Reconstruction of the Tide Gate Bridge Over Flushing Creek and Reconstruction of Tide Gates and Sluice Gates

Block 2018, Lot 1

FLUSHING MEADOWS CORONA PARK, FLUSHING, QUEENS COUNTY, NEW YORK

Phase 1A Archaeological Documentary Study

Prepared for:

The New York City Department of Design and Construction
30-30 Thomson Avenue
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Prepared by:

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Management Summary

SHPO Project Review Number: 18PR00148

LPC Unique Site Identifier: 34038

Involved Agencies: New York City Department of Design and Construction
New York City Department of Transportation
New York State Department of State
New York State Department of Environmental Conservation

Phase of Survey: Phase 1A Documentary Study

Location Information
Location: Flushing, New York
Minor Civil Division: 08101
County: Queens County

Survey Area, project site
Length: Approximately 800 feet
Width: Approximately 215 feet
Area: 1.5 acres (67,000 square feet)

Survey Area, Wetland Mitigation Area
Length: Approximately 100 feet
Width: Approximately 15 feet
Area: 0.04 acres (1,500 square feet)

USGS 7.5 Minute Quadrangle Map: Flushing

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Date of Report: April 2022

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Chapter 1: Introduction and Methodology

A. INTRODUCTION

The New York City Department of Design and Construction (NYCDDC), on behalf of the New York City Department of Parks and Recreation (NYC Parks), is proposing Capital Project HBPED800Q, also referred to the "Reconstruction of the Tide Gate Bridge[1] Over Flushing Creek and Reconstruction of Tide Gates and Sluice Gates," project which is located in Flushing Meadows-Corona Park (see **Figures 1 and 2**). The Tide Gate Bridge is an existing vehicular bridge across Flushing Creek in the northeastern portion of the park and within Block 2018, Lot 1.

B. PROJECT DESCRIPTION

The existing bridge is 36 feet wide and 370 feet long and carries Meridian Road—a NYC Parks road with two vehicular travel lanes and sidewalks—over Flushing Creek. Below the bridge deck is a hydraulic control system comprised of flap gates and sluice gates that regulate the flow of the creek between Flushing Bay to the north and Meadow Lake to the south. Meadow Lake handles runoff from Flushing Meadows-Corona Park, as well as the adjacent Grand Central Parkway. The tide gates below the bridge are passively operated by tidal fluctuations and the sluice gates are manually operated by NYC Parks staff for the purposes of managing surface water elevations in Meadow Lake. The bridge has been inspected and rated in fair to poor condition as the deck structure and other physical elements have deteriorated and the sluice gates were damaged during Superstorm Sandy in 2012. Given the current conditions, it is therefore necessary to replace the bridge deck and the hydraulic systems.

The proposed project involves the removal and replacement of the existing Tide Gate Bridge deck above the pile supports and replacement of the mechanical flood control structures below the bridge deck with new stainless-steel tide and sluice gates and a new hydraulic control system. The proposed design reuses the existing support structures below the bridge deck and the existing pile caps and wing-walls are to be repaired, as necessary. New piers would then be installed on the existing pile caps. The replacement bridge deck will measure 40 feet, 8 inches in width (about 2.3 feet wider than the existing bridge).

The proposed project would also replace all the existing flow control operational equipment, including all electrical conduit, switches, motors, and other equipment necessary to operation of the hydraulic system and the new tide and sluice gates would have modern automated equipment. In addition, the supporting systems for the hydraulic operations of the flood control system will be protected through the relocation of the control house and the replacement of the

[1] The Tide Gate bridge is alternately known as the "Porpoise Bridge."

existing transformer on a new elevated platform which are located near the Long Island Rail Road tracks.

At the east and west approaches to the bridge, the parapets along the north and south wingwalls are also proposed to be replaced to accommodate the widened superstructure. It is also proposed to extend the bridge sidewalks to connect with the existing sidewalks on both sides of the bridge with Americans with Disabilities Act compliant ramps. In addition, the roadway surfaces on both the east and west sides of the bridge are to be milled and repaved and the existing water main and utility lines that are built into the bridge will be replaced.

With the proposed project, the temporarily disturbed New York State Department of Environmental Conservation (NYSDEC)-regulated Intertidal Marsh and High Marsh at the northeast abutment of the bridge would be restored in-kind to the pre-construction grades and planted with smooth cordgrass (*Spartina alterniflora*) and marsh elder (*Iva frutescens*). Additionally, approximately 200 square feet of Intertidal Marsh and High Marsh would be planted on the northwest abutment of the bridge. The temporarily disturbed Adjacent Tidal Wetland Area would be restored in-kind to the pre-construction grades and planted with a native seed mix along with upland species such as switch grass (*Panicum virgatum*), showy goldenrod (*Solidago speciosa*), New England aster (*Symphyotrichum novae angliae*), groundsel bush (*Baccharus halimifolia*), marsh elder (*Iva frutescens*), white pine (*Pinus strobus*), post oak (*Quercus stellate*), and black oak (*Quercus velutina*).

C. REQUIRED APPROVALS AND PREVIOUS ENVIRONMENTAL REVIEW

Approvals necessary to implement the proposed project includes permits and approvals from NYC Parks, the New York City Public Design Commission and the City's Departments of City Planning and Transportation as well as the New York State Departments of Environmental Conservation and State and the Federal Emergency Management Agency, and the United States Army Corps of Engineers. These permits and approvals are subject to City Environmental Quality Review (CEQR), State Environmental Quality Review (SEQRA), and Section 106 of the National Historic Preservation Act. NYC Parks is the lead agency for the environmental review.

The project was initially submitted to LPC for review in March 2019. In a comment letter dated March 14, 2019, LPC determined that the project site was potentially archaeologically significant and requested an Archaeological Documentary Study of the site. Subsequent to that review, the project design was advanced to include the wetland mitigation area (see **Figure 2**). The project was therefore re-submitted to LPC for review in light of these changes. In a comment letter dated February 14, 2022, LPC once again requested the preparation of an Archaeological Documentary Study. This document has been prepared to satisfy that request.

