

# **Proposed Consolidated Edison Transmission Line Goethals to Fox Hills Substations**

**STATEN ISLAND, RICHMOND COUNTY, NEW YORK**

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## **Phase 1A Archaeological Documentary Study**

**Prepared for:**

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**Prepared by:**



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**JANUARY 2023**

## Management Summary

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**SHPO Project Review Number:** 22PR08270

**LPC Unique Site Identifier:** 36739

**Involved Agencies:** New York State Department of Environmental Conservation  
New York City Department of Parks and Recreation

**Phase of Survey:** Phase 1A Documentary Study

**Location Information**

*Location:* Various locations, Staten Island, New York  
*Minor Civil Division:* 08501  
*County:* Richmond County

**Survey Area**

*Length:* Approximately 8 miles (42,000 feet)  
*Width:* Approximately 10 feet along transmission corridor, variable at substations  
*Area:* Approximately 30 acres

**USGS 7.5 Minute Quadrangle Map:** Arthur Kill

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**Date of Report:** January 2023

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**A. INTRODUCTION**

Consolidated Edison (Con Edison) is proposing the development of an approximately 8.1-mile, 138 kilovolt (kV) underground transmission line (or “transmission feeder”) between its Goethals and Fox Hills Substations located on Staten Island, New York City (see NYSDOT Quadrangle Map provided as **Figure 1** and Aerial Overview Map provided as **Figure 2**). The proposed routing utilizes, to the maximum extent practicable, existing roadway rights-of-way (ROW) or Con Edison easements located on previously developed private land and land located within the Staten Island Industrial Park, which is owned by the City of New York Department of Parks and Recreation (DPR). The route segment within Con Edison’s easement within the Staten Island Industrial Park includes an existing paved access road that serves the current Con Edison infrastructure located within the easement.

**B. PROJECT DESCRIPTION**

The transmission line will be installed within a concrete encased duct bank. In upland areas, it will be installed using standard cut and cover duct bank and cable installation procedures. In general, open cut trenching requires a construction corridor width of 20 feet and trench widths are expected to vary between 3 and 8 feet. The proposed duct banks will be approximately 2 to 7.5 feet in width. The top of each proposed duct bank is expected to be located 36 inches (3 feet) below the ground surface and may therefore require a trench depth of 6 to 10 feet. Trench widths and depths will vary with variations in duct bank configuration and subsurface conditions and to avoid interferences with existing buried utilities. To avoid existing utilities, the project’s design basis calls for a minimum 12 inches of vertical clearance and 36 inches horizontal clearance from the from the project’s duct bank to existing water, sewer, gas, electrical distribution, and steam lines. Electrical transmission lines will require 36 inches of vertical clearance and 36 inches of horizontal clearance.

Horizontal directional drilling (HDD) or pipe jacking will be used at three trenchless crossings to cross beneath railways, roadways and other obstructions. These trenchless crossings would be located in the following locations:

- Opposite the existing Goethals Substation where the proposed transmission line extends east from the substation property and will cross beneath the tracks of the Staten Island Railway (Block 1835, Lot 100) to reach River Road (Block 1835, Lot 20);
- Under the West Shore Expressway between the terminus of Bloomfield Avenue and Glen Street; and
- Under the Staten Island Railway tracks east of the terminus of Steuben Avenue (Block 2899, Lot 19).

Each trenchless crossing will require an entry/exit temporary construction area at either end of the segment and will begin and end at existing grade.

## C. DESCRIPTION OF STUDY AREA

The location of the proposed alignment is described in detail below. An aerial overview map illustrating the length of the project alignment is provided as previous Figures 1 and 2 and 1” to 100’ detailed aeriels of the project alignment are provided as **Figures 2-01 to 2-28**. Con Edison’s proposed routing for the proposed underground feeder originates at the Goethals Substation at 100 Chelsea Road (Block 1835, Lots 50 and 75) along the western coast of Staten Island west of River Road (Block 1835, Lot 100). From there, the transmission corridor would extend southeast from the substation along River Road (Block 1835, part of Lot 20 and Block 1760, part of Lot 25). Immediately east of the Goethals Substation, the proposed underground feeder will cross a CSX railroad ROW. Accordingly, right-of-way crossing authorization will be required from CSX.

East of the CSX ROW, the proposed transmission corridor will extend south and east along River Road for a distance of approximately 0.5 miles to the intersection of Chelsea Road, where the transmission corridor will turn briefly north before turning east at Bloomfield Avenue. The proposed transmission corridor will continue east along Bloomfield Avenue for a distance of approximately 0.4 miles to the intersection of Gulf Avenue. East of Gulf Avenue, it is anticipated that the transmission corridor will continue east via horizontal directional drilling (HDD) or jacking to cross underneath the NYSDOT ROW of the West Shore Expressway to reach Glen Street.

At Glen Street, the transmission corridor would turn north and continue within the ROW of Glen Street before turning east within the access drive of a Hampton Inn (Block 1725, Lots 500 and 510) to reach Lois Lane, where the transmission corridor will continue eastward for a distance of approximately 600 feet to reach the ROW of South Avenue. At South Avenue, the transmission corridor continues east through an existing Con Edison utility easement within Staten Island Industrial Park (Block 1561, part of Lot 1—owned by NYC Parks—and Block 2162, part of Lot 1—owned by the New York City Department of Citywide Administrative Services) for a distance of approximately 1,640 feet to reach the intersection of Graham Avenue and Merrill Street. Con Edison’s existing utility easement within the industrial park includes a paved access road that serves the current Con Edison infrastructure located within the easement.

At the intersection of Graham Avenue and Merrill Street, the proposed transmission corridor continues east within the ROW of Merrill Street to Richmond Avenue. East of Richmond Avenue, Merrill Street becomes Morani Street and the transmission corridor continues east and south within the ROW of Morani Street for a distance of approximately 1,300 feet to reach Victory Boulevard. At Victory Boulevard, the transmission corridor turns east for a distance of approximately 1,200 feet, where it turns south with the Canterbury Avenue ROW to the intersection of Dreyer Avenue. At Dreyer Avenue, the underground transmission line would turn west within the ROW for a distance of approximately 1,400 feet to reach its intersection with Willowbrook Road.

