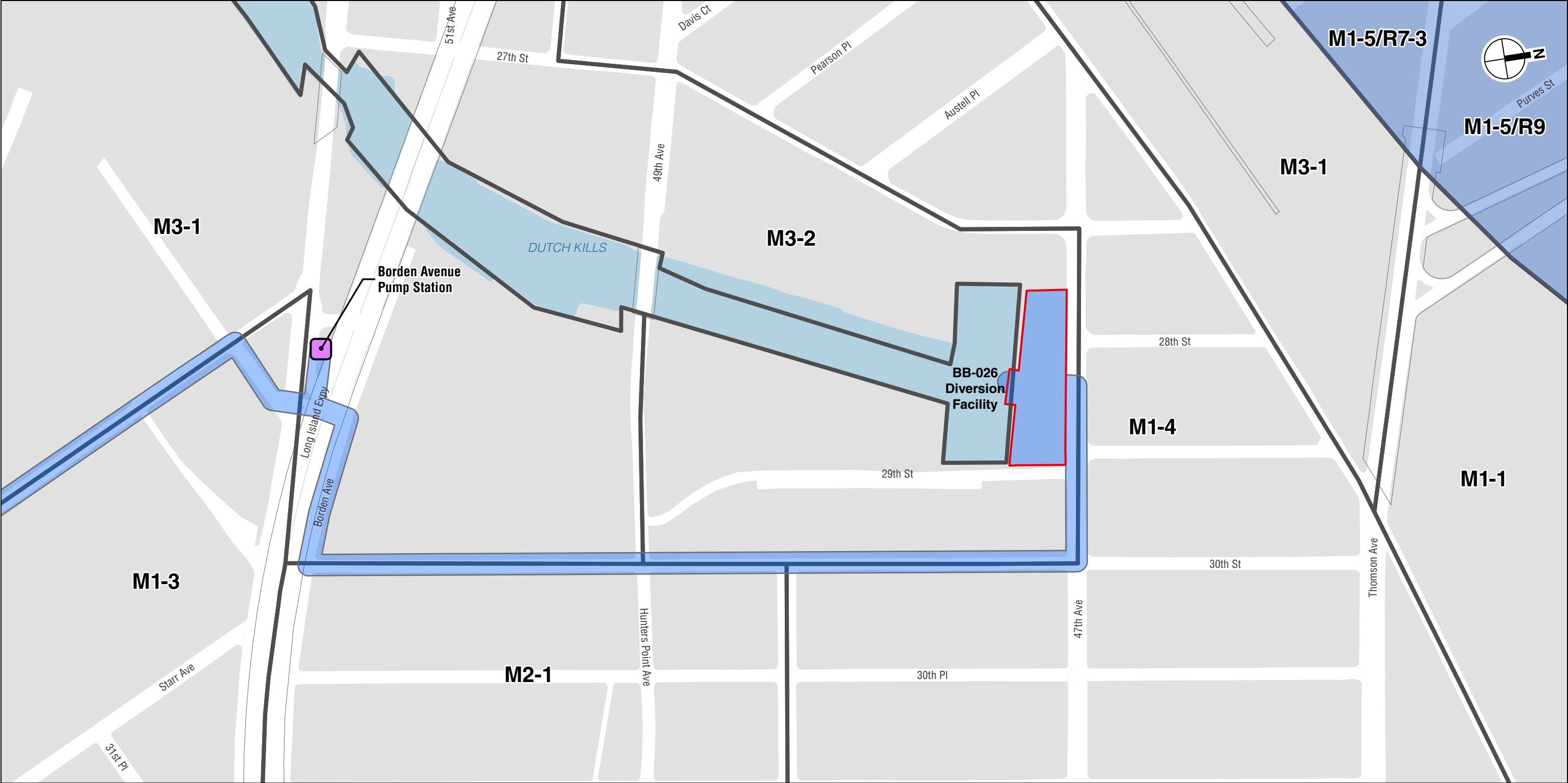


- Project Limits
- TDPS Site
- Approximate Drop Shaft Location

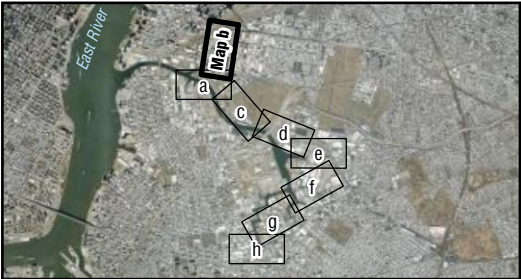
Zoning District Boundary



0200 FEET



- Project Limits
- Zoning District Boundary
- Diversion Facility Site
- Special Long Island City Mixed Use District



