Bronx River Combined Sewer Overflow Project (Contract CSO-BXR-DES)

Project Area HP-009: Block 3463, Part of Lot 1; and

Project Area HP-011: Block 3432, Part of Lot 200

BOROUGH OF THE BRONX, BRONX COUNTY, NEW YORK

Phase 1A Archaeological Documentary Study

Prepared for:

New York City Department of Environmental Protection
59-17 Junction Blvd.
Flushing, NY 11373

Prepared by:

AKRF, Inc.
440 Park Avenue South
New York, NY 10016
212-696-0670

DECEMBER 2021, REVISED VERSION

Management Summary

SHPO Project Review Number: 21PR06918

LPC Unique Project ID: 35911

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

Phase of Survey: Phase 1A Documentary Study

Location Information
Location: Project Area HP-009: Block 3463, part of Lot 1
Project Area HP-011: Block 3432, part of Lot 200
County: Bronx County

Project Area HP-009 Survey Area
Length: Approximately 1400 feet
Width: Approximately 40 to 100 feet
Area: 1.6 acres (68,700 square feet)

Project Area HP-011 Survey Area
Length: Approximately 210 feet
Width: Approximately 100 feet
Area: 0.4 acres (16,900 square feet)

USGS 7.5 Minute Quadrangle Maps: Central Park and Flushing

Report Author: Elizabeth D. Meade, PhD
Registered Professional Archaeologist #16353

Date of Report: December 2021, Revised Version

Table of Contents

List of Figures

List of Photographs

Keys to Photographs for Project Areas HP-009 and HP-011 are provided on aerial photographs.

Chapter 1: Introduction and Methodology

A. INTRODUCTION

The New York City Department of Environmental Protection (DEP) is proposing the Bronx River Combined Sewer Overflow (CSO) Project (Contract CSO-BXR-DES) in the Bronx, NY (see **Figure 1**). The proposed project would design and construct the preferred alternative described in the *CSO Long Term Control Plan (LTCP) for Bronx River* (Bronx River CSO LTCP) for the construction of new and modification of existing sewer infrastructure in order to increase the flow capacity of the existing sewer system and reduce CSOs in the Bronx River. In the Bronx, combined service areas predominately drain to the saline section of the Bronx River, south of East Tremont Avenue. Flows that exceed the capacity of the combined conveyance and treatment system are discharged into New York City's waterbodies via CSO outfalls that are permitted by the New York State Department of Environmental Conservation (DEC). During some storm events, a mixture of untreated stormwater and sewage is discharged through the CSO outfalls into the Bronx River. The Bronx River CSO LTCP serves as a guide to reduce CSO discharges by increasing conveyance capacity of the existing combined sewer system to reduce the annual average CSO volume discharged into the Bronx River. The Bronx River CSO LTCP was submitted to DEC on June 30, 2015[1] and approved on March 7, 2017.[2]

The proposed project is part of a larger effort that DEP is undertaking to improve water quality within New York Harbor and its estuaries by controlling CSO discharges. Under the proposed project, new and existing sewer infrastructure would convey more combined sewer flow downstream to either the Hunts Point Wastewater Resource Recovery Facility (WRRF) for treatment or to the East River through a new regulator (Regulator HP05) and floatables control structure. The proposed project would achieve these CSO reductions through modifications of the combined sewer infrastructure in each of several sewer areas (referred to herein as "project areas") located in the vicinity of the saline segment of the Bronx River. The project areas are associated with and in the vicinity of existing CSO outfalls that are hydraulically interconnected from the furthest upstream point tributary to the Bronx River to the downstream termination at the East River.

B. PROJECT DESCRIPTION

Two non-contiguous project areas included within the project site include Project Area HP-009 and Project Area HP-011. These project areas are described in detail below, and detailed plans of existing utilities referred to herein are included in **Appendix A**.

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[1] New York City DEP. CSO LTCP for Bronx River. June 2015. Available: https://www1.nyc.gov/assets/dep/downloads/pdf/water/nyc-waterways/bronx-river/bronx-river-ltcp-201506.pdf (accessed on April 6, 2021).

[2] New York State DEC. Order on Consent ("Consent Order") DEC Case #XCO2-20110512-25 modification to DEC Case #CO2-20000107-8, Appendix A X. Bronx River CSO. E. Submit Approvable Drainage Basin Specific LTCP for Bronx River. Available: https://www1.nyc.gov/assets/dep/downloads/pdf/water/nyc-waterways/bronx-river/2017-03-07-dec-app-bronx-river-ltcp.pdf (accessed on April 6, 2021).

PROJECT AREA HP-009

Project Area HP-009 is located in the Soundview neighborhood within both Soundview Park and a City of New York Department of Sanitation (DSNY) Compost Facility on Block 3463, Lot 1 (see **Figures 2 and 3a-3c**). The proposed project in Project Area HP-009 would raise the weir height at existing Regulator HP13, as well as construct a new diversion structure and relief sewer to intercept and convey additional flow that currently discharges to the Bronx River through CSO Outfall HP-009 to the Hunts Point WRRF via an existing Bronx River Siphon in Soundview Park. The existing sewer will continue to convey dry weather flows downstream to Regulator HP13 in Soundview Park, and a portion of the wet weather flow will overflow into the new relief sewer. In addition, the existing CSO Outfall HP-010 would be excavated, and its pile supports would be removed for a portion of the HP-010 outfall pipe.

The new relief sewer would be constructed to the west of Regulator HP13 and cross beneath the HP-010 outfall using microtunneling to minimize surface disturbance. To support the microtunneling operation, three vertical shafts would be constructed as access and egress points for the tunneling equipment and the excavated material/spoils. Shaft 1 would be located just northeast of the entrance to the DSNY Composting Facility and would be the location of the launching shaft for the microtunneling equipment. Shaft 2 would be located within the existing DSNY composting facility and would act as an access shaft for removal of portions of the HP-010 outfall pipe and pile supports. Shaft 3 would be located downstream of Shaft 2 and used as the receiving shaft. A construction staging area for equipment and supplies would be located alongside each shaft. During construction, each of the three staging areas would be enclosed and protected by fencing. Once construction is complete, the three areas would be restored to pre-construction conditions, including restoration of topsoil, replanting of trees, and landscaping as necessary. Because the extent of the staging area and the exact limits of project-related disturbance is unknown, for the purposes of this Phase 1A Archaeological Documentary Study, a large area has been conservatively delineated around the location of the Project Area HP-009 to account for the potential expansion of project impacts relating to staging, etc. This conservative study area is depicted separately on all relevant graphics.

PROJECT AREA HP-011

Project Area HP-011 is located in the Harding Park neighborhood in the proximity of White Plains Road and Bronx River Avenue within an existing sewer easement on Block 3432, Lot 200 (see **Figures 4 and 5**). Construction staging areas will be located immediately adjacent to Project Area HP-011. The proposed project in Project Area HP-011 would construct a new regulator (Regulator HP-05) with floatables control and in-system storage for CSO Outfall HP-011. The sewer easement within Project Area HP-011 currently contains an existing regulator and a 13-by-9-foot double-barrel culvert that extends to depths of more than 10 feet below the current ground surface and more than seven feet below the level of groundwater.

To reduce the frequency of CSO discharges to the East River, a three-foot static weir would be installed to increase in-line storage. Fixed underflow baffles located upstream of the bending weirs would be installed to provide floatables control. The new Regulator HP-05 would be constructed upstream of the HP-011 outfall near White Plains Road and Bronx River Avenue. This new regulator would replace an existing regulator with a modification to the weir height to intercept and convey flow towards the Upper East River. The new regulator would involve excavation to depths of approximately 23 feet below grade, as well as the installation of secant pile support walls to the depth of bedrock, which is located at a depth of approximately 39.5 feet below ground surface (-26.5 feet NAVD88). The existing regulator in this area would be decommissioned. During construction, the existing tide gates at the existing regulator would be kept in place in order to protect the upstream construction activities from tidal influence. Following construction, the existing tide gates would be removed and replaced with five new tide gates installed

inside new Regulator HP-05. The new tide gates will prevent flow from the East River from entering the sewer system upstream of new Regulator HP-05. Four local sewer connections would also be relocated upstream of new Regulator HP-05, and the old connections would be abandoned. Once construction is complete, Project Area HP-011 would be restored to pre-construction conditions, including pavement, curbing, sidewalks, and landscaping as necessary.

C. ENVIRONMENTAL REVIEW

The proposed project will require state and city permits and approvals from various agencies, including: New York State Department of Conservation (DEC), including a Stormwater Pollutant Discharge Elimination System (SPDES) permit; the New York City Department of City Planning (DCP); the New York State Department of State (NYSDOS); New York City Department of Parks and Recreation (NYC Parks); and the New York City Department of Transportation (NYCDOT). The project is, therefore, subject to New York City Environmental Quality Review (CEQR) and Section 14.09 of the New York State Historic Preservation Act. The project is also expected to require federal funding subject to Section 106 of the National Historic Preservation Act ("Section 106").

Pursuant to Section 106, consultation was initiated with the New York State Historic Preservation Office (SHPO). In a comment letter dated October 21, 2021, SHPO concluded that the proposed project would not result in impacts on archaeological resources and did not request additional analysis. As such, no further consultation with SHPO is required pursuant to Section 106. Consultation was also initiated with the New York City Landmarks Preservation Commission (LPC) pursuant to CEQR. In a comment letter dated October 19, 2021, LPC concluded that the Project Areas were potentially archaeologically significant in association with the area's precontact occupation. As such, LPC requested that an Archaeological Documentary Study of the project areas be completed. This Phase 1A Archaeological Documentary Study ("Phase 1A Study") has been prepared to satisfy this request. Subsequent to both comment periods, Project Area HP-009 was expanded. The expanded Project Area HP-009 is assessed in this Phase 1A Study. A first draft of this study was submitted to LPC and this revised draft incorporates revisions requested by LPC in a comment letter issued December 15, 2021. This revised draft will be submitted to LPC pursuant to all relevant environmental review legislation as described previously.

D. RESEARCH GOALS AND METHODOLOGY

The Phase 1A Archaeological Documentary Study of the Bronx LTCP project areas has been designed to satisfy the requirements of LPC as issued in 2018 and follows the guidelines of the New York Archaeological Council (NYAC). The study documents the development history of the proposed project site and its potential to yield archaeological resources, including both precontact and historic cultural resources. In addition, this report documents the current conditions of the project site, as well as previous cultural resource investigations that have taken place in the vicinity.

This Phase 1A Archaeological Documentary 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 paving, utility installation, and other previous construction 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:

> *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 freshwater and saltwater 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 the Bronx, the transition from Native American to European settlement, or the historic period occupation of the project site.

To satisfy the four 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, and the Westchester County Archives.[1] Previously identified sites and previously conducted archaeological resources in the vicinity were collected from the files of LPC; the New York State Office of Parks, Recreation, and Historic Preservation (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).[2] Online textual archives, such as Google Books and the Internet Archive Open Access Texts, were also accessed.

E. SUMMARY OF PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS OF THE PROJECT AREAS

SHOREHAVEN PROJECT, 1987

Project Area HP-011 was included within the study area of a Phase 1A Study prepared by Historical Perspectives, Inc. (HPI) in 1987 in association with the construction of the large residential housing development with accompanying subsurface utility connections located to the northeast of the Project Area. At the time of the investigation, the areas were occupied by a recreational facility known as the Shorehaven Beach Club, which was constructed on filled land (HPI 1987a; HPI 1987b). The study concluded that the areas surveyed at that time was sensitive for precontact archaeological resources, including Native American burials (HPI 1987a). The study identifies a previously identified Native American archaeological site in the immediate vicinity of Project Area HP-011. The study also concluded that the larger study area was sensitive for historic period archaeological resources associated with a 17th century residence (ibid).

A supplemental archaeological analysis was completed by HPI to further clarify the locations of archaeological sensitivity within the study area through a review of soil boring logs and map overlays (HPI 1987b). HPI analyzed areas within and adjacent to Project Area HP-011. On what was historically Block 3430, Lot 82—located along the waterfront southwest of the intersection of White Plains Road and Bronx River Avenue—HPI determined based on soil boring logs that 20 to 30.5 feet of fill material were present (ibid). HPI recommended testing in this area only in those locations where fill deposits were shallower in areas closer to Bronx River Avenue (ibid). HPI also assessed what was historically Block 3434, Lot 1, located along the waterfront south of Bronx River Avenue between White Plains Road and the line of Pugsley Avenue. HPI determined that the area south of the intersection of White Plains Road and Bronx River Avenue was inundated marshland, and the modern shoreline was formed as a result of shoreline expansion projects beginning in the late 19th century and continuing through the first half of the 20th century (ibid). Soil borings in this area indicated the presence of 14.5 to 31.5 feet of fill material in this area, and one boring identified peat at a depth of 8 feet below the ground surface (ibid). Finally, the streetbed of White Plains Road was determined to have no archaeological sensitivity due to disturbance associated with the construction of the road and the installation of subsurface utilities (ibid). Subsequent archaeological testing in the form of a Phase 1B Archaeological Investigation was recommended in both areas, except in those locations where protective layers of fill were added previously or that were proposed to raise the grade to protect the new houses from flooding.

[1] The Bronx was historically included within Westchester County; as such, many early property records are held in Westchester County offices.

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

The Phase 1B Archaeological Investigation of some of the areas that were identified as archaeologically sensitive was completed by HPI later in 1987 (HPI 1987c). The testing included the mechanical removal of 20th century fill materials and hand excavation in the underlying soils (ibid). Given the depth of the fill material and the height of the groundwater, safety concerns limited the scope of the testing, as did the theft of the archaeologists' equipment from the site (ibid). A peat layer possibly representing the pre-marsh ground surface was identified at a depth of 5 to 10 feet below the ground surface in the area of Bronx River Avenue east of Puglsey Avenue (referred to in the report as "Area C"). While an archaeologist was able to make some observations of this layer after being lowered into a trench in a backhoe bucket in one area, the depth of groundwater; "torturous" attempts to screen sediments; and other safety considerations made the further exploration of the soils impossible (ibid: 17). Limited testing of the soils below the peat revealed limited precontact artifacts, including a white quartz projectile point, and a number of historic period artifacts before excavation was terminated at a depth of 11.3 feet (ibid). Excavation within a smaller testing area (referred to as "Area D") located west of Pugsley Avenue along the waterfront revealed dense, unconsolidated fill material over wooden pilings encountered at a depth of three feet (ibid). Groundwater was encountered at a depth of six feet, and excavation was terminated when it was determined that it could not continue in a safe manner (ibid).

The investigation also encountered a dense deposit of clay pipe fragments. While initially believed to have been associated with the Point's historic period, occupation was later determined to be associated with an early 20th century amusement park game that offered historical replicas of clay pipes as prizes (Kearns and Saunders 2018). The investigation ultimately "revealed only more evidence of the 20th century grading, filling, and total destruction of what had once been a bucolic setting peopled by Native Americans" (ibid: 139).

SOUNDVIEW PARK AQUATIC ECOSYSTEM RECONSTRUCTION, 2005

The archaeological sensitivity of Soundview Park was assessed as part of a Phase 1A Study completed by the U.S. Army Corps of Engineers (USACE) in 2005. While the study area for the investigation was largely limited to the southern end of Soundview Park, the Phase 1A Study includes some analysis of the larger park, including the HP-009 Project Area. The Phase 1A Study concluded that the park was constructed as a result of landfilling activities in the early- to mid-20th century, when construction debris; municipal refuse; and rock ballast from ships active during World War II were deposited in the marshes that formerly lined this part of the Bronx waterfront. The land that makes up the current park was acquired by the City of New York via eminent domain in 1940, and its boundaries were expanded in the 1950s and 1960s (USACE 2005). In the second half of the century, improvements to the park included the reinforcement of the shoreline, the installation of sewer and drainage systems, landscaping, and the creation of paved walkways (ibid). Geotechnical borings completed as part of the investigation contained evidence of 20th century landfill and modern refuse (ibid). As the depth of impacts associated with the proposed ecosystem reconstruction effort, no additional archaeological analysis was recommended.