At Willowbrook Road, the transmission line would continue south and east within the roadway ROW for a distance of slightly less than one mile to reach Bradley Avenue. East of Bradley Avenue, Willowbrook Road becomes Holden Blvd and the transmission feeder would continue east within the Holden Blvd ROW for a distance of approximately 4,500 feet to reach the intersection of Todt Hill Road. At Todt Hill Road, the transmission corridor would turn north, within the ROW, and continues north for a distance of approximately 2,700 feet to reach the intersection of Windsor Road, crossing beneath the Staten Island Expressway (Interstate 278) along the way.

At Windsor Road, the transmission corridor would turn to the east, extending approximately 1,150 feet to reach the intersection of Little Clove Road. At Little Clove Road, the transmission corridor would turn to the south and east and travel a distance of approximately 6,000 feet to reach Renwick Avenue. From the intersection of Little Clove Road and Renwick Avenue the proposed transmission corridor would

continue south within the ROW of Renwick Avenue and extend a distance of approximately 510 feet to reach Milford Drive (service road to Interstate 278), crossing underneath the Staten Island Expressway along the way. At Milford Drive, the transmission corridor would turn east within the ROW of the Milford Drive service road and extend a distance of approximately 2,200 feet to the intersection of Clove Road. At the Clove Road intersection, Clove Road turn east and becomes the Staten Island Expressway service road. The transmission corridor would continue east along the Clove Road service road an additional 2,000 feet to reach Richmond Road. At Richmond Road, the transmission corridor would bear to the south to continue to follow Clove Road, where it continues east an additional 4,300 feet to reach Mosel Avenue.

At Mosel Avenue, the transmission line route would turn to the north and extends approximately 1,400 feet to the intersection of Steuben Street, once again crossing beneath the Staten Island Expressway along the way. At Steuben Street, the alignment would turn east and continues for approximately 200 feet where it would cross via a trenchless crossing under the Staten Island Railway ROW (Block 2899, Lots 5 and 19). East of the railway crossing, the alignment would continue east for approximately 75 feet to reach the ROW of Kansas Avenue before continuing east a distance of 330 feet to reach the ROW of Narrows Road North.

At Narrows Road North, the transmission corridor would turn northeast and continue within the ROW, a distance of approximately 710 feet to the intersection of Clifton Avenue. At Clifton Avenue, the transmission corridor would turn north within the ROW and extend a distance of approximately 1,000 feet, where the transmission corridor turns west within the ROW of Colton Street and continues west a distance of approximately 400 feet to reach the Fox Hills Substation, crossing Virginia Avenue along the way.

## **D. HISTORY OF ENVIRONMENTAL REVIEW**

The project will require a Stormwater Construction Permit and associated Construction Stormwater Pollution Prevention Plan (SWPPP) approval from the New York City Department of Environmental Protection (NYCDEP). The Project will also require coverage under the New York State Department of Environmental Conservation's (NYSDEC) State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001).

Con Edison has been issued a general permit from the New York State Department of Environmental Conservation (NYSDEC) for the purpose of conducting distribution line maintenance activities. On September 30, 2020, the permit expiration date was extended until October 1, 2024. Permits and approvals included under the general permit issued by the NYSDEC are as follows:

- DEC ID # 0-9999-00111/00025 – Freshwater Wetlands
- DEC ID # 0-9999-00111/00026 – Excavation & Fill in Navigable Waters
- DEC ID # 0-9999-00111/00027 – Water Quality Certification
- DEC ID # 0-9999-00111/00028 – Stream Disturbance
- DEC ID # 0-9999-00111/00029 – Tidal Wetlands

Con Edison intends to install the proposed underground feeder under the above general permits. Con Edison will make all required notifications and submittals to NYCDEP and NYSDEC in accordance with the above general permit requirements and work activities will comply with all applicable general permit conditions.

Coverage under the above general permits requires compliance with Section 14.09 of the New York State Historic Preservation Act. Pursuant Section 14.09, consultation was initiated with the New York State Office of Parks, Recreation, and Historic Preservation (OPRHP) through the New York State Cultural

Resource Information System (CRIS). In comment letters dated November 16, 2022 and November 17, 2022, respectively, LPC and OPRHP indicated that the project corridor was potentially sensitive for archaeological resources associated with the indigenous and colonial occupation of the region and therefore requested that an archaeological documentary study of the site be prepared. This Phase 1A Archaeological Documentary Study has been prepared to satisfy these requests.

## **E. RESEARCH GOALS AND METHODOLOGY**

The Phase 1A Archaeological Documentary Study of the project corridor has been designed to satisfy the requirements of LPC and OPRHP, while also following the guidelines of the New York Archaeological Council (NYAC). The study documents the development history of the proposed project corridor 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 corridor, 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 corridor was occupied during the precontact (Indigenous) 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 corridor; (3) to make a determination of the project corridor'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 corridor was inhabited during the precontact and/or historic periods and identify activities that may have taken place in the vicinity that would have resulted in the deposition of archaeological resources.

The second goal of this Phase 1A study is to determine the likelihood that archaeological resources could have survived intact within the project corridor 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 and subsequently adopted by SHPO:

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

Given the length of the project corridor, this study includes a comprehensive assessment of previous disturbance along the project corridor. This assessment was designed to identify those locations where the corridor has been previously disturbed to the depths that would be affected by the proposed project (6 to 10 feet below grade) and to identify areas that may require more intensive cartographic documentary research. Determinations regarding precontact period archaeological sensitivity were linked closely to an assessment of disturbance relating to a comparison of historical and modern topographical data. Because much of the project corridor is located along the routes of historical roads that were later disturbed by

road modernization, intensive cartographic research designed to identify map-documented structures was focused on those portions of the project corridor that were not already developed streets in the early 20th century. Additional information about how these determinations were made is presented in **Chapter 5, “Assessment of Disturbance and Landscape Modification.”**

The third goal of this study is to make a determination of the project corridor’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 archaeological sites associated with Indigenous occupation would not be present (i.e., locations at great distances from fresh 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 Indigenous occupation, documented historic period activity, and with some disturbance, but not enough to eliminate the possibility that archaeological resources are intact within the project corridor.
- High: Areas with topographical features that would suggest Indigenous 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 or higher sensitivity. Archaeological testing is designed to determine the presence or absence of archaeological resources that could be impacted by a proposed project. Should they exist within the project corridor, such archaeological resources could provide new insight into precontact occupation in northern Staten Island, the transition from Indigenous to European colonization, or the historic period occupation of the project corridor.