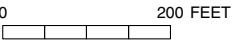
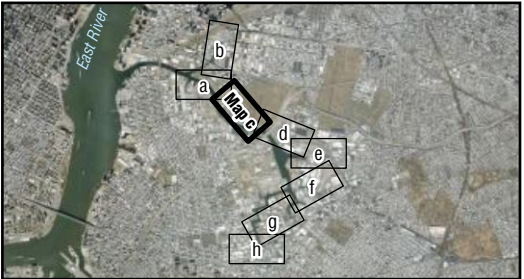
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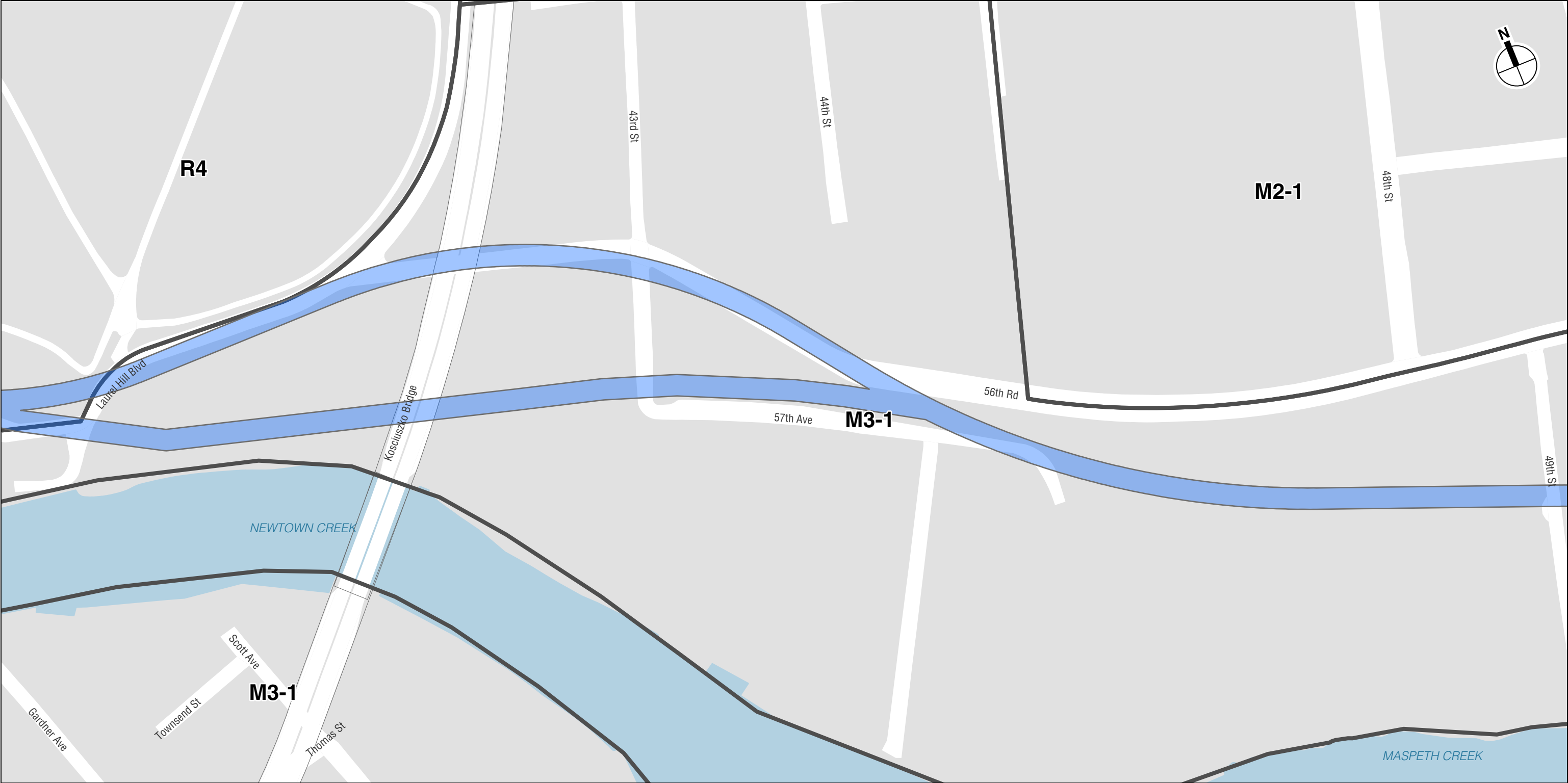


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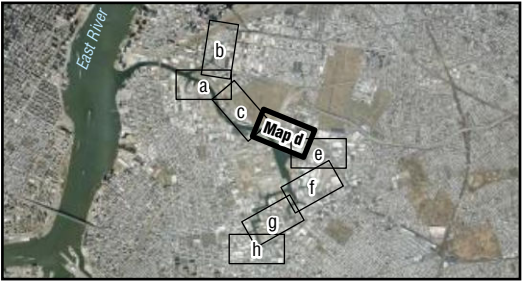
Zoning District Boundary