In addition to the previous consultation with LPC as referenced above, consultation was also initiated with the New York State Historic Preservation Office (SHPO) as part of a Section 106 review completed by the Federal Emergency Management Agency (FEMA). In a comment letter issued September 23, 2019, SHPO concurred with FEMA's finding that the proposed project would not result in impacts on archaeological resources, but concurred with FEMA's finding of Adverse Effect regarding architectural resources. SHPO agreed to FEMA's proposal to apply treatment measures to mitigate that effect pursuant to an existing Programmatic Agreement (see attached letter dated November 15, 2021). At the time of this review, the project site did not

include the proposed wetland mitigation area and it was defined as a smaller area than currently proposed.

D. RESEARCH GOALS AND METHODOLOGY

The Phase 1A Archaeological Documentary Study of the Tide Gate Bridge project site has been designed to satisfy the requirements of LPC as issued in 2018 and it also follows the guidelines of the New York Archaeological Council ("NYAC") as issued in 1994. The study documents the development history of the project site and its potential to yield archaeological resources, including both precontact and historic cultural resources. This Phase 1A Study has four major goals: (1) to determine the likelihood that the project site was occupied during the precontact (Native American) 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 project site; (3) to make a determination of the project site'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 project site was inhabited during the precontact and/or historic periods, and identify any activities that may have taken place in the vicinity that would have resulted in the deposition of archaeological resources.

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

> *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 project site's archaeological sensitivity. As stipulated by the 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 Native American sites would not be present (i.e., locations at great distances from fresh and salt water resources), locations where no historic 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 project site.

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

As mentioned above, the fourth goal of this study is to make recommendations for additional archaeological investigations where necessary. According to NYAC standards, Phase 1B testing is generally warranted for areas determined to have moderate sensitivity or higher. 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 project site, such archaeological resources could provide new insight into the precontact occupation of Queens, the transition from Native American occupation to European colonization, or the historic period occupation of the project site.

To satisfy the goals as outlined above, documentary research was completed to establish a chronology of the project site'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 was 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, the New York City Municipal Archives, and the Queens Public Library Archives. Previously identified archaeological sites and previously conducted archaeological resources in the vicinity were collected from the files of SHPO, NYSM, and the New York City Landmarks Preservation Commission ("NYCLPC"). Information on previously identified archaeological sites and previous cultural resources assessments was accessed through the New York State Cultural Resource Information System (CRIS) maintained by SHPO.[1] Online textual archives, such as Google Books and the Internet Archive Open Access Texts, were also accessed.

[1] https://cris.parks.ny.gov

Chapter 2: Environmental and Physical Settings

A. CURRENT CONDITIONS

As described previously, the project site surrounds the existing Tide Gate Bridge, which carries Meridian Road over the Flushing Creek and is situated on top of a substantial foundation and supported by piles (see **Figures 3A through 3D**). Areas within the project site adjacent to the road contain paved pathways or flat landscaped lawns with trees. A foundation remnant is located to the northwest of the bridge, outside the limits of the project area, that would be left in place and not impacted by the project. Manholes, utility cover plates, catch basins, and light poles are visible within and adjacent to the streetbed of Meridian Road, confirming the presence of utilities beneath the road surface and in adjacent grassy areas. A sewer line runs through the grassy area parallel to and north of Meridian Road and other utilities including telecommunications and water lines are located along the southern side of the project site and below the bridge foundation. A switch pad on a concrete slab is located in the northwest corner of the project site. With the proposed project, some of these existing electrical infrastructure in the grassy lawn to the northwest of the bridge will be removed and replaced with new infrastructure elsewhere within that same area.

The wetland restoration area is situated on the western shore of Flushing Creek in a densely vegetated area that slopes down to the waterfront. A portion of this area is lined with a retaining wall that extends north from the Tide Gate Bridge.

B. GEOLOGY AND TOPOGRAPHY

The Borough of Queens is located within a geographical region known as the Atlantic Coastal Plain Physiographic Province. The Atlantic Coastal Plain, which includes all of Long Island, tends to include flat, gently sloping land (Isachsen, et al. 2000). Bedrock in the vicinity of the project site is identified as the Raritan Formation, composed of clay, silty clay, sand and gravel (Fisher, et al. 1995). This bedrock type dates to the Upper Cretaceous Period of the Mesozoic Era, which lasted between approximately 97 and 66 million years ago (Fisher, et al. 1995; 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 towards the end of the Pleistocene 1.6 million years before present ("BP") to approximately 10,000 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 project site is situated to the north of the Terminal Moraine, the ridge of hills that runs through central Queens marking the southernmost extent of the glacial advancement.

In addition to the deposition of till, the retreating glaciers also left behind a trail of melting ice and water, resulting in the formations of wetlands and small bodies of water across the region. Between 12,000 and 6,000 years before present, sea levels fluctuated followed by a rapid rise in sea levels, reaching their current state by approximately 3,000 years ago (Geoarcheological Research Associates 2007). As seen on the 1891 United States Geological Survey ("USGS") maps of the area (see **Figure 4**), the project site was

historically included in an inundated marsh associated with the larger wetland network known as Flushing Meadows and was bisected by the Flushing Creek.

The 1891 maps indicate that the elevation of the area was at sea level. Modern Lidar elevation data recorded by USGS in 2013 indicates that while Flushing Creek is located at an elevation of -4 to 0 feet relative to the North American Vertical Datum of 1988 ("NAVD88"), upland areas of the project site are situated at an elevation of 6 to 10 feet NAVD88. There is a slight rise in elevation at either end of the Tide Gate Bridge but the upland portions of the project site are generally level. The project site and the wetland restoration area both appear to have been affected by historical landscape modification associated with the filling of the Flushing Meadows and its subsequent conversion into a city park.

C. HYDROLOGY

As described above, the project site and wetland mitigation areas were historically inundated marshland or creek. The modern creek continues to bisect the project site and runs beneath the Tide Gate Bridge. Groundwater in upland areas is situated at depths of 4 to 6 feet below the ground surface (LiRo Engineers, Inc. 2015).