Chapter 2: Environmental and Physical Settings

A. CURRENT CONDITIONS

Project Area HP-009 is located within the boundaries of Soundview Park, a more than 200-acre New York City park that lines the eastern shore of the Bronx River in the vicinity of the neck of land known as Cornell's Neck, the southern end of which is called Clason's Point. The northern and southern ends of the project area are wooded, and the central portion of the project area crosses a DSNY Compost Yard, which is partially paved.

Project Area HP-011 is situated within an existing sewer easement on Block 3432, Lot 200. The project area includes a portion of the streetbed of the southern terminus of Sunset Boulevard, a paved path that extends along the line of White Plains Road, and grassy lawns. A paved and enclosed garbage collection area is present within the eastern side of the project area.

B. GEOLOGY AND BEDROCK

The Bronx is found within a geographic bedrock region known as the Manhattan Prong of the New England (Upland) Physiographic Province. This region is a "rolling lowland area…of metamorphic rocks" dating to the Early Paleozoic, which began approximately 575 million years ago (Isachsen et al. 2000). Two bedrock types are present in the vicinity of the project areas. The northern half of Project Area HP-009 is underlain by the rocks of the Manhattan Formation, a group of that date to the Middle Ordovician Period of the Paleozoic Era and was likely formed more than 435 million years before present (Fisher, et al. 1995; Isachsen, et al. 2000). The remainder of Project Area HP-009 and all of Project Area HP-011 are located in an area underlain by the rocks of the Hartland Formation, a "basal amphibite overlain by pelitic schists" formed during the later Cambrian period (543 to 490 million years ago) and the early part of the Ordovician period (490 to 438 million years ago) of the Paleozoic Era (Fisher, et al. 1970; Isachsen et al. 2000). Bedrock was identified in soil borings at depths of 60 to 70 feet below the ground surface in the vicinity of Project Area HP-009, though shallower rock located five feet below grade was observed in limited areas (Wade Trim and Mott McDonald 2021a). In Project Area HP-011, bedrock was documented at 30 to 40 feet below grade (Wade Trim and Mott McDonald 2021b).

Surficial geology in the immediately vicinity of the project site includes glacial till (Caldwell, et al. 1986). The glacial till was left behind by massive glaciers of up to 1,000 feet thick that retreated from the area towards the end of the Pleistocene. There were four major glaciations that affected the region until approximately 12,000 years ago, when the Wisconsin period—the last glacial period—came to an end (Schuberth 1968). The rocks and sand deposits left behind as a result of glacial movements brought about the creation of hundreds of sand hills, some of which were nearly one hundred feet tall.

C. HYDROLOGY

As the aforementioned glaciers receded, the ensuing runoff created streams, rivers, and lakes as well as thick tracts of marshland in the low-lying areas along the coast of the Bronx. As recently as a few thousand years ago, the sea level was 2 to 4 meters (6.6 to 13.1 feet) lower than it is at present, and areas that were later tidal marshes along coastlines may have been dry, inhabitable land (GRA 2014). The

project areas are situated on the eastern shore of the Bronx River, though as described previously, the route of the river has been anthropomorphically modified over time, near its confluence with the East River. As shown on the 1891 USGS map (see **Figure 6**), the coastline surrounding the project areas has been artificially expanded through the addition of landfill. The project areas were historically located in areas of dense tidal marsh that lined both the shores of the Bronx and East Rivers, as well as creeks and streams that drained the marshes into the rivers to the northeast and northwest of the project areas. Groundwater is expected in both Project Areas HP-009 and HP-011 at depths of 9 to 10 feet below grade (Wade Trim and Mott McDonald 2021a; Wade Trim and Mott McDonald 2021b).

D. SOILS

The *Web Soil Survey* maintained by the National Resource Conservation Service of the United States Department of the Interior[1] indicates that both project areas are underlain by soils associated with anthropomorphic landfilling and urban development. The majority of Project Area HP-009 is associated with a type of well-drained Laguardia Artifactual Coarse Sandy Loam characterized by 3 to 8 percent slopes. The soils in the location of the DSNY Compost Yard are identified as urban fill materials situated over former tidal marsh deposits. Project Area HP-011 is situated in an area that also contains a type of Laguardia Artifactual Coarse Sandy Loam with more level slopes of 0 to 3 percent. The streetbed of White Plains Road to the north is characterized by a type of urban land situated over a till substratum, while the areas to the northeast and northwest are identified as the Urban Land-Greenbelt Complex.

Table 2-1
Study Area Soils

Series Name (Map Symbol)	Soil Horizon Depth (in)	Soil Type	Slope (%)	Drainage	Landform
Laguardia Artifactual Coarse Sandy Loam (LaA, LaBs)	^Au: 0 to 8	Cobbly-artifactual coarse sandy loam	LaA: 0 to 3 LaBs: 3 to 8	Well drained	Associated with anthropomorphic fill
	^BCu: 8 to 26	Very cobbly-artifactual coarse sandy loam			
	^Cu: 26 to 79	Very cobbly-artifactual coarse sandy loam			
Urban Land-Greenbelt Complex (UGAI)	M: 0 to 15	Cemented material	0 to 3	Well-drained	Asphalt over anthropomorphic fill
	2^C: 15 to 79	Gravelly sandy loam			
Urban Land, Tidal Marsh Substratum (UmA)	M1: 0 to 6	Cemented material	0 to 3	n/a	Asphalt over anthropomorphic fill
	M2: 6 to 20	Cemented material			
	2^C: 20 to 79	Very gravelly sand			
Urban Land, Till Substratum (UtA)	M: 0 to 15	Cemented material	0 to 3	Well-drained	Asphalt over anthropomorphic fill
	2^C: 15 to 79	Gravelly sandy loam			

Sources:
Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed November 1, 2021.

A series of eight geotechnical soil borings was completed in Project Area HP-009 in association with the proposed project (Wade Trim and Mott McDonald 2021a). A profile drawing of the typical soil profile overlaid with the proposed tunnel location is included in **Appendix B**. The borings in general identified three soil strata within the project area: fill material containing glass, brick, and cinders/ash to an elevation of approximately -10 feet NAVD88; a dense layer of organic clay believed to be original to the area; and a layer of alluvial sands at depths of approximately -65 feet NAVD88 (ibid). Bedrock underlies

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

these sediments and slopes down from north to south. Peat or traces of peat possibly indicated the lower levels of the marsh that were historically located within the project area were observed in three of the borings at depths greater than 25 feet below the ground surface (-14 feet NAVD88) (ibid). A profile drawing prepared by Wade Trim and Mott McDonald (see **Appendix B**) indicates that the proposed tunnel and access shafts in Project Area HP-009 would extend into the upper level of the organic clay layer and in some places directly into bedrock. However, as seen on the drawing, project impacts would not extend below the documented depth of the peat levels or into the alluvial sands that could potentially represent pre-marsh landscapes that were later inundated following sea level rise (ibid).

Three soil borings were similarly advanced as part of a geotechnical investigation of Project Area HP-011, though all three were within the built portion of White Plains Road north of the project area as defined in this Phase 1A Archaeological Documentary Study (Wade Trim and Mott McDonald 2021b). Those borings identified two general soil levels: fill material containing sand, gravel, cinders, and ash to an elevation of approximately 0 NAVD88, and alluvial sand and gravel at grater depths (ibid).

E. TOPOGRAPHY AND LANDSCAPE MODIFICATION

Historical topographical data for the project areas was collected from a topographical survey of the eastern portion of the Bronx published by the Bronx Topographical Bureau in 1905 (see **Figure 7**). This collection of maps indicates that the majority of what is now Soundview Park and the southern end of Clason's Point is located in areas of anthropomorphic landfill. Project Area HP-009 was almost entirely situated in an area historically occupied by tidal marshland, while the extreme southern end was inundated by the Bronx River. Small areas in the extreme northern and eastern end of Project Area HP-009 were within or immediately adjacent to the original dry land that bordered the marshes. The northern half of Project Area HP-011 was historically located along the southern coast of Clason's Point, while the southern half was in the open waters of the East River.

Nearly all of Project Area HP-009 and most of Project Area HP-011, therefore, appears to be situated in areas of anthropomorphic landfill. To assess the extent to which the landscape of both areas was modified as a result of development later in the 20th century, the elevations depicted on the 1905 map were compared to Lidar information dating to 2017 to determine the extent to which the ground surface has been altered. The comparison of these maps required the conversion of datums, the points from which surface elevations are measured. While the 1905 map does not specify the datum that was used to measure these elevations, it is assumed that the elevations are relative to the Bronx Borough datum, an approximation of mean sea level. These elevations were compared to current Lidar information from a survey completed in 2017 (New York City Department of Information Technology & Telecommunications 2019). The Lidar elevations are measured relative to the North American Vertical Datum of 1988 (NAVD88). The Bronx Borough datum is located 1.508 feet below NAVD88. Therefore, to convert Bronx Borough datum elevations to NAVD88, 1.508 feet must be added to the Bronx datum elevation. For example, an elevation of 10 feet above the Bronx Borough datum is 11.508 feet above NAVD88.

ASSESSMENT OF LANDSCAPE MODIFICATION IN PROJECT AREA HP-009

The elevation comparison indicates significant grade changes in Project Area HP-009, as shown **in Table 2-2**Approximately 10 to 31 feet of fill material appears to have been added across the majority of the former tidal marsh to convert it into parkland. The southern end of the Project Area was historically inundated by the Bronx River and was situated at an elevation of 0 feet BBD in 1905. Between 10.5 and 30 feet of fill appear to have been added to this area. Dry land located at the periphery of the marsh at the northern end of the Conservative Study Area was located at an elevation of 2.2 feet BBD in 1905. That area is now located at an elevation of 14.5 to 16.5 feet, indicating the deposition of 12.3 to 14.3 feet of fill material. An area of dry land at the periphery of the marsh at the eastern end of the Conservative Study Area formerly sloped up

from 2.2 feet BBD near the marsh to 15.9 feet BBD near the intersection of Rosedale and LaCombe Avenues. The elevation of this area has been increased through the deposition of up to 12.7 feet of fill material except in the eastern end, where the grade has been lowered by up to 1 foot.

Table 2-2
Comparison of Surface Elevations in Project Area HP-009

Location within Project Area	1905 Elevation (in feet, BBD)	2017 Elevation (in feet, BBD)	Change in Elevation 1905 to 2017
Southern end, formerly inundated by the Bronx River	0	10.49 to 30.49	Increased by 10.5 to 30 feet
Marshland across majority of Project Area	-5 to 2	10.49 to 30.49	Increased by 10 to 31 feet
Dry land at periphery of marsh in extreme northern end of Conservative Study Area	2.2	14.5 to 16.5	Increased by 12.3 to 14.3 feet
Dry land at periphery of marsh in extreme eastern end of Conservative Study Area	2.2 to 15.9	14.9	Increased by up to 12.7 feet, decreased by up to 1 foot adjacent to intersection of Rosedale and LaCombe Avenues

Notes: For the purposes of comparing elevations to those seen on the 1905 Topographical Survey (see Figure 7A), 2017 elevations have been converted from NAVD88 to BBD. To convert BBD elevations to NAVD88, add 1.508 to the elevations included in this table.

ASSESSMENT OF LANDSCAPE MODIFICATION IN PROJECT AREA HP-011

The ground surface of the HP-011 Project Area was similarly altered through the addition of fill material as shown in **Table 2-3**. The surface elevation in the upland areas in the northern portion of the Project Area has increased by at least 6 to 8.5 feet since 1905. The surface elevation of that portion of the Project Area that was inundated by the East River has increased by at least 8.49 to 10.49 feet since 1905. These comparisons suggest extensive landscape modification associated with landfilling activities and the expansion of the Bronx waterfront.

Table 2-3
Comparison of Surface Elevations in Project Area HP-011

Location within Project Area	1905 Elevation (in feet, BBD)	2017 Elevation (in feet, BBD)	Change in Elevation 1905 to 2017
Southern end, formerly inundated by the East River	0	8.49 to 10.49	Increased by 8.49 to 10.49 feet
Historical upland portion of Project Area	2.0 to 6.4 feet	10.49 to 12.49	Increased by 6 to 8.49 feet

Notes: For the purposes of comparing elevations to those seen on the 1905 Topographical Survey (see Figure 7B), 2017 elevations have been converted from NAVD88 to BBD. To convert BBD elevations to NAVD88, add 1.508 to the elevations included in this table.

Chapter 3: Precontact Period

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 and NYSM, which were accessed via CRIS; LPC (i.e., Boesch 1996); and from other published accounts and archaeology reports. As mapped in CRIS, five precontact archaeological sites have been identified within one mile of the project areas; however, additional sites have been reported in the area that are not identified in CRIS (HPI 1987a, 1987b). Furthermore, Project Area HP-011 is located within a generalized area of archaeological sensitivity as mapped by SHPO in CRIS. 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	Distance from Project Areas	Additional Source Information
Clason's Point NYSM Site 713/2804	Village site with burials	Overlaps HP-011 Project Area	Parker (1920)
NYSM Site 2826/2831	Shell middens	0.5 miles	Parker (1920)
Pugsley Creek Park Site SHPO Site 00501.000070	Middle Archaic, Late Archaic, and possibly Woodland-era lithic artifacts (projectile points; bifaces; scrapers; grinding stones; and debitage) recovered by collectors	0.59 miles	Cohn and Apuzzo 1988
Quinnahung SHPO Site 00501.000028	Camp and/or village with mound feature and planting ground	0.64 miles	Bolton 1922
Sources: New York State Cultural Resource Information System (CRIS); Boesch 1996; Bolton 1922; Parker 1920.			

Additional information on the precontact occupation of the southern Bronx coastline was recorded by archaeologists in the early 20th century. Bolton's 1922 map of precontact settlements in the area (see **Figure 8**) depicts the village known *Snakapins* at the southern end of the neck of land known as Clason's Point. The Contact-Period village was excavated, named, and described by archaeologist Alanson Skinner and the Museum of the American Indian in 1918 (Skinner 1919; Boesch 1996; Cantwell and Wall 2001). The main village site was centered on a small cove on the western side of the Point, northwest of Project Area HP-011. Skinner's map of the area excavated in 1918 identifies the village at the southwest corner of what is now Soundview Avenue and Lacombe Avenue, east of the filled marshes that occupied Project Area HP-009. The settlement was situated on elevated land between 30 and 40 feet above sea level (HPI 1987b). Skinner (1919) indicated that the site comprised a series of 66 filled pits/shell middens containing a variety of shell, pottery, smoking pipes, animal bone (including deer antlers and turtle shells), lithic tools and debitage, and human remains in flexed single or double burials (Skinner 1919). Some of the pits were interpreted as hearths due to the presence of burned shell and others were suspected to be storage pits or remnants of lodge-type houses that supported a village of approximately 300 individuals (ibid; Bolton 1922). In addition to those documented by Skinner (1919), both primary and secondary burials have been reported on Clason's Point and were encountered during the construction of recreational facilities and houses (HPI 1987b). The majority of the burials were documented at shallow depths within approximately three feet below the ground surface (ibid).

Bolton (1922) indicates that additional shell middens and fishing stations were located at the southwestern and southeastern sides of Clason's Point east and west of Project Area HP-011. Portions of modern Soundview Avenue run along a former Native American path that extended south and curled around the tip of the Point, connecting *Snakapins* with other settlements. It has also been reported that local indigenous occupants utilized local waterways, including Pugsley Creek, for transportation (McNamara 1996). Settlements similar to *Snakapins* and many shell middens were documented on the necks and points of land lining the southern Bronx shoreline as documented by Bolton (1922, 1934, and 1975); Parker (1920); and others. HPI's (1987a; 1987b) research and discussions with local informants also suggested that a Native American burial site was documented in the vicinity of the intersection of White Plains Road and Cornell Avenue north of Project Area HP-011. HPI's overlay maps (see *Overlay Figure VI* in HPI 1987b) also identify an unnamed site within Project Area HP-011 along the line of White Plains Road south of Bronx River Avenue. HPI (1987a, 1987b) indicates that the site was identified by Bolton (1922, 29134) and confirmed by local informants as one of several shell middens that lined the western and southern sides of Clason's Point.

Based on the extensive archaeological deposits documented in the area, early 20th century archaeologists delineated the "Clasons Point Focus" to describe the distinctive pottery found in the area. Sites associated with the Focus were commonly found across portions of the New York City region where indigenous villages were established "near tidal inlets on the second rise of ground above the water" (Smith 1950: 120). They typically involved a series of shell-filled pits used for storage, cooking, and occasionally burials (ibid). While the distinct Clasons Point stamped pottery was identified, projectile points were less commonly recovered from these sites (ibid).