Approximate Drop Shaft Location

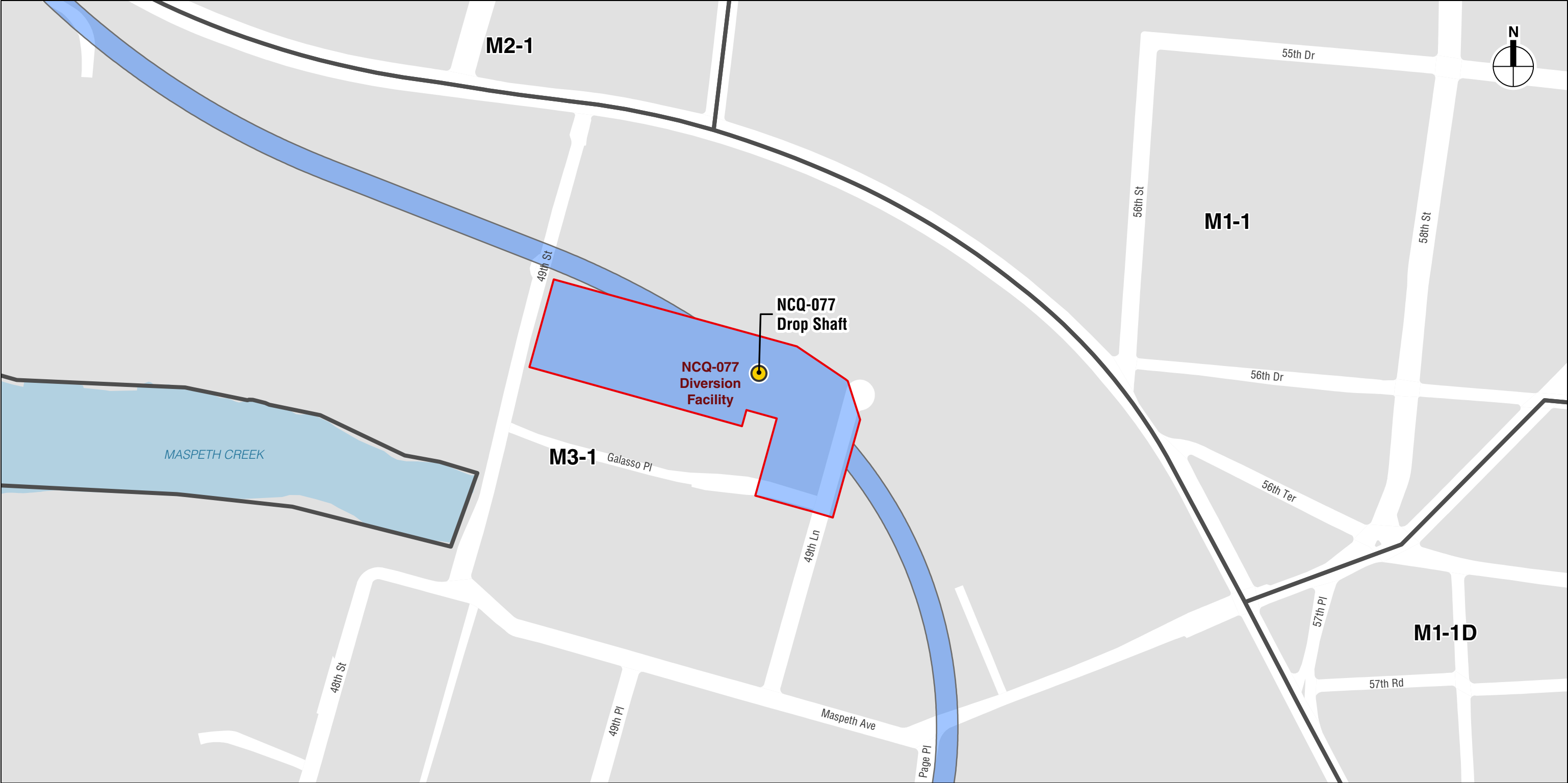




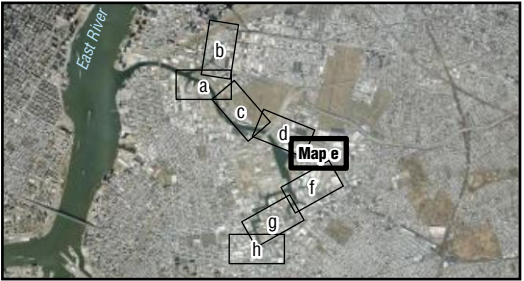
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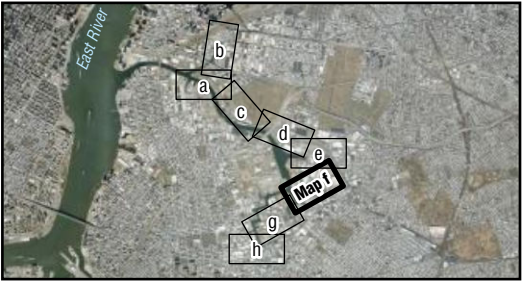
- Project Limits
- Diversion Facility Site
- Approximate Drop Shaft Location
- Zoning District Boundary