To satisfy the four goals as outlined above, documentary research was completed to establish a chronology of the project corridor’s development, landscape alteration, and to identify any individuals who may have owned the land or worked and/or resided there, and to determine if buildings were present there in the past. Data were gathered from various published and unpublished primary and secondary resources, such as historic maps, topographical analyses (both modern and historic), historic and current photographs (including aerial imagery), newspaper articles, local histories, and previously conducted archaeological surveys. These published and unpublished resources were consulted at various repositories, including the Main Research Branch of the New York Public Library (including the Local History and Map Divisions) and the Library of Congress. Previously identified sites and previously conducted archaeological resources in the vicinity were collected from the files of LPC, 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).<sup>1</sup> Online textual archives, such as Google Books and the Internet Archive Open Access Texts, were also accessed. Attempts were made to identify the owners and occupants of the project corridor using historical maps. For this part of Staten Island, it can be difficult to identify owners using historical directories and census record, as the area’s rural nature throughout much of its history makes it difficult to correlate specific records with specific properties as a result of the lack of or

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<sup>1</sup> <https://cris.parks.ny.gov>

inconsistent use of street addresses and the presence of large families in the general regions with multiple individuals sharing the same names.

**A. INTRODUCTION**

Information about the archaeological sensitivity of northern Staten Island has been collected over the last century by both professional and avocational archaeologists, and archaeological work in the area have documented some of the oldest archaeological sites in New York City. These investigations have varied greatly with respect to the availability of data and the degree to which they comply with modern professional standards for archaeological investigations. Previous archaeological investigations of the project corridor and immediate vicinity are summarized below.

**B. PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS NEAR THE PROJECT CORRIDOR****GOETHALS BRIDGE REPLACEMENT PHASE 1 INVESTIGATION, 2007**

In 2007, a joint venture of the Louis Berger Group and Parsons Brinckerhoff (LBG/PB) completed a Phase 1 Archaeological Investigation for a project involving the replacement of the Goethals Bridge, which extends between Elizabeth, NJ, and northwestern Staten Island north of the project corridor. Extensive documentary research suggested that areas within the Staten Island portion of the Goethals Bridge study area was sensitive for precontact archaeological resources, including those associated with the archaeological sites documented in the vicinity of the historical community of Old Place, as well as sensitivity associated with the area's historic period occupations. More than 160 shovel test pits were excavated within the areas of archaeological sensitivity. While no intact archaeological resources were identified and no additional work was recommended, the final report issued by LBG/PB indicated that some precontact resources were encountered that may suggest the presence of precontact archeological sites in the vicinity but outside the area of potential effect for that project.

**SPECTRA ENERGY PIPELINE PHASE 1 THROUGH PHASE 3 INVESTIGATIONS (OLD PLACE NECK), 2011–2014**

Extensive archaeological investigations of the previously documented the Old Place Neck archaeological site were completed by the Public Archaeology Laboratory (PAL) between 2011 and 2014 in association with the construction of a new natural gas pipeline through northwestern Staten Island to the north and east of the project corridor. PAL's initial work involved the completion of a Phase 1B Archaeological Investigation which resulted in the discovery of the nearly 172,000-square-foot Old Place Neck archaeological site (OPRHP site number A08501.002971), which is associated with a site that was previously been described in the early 20th century and contained both precontact and historic period components (see **Chapter 4: "Precontact Period Archaeological Resources"**). A Phase 2 site evaluation of the site was subsequently completed, and portions of the archaeological site were avoided through a redesign of the proposed project (ibid). The Phase 2 Archaeological Survey/Evaluation resulted in the recovery of Indigenous archaeological artifacts including lithic projectile points, stone tools, lithic debitage, and pottery. The site was determined to represent short and long-term occupation of the site between the Late Archaic through the Contact period, though there was some evidence that suggested that

artifacts representing the Paleoindian period were also present (ibid). In addition, historic period glass, ceramics, and other artifacts were recovered and several features, including postmolds, were documented (PAL 2011).

The Phase 2 Survey/Evaluation concluded that the site was eligible for listing on the State and National Registers of Historic Places (S/NR) and as such, a Phase 3 Data Recovery was later completed (PAL 2014). The Phase 3 included extensive data collection to further document the archaeological site and to reconstruct its Paleoenvironment through geoarchaeological and palynological analysis. The Phase 3 Data Recovery resulted in the recovery of nearly 24,000 artifacts (including precontact and historic elements). Precontact artifacts included a large amount of lithic debitage (including jasper, chert, quartzite, quartz, basalt, granite, imported argillite, and sandstone) that PAL determined represents a lithic workshop. A number of lithic projectile points, blades, bifacial tools, and other stone tools were also recovered, the majority of which were situated within and below the depth of the historic plow zone, and while multiple precontact occupation periods were represented from Paleoindian to Woodland, there was no stratigraphic correlation between them (PAL 2014). Precontact ceramics, faunal remains, and fire-cracked rock were also recovered in large numbers. A number of features were identified, including hearths/cooking pits. Historic period artifacts were identified that featured production dates between the 17th and 20th centuries.

#### **ARTHUR KILL POWER PLANT LATERAL, 2001–2003**

In 2001, Hunter Research, Inc. prepared a Phase 1A Study associated with a proposed lateral pipeline to be constructed between the western shoreline of Staten Island. The study area for this investigation includes a long linear corridor that begins north of the project corridor and partially overlaps it east of the Goethals Substation near the intersection of River Road and the CSX railroad tracks. The Phase 1A Study noted five previously documented precontact sites located within or near the study area's boundaries. These sites were located on upland landforms near resource-rich wetlands in areas typical of Indigenous camps and semi-permanent village settlements. The area was also located in the vicinity of more than 20 historic and/or contact period archaeological sites. The Phase 1A Study recommended redesigning the project to limit impacts to potentially archaeologically sensitive areas and recommended a Phase 1B Archaeological Investigation for those sensitive areas that would be affected by the project.