Chapter 4: The Historic Period

A. INTRODUCTION

The historical context of the Clason's Point area was described in detail in previous archaeological studies, including HPI 1987a and 1987b. As such, the early history of the area will only be summarized here in sufficient detail to support the determination of archaeological sensitivity for both project areas. As described in Chapter 2, "Environmental and Physical Settings," Project Area HP-009 was inundated marshland, and portions of both project areas were situated in what was historically the Bronx and East Rivers until filling episodes were completed by the mid-20th century.

B. HISTORY OF THE PROJECT AREAS' DEVELOPMENT

EARLY COLONIAL HISTORY OF CLASON'S POINT

New York was "discovered" by Giovanni de Verrazano in 1524 and explored by Henry Hudson in 1609, thus marking the beginning of European occupation in the area. By 1621, the area had become part of a Dutch colony and the States-General in the Netherlands chartered the Dutch West India Company ("WIC") to consolidate Dutch activities in the New World. It was at this time that the WIC began to purchase large tracts of land from the Native Americans. The WIC purchased *Keskeskeck* from the local Native Americans in 1639 (Hansen 1950).

In 1646, the WIC granted the neck of land now known as Clason's Point to Thomas Cornell, an English colonist, and it became known as "Cornell's Neck" (Jenkins 1912). Cornell was involved in a series of violent encounters with the local indigenous groups in the area, who reportedly burned his house following a dispute over payment for the land (ibid). Following this event, Cornell relocated to Rhode Island and ownership of his land on Cornell's Neck was transferred to his daughter, Sarah, and her husband, Thomas Willet (ibid). The stone kitchen of the Cornell house apparently survived the fire and was incorporated into an inn established in the area in the late 19th century (ibid). The land grant was reaffirmed in the name of William Willet, Sarah's son, in 1667 (ibid).

Towards the end of the 17th century, the increasing European population rapidly displaced the Native American population in the Dutch colony of New Amsterdam and the English colony of New York. Westchester County was formally founded in 1683 (Jenkins 1912). The Willet family retained ownership of Cornell's Neck until 1793, when its western half was sold to an Irish immigrant named Dominick Lynch and the eastern half to Isaac Clason[1] (ibid). The 1800 federal census indicates that Clason's household included seven enslaved persons of African descent. It, therefore, appears that forced labor was utilized on Clason's property prior to the end of slavery in New York State in 1827.

[1] Some historical documents use alternative spellings including Classon, Clauson, and Clawson.

19TH CENTURY DEVELOPMENT OF CLASON'S POINT

A coastal survey of the southeastern Bronx prepared by Charles Renard in 1837 depicts two houses on Clason's Point, one to the northeast of Project Area HP-011 and one to the north. Buildings in the same locations are depicted on the 1891 USGS map (see **Figure 6**). The 1837 survey depicts the thick marsh that was located in the vicinity of Project Area HP-009. Smaller areas of marsh are identified along the southwestern and southeastern corners of the Point in areas similar to those depicted on Bolton's 1922 map of precontact sites (see **Figure 8**). A dock is depicted along the waterfront to the east of Project Area HP-011. An 1838 survey of Clason's Point prepared by Andrew Findlay (copied by Charles G. Banks in 1878 and reproduced in Robinson's 1897 atlas) depicts conditions similar to the 1837 coastal survey but provides additional detail (see **Figure 9**). The Findlay survey, which is missing information due to damage to the original map, indicates that Clason's Point had been subdivided into smaller parcels. The house to the north of Project Area HP-011 is identified on the map as a "mansion" with a series of "out buildings" located on a 14.85-acre parcel of land at the southwest corner of the Point. An embankment and an "old dock" are depicted along the waterfront to the south of the parcel, in an area that appears to be west of Project Area HP-011, and the previously described dock is depicted on the waterfront to the east of the project area. The project area appears to be located adjacent to an undeveloped 1.81-acre waterfront parcel of land identified as lot "No. 5" and a six-acre "garden" parcel known as lot "No. 6." The map also indicates that the southern end of Clason's Point, possibly including all or part of Project Area HP-011, was below the high-water mark and was thus inundated at high tide.

The 1851 Sidney and Neff map depicts the same two houses and indicates that they were both owned by members of the Clason family: the western home was that of "Miss J. Clason," the eastern home was that of "A.W. Clason," and the dock at the waterfront is identified on that map as a "wharf." O'Connor's 1853 map of Westchester indicates that the owners of property at the southern end of Clason's Point included "A.W. Clason & I.C. Delaplane." The 1858 Merry and 1860 Walling atlases of Westchester County identify "J. Mannot" as the only property owner on the Point. Several maps with similar detail, including the 1867 Beers, 1868 Beers, and 1872 Dripps maps similarly identify "J. B. Manno [sic]" as the owner of both properties. Amore detailed 1868 survey of Clason's Point by Gust. Fambach and William G. Livingston (reproduced in Robinson's 1897 atlas) depicts divisions of property similar to that seen on the 1838 Findlay map, with the former "No. 5" parcel delineated as a separate parcel with a small garden located east of the Mannot property, which is not depicted on the map. The parcel to the east contained a barn, small outbuilding, and the previously described dock. Collectively, the former No. 5 and 6 parcels and additional land to the north were part of a property identified as parcel 37 on the map.

The 1881 Bromley atlas reflects changes to the ownership of the properties on Clason's Point. The former Mannot property on the western side of the Point was by that time owned by the estate of A.C. Kingsland. The property to the east, including the area adjacent to Project Area HP-011 / parcel 37, was, at that time, owned by B. [Bradish] Johnson. The 1898 Sanborn map continues to depict parcel 37 as vacant land. The property to the east had been purchased by Clinton Stephens, who operated the property as a waterfront resort (HPI 1987a). Stephens establishment, known as the Clason Point Inn, was reported to have incorporated portions of the 17th century stone foundation of the home of Thomas Cornell (Jenkins 1912). Stephens also received water lots grants and was responsible for filling portions of the shoreline adjacent to the Point starting in 1894, but based on the 1905 topographical survey, it appears that this landfill was located to the east of Project Area HP-011 (HPI 1987b). Some of the buildings on the resort are depicted on the 1905 topographical survey to the east of Project Area HP-011, which also shows the historical embankment and dock to the west and east. A survey of the Bronx waterfront in the collection of the New York City Municipal Archives that was drafted in 1896 and updated through the 1950s[1]

[1] Accessible here: https://nycma.lunaimaging.com/luna/servlet/s/h73y26

indicates that another water lot adjacent to Project Area HP-011 was granted to the executors of the estate of Bradish Johnson in 1895. The map depicts the proposed extension of White Plains Road and depicts a "rough stone wall" lining the southern shore of Clason's Point in at least a portion of Project Area HP-011.

LANDFILLING AND SHORELINE EXPANSION IN THE 20TH CENTURY

That portion of the Bronx located east of the Bronx River remained part of Westchester County until 1895, when it was annexed to the City of New York (Gonzalez 2004). While initially part of New York County, the borough of the Bronx was formally designated in 1914 (ibid). Following the annexation of the Bronx, the Soundview area remained a relatively rural recreation destination. The 1908 Sanborn map and 1913 Bromley atlas depict a greater number of buildings on the resort, but suggests that the waterfront near Project Area HP-011 was relatively unchanged. The 1913 map depicts an easement continuing the line of White Plains Road past what was then the shoreline. Some of these early filling efforts were related to the deposition of refuse collected from city streets by the Street Cleaning Department (Jenkins 1912). The 1919 Sanborn map reflects the significant expansion of the waterfront resort community with additional recreational facilities to the east and a bungalow community to the west (see **Figure 10**). The map suggests that some landfilling had occurred at the foot of White Plains Road in the location of the easement shown on the 1913 map. This marks the first time that Project Area HP-011 was entirely dry land. The aforementioned 1896 municipal survey indicates that the title to the extension of White Plains Road was vested in 1912. The 1919 Sanborn map continues to depict Project Area HP-009 as marsh.

Similar conditions in both project areas are depicted on the 1928 and 1951 Sanborn maps. These maps depict the line of White Plains Road as extending as far south as the mapped bulkhead line and continuing on as a sewer easement. The extent to which the road was fully developed is unknown, as a 1924 aerial photograph[1] suggests that the vicinity of the road remained unpaved and undeveloped with the exception of a small area of landfill at the southern end of the shoreline. The image reflects the beginning of landfilling in the marshes now located within Soundview Park / Project Area HP-009. An aerial photograph taken in 1951 depicts a more linear/developed shoreline along Soundview Park, which was entirely filled by that time with a combination of dredged material and construction/demolition debris (HPI 1987a; 1987b). The 1951 image otherwise does not depict substantial development within the HP-011 Project Area, nor does it suggest that White Plains Road was fully constructed in the adjacent area. A 1957 photograph of the waterfront taken by NYC Parks depicts White Plains Road as an unpaved road ending with a rip-rap shoreline.[2] What may be a sewer outlet is visible along the waterfront at the foot of the line of White Plains Road. A 1996 aerial photograph continues to depict Project Area HP-011 as undeveloped. The paved and fully constructed portion of White Plains Road terminated just south of the line of Bronx River Avenue until the construction of the Shorehaven housing development to the east and northeast.

[1] All referenced aerial photographs are accessible at: https://maps.nyc.gov/then&now/.

[2] Accessible at: https://nycma.lunaimaging.com/luna/servlet/s/81471x

Chapter 5: 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 and lithographs, newspaper articles, and local histories. The information provided by these sources was analyzed to reach the following conclusions.

PREVIOUS DISTURBANCE

PROJECT AREA HP-009

Project Area HP-009 was inundated marshland until landfilling efforts began in the first half of the 20th century and intensified in the 1940s and 1950s. The majority of the fill material making up what is now Soundview Park includes construction and demolition debris and dredged material. The elevation in this part of the Project Area has been increased by approximately 10 to 31 feet of fill material in the areas formerly occupied by marsh and 10.5 to 30 feet in areas formerly inundated by the Bronx River. The surface elevation of two areas of dry land formerly on the periphery of the marshes in the northern and eastern ends of the Conservative Study Area have been increased by 12.3 to 14.3 feet of fill except in the vicinity of the intersection of LaCombe and Rosendale Avenues, where the grade was lowered by approximately 1 foot. In addition to disturbance associated with landfilling, the park contains subsurface infrastructure that crossed through the project area, including existing sewers and outfalls.

PROJECT AREA HP-011

Only the northern end of Project Area HP-011 was fast land prior to the 20th century landfilling efforts that expanded and regulated the shoreline of Clason's Point. The southern end was modified through the addition of fill material and shoreline modifications (e.g., rip rap) that raised the ground surface elevation by approximately 8.5 to 10.5 feet. The landscape of the upland area was similarly modified and the elevation of that part of the Project Area was raised by approximately 6 to 8.5 feet. The project area also contains extensive subsurface infrastructure including sewers, a regulator, tide gates, etc. These utilities and other shoreline modifications are expected to have resulted in extensive disturbance to what has historically the original waterfront in the northern portion of the project area.

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, "Precontact Period," the original landform of Clason's Point is known to have been the site of Native American settlements, shell middens, and burial sites. Absent previous disturbance, waterfront areas along the landform would be considered to be highly sensitive. As seen in **Appendix B**, Project Area HP-009 is located in an area of filled marsh and open water, and the project impacts are expected to extend to approximate depths ranging between 42.5 and 45 feet below the ground

surface (-15 to -28 feet NAVD88). The project impacts are therefore not expected to penetrate the pre-marsh ground surface, which is expected to be situated at -65 feet NAVD88, nearly 40 feet below the deepest point that would be impacted by the project. As such, Project Area HP-009 is determined to have no sensitivity for precontact archaeological resources in the soil levels that would be impacted by the proposed project.

Similarly, Project Area HP-011 was partially inundated by the East River and has been expanded through the addition of fill material. While the northern portion of the project area was located along the waterfront prior to 20th century landscape modifications, subsequent development including shoreline regulation and the installation, maintenance, and replacement of utilities would have resulted in disturbance beyond the depth of existing fill deposits, which are expected to be approximately 6 to 8.5 feet in thickness. Therefore, Project Area HP-011 is determined to have low sensitivity for precontact archaeological resources in the soil levels that would be impacted by the proposed project.

HISTORIC SENSITIVITY ASSESSMENT

Project Area HP-009 was inundated until the 20th century and no buildings or other structures appear to have been located in the area. Similarly, the upland portion of Project Area HP-011 was located adjacent to 16th through 19th century residential and agricultural estates and late-19th and early-20th century resort communities. However, no developments appear to have been located within Project Area HP-009 itself. Given the presence of 20th century fill and utility-related disturbance, both Project Area HP-009 and Project Area HP-011 are determined to have no sensitivity for archaeological resources associated with the occupation of Clason's Point during the historic period.

B. RECOMMENDATIONS

The project areas have been determined to have no or low sensitivity for archaeological resources associated with the precontact occupation of the region, and no sensitivity for archaeological resources associated with the historic period. As a result, no further archaeological analysis is recommended. In the event that the project design changes and the project would result in deeply buried alluvial sands located below the area of impact within Project Area HP-009, additional archaeological analysis may be required. If such project design changes occur, consultation will be initiated with LPC and SHPO to discuss appropriate methods for such analysis of deeply buried resources.

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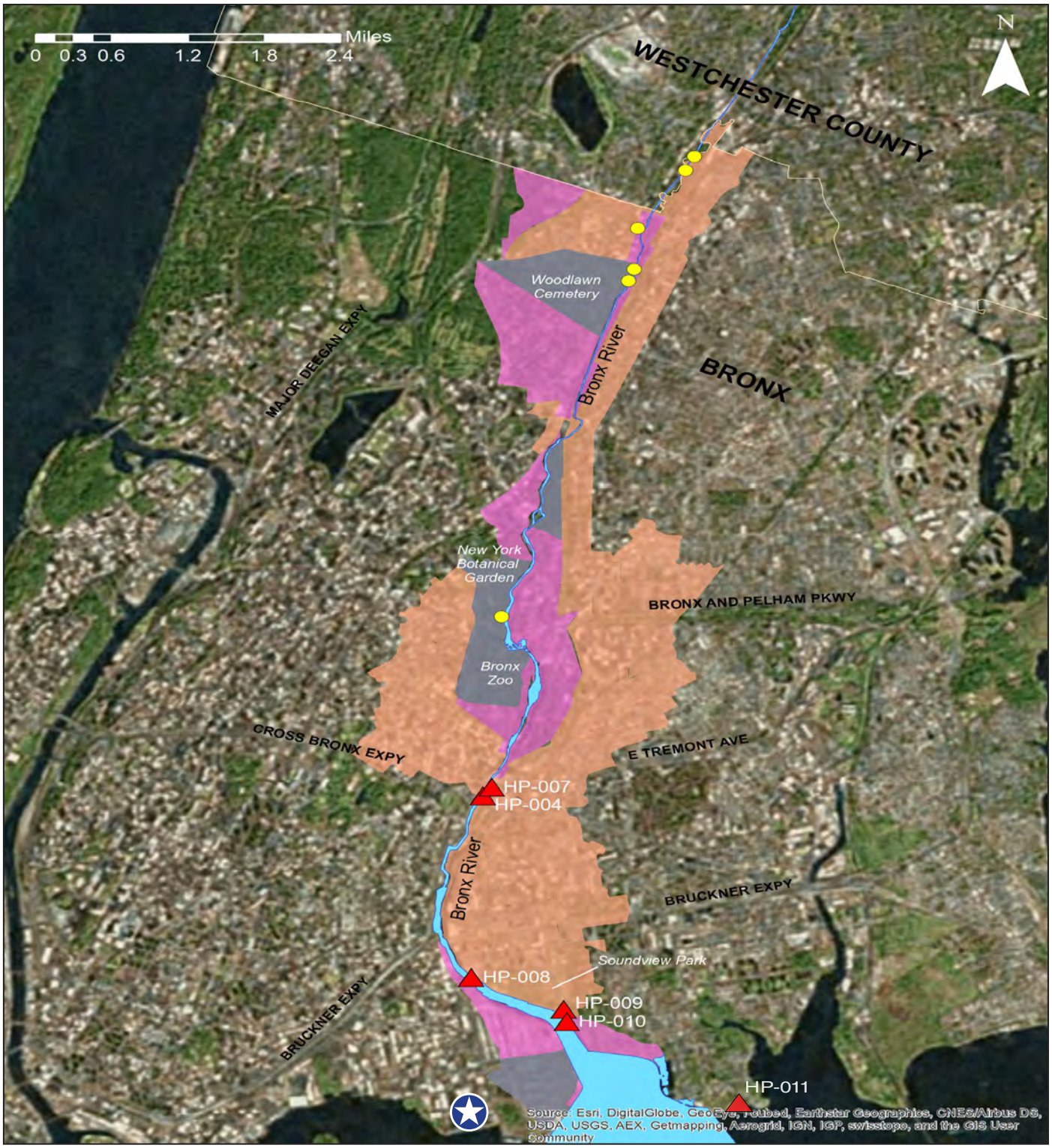
Figures