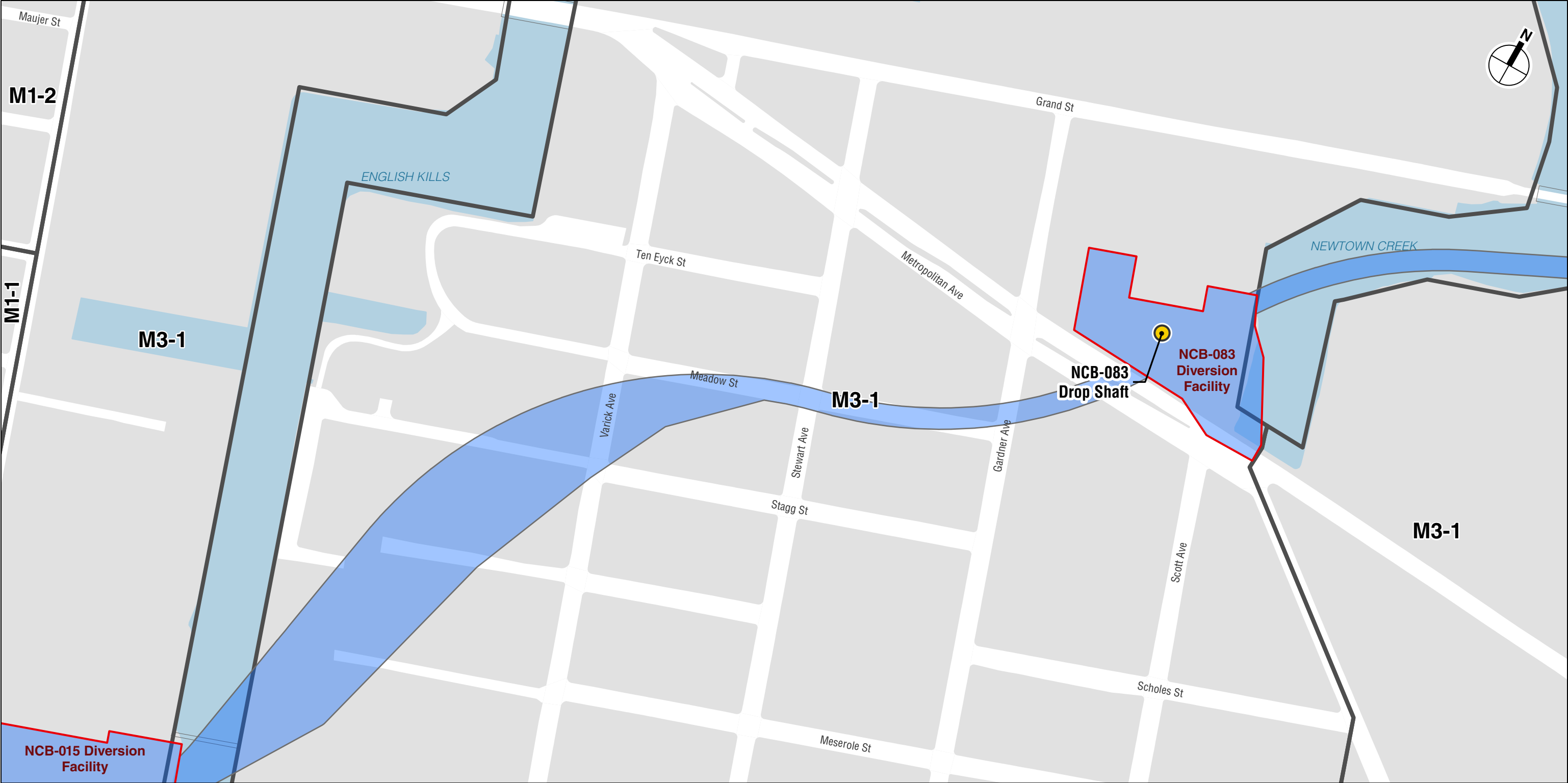
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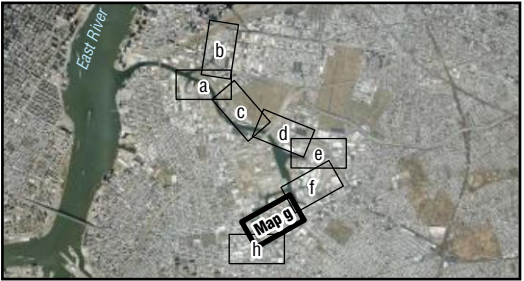