The Phase 1B Archaeological Investigation was conducted in 2003 by Hunter Research, Inc. The investigation consisted of the excavation of 197 shovel test pits, five units, and five geomorphological tests. While precontact artifacts were observed during the investigation, they were recovered from disturbed soil contexts and no historic period artifacts were recovered. The investigation concluded that the project would not disturb archaeological resources.

#### **PROPOSED FORTISTAR POWER FACILITIES TRANSMISSION LINES, 2001**

In 2001, Dean and Barbour Associates prepared a Phase 1A Archaeological Documentary Study of the proposed location for new gas and electric transmission lines in Northeastern Staten Island. The study area for this study was located along the Staten Island waterfront in the Chelsea neighborhood and the locations of proposed transmission lines that was located south of the project corridor. This study determined that eight previously identified precontact sites were situated within the project boundaries. The study determined that portions of the study area were previously disturbed and that others may have been covered with a deep fill layer. A Phase 1B Archaeological Investigation of undisturbed portions of the study area was recommended, though there is no indication that such an investigation occurred.



### **LIBERTY GENERATING PROJECT PROPOSED UNDERGROUND ELECTRIC TRANSMISSION TABLE, 2002**

In 2002, John Milner Associates conducted a Phase 1A Archaeological Documentary Study in association with the proposed installation of an underground electrical transmission cable along the waterfront a short distance north of the Goethals Substation. The study concluded that previously reported archaeological sites were situated 1,000 feet east and southeast of the Phase 1A Study's study area. The study concluded that the area of the proposed transmission line was heavily disturbed as a result of the construction of a former liquified natural gas facility and an adjacent substation. Furthermore, the study determined that the area was a former wetland that was filled in association with the area's industrial development. As such, the study concluded that the area is not archaeologically sensitive and no further archaeological analysis was recommended.

### **PROPOSED TELECOMMUNICATION INSTALLATION AT 100 MERRILL AVENUE, 2008**

In 2008, G.C. Environmental, Inc. prepared a Phase 1 Archaeological Investigation of the site of a proposed telecommunications facility at 100 Merrell Street. The study area for the investigation was adjacent to the proposed transmission corridor on the south side of Merrill Avenue between Arlene Street and Danny Court. Background research initially suggested that the site had the potential to be sensitive for precontact archaeological resources. However, the excavation of four shovel test pits confirmed that the site was disturbed as a result of modern development and no further archaeological analysis was recommended.

### **BLOOMFIELD HEATER SITE 1, 2010**

In 2010, URS Corporation conducted a Phase 1 Archaeological Survey of a 0.68-acre study area located adjacent to the transmission corridor on the south side of Bloomfield Avenue between Chelsea Road and Gulf Avenue. Research concluded that the study area was sensitive for archaeological resources associated with both the precontact and historic period occupation of the area and that such deposits were situated between a layer of fill. After using a mechanical excavator to strip away fill levels in twenty-one trenches, seven shovel test pits were excavated through the buried ground surface and underlying materials. All but one of the testing locations contained modern fill or disturbed soils. The final testing location contained natural but culturally sterile soils. No further analysis was recommended.

### **SAW MILL CREEK WETLAND MITIGATION BANK, 2013**

In 2013, HPI completed a Phase 1A Study of the Saw Mill Creek Wetland Mitigation Bank, a large area to the south of River Road/the project corridor between the CSX railroad tracks and the West Shore Expressway. The study area for the investigation included upland areas adjacent to coastal wetland areas as well as map-documented structures dating to the historic period. The Phase 1A Study identified areas of precontact and/or historic period archaeological sensitivity in former upland areas and in the locations of map-documented structures.

### **EASTBOUND I-278 STATEN ISLAND, SOUTH AVENUE TO VICTORY BOULEVARD OVERPASS, 2015**

In 2015, the New York State Museum Cultural Resource Survey program conducted a Phase 1 Archaeological Investigation of a large area surrounding a portion of the eastbound lane of Interstate 278 between South Avenue and Victory Boulevard. The study area for this investigation was adjacent to the project corridor east of Christopher Lane. The investigation included a combination of documentary

research and testing and did not document areas of archaeological sensitivity or archaeological sites and no further work was recommended.

**MICHAEL J. PETRIDES SCHOOL CAMPUS EXPANSION, 2018**

In 2018, AKRF, Inc. prepared a Phase 1A Study for the campus of the Michael J. Petrides School, located south of Milford Drive and west of Ocean Terrace adjacent to the transmission line route to the south. The study concluded that the majority of the campus had been extensively disturbed as a result of modern development and landscape modification. Four wooded areas on the campus where limited disturbance was documented were identified as having low to moderate sensitivity for precontact archaeological resources. These four areas were at the southern end of the campus and were not in close proximity to the line of the proposed transmission corridor along Milford Drive.

**A. CURRENT CONDITIONS**

The majority of the project corridor includes heavily developed industrial areas or active roadways or rail corridors. The western end of the corridor is the site of the existing Goethals Substation (Block 1835, Lot 75), a portion of which was constructed in an area of landfill in the late 1960s and which was later expanded between the 1980s and 2000s. The facility is largely paved and developed with small buildings and above- and below-ground electrical equipment and related facilities. Areas bordering the substation to the west and south are vegetated and separate the substation property from the Arthur Kill and the wetland networks associated with the Saw Mill Creek Marsh to the south and east. Between the substation and Staten Island Industrial Park, the project corridor runs almost entirely along built roadways. Utility poles line the majority of these roads and the extent to which subsurface utilities are present in that portion of the project corridor is unknown; however, the presence of fire hydrants confirm the presence of buried infrastructure. The project corridor would extend through landscaped areas on either side of the West Shore Expressway between Gulf Avenue and Glen Street and in a small area west of Lois Lane within Block 1725, Lot 510.