11.15.21



Source: Combined Sewer Overflow Long Term Control Plan, NYCDEP, July 2015

- Combined
- Direct
- Separate
- CSO Outfall
- MS4 Outfall
- Hunts Point Wastewater Resource Recovery Facility

Bronx River Watershed

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

Figure 1

12.2.21

0 200 FEET

Project Limits

Conservative Study Area

*Shaft Site**

HP-009 and HP-010 Outfall Locations

HP13 Regulator

Construction Access / Egress Point

* *Construction staging would occur within the shaft sites.*

Project Area HP-009
Project Location

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

Figure 2

11.15.21

Source: NYC Environmental Protection, Bureau of Engineering Design and Construction

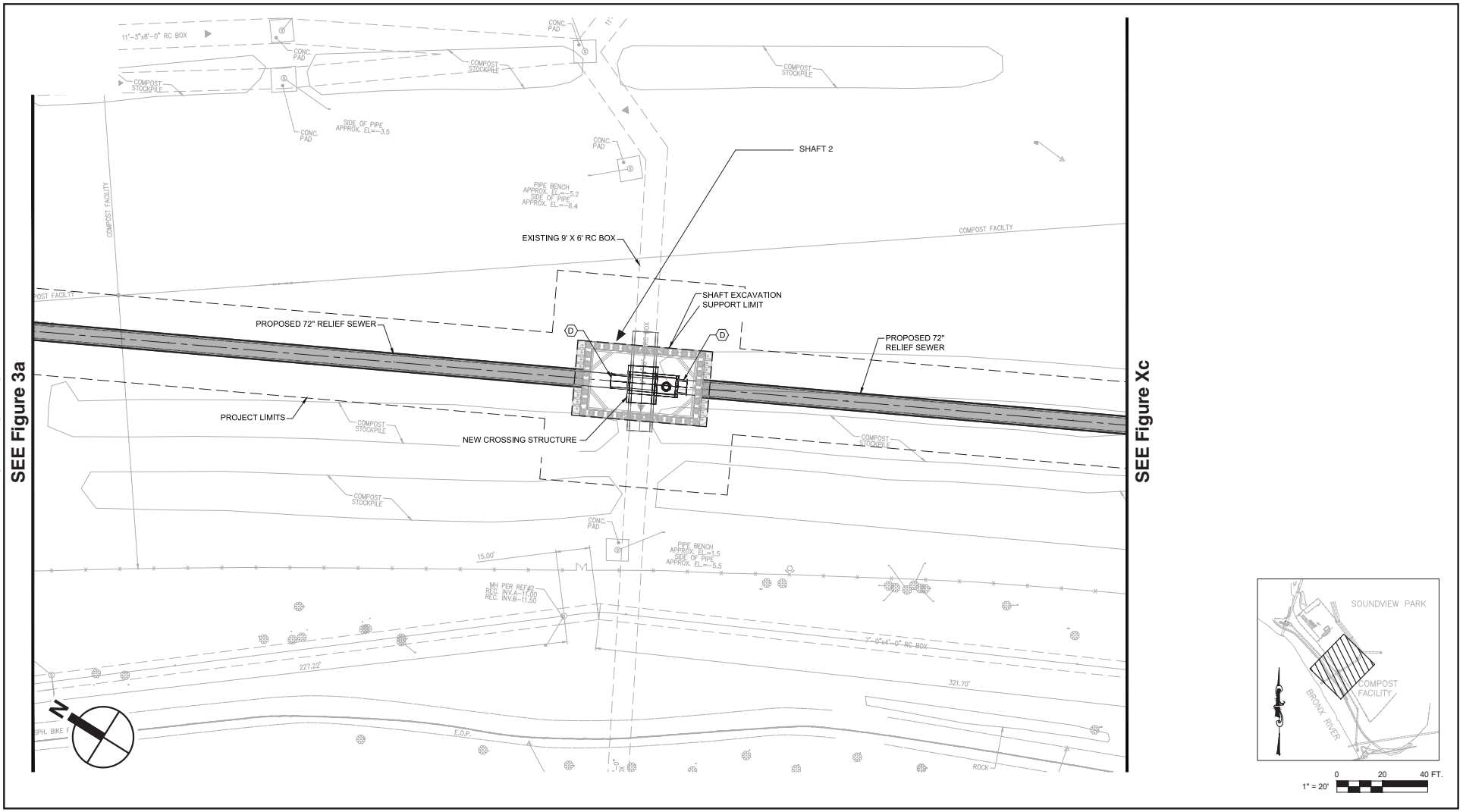
NOTE: Construction staging would occur within the shaft sites

Project Area HP-009
Proposed Site Plan

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

Figure 3a

11.15.21



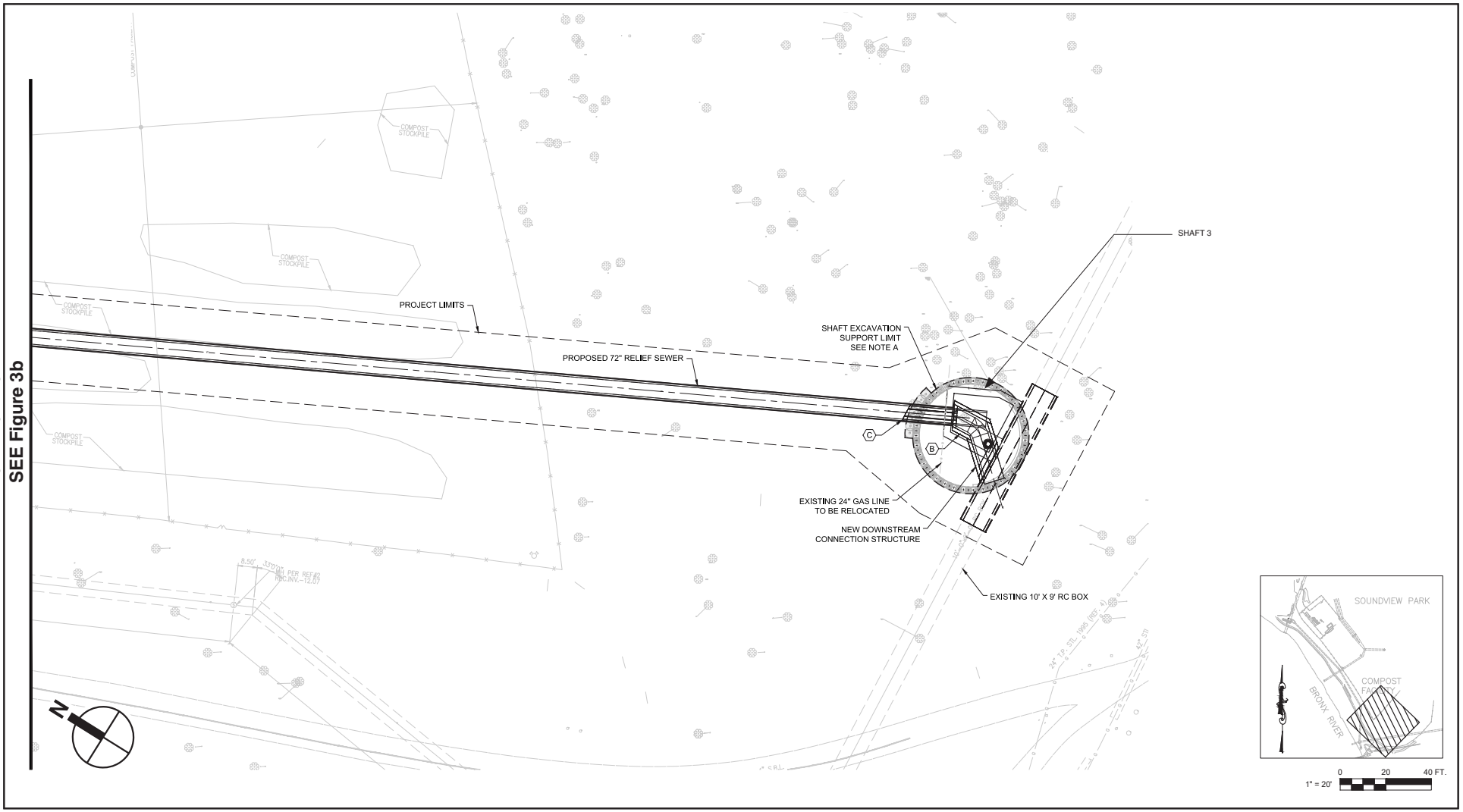
Source: NYC Environmental Protection, Bureau of Engineering Design and Construction

NOTE: Construction staging would occur within the shaft sites

Project Area HP-009
Proposed Site Plan
Figure 3b

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

11.15.21



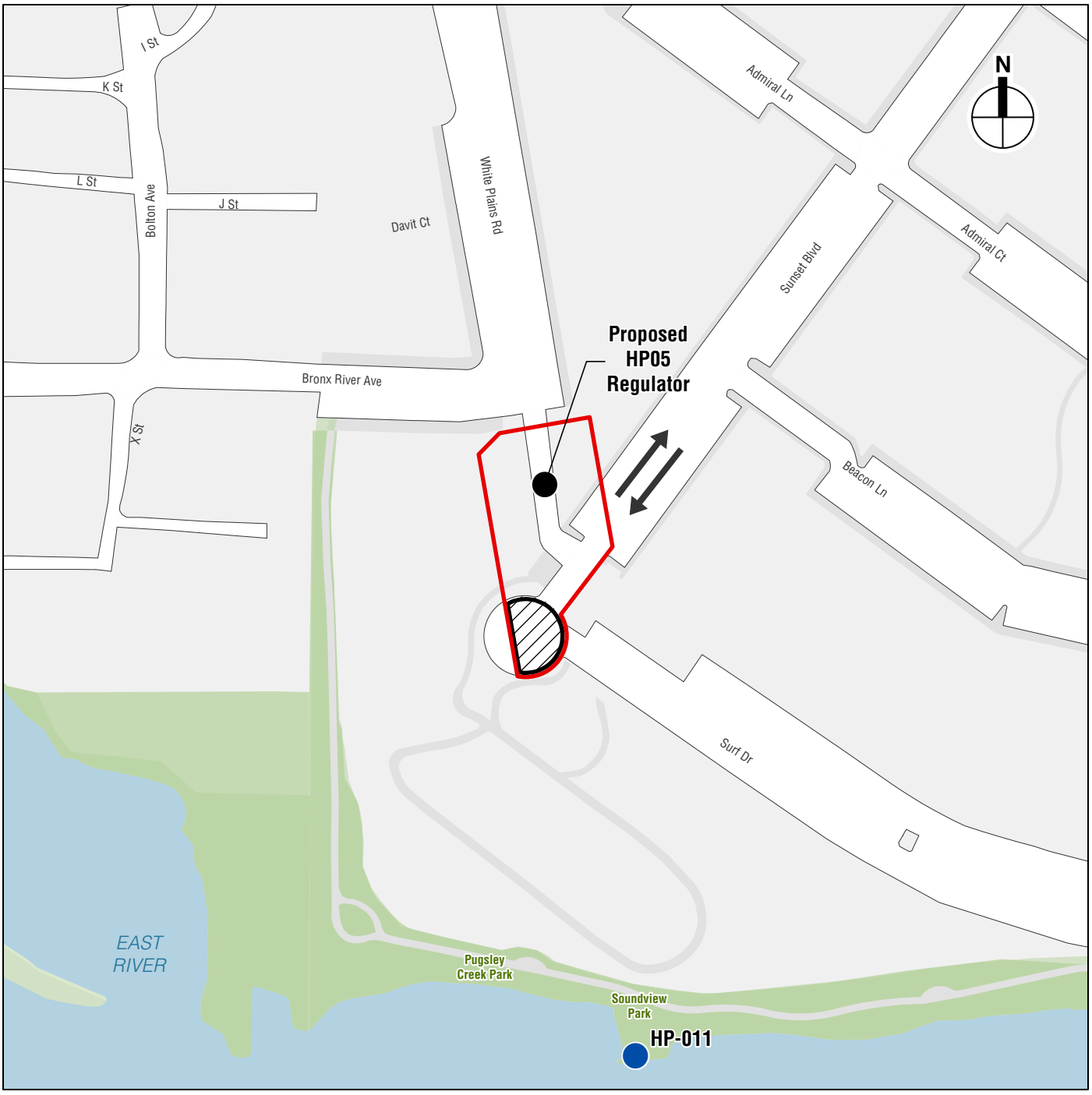
Source: NYC Environmental Protection, Bureau of Engineering Design and Construction