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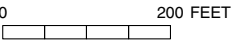
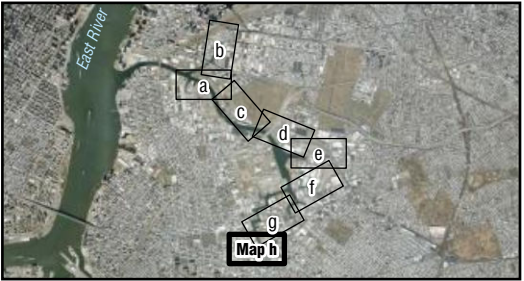
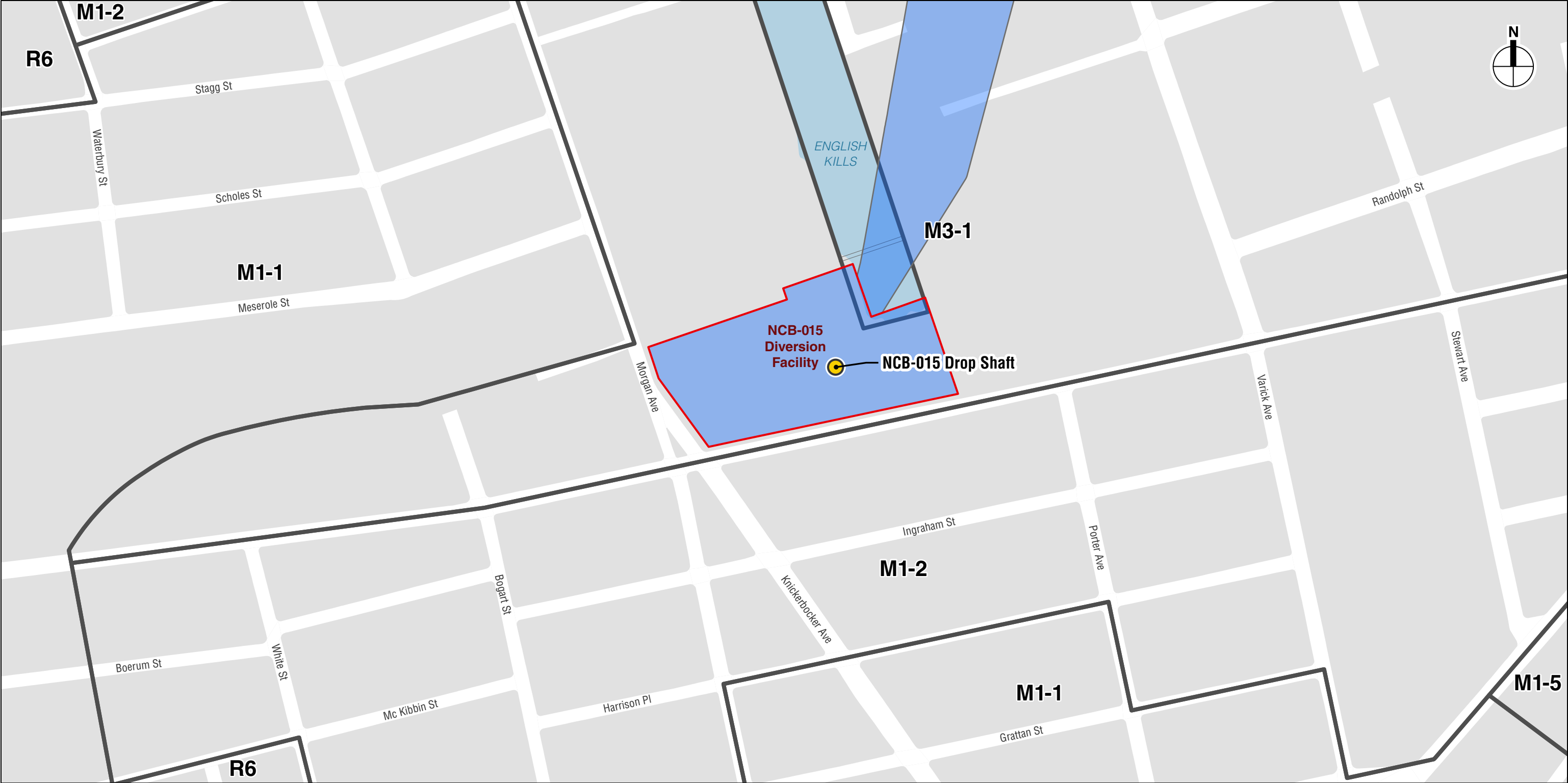