The project corridor will extend through Staten Island Industrial Park via an existing Con Edison easement through the otherwise wooded park/nature preserve located at the boundary between Block 1565, Lot 1 and Block 2161, Lot 1. This route segment within Con Edison's existing easement includes an existing paved access road that serves the current Con Edison infrastructure located within the easement. East of the Staten Island Industrial Park, the project corridor continues through built roadways between Staten Island Industrial Park and the existing Fox Hills Substation. These roads are also lined with utility poles carrying overhead lines, but pavement markings, fire hydrants, catch basins, emergency callboxes, and manholes confirm the presence of buried utilities in these roadways including gas, water, and sewer lines. The corridor would cross the tracks of the Staten Island Railroad (SIR) between the termini of Steuben Street and Kansas Avenue (Block 2899, Lot 19 and Block 2901, Lot 16). The eastern terminus of the project corridor is located at the existing Fox Hills Substation (Block 2992, Lot 25).

**B. GEOLOGY AND TOPOGRAPHY**

Staten Island's physical setting was shaped 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 lasted until roughly 12,000 years ago when the Wisconsin period—the last glacial period—came to an end (Reeds 1925). Staten Island is bisected by the Harbor Hill Moraine, a rocky ridge marking the southern limit of glacial movement in the region. The progression of the Terminal Moraine resulted in the separation of the Atlantic Coastal Plain in southern Staten Island from the remainder of the island to the northwest, which is characterized by hard bedrock rather than glacial deposits (Isachsen, et al. 2000; Reeds 1925). Todt Hill, one of the most prominent geological features on Staten Island and the point of New York City's highest elevation, is situated immediately south of the eastern third of the project corridor (Schuberth 1968). Climbing to a height of 410 feet above sea level, "Todt Hill...contains the unsorted and unstratified deposits of the Harbor Hill Moraine...[that] overlie the serpentite" (ibid: 249). An 1898

USGS Topographical map of Staten Island depicts the steep hills of the moraine in this area (see **Figure 3**).

The eastern end of the project corridor is situated in the vicinity of the Terminal Moraine and four general bedrock types have been identified in the area (Fisher, et al. 1995). The western segment of the corridor, extending as far east as the line of Hillman Avenue, is located in an area underlain by bedrock identified as Palisade Diabase, part of the Newark Group (Fisher, et al. 1995). Bedrock in the area situated between Hillman Avenue and Loop Road is associated with the Stockton formation (comprised of arkose, conglomerate, and mudstone), also associated with the Newark Group (ibid). These rock types were formed during the Upper Triassic Epoch of the Mesozoic Era, which occurred between 230 and 190 million years before present (ibid; Isachsen, et al. 2000). East of Loop Road, in the general location of the Terminal Moraine, bedrock has been identified as an intrusive serpentinite dating to the Lower Ordovician approximately 490 to 460 million years before present (Fisher, et al. 1995; Isachsen, et al. 2000). East of the moraine (east of the approximate line of Richmond Road), bedrock has been identified as coastal plain deposits associated with the Raritan Formation (clay, silty clay, sand, and gravel) dating to the Upper Cretaceous Period of the Mesozoic Era, formed between 97 and 66 million years ago (Fisher, et al. 1995; Isachsen, et al. 2000).

Documented surficial geology in the vicinity of the project corridor includes four deposit types. In the western end of the project corridor (west of Staten Island Industrial Park), surficial deposits have been identified as artificial fill (Cadwell 1989). As described below, much of this area is occupied by filled wetlands. In the location of Staten Island Industrial Park, surficial deposits are characterized as Lacustrine Sand, defined as “sand deposits associated with large bodies of water, generally a near-shore deposit or near a sand source” (ibid). To the east, surficial deposits include glacial till and till moraine, consistent with previously described glacial activity (ibid).

## **C. HYDROLOGY**

As the glaciers receded, the ensuing runoff created streams, rivers, and lakes as well as thick tracts of marshland in the low-lying areas along Staten Island’s coasts. 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 the coastline was located further out into the bay hundreds of meters south of its present location (Geoarcheology Research Associates 2014). The Goethals Substation is adjacent to the Arthur Kill, the tidal strait that separates Staten Island from mainland New Jersey, and the marshes surrounding the Saw Mill Creek. The large tracts of wetlands that historically lined the coasts of Staten Island are visible on the 1898 USGS map (see **Figure 3**).

The 1907–1911 topographical survey (see **Figures 4-01 to 4-28**) indicates that the substation and the portion of the project corridor situated west of Chelsea Road were within an area of coastal wetland. An area identified as “swamp & woods” is identified on the maps within the project corridor in the vicinity of Morani Street between Richmond Avenue and Victory Boulevard. Stream that drained a large wetland network of swamps and ponds located north of Willowbrook Avenue crossed through the project corridor/Willowbrook Road near its intersections with Westwood and Filmore Avenues. A small pond was located near what is now the northwest corner of Tillman Street and Todt Hill Road that partially entered the project corridor. Streams that drained swamps and ponds crossed the project corridor near several intersections, including: Todt Hill Road and Andes Place; Slossen and Motley Avenues; Clove Road and Albert Street; Little Clove Road and Northern Boulevard; Little Clove Road and Renwick Boulevard; Renwick Avenue and the Staten Island Expressway. An extensive network of ponds and swamps are identified along the line of what is now Clove Road between Oder Avenue and Mosel Avenue; along Mosel Avenue between Clove Road and Steuben Street; and in the vicinity of Steuben

Street and Kansas Avenue west of Narrows Road. The majority of the southern half of the Fox Hills Substation is also identified on the map as swampland.

### D. SOILS

The Web Soil Survey maintained by the United States Department of Agriculture (USDA)'s National Resource Conservation Service indicates that twenty-eight soil complexes and open water are mapped within the project corridor. These soil types are summarized below in **Table 3-1**.