D. SOILS

The Web Soil Survey maintained by the United States Department of Agriculture's Natural Resources Conservation Service[1] indicates that the project site is underlain by the open water of the Flushing Creek and soils associated with the "Ebbets-Laguardia-Urban Land" complex. The typical profile of these types of soils includes 0 to 7 inches of sandy loam; 7 to 27 inches of gravelly artifactual sandy loam; and 27 to 72 inches of very gravelly-artifactual loamy coarse sand. These well-drained soils are typically found in level areas with slopes ranging from 0 to 3 percent.

Four soil borings were completed as part of an investigation of the project site completed by LiRo Engineering, Inc. in 2015, one at each corner of the existing bridge. On the western side of the bridge, the soil profile included 8 to 15 feet of sandy, ashy fill material over a 2- to 5-foot-thick layer of peat. The shallower and thicker peat deposits were observed near the bridge's southwest corner, possibly suggesting greater disturbance to the peat layer to the north of the bridge. On the east side of the bridge, 10 to 14 feet of fill were observed over a 2-foot thick peat layer., However, the peat layer was deeper on the northern side of the bridge in that portion of the project site. The peat was underlain by muddy clay in all locations (LiRo Engineering, Inc. 2015). As currently proposed, project-related impacts located outside of the footprint of the existing bridge will involve the installation of electrical infrastructure, fencing, and landscaping and are not expected to result in impacts to depths that would penetrate the peat layer.

E. SUMMARY OF PREVIOUS ARCHAEOLOGICAL INVESTIGATION OF THE PROJECT SITE AND VICINITY

An area adjacent to the Flushing Creek north of the Tide Gate Bridge, including the location of the wetland mitigation area, was included within a 2003 Phase 1A Archaeological Documentary Study prepared by Panamerican Consultants, Inc. in 2003 for the Flushing Bay Ecosystem Restoration Project. At the time, the project recommended modifications to the culverts and tidal gates in the vicinity of the Tide Gate Bridge (referred to as the "Porpoise Bridge" in that study). The study determined that the surface areas adjacent to the creek had very low sensitivity for precontact archaeological resources and that subsurface areas adjacent to the creek had low to moderate sensitivity because of disturbance to creek

[1] https://websoilsurvey.sc.egov.usda.gov/

banks resulting from historical and modern development. The general area surrounding Flushing Creek was identified as an area of high historical sensitivity due to the presence of the Long Island Railroad (LIRR) bridge to the north of the project site and the Tide Gate Bridge within the project site, as both bridges were identified as potentially significant structures (Panamerican Consultants 2003). The report recommended further survey work specific to the potentially historic bridges, but does not appear to have recommended further archaeological analysis.

A. PREVIOUSLY IDENTIFIED NATIVE AMERICAN ARCHAEOLOGICAL SITES NEAR THE PROJECT SITE

In general, Native American habitation sites are most often located in coastal areas with access to marine resources, near fresh water sources and areas of high elevation and level slopes (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 SHPO, LPC, NYSM, and from published accounts. Seven sites have been identified within one mile of the project site in databases maintained by SHPO and NYSM (accessed via CRIS) and the project site is located within a generalized area of archaeological sensitivity as mapped by SHPO. These sites are summarized in **Table 3-1**, below.

Table 3-1
Precontact Archaeological Sites in the Vicinity of the Project Site

Site Name/ Number	Site Type	Approximate Distance from Project Site	Source Information
NYSM Site 4544	Camp	Overlaps	Parker 1920
NYSM Site 4542	Camp	4,000 feet	Parker 1920
Grantville Site SHPO Site 08101.000133	Archaic and Woodland period habitation site on northern side of Flushing Bay	4,600 feet	Smith (1950)
Linnean Garden NYSM Site 4524 SHPO Site 08101.013320*	Burial Site	4,500 feet	Furman 1875; Parker 1920; Bolton 1922; AKRF 2021
Flushing Friends Meeting House Precontact Site NYSOPRHP: 08101.011370	Woodland-era campsite with projectile points and other lithic artifacts	4,400 feet	
NYSM Site 4545	Traces of occupation	1,000 feet	Parker 1920
New York Hall of Science Precontact Site NYSOPRHP: 08101.011526	Surface finds, possible camp	5,000 feet	

Note: *The "NYS Museum Sites" layer in CRIS incorrectly maps this site within the Queens Botanical garden east of the project site; the location as mapped by the SHPO site is correct.
Sources: CRIS (https://cris.parks.ny.gov)

The majority of these sites were mapped based on descriptions provided by Parker (1920) based on reports from other archaeologists and avocational archaeologists in the late-19th and early 20th centuries. Little is known about these sites and they were not excavated according to modern archaeological standards or ethical guidelines. Two sites were documented through modern archaeological surveys. The first (SHPO site 08101.011526) included a surface find—a possible lithic core—on the grounds of the New York Hall of Science nearly one mile west of the project site. The other site (SHPO site 08101.011370) included a small Woodland-period campsite that included projectile points and other precontact lithic artifacts that was documented by archaeologists Eugene Boesch and Jerome Wooden in

the location of the Friends Meeting House 4,400 feet northeast of the project site, which also contains a historic period cemetery.

CRIS identifies the "Linnean Garden" site in two locations: one a short distance east of the project site within the grounds of the Queens Botanical Garden and one within the historical village of Flushing. Previous research confirmed that this site was in the latter location, now mapped as SHPO Site 08101.013320 (Innes 1908; Roberts 1997; Seyfried 2001; AKRF 2021). The site is believed to have been utilized as a "station," or occupation site, with planting fields that were later repurposed as botanical gardens in the historical period, long before the modern Queens Botanical Garden was established (Bolton 1922:182). Parker (1920) described the site as: "Burial sites yielding 11 skeletons, in the Linnaean Garden in Flushing in 1841. All heads were to the east" (Parker 1920:672). Parker's source for information on the site was historian Gabriel Furman (1875), who described the site and its discovery as follows:

> *In the month of July 1841, eleven human skeletons were unearthed in excavating the ground to run a road through the Linnæn Garden, at Flushing, in Queens County. The place where they were found has been for fifty years used as a horticultural nursery. They were within a circle of thirty feet, their heads all lay to the east, and some nails and musket-balls were found with them. Conjecture has been foiled in speculating upon the circumstances under which they were inhumed* (Furman 1875: 5-6).