NOTE: Construction staging would occur within the shaft sites

Project Area HP-009
Proposed Site Plan
Figure 3c

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

11.16.21



0 200 FEET

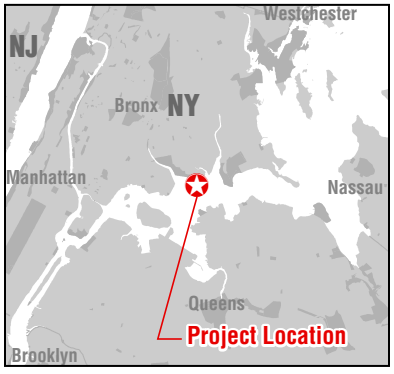
Project Limits

Staging Area

HP-011 Outfall Location

Proposed HP05 Regulator

Construction Access / Egress Point

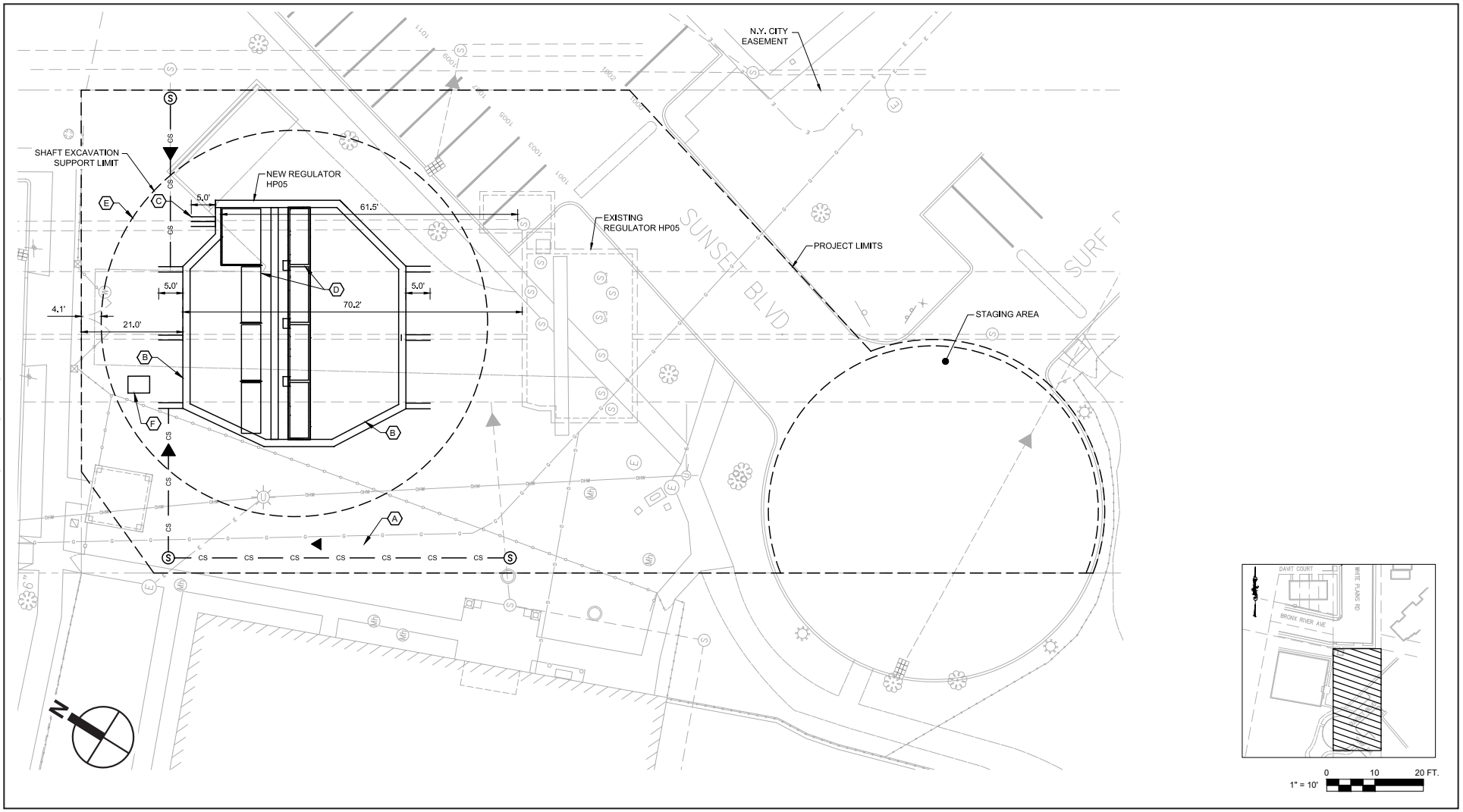


Project Area HP-011
Project Location

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

Figure 4

11.15.21



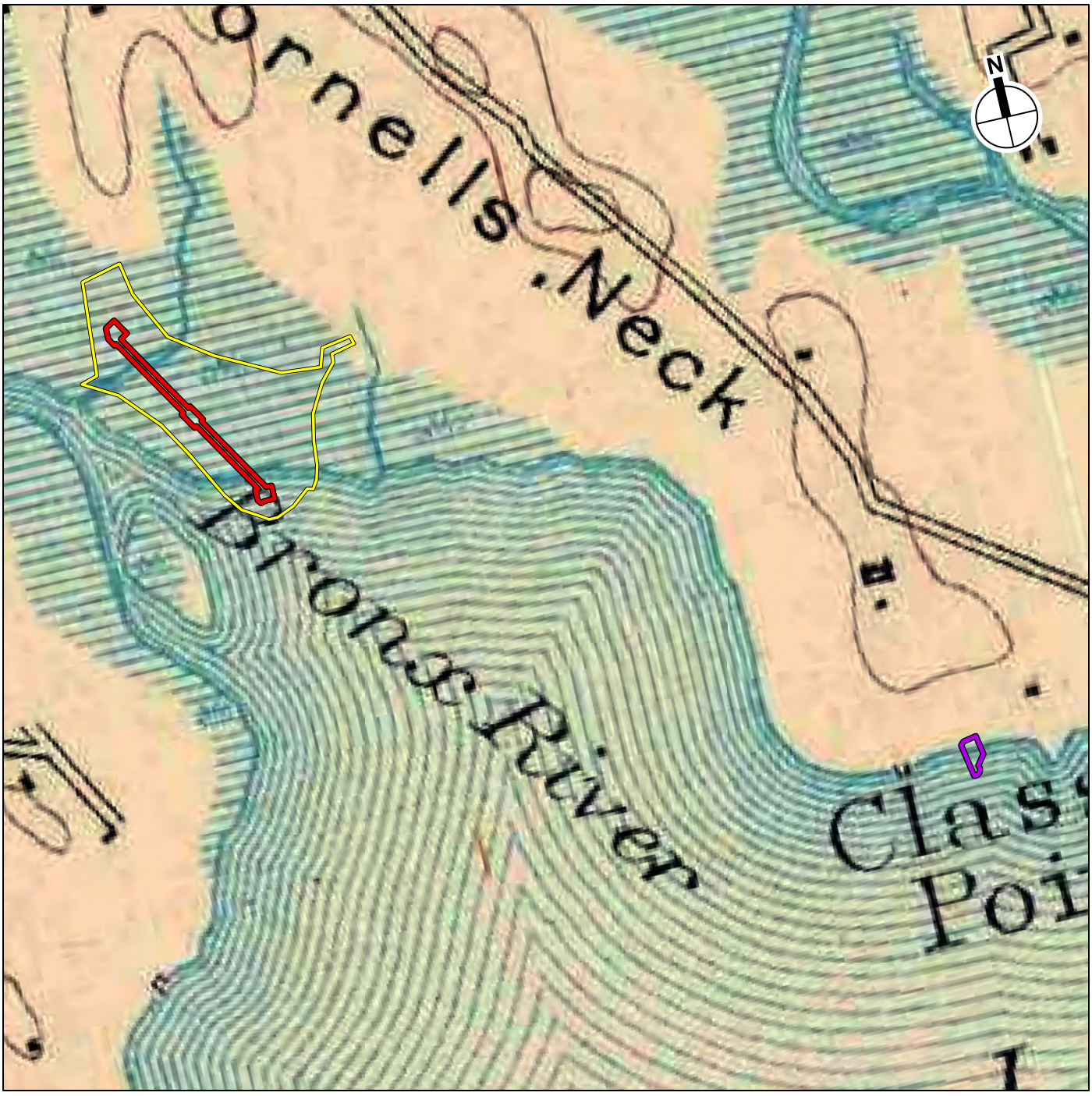
Source: NYC Environmental Protection, Bureau of Engineering Design and Construction

Project Area HP-011
Proposed Site Plan

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

Figure 5

12.2.21



HP-009 Project Limits

HP-011 Project Limits

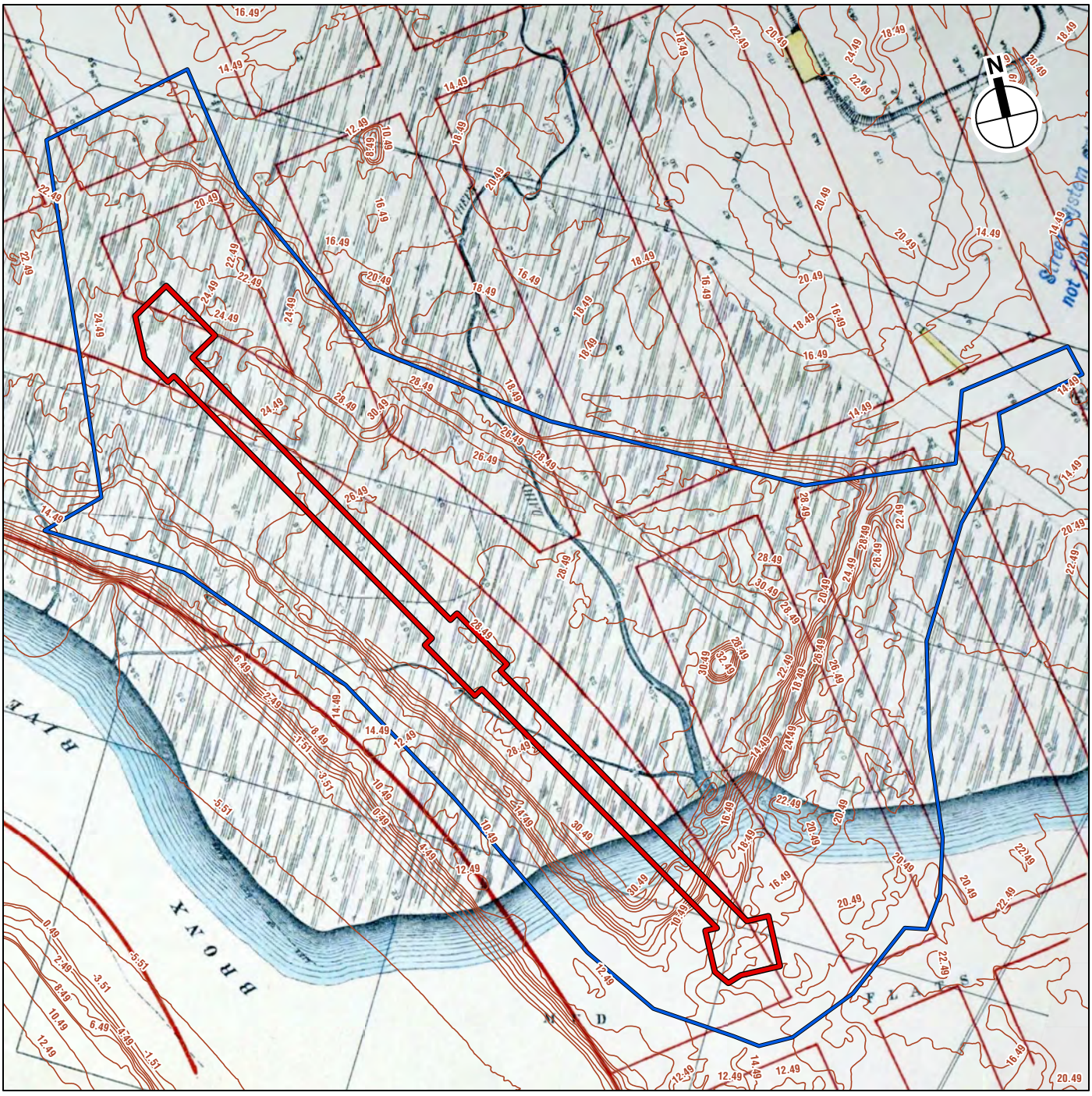
Conservative Study Area

1891 USGS Map

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

Figure 6

12.2.21



HP-009 Project Limits

Conservative Study Area

Contour (Bronx Borough Datum)

0 400 FEET

1905 Topographical Survey

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

Figure 7a

11.17.21

HP-011 Project Limits

Contour (Bronx Borough Datum)

1905 Topographical Survey

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

Figure 7b

11.17.21

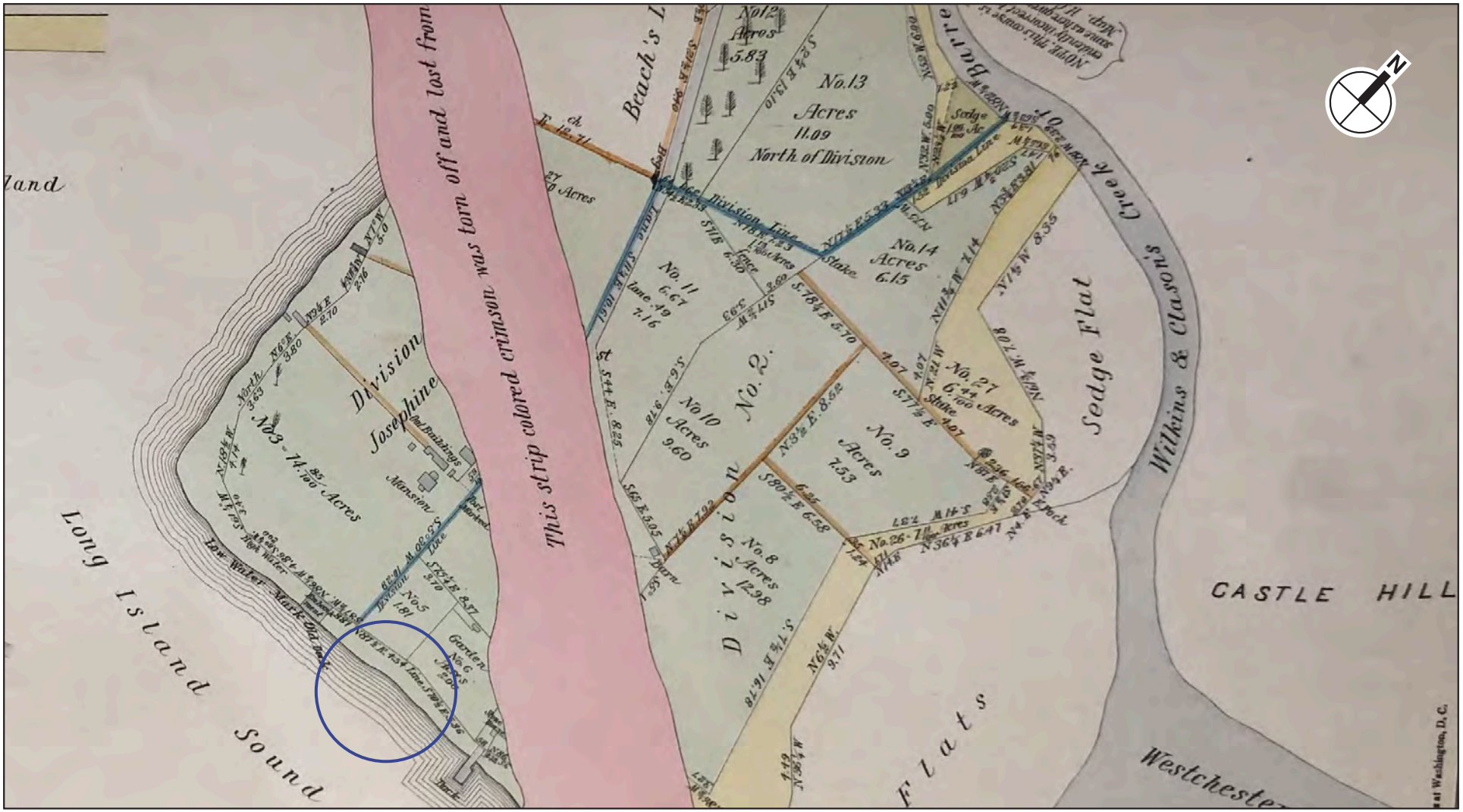
General Location of Project Areas

1922 Bolton

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

Figure 8

11.17.21



NOT TO SCALE

Approximate location of HP-011 Project Area

1838 Findlay Map from 1897 Robinson Atlas

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

Figure 9

11.17.21

HP-011 Project Limits

0 200 FEET

1919 Sanborn

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

Figure 10

Photographs

** Construction staging would occur within the shaft sites.*

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

View of the proposed Shaft 1 location adjacent to the entrance to the NYC Department of Sanitation (DSNY) Compost Facility, facing southeast. October 12, 2020. **1**

View of the wooded area adjacent to the proposed Shaft 1 location, facing northeast. October 12, 2020. **2**

View of the DSNY Composting Facility, which encompasses the proposed Shaft 2 location, facing southeast. October 12, 2020. **3**

View of HP-009 outfall, facing northwest. October 12, 2020. **4**

View of the paved path and wooded area southwest of the DSNY Compost Facility, facing northwest. October 12, 2020. **5**

View of the paved path and vegetated area southwest of the DSNY Compost Facility, facing northwest. October 12, 2020. **6**

View of shoreline, facing northwest. October 12, 2020. **7**

View of the shrubland area adjacent to the proposed Shaft 3 location, facing east. October 12, 2020. **8**

View of the proposed Shaft 3 location, facing southwest. October 12, 2020. **9**

11.16.21

Data source: Orthoimagery via Nearmap

0 200 FEET

Project Limits

Staging Area

HP-011 Outfall Location

Proposed HP05 Regulator

Photograph View Direction and Reference Number

BRONX RIVER COMBINED SEWER OVERFLOW PROJECT

View of the intersection of White Plains Road and Bronx River Avenue adjacent to the proposed Regulator HP05 location, facing southeast. October 12, 2020. **10**

View of the paved road and sidewalk adjacent to the proposed Regulator HP05 location, facing south. October 12, 2020. **11**

View of the proposed Regulator HP05 location adjacent to the intersection of White Plains Road and Bronx River Avenue, facing south. October 12, 2020. **12**

Appendix A: Utility Drawings

NOTES

1. VERTICAL DATUM – NAVD 1988 AND HORIZONTAL DATUM – NY EAST NAD83 STATE PLANE COORDINATE SYSTEM; BASED ON GPS OBSERVATIONS BY MATRIX NEW WORLD ON NOVEMBER 1, 2019 AND REFERRING TO LEICA SMARTNET CONTINUOUSLY OPERATING REFERENCE STATION (CORS) NETWORK, NATIONAL GEODETIC SURVEY MONUMENT: CORS STATION "NYBP, NYCI, NYVH".
2. THE EXISTING CONDITIONS SHOWN HEREON ARE BASED ON A FIELD SURVEY PERFORMED BY MATRIX NEW WORLD WITH LASER SCANNING EQUIPMENT (LiDAR).
3. MATRIX NEW WORLD MAKES NO GUARANTEES THAT ALL UNDERGROUND UTILITIES ARE SHOWN HEREON AND THAT THE EXACT LOCATIONS OF THE UNDERGROUND UTILITIES INDICATED ON THIS SURVEY ARE APPROXIMATE. ALL UTILITY LOCATIONS MUST BE VERIFIED WITH THE PROPER UTILITY COMPANIES PRIOR TO DESIGN, EXCAVATION OR CONSTRUCTION.
4. EXCAVATORS AND CONTRACTORS WORKING IN THE FIVE BOROUGHS OF NEW YORK CITY AND NASSAU AND SUFFOLK COUNTIES ON LONG ISLAND MUST CONTACT NEW YORK 811, 1-800-272-4480 OR 811, AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) PRIOR TO BEGINNING ANY MECHANIZED DIGGING OR EXCAVATION WORK TO ENSURE THAT UNDERGROUND UTILITY LINES ARE MARKED.
5. NO LEGAL GRADE INFORMATION IS AVAILABLE FOR THIS SURVEY SITE.