**Table 3-1  
Project Area Soils**

Series Name	Typical Soil Profile			Slope (%)	Drainage	Landform
	Level	Soil Horizon Depth (inches)	Soil Type			
Appoquinimink Mucky Peat (ApA)	Oe	0 to 3	Mucky Peat	0 to 1	Very Poorly Drained	Tidal Marshes
	Cg	3 to 28	Silt Loam			
	Oa	28 to 35	Muck			
	O'e	35 to 47	Mucky Peat			
Boonton Loam (BtB)	Oe	0 to 1	Moderately Decomposed Plant Material	0 to 3	Well Drained	Ground Moraines
	A	1 to 3	Loam			
	BE	3 to 26	Sandy Loam			
	BtX	26 to 67	Gravelly Sandy Loam			
	BC	67 to 73	Gravelly Fine Sandy Loam			
Deefield Loamy Fine Sand (DfA)	Ap	0 to 9	Loamy Fine Sand	0 to 3	Moderately Well Drained	Outwash Terraces, Outwash Deltas, Outwash Plains, Kame Terraces
	Bw	9 to 25	Loamy Fine Sand			
	BC	25 to 33	Fine Sand			
	Cg	33 to 60	Sand			
Greenbelt-Urban Land Complex (GUB, GUC)	^A	0 to 5	Loam	B:3 to 8 C: 8 to 15	Well Drained	Summit
	^Bw1	5 to 16	Loam			
	^Bw2	16 to 30	Loam			
	^C	30 to 79	Sandy Loam			
Hooksan-Verrazano-Urban Land Complex (HVUB)	C1	0 to 20	Sand	0 to 8	Excessively Drained	Dunes
	C2	20 to 30	Sand			
	C3	30 to 64	Sand			
Ipswich Mucky Peat (IwA)	Oe	0 to 42	Mucky Peat	0 to 2	Very Poorly Drained	Tidal Marshes
	Oa	42 to 59	Muck			
Marinepark-Verrazano Complex (MVA)	^Au	0 to 4	Sandy Loam	0 to 3	Well Drained	Foothlope
	^Bwu	4 to 19	Gravelly-Artifactual Sandy Loam			
	2^C	19 to 72	Sand			
Oil-Waste Land (Oi)	n/a	n/a	n/a	n/a	n/a	n/a
Preakness Mucky Silt Loam (PkA)	Oi	0 to 3	Slightly Decomposed Plant Material	0 to 3	Poorly Drained	Drainageways, Depressions
	A1	3 to 5	Mucky Silt Loam			
	A2	5 to 15	Silt Loam			
	Bg	15 to 25	Sandy Loam			
	Cg	25 to 72	Loamy Sand			
Preakness Silt Loam (PvA)	Oi	0 to 3	Slightly Decomposed Plant Material	0 to 3	Very Poorly Drained	Drainageways, Depressions
	A1	3 to 5	Mucky Silt Loam			
	A2	5 to 15	Silt Loam			
	Bg	15 to 25	Sandy Loam			
	Cg	25 to 72	Loamy Sand			

**Table 3-1 (cont'd)  
Project Area Soils**

Series Name	Typical Soil Profile			Slope (%)	Drainage	Landform
	Level	Soil Horizon Depth (inches)	Soil Type			
Todthill-Wotalf Complex (TWE)	A	0 to 7	Gravelly Highly Organic Loam	35 to 60	Well Drained	Ridges, Hills
	AB	7 to 12	Very Gravelly Loam			
	Bw	12 to 30	Extremely Gravelly Fine Sandy Loam			
	2R	30 to 40	Bedrock			
Urban Land-Greenbelt Complex (UGA, UGB, UGC, UGD)	M	0 to 15	Cemented Material	A: 0 to 3 B: 3 to 8 C: 8 to 15 D: 15 to 25	n/a	Summit
	2^C	15 to 79	Gravelly Sandy Loam			
Urban Land-Greenbelt Complex, Low Impervious Surface (UGBI, UGCI, UGDI)	M	0 to 15	Cemented Material	B: 3 to 8 C: 8 to 15 D: 15 to 25	n/a	Summit
	2^C	15 to 79	Gravelly Sandy Loam			
Urban Land-Laguardia Complex (ULA)	M	0 to 15	Cemented Material	0 to 3	n/a	Summit
	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	Summit
	M2	6 to 20	Cemented Material			
	2^C	20 to 79	Very Gravelly Sand			
Urban Land, Outwash Substratum (UoA)	M1	0 to 6	Cemented Material	0 to 3	n/a	Summit
	M2	6 to 20	Cemented Material			
	2^C	20 to 72	Gravelly Sand			
Urban Land, Sandy Substratum (UsA)	M1	0 to 6	Cemented Material	0 to 3	n/a	Summit
	M2	6 to 20	Cemented Material			
	2^C	20 to 72	Coarse Sand			
Urban Land, Till Substratum (UtA, UtB)	M	0 to 15	Cemented Material	A: 0 to 3 B: 3 to 8	n/a	Summit
	2^C	15 to 79	Coarse Sand			
Urban Land-Verrazano Complex (UVA)	M1	0 to 6	Cemented Material	0 to 3	n/a	Summit
	M2	6 to 20	Cemented Material			
	2^C	20 to 72	Coarse Sand			
Urban Land-Verrazano Complex, Low Impervious Surface (UVAI)	M1	0 to 6	Cemented Material	0 to 3	n/a	Summit
	M2	6 to 20	Cemented Material			
	2^C	20 to 72	Coarse Sand			
Windsor Complex, Loamy Substratum (WWB)	Oi	0 to 2	Slightly Decomposed Plant Material	0 to 8	Well Drained	Outwash Plains
	A	2 to 2	Loamy Sand			
	Bw	2 to 27	Loamy Sand			
	C1	27 to 50	Sand			
	2C2	50 to 71	Sandy Loam			

Sources: USDA Natural Resources Conservation Service Web Soil Survey: <https://websoilsurvey.sc.egov.usda.gov> (accessed November 2022).