A similar narrative was published by historian Benjamin F. Thompson in 1843, only two years after the reported discovery of the remains. Additional similar reports have been repeated in other published works, including Bolton (1922). Fulton's account therefore appears to have been based on Thompson's:

> *In the autumn of 1841, while some persons were employed in excavating the ground, in the grading of Linnæus street, through a part of what was once the Linnæan Gardens, a dozen or more human skeletons were discovered and exhumed almost entire. From the fact of leaden bullets being found among the bones, it seems highly probably that the unfortunate individuals whose relics they were had fallen by an enemy in battle—and from the circumstance that a very considerable British force was stationed here during the Revolutionary war, it is no more reasonable to suppose, these bones may have been the remains of some of our countrymen, or of their opponents, who had fallen in a skirmish with each other* (Thompson 1843 II: 93-94).

The final sit located within one mile of the project site was situated at the southern end of College Point along the northern shore of Flushing Bay approximately 4,600 feet north of the project site. Known as the "Grantville Site," it was investigated first in the 1930s by M.C. Schreiner and again later by archaeologist Ralph Solecki (Smith 1950). Pottery recovered from this site were determined to be associated with the Bowman's Brook and Clason's Point traditions, the latter having been named for a site located along the southern shore of the Bronx directly opposite College Point (ibid). While some non-ceramic traditions were observed among the Grantville site collections, Smith (1950) determined that they could not be identified as belonging to a "pre-pottery" culture, and as such it is assumed that the Grantville site dates to the Woodland period.

B. DEVELOPMENT HISTORY OF THE PROJECT SITE

As described previously, the project site remained within the inundated marshland of Flushing Meadows and was in the vicinity of Flushing Creek until the early 20th century. The line of Flushing Creek has been modified over time, which is reflected on historical maps of the area (Panamerican Consultants 2003). Numerous maps depict these conditions during the 19th century, including the 1844 Hassler coastal survey; the 1852 Connor map (see Figure 5); the 1873 Beers atlas; and the 1891 Wolverton atlas. Maps

depicting conditions in the early 20th century are similar, including the 1902-1903 Sanborn maps[1]; the 1904 Ullitz atlas; the 1909 Bromley atlas (see **Figure 6**); The exact placement of Flushing Creek within the project site appears to vary on these maps. This discrepancy may be related to inaccuracies of the historical surveys or to anthropomorphic landscape changes that resulted in changes to the creek's path. The 1903 Sanborn, 1904 Ullitz map and 1909 Bromley atlas suggest that the areas of tidal marsh were divided into large privately-owned tracts that were presumably associated with salt hay farming/cultivation. While the 1902 Sanborn map depicts the names of some of the owners of these salt hay tracts on the western side of the creek, it indicates that the identities of the owners of tracts in the vicinity of the project site were unknown. The 1903 Sanborn map depicting the other side of the creek reflects the growing industrialization and development of the area to the east of what is now Flushing Meadows Corona Park.

Sanborn maps published in 1914/1917 indicate that the marshes remained intact surrounding the Flushing Creek. A 1924 aerial photograph taken by the City of New York[2] reflects the beginning of some filling on either side of the creek, including the construction of what appears to be a grid of streets on the eastern side of the waterfront. The same mapped (but not constructed) streets are visible on the 1917 Sanborn map of that area.

The dramatic transformation of the Flushing Meadows area occurred in the 1930s in preparation for the 1939 World's Fair. The Tide Gate Bridge was constructed in 1938 in advance of the 1939 World's Fair, damming the creek "to keep incoming tides from reaching further upstream into the park" (Kadinsky 2016: 104). To counteract construction-related delays being caused by the creek's tides, the route of the creek was realigned and redirected through pipes at this time through the installation of sheeting with the Tide Gate Bridge designed to control the creek's tides (*New York Daily News* 1936). The bridge served to retain fresh water and hold back the tide of incoming salt water, transforming the creek into lakes (*Brooklyn Daily Eagle* 1938). Historical photos taken around the time of its construction depict the extensive submerged portions of the bridge.[3] The photographs also appear to depict a cleared and modified creek shoreline in the areas adjacent to the bridge. Timber structures are visible within the water to the north of the bridge in one photograph, although it is unclear if they pre-date the filling efforts or if they were constructed to facilitate the transformation of the area.[4] Maps of the fair grounds in the collection of the New York Public Library depicts the bridge near the northern end of the event space, with "Tomorrow Town" situated to the southwest of the bridge and a horticultural exhibit to the east.[5] Photographs show that the grassy lawn area within the western portion of the project site contained a bus terminal and parking lot and that the waterfront areas adjacent to the bridge featured wetland areas to the north of the bridge.[6]

The 1950 Sanborn map depicts the project site as undeveloped with the exception of the bridge. A 1951 aerial photograph[2] reflects the demolition of all fair facilities within the project site. The 1964 World's Fair was also located within Flushing Meadows Corona Park. The foundation remnant currently located

[1] The area on the west side of Flushing Creek was included in Volume 3 of the Sanborn maps as published in 1902 and the area on the eastern side of the creek was included within Volume 5 as published in 1903.

[2] Accessible here: https://maps.nyc.gov/then&now/.

[3] Accessible here: https://nycma.lunaimaging.com/luna/servlet/s/oq9qv7; https://nycma.lunaimaging.com/luna/servlet/s/626gc4; https://nycma.lunaimaging.com/luna/servlet/s/4o8oa2.

[4] Accessible here: https://nycma.lunaimaging.com/luna/servlet/s/2227o8/.

[5] Accessible here: https://digitalcollections.nypl.org/items/b07fa8e0-35d3-0131-4020-58d385a7bbd0 and here: https://digitalcollections.nypl.org/items/5e66b3e8-9720-d471-e040-e00a180654d7.

[6] See photograph here: https://nycma.lunaimaging.com/luna/servlet/s/k3fjw0/.

to the northwest of the bridge was constructed at this time in association with what formal plans of the fair identify as "Sub Station No. 3" (Andrews & Clark 1964). Plans of the fair's electrical systems depict extensive infrastructure expanding out of the substation to other areas of the park (ibid). To the west, within the project site, was a large security building with an adjacent car port (ibid). No fair-related developments were located on the eastern bank of the bridge, which was landscaped at that time. Following the demolition of these facilities after the end of the fair, aerial photographs and Sanborn maps reflect the project site in largely the same conditions as those seen today, with the exception of improvements to pathways and landscaping over time.