REFERENCES

1. NO PROPERTY INFORMATION IS REQUIRED FOR THIS SURVEY SITE.
2. A MAP ENTITLED "NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF WATER AND SEWER OPERATIONS ENGINEERING, BRONX SEWER MAP, GRID No. 022235, DATUM: NAD, 1983, BRONX BOROUGH SEWER AND HIGHWAY DATUM, SHEET 127X, MAP PLOTTED: 08/31/2011.
3. PLAN ENTITLED "RECORD DRAWING, N. DI MENNA & SONS, INC., CONTRACTOR., REGULATOR No. 13", PREPARED BY THE DEPARTMENT OF PUBLIC WORKS, DATED 02/16/1952 AND FILED AS MAP No. 9658-PW14.
4. CONSOLIDATED EDISON CO. OF N.Y. – BRONX MAPS & RECORDS BUREAU GAS MAINS AND SERVICE PLATE Nos. 6-P AND 6-Q, LAST MODIFIED ON 03/29/2019.
5. NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER AND SEWER OPERATIONS, SEWER MAPPING, MAP PRINT DATE: 12/05/2019.
6. SEWER INSPECTION OF THE HUNTS POINT INTERCEPTOR AT WESTCHESTER CREEK CONDUCTED BY SAVIN ENGINEERS, P.C. OF PLEASANTVILLE, NY DATED 08/03/2010.
7. CITY OF NEW YORK OFFICE OF THE PRESIDENT OF THE BOROUGH OF THE BRONX ENGINEERING BUREAU MAP SHOWING THE CHANGE OF LINES AND GRADES, THE ELIMINATION AND ADDITION OF PORTIONS OF SOUNDVIEW PARK AND THE ELIMINATION OF BRONX RIVER AVE. RANDALL AVE. AND METCALF AVE. WITHIN THE TERRITORY BOUNDED BY BRUCKNER BLVD., METCALF AVE., SEWARD AVE., ROSEDALE AVE., TO BRONX RIVER AVE., THENCE SOUTHERLY OT THE NORTHERLY PIERHEAD AND BULKHEAD LINE OF THE BRONX RIVER, ALONG SAID PIERHEAD AND BULKHEAD LINE TO LAFAYETTE AVE AND MORRISON AVENUE INCLUDING THE EXTENSION OF THE BRONX RIVER PARKWAY SOUTHERLY EXTENSION FROM BRUCKNER BLVD, TO LAFAYETTE AVE., AND THE EXTENSION OF RANDALL AVE., TO THE BRONX RIVER. AMENDMENT TO SECTION 39, 48 PLAN NO 11357 DATED AUGUST 12, 1952

ABBREVIATIONS

AERIAL ELECTRIC, TELEPHONE, FIBER	A/E,T,F
ASPHALT	ASPH.
ASPHALT WALK	A.W.
BLOCK	BLK.
BOTTOM OF BEAM	B.O.B.
BOTTOM OF CHAMBER	B.O.C.
BOTTOM OF CURB	B.C.
BOTTOM OF STOCKPILE	B.S.
BRICK	BRK.
BUILDING	BLDG.
CAST IRON PIPE	C.I.P.
CATCH BASIN	C.B.
CHAIN LINK FENCE	C.L.F.
CONCRETE CURB	C.C.
CONCRETE SIDEWALK	C.SW.
CONCRETE WALK	C.W.
DEPRESSED OR FLUSH CURB	D.C.
DOUBLE	DBL.
DOUBLE BARREL	DB
DOUBLE BROKEN YELLOW LINE	D.B.Y.L.
DOUBLE SOLID YELLOW LINE	D.S.Y.L.
DRAWING	DWG.
DRIVEWAY	DWY.
EASEMENT	ESMT.
ELECTRIC	ELEC.
ELEVATION	ELEV.
EXTRA STRENGTH VITRIFIED CLAY PIPE	ESVP
FILED MAP	F.M.
FINISHED FLOOR	FF
FOOTING	FTG.
FRAME	FR.
GARAGE FLOOR	GF
GAS METER	GM
GRATE	GR.
GUARD POST	GP
HEIGHT	HT.
LANDSCAPE	LSCP.
LIGHT	LGT.
MANHOLE	MH
MARKER	MKR.
MASONRY	MAS.
MOUNTED	MTD.
NOW OR FORMERLY	N/F
OVERHEAD	O/H
PAGE	PG
PART OF	P/O
PAVEMENT	PVMT.
POINT	PNT.
POLYVINYL CHLORIDE	PVC
PRECAST REINFORCED CONCRETE PIPE	PRCP
RAILROAD	R.R.
REF.	REFERENCE
REINFORCED CONCRETE	RC
REINFORCED CONCRETE PIPE	RCP
RET.	RETAINING
RIGHT-OF-WAY	R.O.W.
ROADWAY	RDWY.
SAFETY SURFACE	SAF.
SANITARY	SAN.
SEWER	SWR.
SIDEWALK	SDWK.
SLEEVE	SLV.
SOLID WHITE LINE	S.W.L.
SOLID YELLOW LINE	S.Y.L.
STAKE SET	STKS
STEEL	STL.
STEEL-FACED CURB	S.F.C.
STEEL PICKET FENCE	S.P.F.
STONE	STN.
STORY	STY.
TOP OF BANK	T.B.
TOP OF BELL	T.O.B.
TOP OF CURB OR TOP OF CONCRETE	T.C.
TOP OF CURB PIECE	T.C.P.
TOP OF PIPE	T.O.P.
TOP OF RAIL	T.O.R.
TOP OF RAILROAD TRACK RAIL	TR
TOP OF STEEL BEAM	T.B.
TRAVERSE	TRV
TYPICAL	TYP.
UTILITY POLE	U.P.
VENT PIPE	V.P.
VITRIFIED CLAY PIPE	V.C.P.
WROUGHT IRON FENCE	W.I.F.

LEGEND (EXISTING)

MANHOLES
- ELECTRIC
- CABLE TV
- TELEPHONE
- TRAFFIC
- NYC MANHOLE (NYC)
- GAS
- WATER
- FIRE DEPARTMENT
- SUBWAY
- COAL CHUTE (CC)
- STORM SEWER
- COMBINED SEWER
- SANITARY SEWER
- INTERCEPTOR SEWER
- UNIDENTIFIED MANHOLE (NO RECORD AVAILABLE)
- BUILT MANHOLE REPLACED BY NEW MANHOLE
- RECORD MANHOLE
- HARDWARE RIM ELEV. & INV. ELEV. (SEWER, ETC.) (61.23 INV.47.89)

INLETS/OUTLETS
- STORMWATER INLET

CATCH BASINS
- CATCH BASIN w/CURB PIECE – TYPE 1
- CATCH BASIN w/o CURB PIECE – TYPE 2
- CATCH BASIN w/o CURB PIECE – TYPE 3
- INLET
- SEEPAGE BASIN (SB)
- YARD DRAIN (YD)

HYDRANTS
- LOW PRESSURE HYDRANT
- HIGH PRESSURE HYDRANT
- SIAMESE FIRE CONNECTION

STREET LIGHTING AND TRAFFIC SIGNALS
- WOOD UTILITY POLE
- WOOD UTILITY POLE w/STREET LIGHT
- WOOD UTILITY POLE w/TRAFFIC SIGNAL (T)
- WOOD UTILITY POLE w/STREET LIGHT and FIRE ALARM BOX (F)
- WOOD UTILITY POLE w/FIRE ALARM BOX (F)
- WOOD UTILITY POLE w/PEDESTRIAN SIGNAL
- WOOD UTILITY POLE w/TRAFFIC AND PEDESTRIAN SIGNAL (TPS)
- WOOD UTILITY POLE w/STREET LIGHT and TRAFFIC AND PEDESTRIAN SIGNAL (TPS)
- WOOD UTILITY POLE w/STREET LIGHT and PEDESTRIAN SIGNAL
- GUY ANCHORAGE (GW)
- STREET LIGHT (METAL POLE)
- STREET LIGHT AND TRAFFIC SIGNAL (T)
- STREET LIGHT AND TRAFFIC SIGNAL WITH PEDESTRIAN SIGNAL (TPS)
- STREET LIGHT w/PEDESTRIAN SIGNAL (PS)
- STREET LIGHT w/FIRE ALARM BRACKET (F)
- TRAFFIC SIGNAL POST (T)
- TRAFFIC SIGNAL CONTROL BOX
- STANCHION WITH TRAFFIC SIGNAL (T)
- STANCHION W/PEDESTRIAN SIGNAL (PS)
- TRAFFIC SIGNAL POST w/PEDESTRIAN SIGNAL (TPS)

VALVE BOXES
- GAS (G)
- WATER (W)
- STEAM (St)
- UNKNOWN (UNK)

TREES
- EXISTING TREE (SIZE AS LABELED)
- SHRUB
- HEDGE (HEIGHT AS LABELED)
- TREE LINE

MISCELLANEOUS
- AREA LIGHT
- ELECTRIC METER (EM)
- GAS METER (GM)
- VAULT (SIDEWALK) (V)
- OIL FILL CAP OR OIL VENT (OFILL)
- FIRE ALARM BOX (F)
- POLICE CALL BOX (P)
- MAIL BOX, PUBLIC PHONE (MB, TEL.)
- SOIL BORING
- COLUMN – FOUNDATION (OF ELEVATED STRUCTURES)
- FLAG POLE
- SIGN (GROUND MOUNTED)
- PEDESTRIAN RAMP
- CURB (CONCRETE UNLESS OTHERWISE INDICATED)
- CURB WITH DROP CURB (DRIVEWAY)
- EDGE OF PAVEMENT WITHOUT CURB
- NORTH ARROW

BARRIERS
- GUIDE RAIL
- CAST IN PLACE CONCRETE BARRIER
- RETAINING WALL (w/TYPE) (RW (STN.))
- RAILROAD/TROLLEY TRACK

FENCE (WITH HEIGHT AND TYPE)
- CHAIN LINK FENCE
- BARBED WIRE
- IRON PICKET FENCE
- WIRE FENCE
- IRON ON CONCRETE COPING
- WOOD PICKET FENCE
- WOOD STOCKADE FENCE
- BARBED OR RAZOR WIRE
- WATERCOURSE LINE
- GUARD POST (GP)

BUILDINGS
- HOUSE INFORMATION – HOUSE NUMBER, BLDG TYPE, FIRST FLOOR ELEV., (CE) CELLAR ENTR., (GE) GARAGE ENTR.
- STAIRS OR STOOPS
- CANOPY (CANOPY)

CONDUITS
- CATCH BASIN CONNECTION w/FLOW DIRECTION

CONDUITS
- STORM SEWER (WITH SIZE – LESS THAN 24")
- STORM SEWER (WITH SIZE – 24" AND GREATER)*
- SANITARY SEWER (WITH SIZE – LESS THAN 24")
- SANITARY SEWER (WITH SIZE – 24" AND GREATER)*
- COMBINED SEWER (WITH SIZE – LESS THAN 24")
- COMBINED (WITH SIZE – 24" AND GREATER)*
- INTERCEPTOR SEWER (WITH SIZE – LESS THAN 24")
- INTERCEPTOR SEWER (WITH SIZE – 24" AND GREATER)*
- CATCH BASIN CONNECTION
- GAS LINE (WITH SIZE)
- STEAM (WITH SIZE)
- ELECTRIC
- WATER
- TELEPHONE
- CABLE
- FIRE ALARM
- OVERHEAD (AERIAL) UTILITY LINE
- TA SUBWAY CONDUIT

LEGAL DATA
- LOT & BLOCK NUMBER (BLOCK 3870 LOT 28)
- ESTABLISHED/LEGAL GRADE
- ANGLE (86°30'45")
- BLOCK LENGTH (167.01')
- INTERPOLATED/CALCULATED ANGLE OR LENGTH ([86°30'45"] [167.01'])
- PROPERTY POSSESSION LINE
- MAPPED PROPERTY LINE (RIGHT-OF-WAY LINE)
- LOT LINE
- SURVEY MONUMENT (CITY) – IDENTIFY BY TOPO NUMBER (M#)
- BENCH MARK (LABEL) (BM#)

SURVEY CONTROLS
- CONTROL SURVEY TRAVERSE
- CENTER LINE BASE LINE (10+00, 10+50)

TABLE OF CONTENTS

GRAPHIC SCALES
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NOTES, LEGENDS AND ABBREVIATIONS

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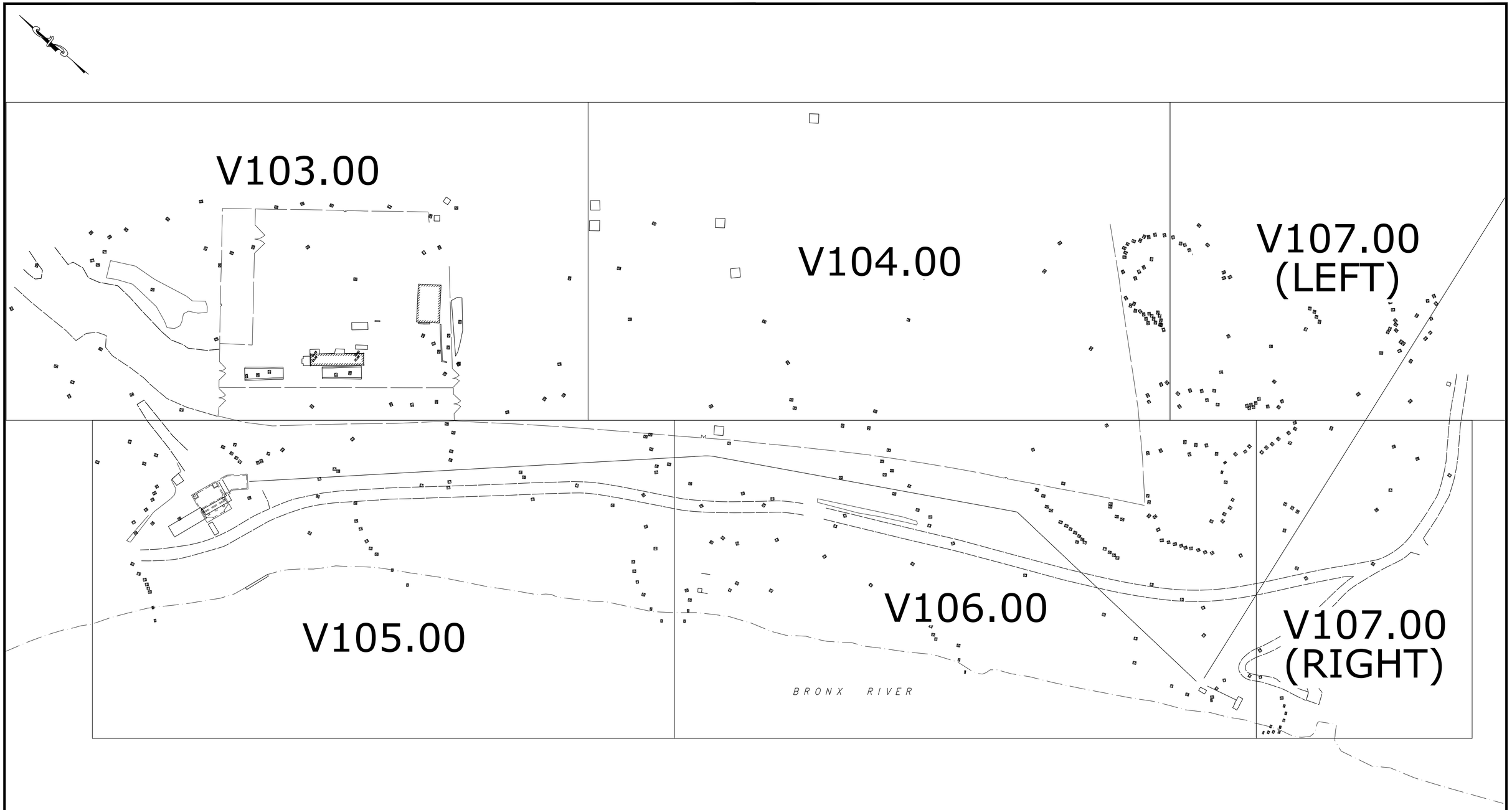

PLAN SHEET INDEX

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TOPOGRAPHIC AND UTILITIES SURVEY
SITE HP-009

DATE: 11/05/2021
SCALE: AS NOTED
SHEET NO: 2 OF 7
DRAWING NO. V102.00

SEWER EASEMENT PER REF. 7 ALTERATION CP 9350 MAP (APPROXIMATE LOCATION AND SCALED PER MAP)

BOX 1915 RC 135"x96" (REF. 5)

BOX 1915 RC 120"x96" (REF. 5)

AREA BEYOND SURVEY SCOPE

11'-3"x8'-0" RC BOX

9'-0"x6'-0" RC BOX

COMPOST STOCKPILE

COMPOST FACILITY

FINISHED COMPOST STORAGE AREA

GPR-LOCATED ELEC. LINE

GPR-LOCATED WATER LINE

GPR-LOCATED SEWER LINE

TRUCK SCALE

TRAILER BLDG.