**A. PRECONTACT PERIOD CONTEXT**

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

**PALEO-INDIAN PERIOD**

Human populations did not inhabit the Northeast until the glaciers retreated more than 11,000 years ago. These new occupants included Indigenous populations referred to by archaeologists as Paleo-Indians, the forebears of the Delaware—also called the Lenape—who would inhabit the land in later years. Archaeological evidence suggests that the Paleo-Indians were likely highly mobile hunters and gatherers who utilized a distinct style of lithic technology, typified by fluted points. They appear to have lived in small groups of fewer than 50 individuals (Dincauze 2000) and did not maintain permanent campsites. In addition, most of the Paleo-Indian sites that have been investigated were located near water sources. Because of the close proximity of Paleo-Indian sites to the coastline, few have been preserved in the New York City area. Of the few Paleo-Indian sites that have been discovered in New York City, nearly all have been found on Staten Island, including the Port Mobil and Old Place sites (Cantwell and Wall 2001). Like most precontact sites, Port Mobil was situated on high ground overlooking the water. Because of heavy disturbance in the area—it is currently an oil tank farm—artifacts recovered from the site to date include a collection of fluted points and other stone tools characteristic of the period (Ritchie 1980). Paleo-Indian artifacts were also found along the eroding shoreline 500 yards south of the Port Mobil site and at the Cutting site in the Rossville section of Staten Island (*ibid*). Recent excavations at the Old Place site in northwestern Staten Island by the Public Archaeology Laboratory (PAL) have yielded new evidence regarding the site's occupation during the Paleo-Indian period through the Late Woodland, though the majority of the collected artifacts date to the Archaic (PAL 2014).

**ARCHAIC PERIOD**

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

The rising sea levels and rapid development of the area, as well as the dominance of coniferous forests at that time generated a habitat ill-fit for human habitation (Boesch 1994), and few Early Archaic sites have been identified in New York City. Most of those that have been identified are located on Staten Island, including Ward's Point at the southwestern tip of the island; Richmond Hill; the H. F. Hollowell site; and the Old Place site. Sites such as Ward's Point—a domestic habitation location that due to lowered sea levels was originally inland that is now commonly referred to as *Aakawaxung Munahanung*—tend to be deep and stratified and have yielded stone tools related to cooking, woodworking, and hide processing. The many years of constant occupation caused the artifacts to be deeply buried under more recent debris deposits (Cantwell and Wall 2001). However, at the Old Place Site, the only artifacts that were discovered—stone tool assemblages—were found at relatively shallow depths of around 42 inches or 3.5 feet (Ritchie 1980).

Few Middle Archaic sites have been archaeologically documented in the region. The majority of these tend to consist of large shell middens, which are often found near major watercourses such as the Hudson River, although stone points have also been found in such locations. These sites were in great danger of obliteration because of their proximity to the shrinking coastlines. Unlike the Early and Middle periods, many Late Archaic sites have been found throughout the New York City area including many in Staten Island. Late Archaic habitation sites are often found in areas of low elevation near watercourses and temporary hunting sites are often located near sandy areas (Boesch 1994). Late Archaic sites identified in Staten Island include the Pottery Farm, Smoking Point, and the Wort Farm sites, all of which are situated in southern Staten Island (ibid).

Finally, many Terminal Archaic sites from all across the city have provided examples of what archaeologists call the Orient culture, which is characterized by long fishtail stone points and soapstone bowls. Extremely elaborate Orient burial sites have been found on eastern Long Island, but none have been identified on Staten Island. Orient-style fishtail points have been discovered along the shores of the Charleston neighborhood in southwestern Staten Island, and it is assumed that they fell from eroding cliffs located nearby (Boesch 1994).

## **WOODLAND PERIOD**

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

The Woodland period ended with the arrival of the first Europeans in the early 1500s. One Woodland period archaeological site that has been identified on Staten Island is the Bowman's Brook site, located along the island's northwest coastline. That site yielded a type of incised pottery, which has since become known as the Bowman's Brook Phase. Sites with this particular type of pottery are most often located near tidal streams or coves and are usually associated with large shell middens and refuse pits, indicating long periods of occupation (Ritchie 1980). The Bowman's Brook site also contained several human and dog graves, as well as bundle burials (Cantwell and Wall 2001). The *Aakawaxung Munahanung* site was also occupied during the Woodland period, and many Indigenous artifacts and elaborate burials with varied grave offerings have been uncovered there (ibid).



## CONTACT PERIOD

The Contact Period begins with the arrival of the first Europeans in the early 1500s. At that time, a division of the Munsee Indians known as the Raritan occupied southern Staten Island (Bolton 1975). They entered the area toward the end of the Woodland period (Boesch 1994). They referred to Staten Island as *Aquehonga Manacknong*, possibly meaning “haunted woods,” “bushnet fishing place,” or “the high bank fort place” (Grumet 1981: 2). The name may have also referred to the village settlement at Ward’s Point now known as *Aakawaxung Munahanung* (ibid). In land transactions with the Europeans, the island was also referred to as “Matawucks” and “Eghquaous” (Boesch 1994).

The Contact Period in the New York City area began with the arrival of European expeditions led by Giovanni de Verrazano in 1524 and Henry Hudson in 1609, and the area was first colonized by Dutch colonizers in the early 17th century. Shortly after Hudson’s men explored Staten Island, a skirmish ensued with the local Indians, resulting in the death of one of Hudson’s crewmen (Burrows and Wallace 1999). Because of this incident, the Indigenous residents of Staten Island were extremely wary of Europeans and set up lookouts on tall hills in an effort to spot approaching ships so as to prevent vessels from landing (Historical Records Survey 1942: xii).

Beginning in 1621, Dutch West India Company (WIC) managed Dutch interests in the New World and began to purchase large tracts of land from the Indigenous groups that inhabited the region. Although the land had been “sold” to the Europeans in 1630 (Grumet 1981), it was not until 1638 that a successful European colony, that of Olde Dorpe, could be established on the island, which continues to retain its Dutch name of “Staaten Island”. Violence between Indigenous communities and European colonizers would cause this village to be burned down and rebuilt several times throughout the contact period (ibid). Several incidents occurred on Staten Island in which Dutch colonist and Indigenous groups engaged in violent, deadly clashes, including a war attributed to Dutch Director-General William Kieft in the 1640s and the “Peach War” of 1655 (Grumet 1981). Following the end of the latter altercation and facing a growing European population, the Indigenous residents of the area sold the remainder of the land on Staten Island between 1657 and 1670, finally paving the way for extensive European colonization throughout the island (Grumet 1981; Bolton 1975).