Chapter 4: Conclusions and Recommendations

A. CONCLUSIONS

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

ASSESSMENT OF PREVIOUS DISTURBANCE

The project site was inundated by a creek and surrounding marshlands until filling efforts transformed the landscape in the 1930s. These landfilling initiatives included the diversion and realignment of the creek and the construction of the bridge, which also acts as a dam. The bridge itself has substantial subsurface components, including foundations and support columns and piles. The upland areas adjacent to the bridge have experienced disturbance associated with landfilling and the construction of the bridge; the installation of utilities; the construction and demolition of buildings, parking lots, and other facilities associated with the 1939 and 1964 World's Fairs; and landscaping and other improvements necessary to construct and maintain the modern park.

PRECONTACT SENSITIVITY ASSESSMENT

The precontact sensitivity of project sites in New York City is generally evaluated by a site's proximity to level slopes, watercourses, well-drained soils, and previously identified precontact archaeological sites. As described in **Chapter 3**, **"Background Research**,**"** the project site is located within one mile of a number of previously reported archaeological sites. While the marshes within and surrounding the project site would have provided important resources for local indigenous groups during the precontact period, the project site was occupied by an active creek and tidal marsh until the 1930s. The efforts made to transform the area through the construction of the Tide Gate Bridge and its associated infrastructure would therefore have resulted in significant landscape modification and disturbance within the footprint of the existing bridge.

Soil borings suggest that a 2- to 5-foot-thick intact peat layer may be present beneath what are now the upland areas on either side of the bridge. The upper level of the peat layer was identified between 8 and 15 feet below the ground surface. The presence of the peat may indicate that soil strata potentially containing evidence of human occupation before the sea level rise that occurred approximately 3,000 years ago could be intact in deeply buried areas across the site outside of the footprint of the bridge. However, the inconsistent thickness of the peat may reflect some disturbance to the deeply buried soil strata as a result of the bridge's construction. Furthermore, project related impacts outside of the footprint of the bridge are expected to relate to landscaping, electrical infrastructure, fencing, and other generally shallow impacts that will not penetrate the depth of the peat layer in undisturbed areas. Therefore, given the extent to which the project site has been disturbed as a result anthropomorphic landscape modification and the construction of the bridge and the lack of impacts to areas that could contain deeply buried archaeological sensitivity, the project site is determined to have low sensitivity for archaeological resources associated with the precontact occupation of the area.

HISTORIC SENSITIVITY ASSESSMENT

The project site was inundated until the 1930s when the existing bridge was constructed and the surrounding area filled and modified. The large, grassy area within the northwestern portion of the project site was developed with a bus terminal and parking lot as part of the 1939 World's Fair and as a security building and substation as part of the 1964 World's Fair. However, following both events, the buildings were demolished and the area modified for use as a park. Given the disturbance generated by two episodes of construction and demolition, the project site is determined to have no archaeological sensitivity for resources associated with the historic period occupation of the area.

B. RECOMMENDATIONS

The project site is determined to have low sensitivity for precontact archaeological resources and no sensitivity for archaeological resources associated with the historic period. The impacts associated with the proposed project are therefore not expected to result in the disturbance of archaeological resources and no further archaeological analysis is recommended.

References

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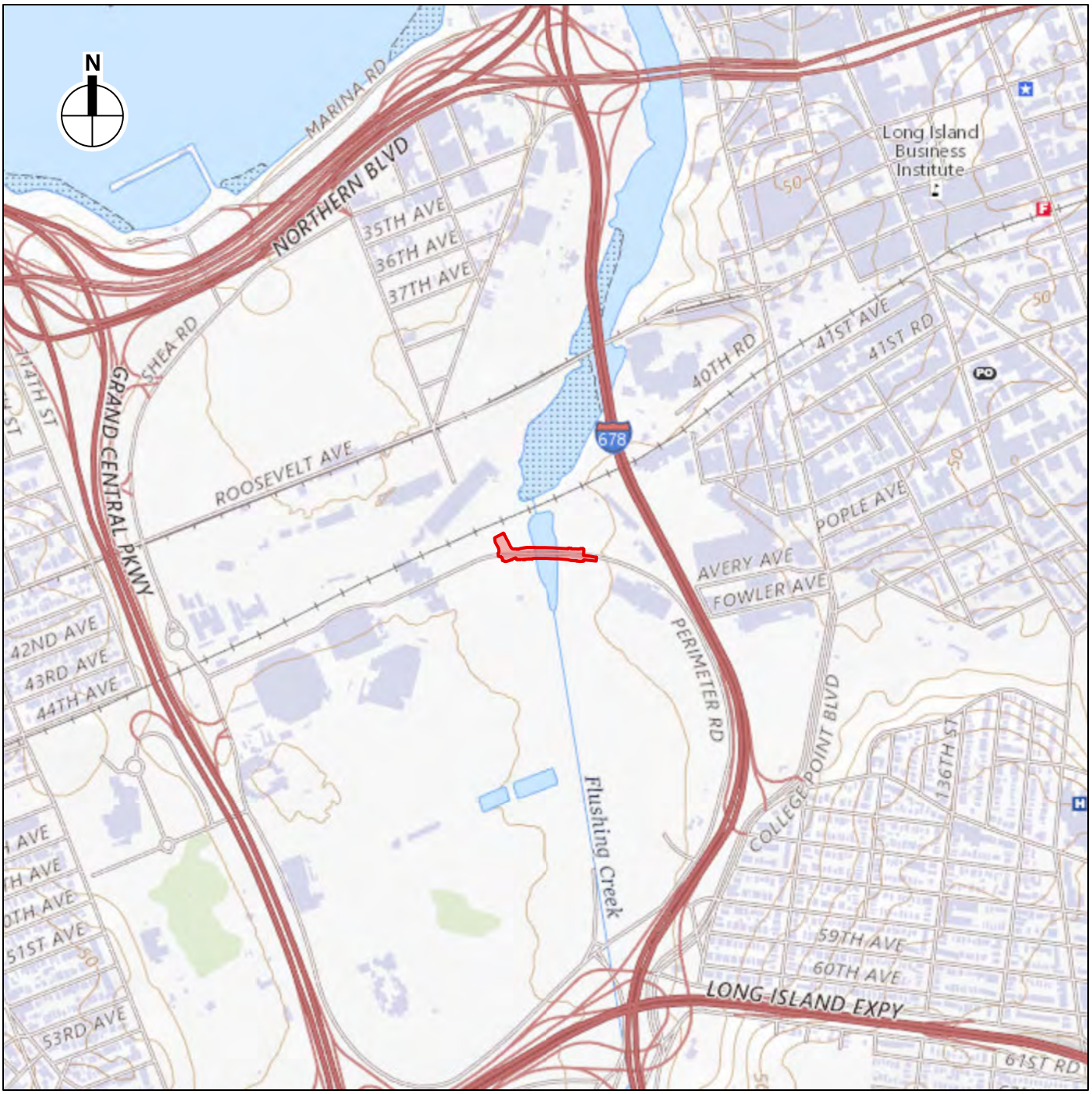
Figures