- Project Limits
- Diversion Facility Site
- Approximate Drop Shaft Location

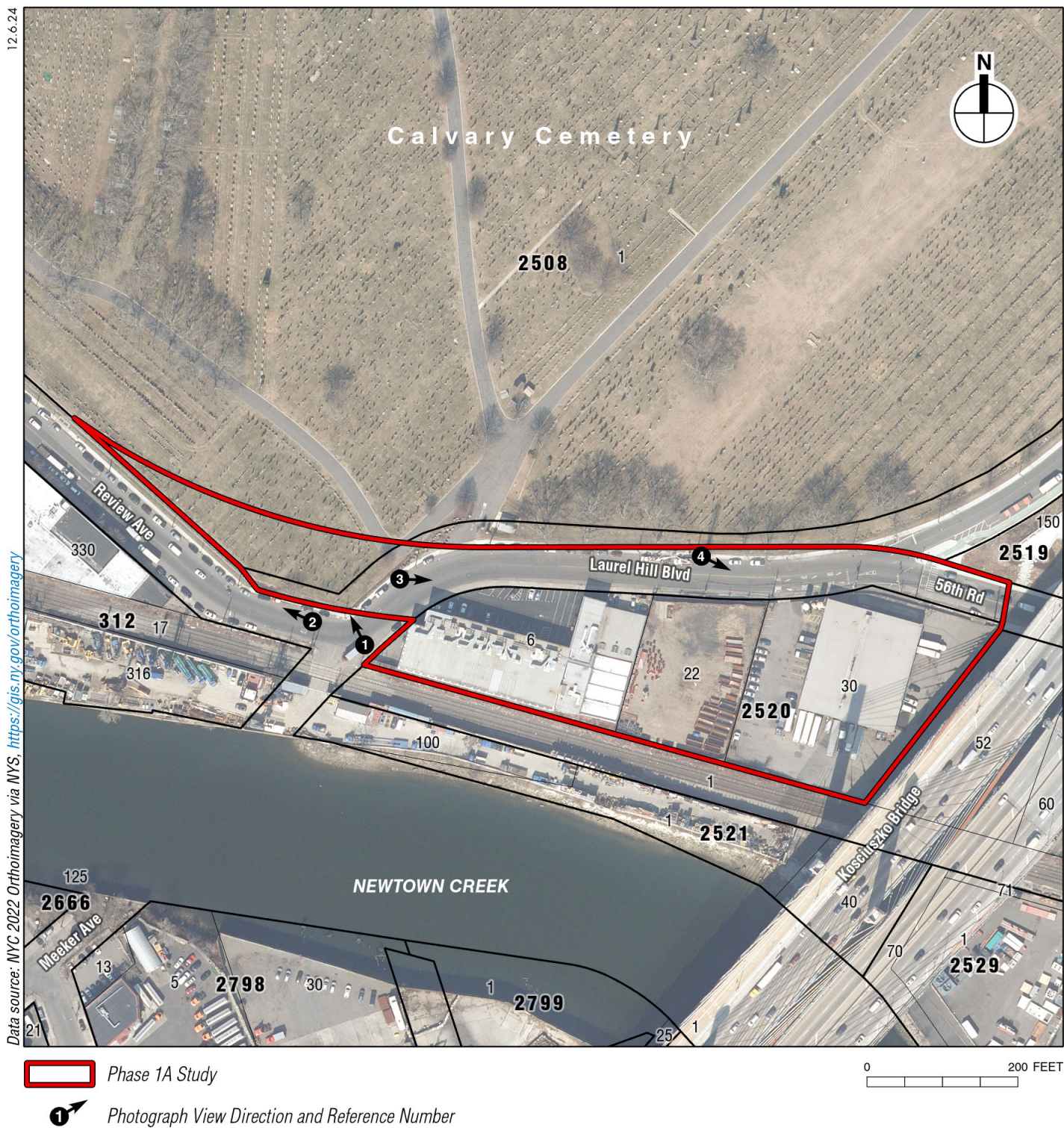
Zoning District Boundary



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Data source: NYC 2022 Orthoimager via NYS, <https://gis.ny.gov/orthoimager>