TRAILER BLDG. CONC. FDN.

CONC. PAD

CONC. BLK.

ELEC. BOX

WOOD STEPS

COMPOST STOCKPILE W/ CONC. BLK.

ASPH. DWY.

APPROX. LOC. OF MH PER REF. 5 NOT FND.

STONES AND MAS. DEBRIS PILE

14'-0"x8'-0" 1959 (REF. 5) RC BOX SEWER

PNT. No. 21 N: 236261.09 E: 1020384.13 Z: 26.21' TRV21

PNT. No. 24524 N: 236179.38 E: 1020351.58 Z: 26.08' MAGS

PNT. No. 220021 N: 236357.77 E: 1020188.97 Z: 30.71' BOR 21

PNT. No. 20 N: 236110.61 E: 1020189.69 Z: 25.46' TRV20

MATCHLINE - DWG. V104.00

MATCHLINE - DWG. V105.00

GRAPHIC SCALES
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1"=20' 0 20 40 FT.

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BRONX, NY

TOPOGRAPHIC AND UTILITIES SURVEY
SITE HP-009

DATE: 11/05/2021
SCALE: AS NOTED
SHEET NO: 3 OF 7
DRAWING NO. V103.00

MATCHLINE - DWG. V103.00

MATCHLINE - DWG. V107.00 (LEFT)

MATCHLINE - DWG. V105.00

MATCHLINE - DWG. V106.00

0 20 40 FT.
1"=20'

GRAPHIC SCALES
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TOPOGRAPHIC AND UTILITIES SURVEY SITE HP-009

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SCALE: AS NOTED
SHEET NO: 4 OF 7
DRAWING NO. V104.00

MATCHLINE - DWG. V103.00

MATCHLINE - DWG. V106.00

GRAPHIC SCALES
CHECK BEFORE USE

0 20 40 FT.
1"=20'

IF SHEET IS LESS THAN 22" X 34"
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BRONX, NY

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SITE HP-009

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SCALE: AS NOTED
SHEET NO:
5 OF 7
DRAWING NO.
V105.00

MATCHLINE - DWG. V103.00

MATCHLINE - DWG. V104.00

MATCHLINE - DWG. V105.00

MATCHLINE - DWG. V107.00 (RIGHT)

1"=20' 0 20 40 FT.

GRAPHIC SCALES
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NO.	DATE	DESCRIPTION	APPR'D.

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SECTION MANAGER:

NYC Environmental Protection

ACCOUNTABLE MANAGER
PORTFOLIO MANAGER
DIRECTOR, IN HOUSE DESIGN

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CONTRACT CSO-BXR DES ENGINEERING SERVICES AND DESIGN SERVICES DURING CONSTRUCTION FOR BRONX RIVER LONG TERM CONTROL PLAN BRONX, NY

TOPOGRAPHIC AND UTILITIES SURVEY SITE HP-009

DATE: 11/05/2021
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SHEET NO: 6 OF 7
DRAWING NO. V106.00

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DESIGN LEAD:

SECTION MANAGER:

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BRONX, NY

TOPOGRAPHIC AND UTILITIES SURVEY
SITE HP-009

DATE: 11/05/2021
SCALE: AS NOTED
SHEET NO: 7 OF 7
DRAWING NO. V107.00

NOTES

1. VERTICAL DATUM – NAVD 1988 AND HORIZONTAL DATUM – NY EAST NAD83 STATE PLANE COORDINATE SYSTEM; BASED ON GPS OBSERVATIONS BY MATRIX NEW WORLD ON NOVEMBER 1, 2019 AND REFERRING TO LEICA SMARTNET CONTINUOUSLY OPERATING REFERENCE STATION (CORS) NETWORK, NATIONAL GEODETIC SURVEY MONUMENT: CORS STATION "NYBP, NYCI, NYVH".

2. THE EXISTING CONDITIONS SHOWN HEREON ARE BASED ON A FIELD SURVEY PERFORMED BY MATRIX NEW WORLD WITH LASER SCANNING EQUIPMENT (LiDAR).

3. MATRIX NEW WORLD MAKES NO GUARANTEES THAT ALL UNDERGROUND UTILITIES ARE SHOWN HEREON AND THAT THE EXACT LOCATIONS OF THE UNDERGROUND UTILITIES INDICATED ON THIS SURVEY ARE APPROXIMATE. ALL UTILITY LOCATIONS MUST BE VERIFIED WITH THE PROPER UTILITY COMPANIES PRIOR TO DESIGN, EXCAVATION OR CONSTRUCTION.

4. EXCAVATORS AND CONTRACTORS WORKING IN THE FIVE BOROUGHS OF NEW YORK CITY AND NASSAU AND SUFFOLK COUNTIES ON LONG ISLAND MUST CONTACT NEW YORK 811, 1-800-272-4480 OR 811, AT LEAST 48 HOURS BUT NO MORE THAN 10 WORKING DAYS (EXCLUDING WEEKENDS AND LEGAL HOLIDAYS) PRIOR TO BEGINNING ANY MECHANIZED DIGGING OR EXCAVATION WORK TO ENSURE THAT UNDERGROUND UTILITY LINES ARE MARKED.

REFERENCES

1. PROPERTY INFORMATION SHOWN HEREON PER THE FOLLOWING:

   A. A MAP ENTITLED "CITY OF NEW YORK OFFICE OF THE PRESIDENT OF THE BOROUGH OF THE BRONX BUREAU OF TOPOGRAPHY, MAP SHOWING THE ELIMINATION, DISCONTINUING AND CLOSING OF WHITE PLAINS ROAD FROM THE U.S. BULKHEAD LINE TO BRONX RIVER AVE. AND THE DELINEATION OF A 100' SEWER EASEMENT THEREIN AND THE DELINEATION OF A WIDENING (TO 100') OF AN EXISTING ADJOINING EASEMENT AND THE ELIMINATION OF PUGSLEY AVE. FROM THE U.S. BULKHEAD LINE TO SOUND VIEW AVE. AND THE ELIMINATION OF BRONX RIVER AVE. FROM PUGSLEY AVE. TO SOUND VIEW AVE. AND THE DISCONTINUING AND CLOSING OF A PORTION THEREOF AND THE ELIMINATION, DISCONTINUING AND CLOSING OF BRONX RIVER AVE. FROM THE U.S. BULKHEAD LINE TO SOUND VIEW AVE. AND THE ESTABLISHMENT OF A PARK ADDITION COTERMINOUS WITH THE ELIMINATED PORTION AND THE ELIMINATION OF BETTS AVE. FROM SOUND VIEW AVE. TO GILDERSLEEVE AVE. AND THE DISCONTINUING AND CLOSING OF A PORTION THEREOF AND THE ESTABLISHMENT OF A PARK ADDITION WITHIN THE ELIMINATED PORTION AND THE ELIMINATION OF HUSSON AVE. FROM SOUND VIEW AVE. TO CORNELL AVE. AND THE DISCONTINUING AND CLOSING OF A PORTION THEREOF AND THE ELIMINATION OF CORNELL AVE. FROM BETTS AVE. TO A POINT 120.000' WESTERLY THEREFROM AND THE DISCONTINUING AND CLOSING OF A PORTION THEREOF AND THE ESTABLISHMENT OF A PARK ADDITION COTERMINOUS WITH THE ELIMINATED PORTION AND THE ELIMINATION OF A 30' PERMANENT SEWER EASEMENT DELINEATION FROM WHITE PLAINS RD. TO PUGSLEY AVE. AND THE ADJUSTMENT OF GRADES NECESSITATED THEREBY PLAN NO. 13027 AMENDMENT TO SECTIONS 49 & 54, BLOCK NOS. (SECTION 14 OF LAND MAP) SHOWN THUS: 3436", DATED: NEW YORK, 09/30/1987 AND REVISED THROUGH 02/10/1988 AND CERTIFIED ON 11/25/2014 BY YVETTE V. GRUEL, SECRETARY OF THE CITY PLANNING COMMISSION AND FILED AS MAP No. 8704.

   B. THE FOLLOWING DEED:

      BLOCK 3430, LOT 82
      DOCUMENT ID: 2017101001013002, DOCUMENT DATE: 07/12/2017
      PREPARATION DATE: 10/11/2017, CRFN 2017000374801

   C. PROPERTY INFORMATION SHOWN HEREON PER NEW YORK CITY DEPARTMENT OF FINANCE DIGITAL TAX MAP WEBSITE.

   D. LEGAL GRADE AND PERMANENT SEWER EASEMENT INFORMATION SHOWN HEREON PER A MAP ENTITLED "FINAL SECTION 54 AS AMENDED, ORIGINAL SECTION FILED JULY 16, 1908", AMENDED AND CORRECTED THROUGH 10/17/1990.

2. MAPS ENTITLED:
   A. "CABLEVISION SYSTEMS CORP, OPTIMUM TV, BRONX, HUB-A, NEW YORK, 05/15/03, NODE 5A38-20E138-238, MAP DATE: 03/24/2016.
   B. UPDATED CABLE UTILITY PLATE PROVIDED BY ALTICE ON 03/03/2021.

3. PLANS ENTITLED "RECORD DRAWING, CITY OF NEW YORK DEPARTMENT OF PUBLIC WORKS, DIVISION OF ENGINEERING, BUREAU OF SEWAGE DISPOSAL DESIGN, HUNTS POINT SEWAGE TREATMENT WORKS, HUNTS POINT INTERCEPTING SEWERS, PLAN AND PROFILE, WHITE PLAINS RD. – SHORE LINE TO GILDERSLEEVE AVE., CONTRACT NO. 3A, SHEET S-2 OF 30"; "REGULATOR No. 5 WHITE PLAINS RD. & BRONX RIV. AVE., PLAN & SECTIONS, WHITE PLAINS RD. – SHORE LINE TO GILDERSLEEVE AVE., CONTRACT NO. 3A, SHEET S-17 OF 30", DATED 01/1952.

4. CONSOLIDATED EDISON CO. OF N.Y. INC. – BRONX CONDUIT; LOW TENSION MAINS AND SERVICE PLATE; CONDUIT PLATE Nos. 3-S AND 4-S, PLOT DATES: 02/28/2019 AND 09/21/2011 RESPECTIVELY.

5. CONSOLIDATED EDISON CO. OF N.Y. INC. – BRONX GAS MAINS AND SERVICE PLATE Nos. 3-S AND 4-S, PLOT DATE: 06/14/2018.

6. NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER AND SEWER OPERATIONS, SEWER MAPPING, PRINT DATE: 12/09/2019. NOTE: INVERT ELEVATIONS APPROXIMATELY SHOWN FOR UNFOUND STRUCTURES ARE CONVERTED FROM BRONX DATUM TO NAVD88 EITHER BY ADDING 1.508 FEET TO INVERT ELEVATIONS SHOWN ON THE AFOREMENTIONED MAPPING FOR STRUCTURES OUTSIDE THE TOPOGRAPHIC SCOPE OF THIS SURVEY, OR OTHERWISE OBTAINED FROM THE DIFFERENCE OF STRUCTURE RIM AND INVERT ELEVATIONS SUBTRACTED FROM STRUCTURE ELEVATIONS WITHIN THE TOPOGRAPHIC SCOPE OF THIS SURVEY.

7. NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER AND SEWER OPERATIONS, WATER MAPPING, PRINT DATE: 12/09/2019.

8. NO VERIZON UTILITY INFORMATION AVAILABLE FOR SURVEY SITE.

9. A PLAN ENTITLED "PAVING PLAN, SOUNDVIEW ASSOCIATES CO., BRONX, NEW YORK, DRAWING No. SD-3 BXP88-10", PREPARED BY KRAVCHENKO & ASSOCIATES – CONSULTING ENGINEERS OF NORTHPORT, NY, DATED 02/17/1987 AND REVISED THROUGH 06/12/1001.

ABBREVIATIONS

AERIAL ELECTRIC, TELEPHONE, FIBER	A/E,T,F
ASPHALT	ASPH.
ASPHALT WALK	A.W.
BLOCK	BLK.
BOTTOM OF BEAM	B.O.B.
BOTTOM OF CHAMBER	B.O.C.
BOTTOM OF CURB	B.C.
BOTTOM OF WALL	B.W.
BRICK	BRK.
BUILDING	BLDG.
CAST IRON PIPE	C.I.P.
CATCH BASIN	C.B.
CHAIN LINK FENCE	C.L.F.
CONCRETE CURB	C.C.
CONCRETE SIDEWALK	C.SW.
CONCRETE WALK	C.W.
CUSTOMER	CUST.
DEPRESSED OR FLUSH CURB	D.C.
DIRECT BURIED CABLE	DBC
DOUBLE	DBL.
DOUBLE BARREL	DB
DOUBLE BROKEN YELLOW LINE	D.B.Y.L.
DOUBLE SOLID YELLOW LINE	D.S.Y.L.
DRAWING	DWG.
DRIVEWAY	DWY.
EASEMENT	ESMT.
ELECTRIC	ELEC.
ELEVATION	ELEV.
EXTRA STRENGTH VITRIFIED CLAY PIPE	ESVP
FILED MAP	F.M.
FINISHED FLOOR	FF
FOOTING	FTG.
FRAME	FR.
GARAGE FLOOR	GF
GAS METER	GM
GRATE	GR.
HEIGHT	HT.
INNACCESSIBLE	INNACC.
LANDSCAPE	LSCP.
LIGHT	LGT.
MANHOLE	MH
MARKER	MKR.
MASONRY	MAS.
MOUNTED	MTD.
NOW OR FORMERLY	N/F
OVERHEAD	O/H
PAGE	PG
PART OF	P/O
PAVEMENT	PVMT.
POINT	PNT.
POLYVINYL CHLORIDE	PVC
POLYVINYL COATED DUCTWORK	PCD
PRECAST REINFORCED CONCRETE PIPE	PRCP
RAILROAD	R.R.
REF.	REFERENCE
REINFORCED CONCRETE	RC
REINFORCED CONCRETE PIPE	RCP
RET.	RETAINING
RIGHT-OF-WAY	R.O.W.
ROADWAY	RDWY.
SAFETY SURFACE	SAF.
SANITARY	SAN.
SEWER	SWR.
SIDEWALK	SDWK.
SOLID WHITE LINE	S.W.L.
SOLID YELLOW LINE	S.Y.L.
STEEL	STL.
STEEL-FACED CURB	S.F.C.
STEEL PICKET FENCE	S.P.F.
STONE	STN.
STORY	STY.
TOP OF BELL	T.O.B.
TOP OF CURB OR TOP OF CONCRETE	T.C.
TOP OF CURB PIECE	T.C.P.
TOP OF PIPE	T.O.P.
TOP OF RAIL	T.O.R.
TOP OF RAILROAD TRACK RAIL	TR
TOP OF STEEL BEAM	T.B.
TRAVERSE	TRV
TYPICAL	TYP.
UNDERGROUND	U/G
UTILITY POLE	U.P.
VITRIFIED CLAY PIPE	V.C.P.
WROUGHT IRON FENCE	W.I.F.