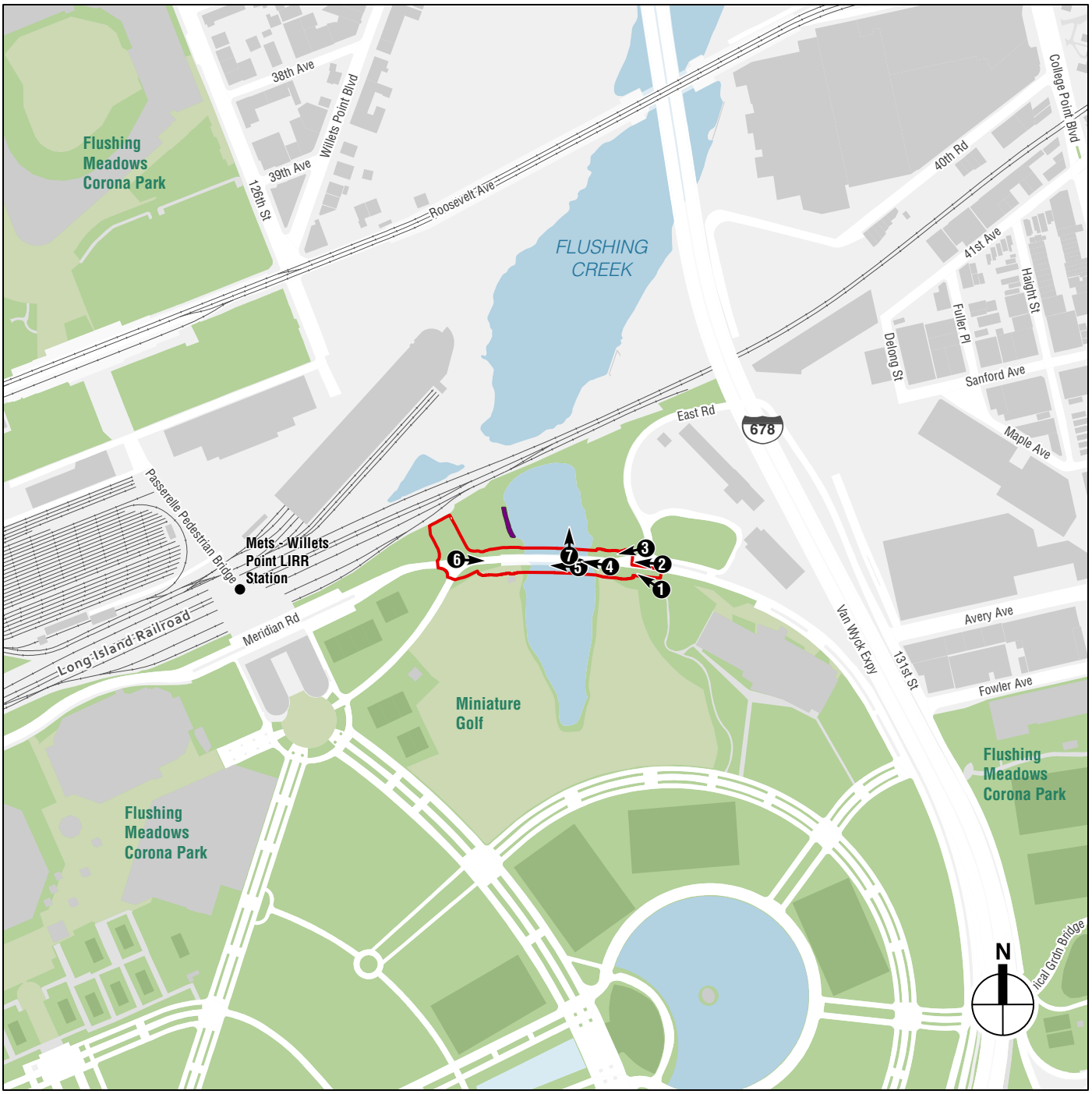
Approximate coordinates of Project Site:
73°50'25"W 40°45'10"N