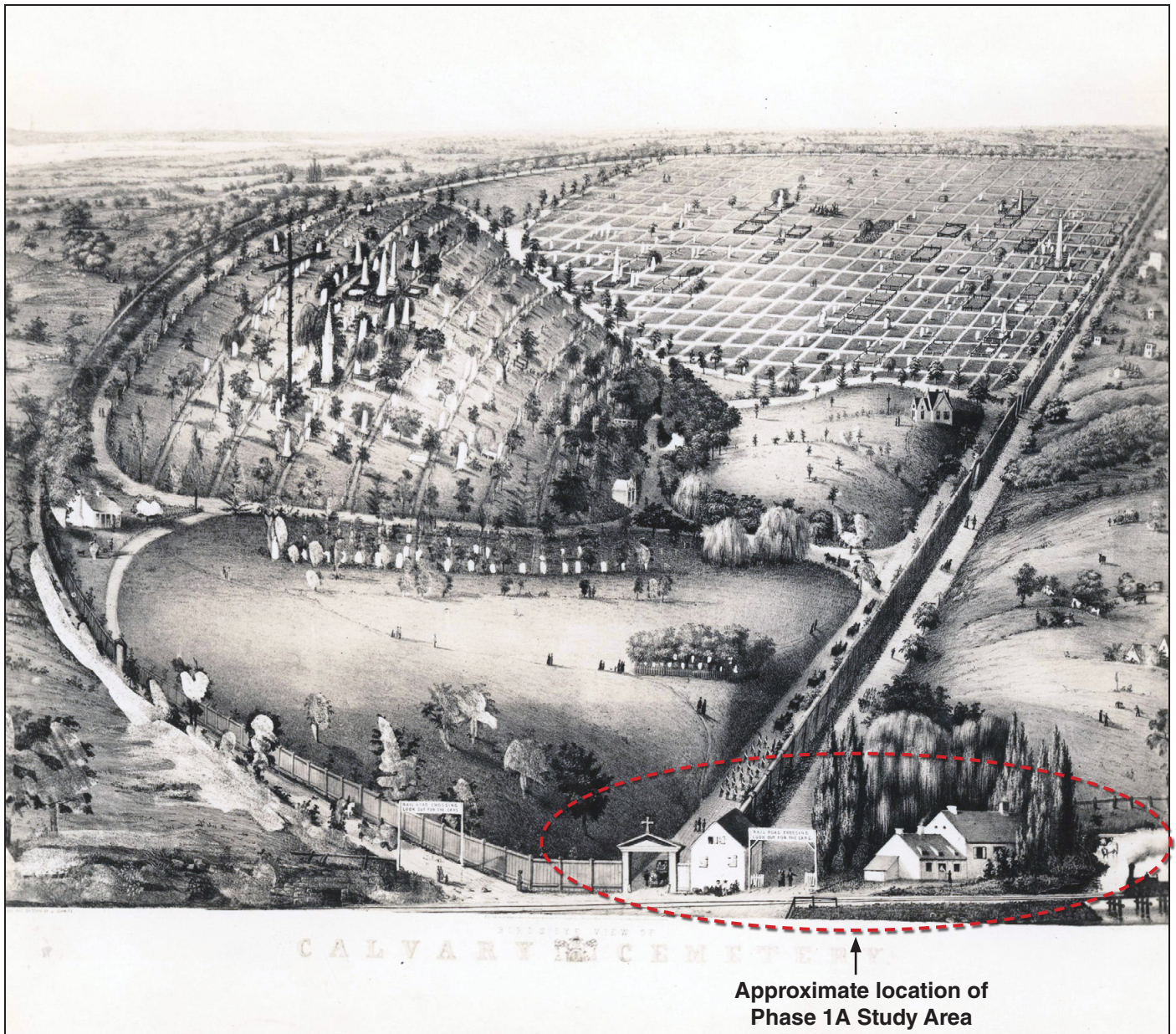
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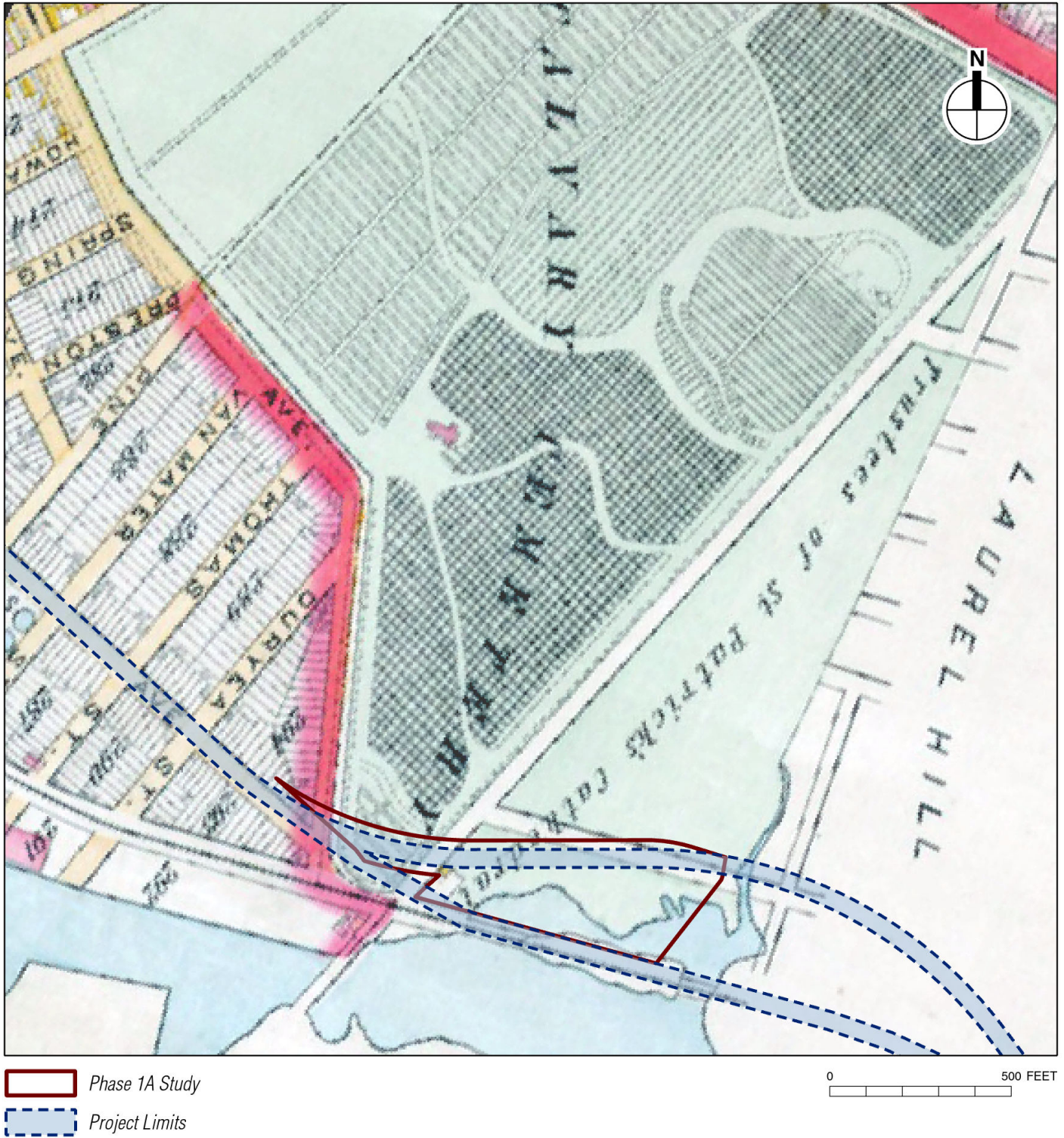