LEGEND (EXISTING)

MANHOLES
- ELECTRIC
- CABLE TV
- TELEPHONE
- TRAFFIC
- NYC MANHOLE (NYC)
- GAS
- WATER
- FIRE DEPARTMENT
- SUBWAY
- COAL CHUTE (CC)
- STORM SEWER
- COMBINED SEWER
- SANITARY SEWER
- INTERCEPTOR SEWER
- UNIDENTIFIED MANHOLE (NO RECORD AVAILABLE)
- BUILT MANHOLE REPLACED BY NEW MANHOLE
- RECORD MANHOLE
- HARDWARE RIM ELEV. & INV. ELEV. (SEWER, ETC.) (61.23 INV.47.89)

INLETS/OUTLETS
- STORMWATER INLET

CATCH BASINS
- CATCH BASIN w/CURB PIECE – TYPE 1
- CATCH BASIN w/o CURB PIECE – TYPE 2
- CATCH BASIN w/o CURB PIECE – TYPE 3
- INLET
- SEEPAGE BASIN (SB)
- YARD DRAIN (YD)

HYDRANTS
- LOW PRESSURE HYDRANT
- HIGH PRESSURE HYDRANT
- SIAMESE FIRE CONNECTION

STREET LIGHTING AND TRAFFIC SIGNALS
- WOOD UTILITY POLE
- WOOD UTILITY POLE w/STREET LIGHT
- WOOD UTILITY POLE w/TRAFFIC SIGNAL (T)
- WOOD UTILITY POLE w/STREET LIGHT and FIRE ALARM BOX (F)
- WOOD UTILITY POLE w/FIRE ALARM BOX (F)
- WOOD UTILITY POLE w/PEDESTRIAN SIGNAL
- WOOD UTILITY POLE w/TRAFFIC AND PEDESTRIAN SIGNAL (TPS)
- WOOD UTILITY POLE w/STREET LIGHT and TRAFFIC AND PEDESTRIAN SIGNAL (TPS)
- WOOD UTILITY POLE w/STREET LIGHT and PEDESTRIAN SIGNAL
- GUY ANCHORAGE (GW)
- STREET LIGHT (METAL POLE)
- STREET LIGHT AND TRAFFIC SIGNAL (T)
- STREET LIGHT AND TRAFFIC SIGNAL WITH PEDESTRIAN SIGNAL (TPS)
- STREET LIGHT w/PEDESTRIAN SIGNAL (PS)
- STREET LIGHT w/FIRE ALARM BRACKET (F)
- TRAFFIC SIGNAL POST (T)
- TRAFFIC SIGNAL CONTROL BOX
- STANCHION WITH TRAFFIC SIGNAL (T)
- STANCHION W/PEDESTRIAN SIGNAL (TPS)
- TRAFFIC SIGNAL POST w/PEDESTRIAN SIGNAL (TPS)

VALVE BOXES
- GAS (G)
- WATER (W)
- STEAM (St)
- UNKNOWN (UNK)

TREES
- EXISTING TREE (SIZE AS LABELED)
- SHRUB
- HEDGE (HEIGHT AS LABELED)
- TREE LINE

MISCELLANEOUS
- AREA LIGHT
- ELECTRIC METER
- GAS METER
- VAULT (SIDEWALK)
- OIL FILL CAP OR OIL VENT (FILL)
- FIRE ALARM BOX (F)
- POLICE CALL BOX (P)
- MAIL BOX, PUBLIC PHONE (MB, TEL.)
- SOIL BORING
- IRRIGATION VALVE BOX
- COLUMN – FOUNDATION (OF ELEVATED STRUCTURES)
- FLAG POLE
- SIGN (GROUND MOUNTED)
- PEDESTRIAN RAMP
- CURB (CONCRETE UNLESS OTHERWISE INDICATED)
- CURB WITH DROP CURB (DRIVEWAY)
- EDGE OF PAVEMENT WITHOUT CURB
- NORTH ARROW

BARRIERS
- GUIDE RAIL
- CAST IN PLACE CONCRETE BARRIER
- RETAINING WALL (w/TYPE) (RW (STN.))
- RAILROAD/TROLLEY TRACK

FENCE (WITH HEIGHT AND TYPE)
- CHAIN LINK FENCE
- BARBED WIRE
- IRON PICKET FENCE
- WIRE FENCE
- IRON ON CONCRETE COPING
- WOOD PICKET FENCE
- WOOD STOCKADE FENCE
- BARBED OR RAZOR WIRE
- WATERCOURSE LINE
- GUARD POST (GP)

BUILDINGS
- HOUSE INFORMATION – HOUSE NUMBER, BLDG TYPE, FIRST FLOOR ELEV., (CE) CELLAR ENTR., (GE) GARAGE ENTR.
- STAIRS OR STOOPS
- CANOPY (CANOPY)

CONDUITS
- CATCH BASIN CONNECTION w/FLOW DIRECTION

CONDUITS
- STORM SEWER (WITH SIZE – LESS THAN 24")
- STORM SEWER (WITH SIZE – 24" AND GREATER)*
- SANITARY SEWER (WITH SIZE – LESS THAN 24")
- SANITARY SEWER (WITH SIZE – 24" AND GREATER)*
- COMBINED SEWER (WITH SIZE – LESS THAN 24")
- COMBINED (WITH SIZE – 24" AND GREATER)*
- INTERCEPTOR SEWER (WITH SIZE – LESS THAN 24")
- INTERCEPTOR SEWER (WITH SIZE – 24" AND GREATER)*
- CATCH BASIN CONNECTION
- GAS LINE (WITH SIZE)
- STEAM (WITH SIZE)
- ELECTRIC
- WATER
- TELEPHONE
- CABLE
- FIRE ALARM
- OVERHEAD (AERIAL) UTILITY LINE
- TA SUBWAY CONDUIT

LEGAL DATA
- LOT & BLOCK NUMBER (BLOCK 3870 LOT 28)
- ESTABLISHED/LEGAL GRADE
- ANGLE (86°30'48")
- BLOCK LENGTH (167.01')
- INTERPOLATED/CALCULATED ANGLE OR LENGTH ([86°30'48"] [167.01'])
- PROPERTY POSSESSION LINE
- MAPPED PROPERTY LINE (RIGHT-OF-WAY LINE)
- LOT LINE
- SURVEY MONUMENT (CITY) – IDENTIFY BY TOPO NUMBER
- BENCH MARK (LABEL)

SURVEY CONTROLS
- CONTROL SURVEY TRAVERSE
- CENTER LINE BASE LINE (10+00, 10+50)

TABLE OF CONTENTS

GRAPHIC SCALES
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NOTES, LEGENDS AND ABBREVIATIONS

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SECTION MANAGER:

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CONTRACT CSO-BXR DES ENGINEERING SERVICES AND DESIGN SERVICES DURING CONSTRUCTION FOR BRONX RIVER LONG TERM CONTROL PLAN BRONX, NY

TOPOGRAPHIC AND UTILITIES SURVEY SITE HP-011

DATE: 09/04/2021
SCALE: AS NOTED
SHEET NO: 1 OF 3
DRAWING NO. V101.00

TOPOGRAPHIC SURVEY

GRAPHIC SCALES
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TOPOGRAPHIC AND UTILITIES SURVEY SITE HP-011

DATE: 09/04/2021
SCALE: AS NOTED
SHEET NO: 2 OF 3
DRAWING NO. V102.00

GRAPHIC SCALES
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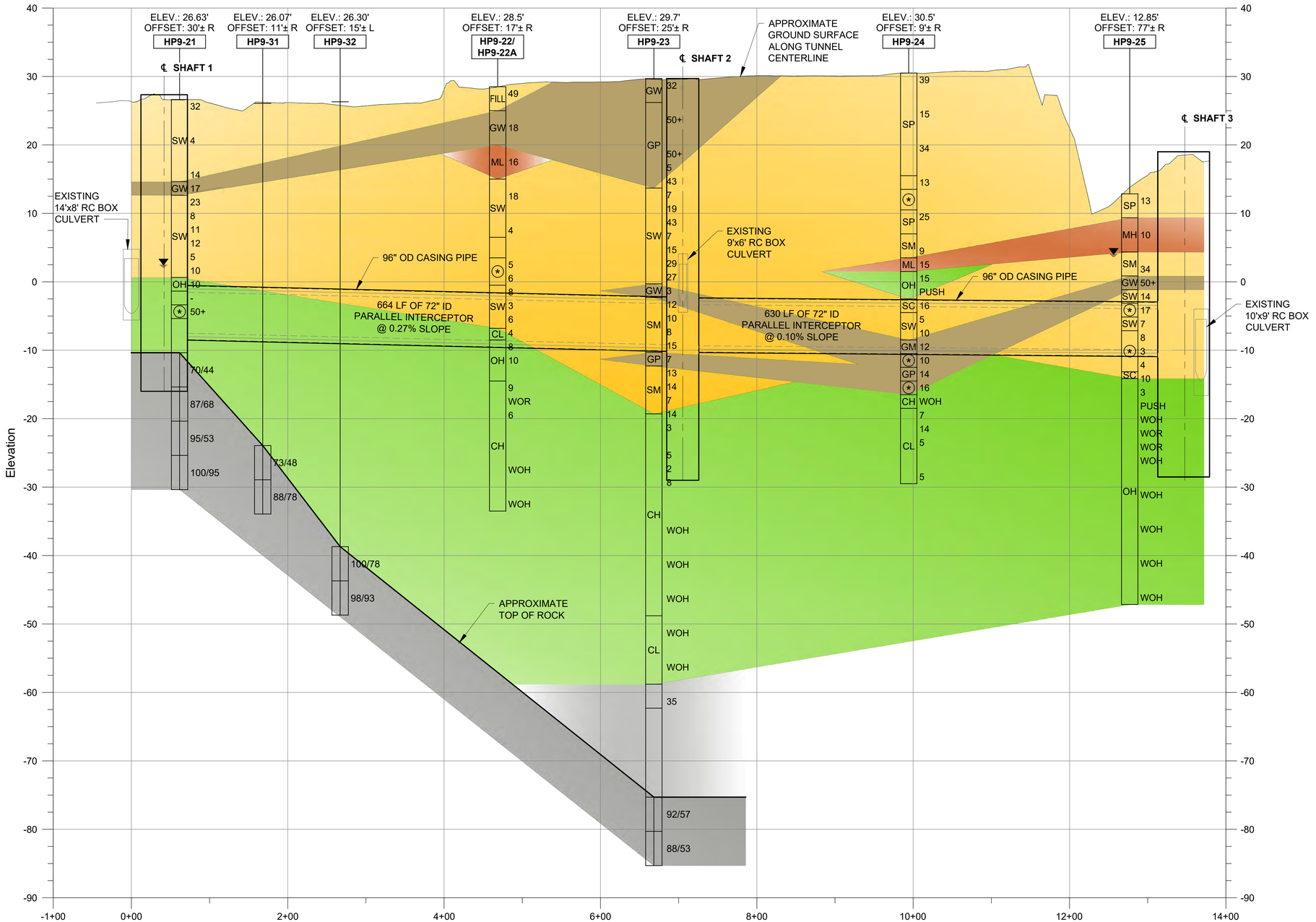
TOPOGRAPHIC AND UTILITIES SURVEY SITE HP-011

DATE: 09/04/2021
SCALE: AS NOTED
SHEET NO: 3 OF 3
DRAWING NO. V103.00

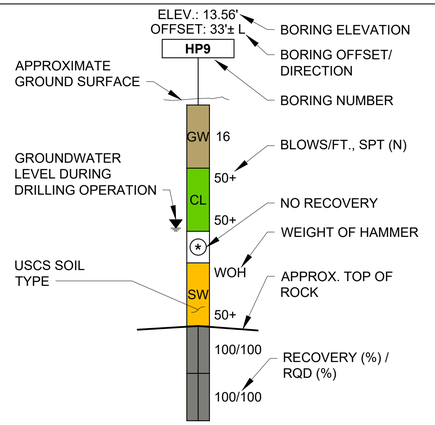
Appendix B: Project Area HP-009 Soil Profile by Wade Trim and Mott McDonald



GEOLOGIC PROFILE

HORIZONTAL SCALE: 1"=70'-0"
VERTICAL SCALE: 1"=8'-0"

BORING LEGEND:



SOIL AND ROCK TYPES IN BORINGS:

FILL	SAND WITH ASPHALT AND GRAVEL
SC	CLAYEY SAND
SM	SILTY SAND
SP	POORLY-GRADED SAND, GRAVELY SAND
SW	WELL-GRADED SAND, GRAVEL SAND
GM	SILTY GRAVEL
GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES
GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES
MH	INORGANIC ELASTIC SILT
ML	INORGANIC SILT OF LITTLE TO SLIGHT PLASTICITY
CH	INORGANIC CLAY OF HIGH PLASTICITY; FAT CLAY
CL	INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY; LEAN CLAYS
OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY; ORGANIC SILTS
	DECOMPOSED ROCK AND CLAY
	SCHIST

NOTES:

1. EXISTING GROUND SURFACE SHOWN ALONG THE PARALLEL INTERCEPTOR CENTERLINE.
2. TOP OF BORINGS ELEVATION SHOWN AS SURVEYED AT THE LOCATIONS OF THE BOREHOLES. BOREHOLES DRILLED WITH THE OFFSET FROM THE PARALLEL INTERCEPTOR CENTERLINE. OFFSET INDICATED ABOVE BORING NUMBER.
3. THIS PROFILE HAS BEEN DEVELOPED BASED ON FINDINGS FROM WIDELY SPACED TEST BORINGS. ACTUAL SUBSURFACE CONDITIONS BETWEEN BORING LOCATIONS WILL BE EXPECTED TO VARY FROM THOSE SHOWN IN THIS PROFILE.
4. REFER TO THE GEOTECHNICAL DATA REPORT (GDR) FOR LOGS OF THE BORINGS AND LABORATORY TEST RESULTS. REFER TO THE GEOTECHNICAL BASELINE REPORT (GBR) FOR A DESCRIPTION OF THE SUBSURFACE MATERIALS ENCOUNTERED IN THE BORINGS.
5. BORING OFFSET MEASUREMENT IS DEFINED AS LEFT (L) OR RIGHT (R) OF ALIGNMENT, ASSUMING AN UPSTATION DIRECTION ALONG THE ALIGNMENT.

60% DESIGN SUBMITTAL

DATE SUBMITTED:
DECEMBER 10, 2021

GRAPHIC SCALES CHECK BEFORE USE

IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT. SCALE ACCORDINGLY

NO.	DATE	REVISIONS/DESCRIPTION	APPR'D.

DESIGNED BY: L. GLODKOWSKI
DRAWN BY: Q. BENEDICTO
CHECKED BY: V. RUBINO
DESIGN LEAD: I. NITZOVA
PROJECT MANAGER: T. O'ROURKE

WADE TRIM | MOTT MACDONALD

Environmental Protection

ACCOUNTABLE MANAGER: NURUL SADAT, PE
PORTFOLIO MANAGER: DANIEL SOLIMANDO, PE

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CSO-BXR-DES
BRONX RIVER CSO LONG TERM CONTROL PLAN
HP-009 PROJECT AREA

GEOLOGIC PROFILE

DATE: 12/10/2021
SCALE: AS NOTED
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