USGS Topographic Map – Flushing and Jamaica Quadrangles

Figure 1

RECONSTRUCTION OF THE TIDE GATE BRIDGE AND HYDRAULIC SYSTEMS
NYC DDC PROJECT ID: HBPED800Q

3.14.22



0 1,000 FEET

Project Site

Wetland Mitigation Site

Photograph View Direction and Reference Number

RECONSTRUCTION OF THE TIDE GATE BRIDGE AND HYDRAULIC SYSTEMS
NYC DDC PROJECT ID: HBPED800Q

Project Location

Figure 2

South side of Meridian Road looking west over the Tide Gate Bridge **1**

Meridian Road looking west over Tide Gate Bridge **2**

North side Meridian Road looking west over the Tide Gate Bridge **3**

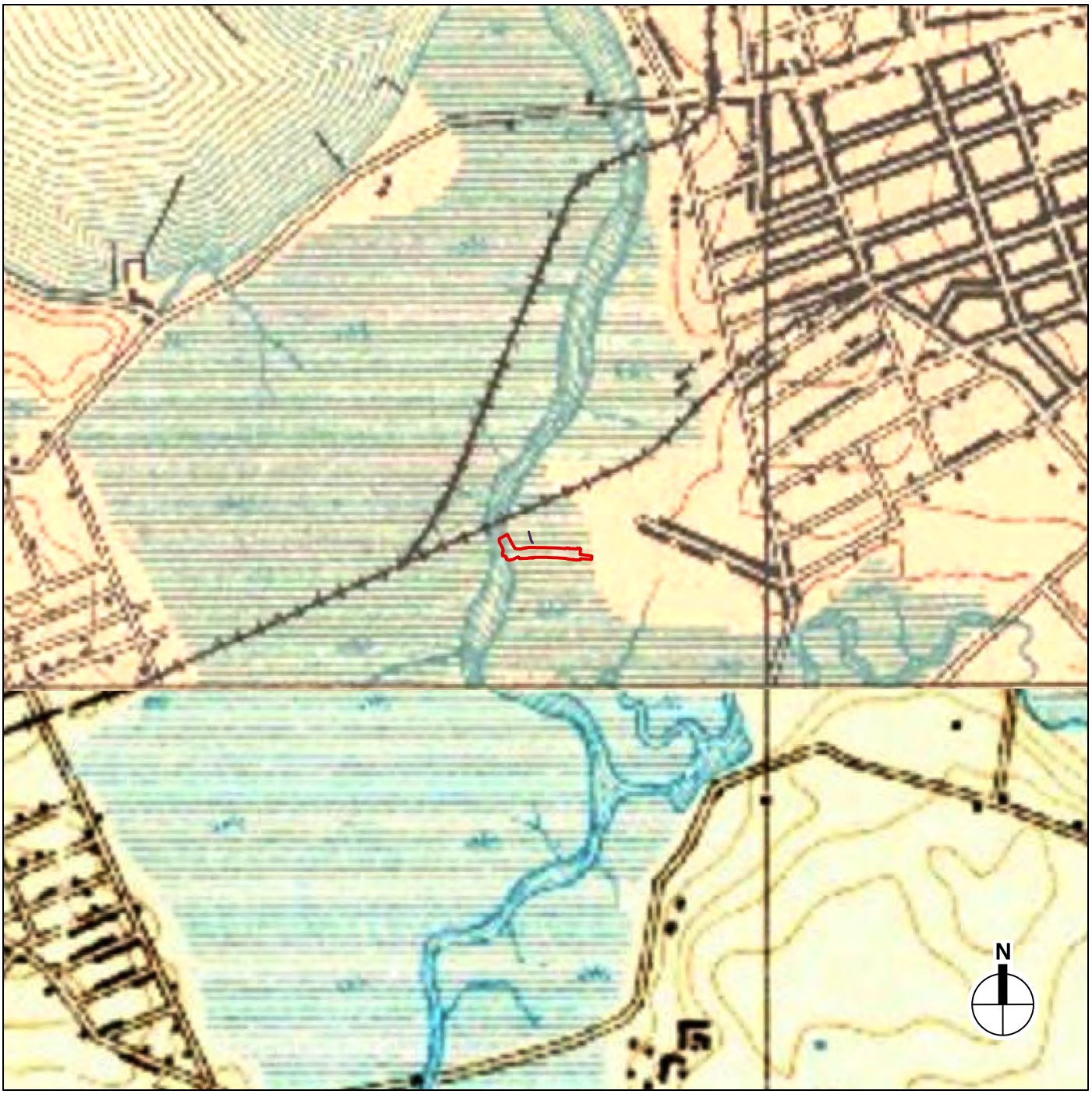
East side of Tide Gate Bridge looking west **4**