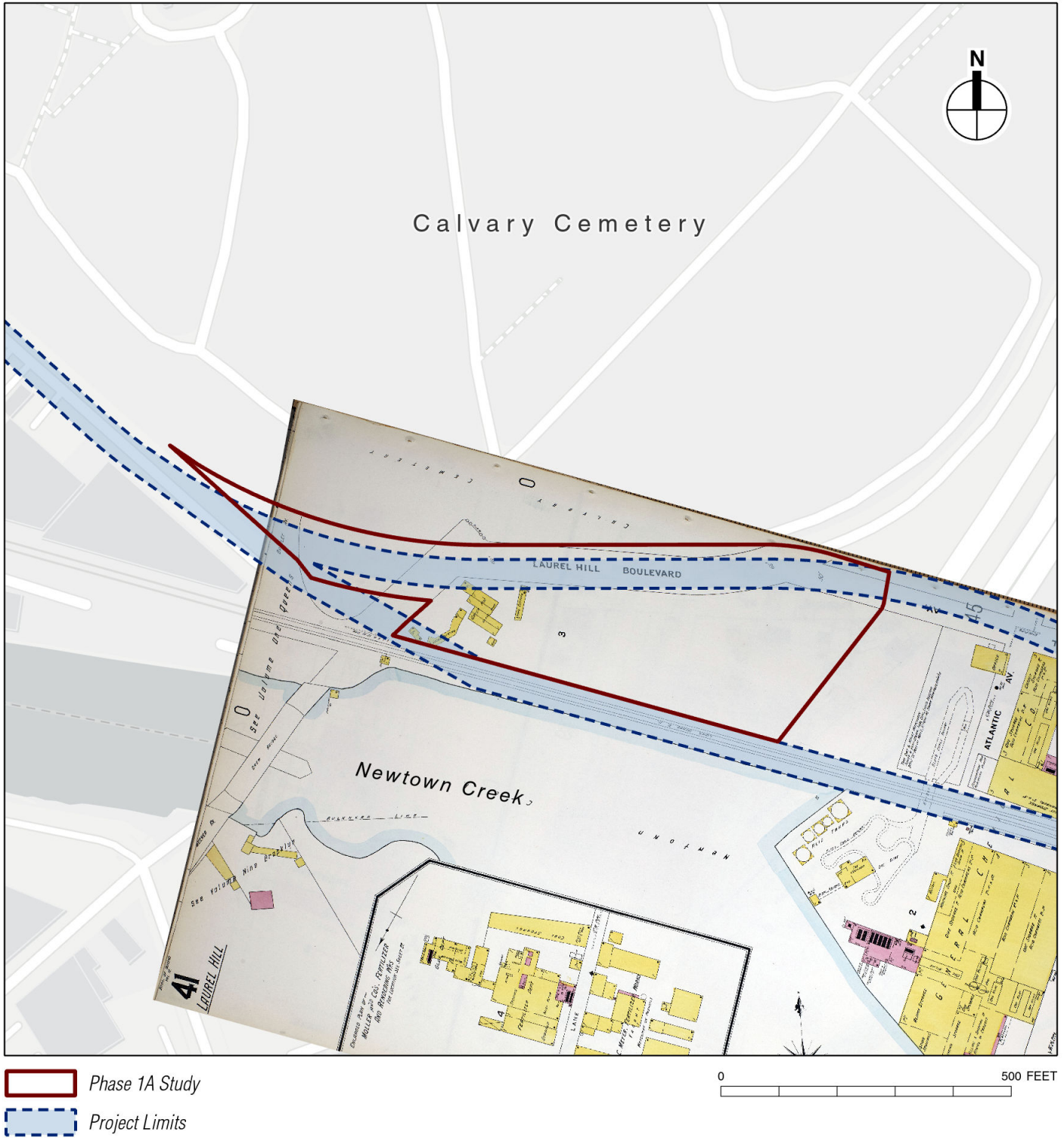
-  Phase 1A Study
-  Project Limits

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1855 Endicott and Company
View of Calvary Cemetery
Figure 6





NOTE: Connecting plates do not depict relevant content within Calvary Cemetery to the northwest and additional map coverage to the north does not exist.

1902 Sanborn Map

 Phase 1A Study

 Project Limits

NOTE: Connecting plates do not depict relevant content within Calvary Cemetery to the northwest and additional map coverage to the north does not exist.

1950 Sanborn Map

Figure 9

Photographs



Looking northwest at Calvary Cemetery from a point near the intersection of Review Avenue and Laurel Hill Boulevard, showing the slope between the last row of graves and the street

1



Looking northwest at the retaining wall lining the southern side of Calvary Cemetery along Review Avenue, showing grave markers at a higher elevation

2



Looking northeast along Laurel Hill Boulevard, with Block 2560, Lot 6 in the foreground and the vacant lot on Lot 22 in the distance

3



Looking east along Laurel Hill Boulevard, with the buildings on Block 2560, Lot 30 in the center and the vacant lot on Lot 22 at right

4