South side of Tide Gate Bridge **5**

West side of Tide Gate Bridge looking east **6**

North side of Tide Gate Bridge **7**

3.7.22

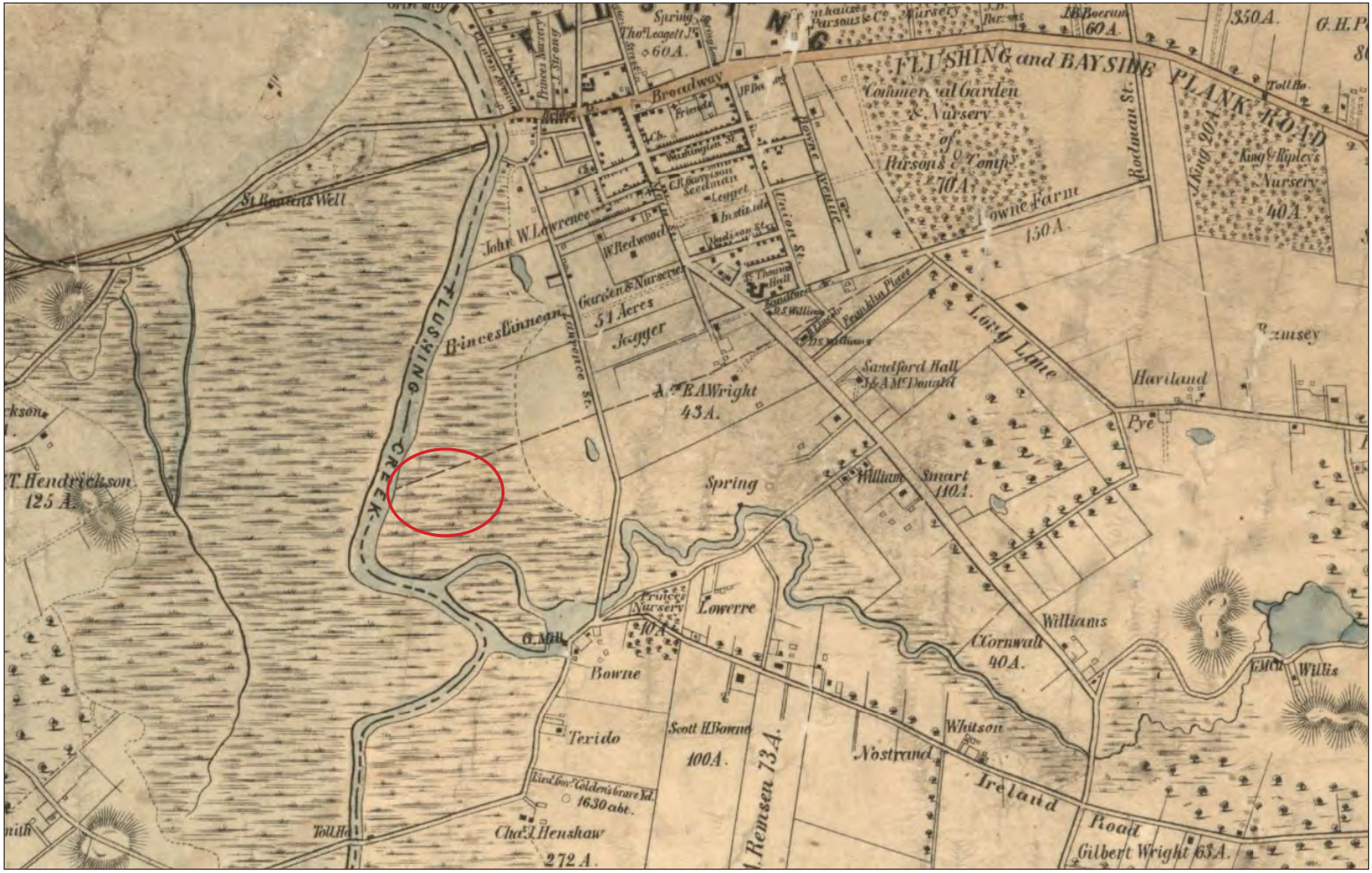


Project Site

Wetland Mitigation Site

RECONSTRUCTION OF THE TIDE GATE BRIDGE AND HYDRAULIC SYSTEMS
NYC DDC PROJECT ID: HBPED800Q

1891 USGS Map
Figure 4

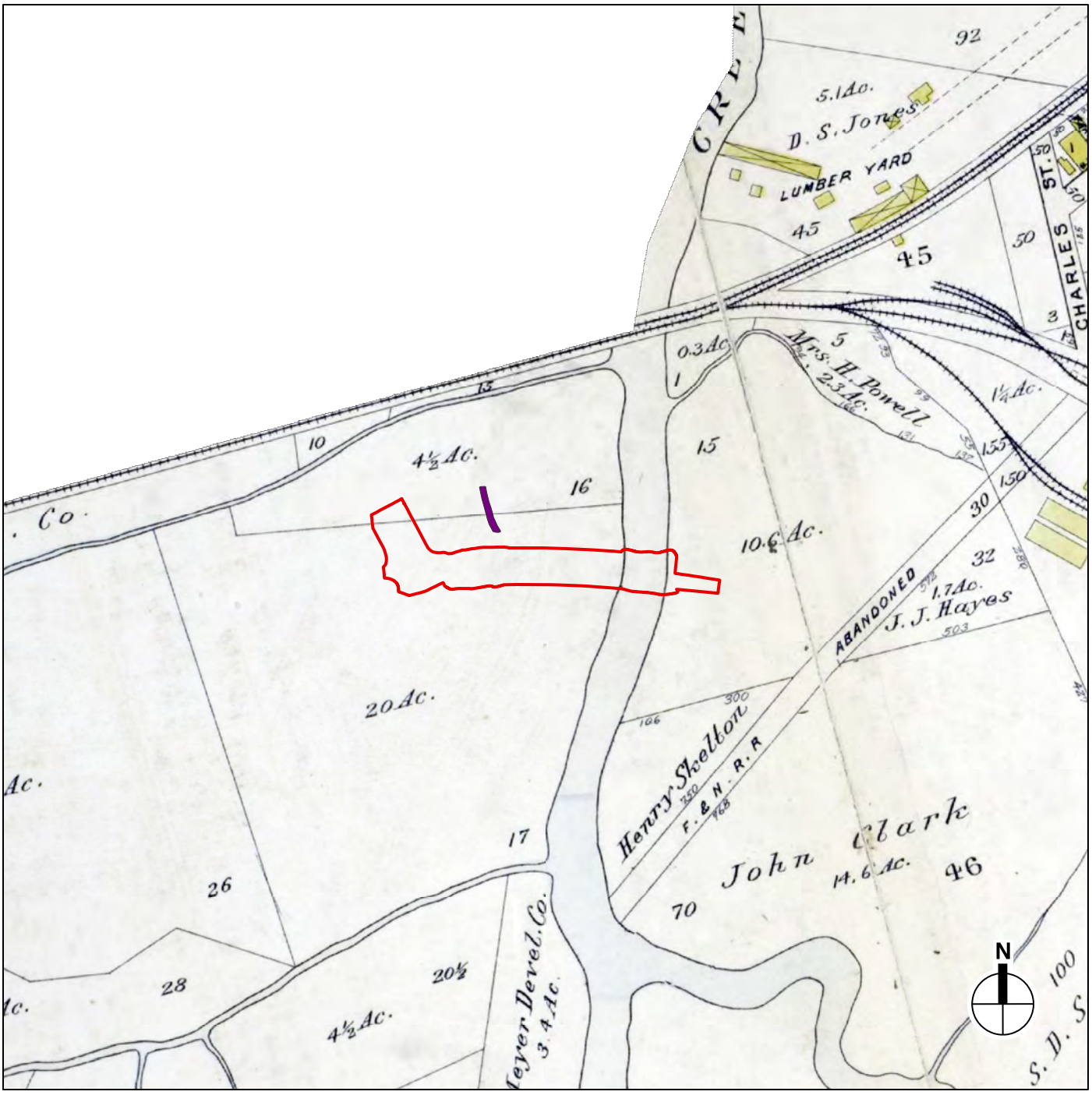


Approximate Location of Project Site

RECONSTRUCTION OF THE TIDE GATE BRIDGE AND HYDRAULIC SYSTEMS
NYC DDC PROJECT ID: HBPED800Q

1852 Connor Map
Figure 5

3.7.22



Project Site

Wetland Mitigation Site

Note: Map does not continue.

RECONSTRUCTION OF THE TIDE GATE BRIDGE AND HYDRAULIC SYSTEMS
NYC DDC PROJECT ID: HBPED800Q

1909 Bromley Map

Figure 6