## B. PREVIOUSLY IDENTIFIED INDIGENOUS ARCHAEOLOGICAL SITES NEAR THE PROJECT CORRIDOR

In general, Indigenous habitation sites are most often located in coastal areas with access to marine resources and near fresh water sources and areas of high elevation and level slopes of less than 12 to 15 percent (NYAC 1994). The topographical survey cited above suggests that the project corridor was a historically diverse ecological setting with access to fresh- and saltwater resources along the entire route.

Further indication of the potential presence of human activity near a project site is indicated by the number of precontact archaeological sites that have been previously identified in the vicinity. Information regarding such previously identified archaeological sites was obtained from various locations including the site files of SHPO, LPC, NYSM, and from published accounts. More than one dozen archaeological sites have been identified within a half mile of the project corridor. These sites are summarized in **Table 4-1**, below. Additional significant sites located within a one mile radius in northwestern Staten Island are summarized below given the significance of recent archaeological work in that area. Furthermore, the eastern and western thirds of the project corridor are situated within “buffer zones” mapped around known archaeological sites that are utilized as approximations of generalized archaeological sensitivity by SHPO. The great number of sites that have been identified near the project corridor clearly demonstrates that northern Staten Island was occupied by Indigenous communities during the precontact period.

**Table 4-1**  
**Previously Identified Indigenous Archaeological Sites within One-Half Mile**

OPRHP Site Number	NYSM Site Number	LPC Site Number	Site Name	Distance to Project Corridor	Time Period	Site Type
08501.000134 08501.002366	7215	23	Old Place	5,000 feet	Paleoindian to Contact	Village site with burials; lithic points, pottery, and other objects
08501.002971	n/a	n/a	Old Place Neck	5,000 feet	Late Paleoindian through Contact	Camp or workshop with cooking, pit, and hearth features
08501.000135	746, 4627	71	Chelsea	2,250 feet	Precontact	Village site with burials and lithics
n/a	4596	A, 41	Bloomfield/Beulah Point/Watchogue	Overlaps	Late archaic to Late Woodland, possibly Historic	Scattered campsites with lithic artifacts and projectile points found on hills and dunes
08501.002866	n/a	n/a	Bloomfield Road Precontact Deposit	2,500 feet	Possibly Woodland	Small collection of lithics and ceramic sherds recovered from disturbed soils
n/a	4597	42	Bull's Head Site	Overlaps	Woodland	Burial site near the intersection of Watchogue Road and Junction Avenue/on a knoll north of Victory Boulevard
n/a	4615	n/a	n/a	3,000 feet	Precontact	Campsite at the base of a hill near the intersection of Bard Avenue and Clove Road
n/a	6496	n/a	Weir/Don Site	Overlaps	Precontact	Site with projectile points and possible hearth features
n/a	7216	n/a	n/a	3,000 feet	Precontact	Traces of occupation
n/a	7813	n/a	n/a	1,500 feet	Precontact	Traces of occupation
n/a	n/a	C	Prall's Fever	2,500 feet	Precontact	Indigenous artifacts
n/a	7324	n/a	n/a	Overlaps	Transitional Archaic	Submerged projectile points found below wetland deposits
n/a	8478	n/a	n/a	Overlaps	Precontact	Traces of occupation
n/a	8479	n/a	n/a	600 feet	Precontact	Campsite
n/a	8503	n/a	n/a	800 feet	Precontact	Campsite
n/a	8504	n/a	n/a	Overlaps	Precontact	Traces of occupation

**Sources:** CRIS database (<https://cris.parks.ny.gov/>); Skinner 1909; Parker 1920; Ritchie 1980; and Boesch 1994.

As seen in **Table 4-1**, the majority of these sites are poorly documented and represent a variety of occupation site types, including campsites, villages, and shell middens. Several of these sites were discovered in the early 20th century by avocational archaeologists and were reported by authors such as Arthur C. Parker (1922), Alanson Skinner (1909), and Reginald P. Bolton (1922, 1934, 1975). Unfortunately, few of these sites are well documented and little is known about the precontact sites' exact locations, extent, or artifact collections. However, others, such as the Old Place site, have been extensively documented over time. However, several are large sites with multiple components that have been excavated by avocational and professional archaeologists over the last century in northern and northwestern Staten Island. These large, well-documented sites include Old Place and Bloomfield/Watchogue. Extensive shell heaps in the region were also documented by M.R. Harrington (Skinner 1909). Major sites documented in the region are described below.

#### ARCHAEOLOGICAL INVESTIGATIONS OF OLD PLACE AND BOWMAN'S BROOK

The Old Place site is one of the largest archaeological sites in the region and it has been archaeologically investigated numerous times since the early 20th century; however, it was only recently that the boundaries of the site were formally identified and documented via modern archaeological means

(LBG/PB 2007; PAL 2011; PAL 2014). The marshes were likely formed within the last 5,000 years following an extended period of sea level rise that inundated former waterfront areas, resulting in the formation of the wetlands that formerly covered much of northwestern Staten Island, including the site of the Goethals Substation (Geoarcheology Research Associates 2014). As such, the earlier episodes of occupation of the Old Place area were likely characterized by dramatically different environmental conditions.

The earliest known investigations of Old Place and the nearby sites of Howland's Hook and Bowman's Brook were documented by Alanson B. Skinner. The Old Place site was described as being located "on a sandy promontory known as Tunissen's Neck, a large village of ancient character" (Bolton 1922:192) that "yielded pottery, bone, and stone objects" associated with the residential occupation of the area (Bolton 1922: 232). In 1909, Alanson Skinner described the location of Old Place Neck as follows:

*On Tunissen's, or Old Place Neck, there is a large village site. Near the extreme point are shell pits and fireplaces, unusually far apart. Some of the refuse pits here are of considerable size and depth* (Skinner 1909:8)

Per Skinner's description, artifacts and features documented at the site in the early 20th century included precontact and contact period objects including decorated ceramics, lithic and brass projectile points, lead bullets, smoking pipes, kettles, and shell middens (Skinner 1909). Skinner described some of the artifacts as trade goods and also indicated that he personally excavated graves in the area, including those of people of European descent (ibid). Skinner also documented the Bowman's Brook site near Howland's Hook in the northwestern corner of Staten Island within an industrial area along the northern coast of Staten Island. That site was identified as a large village with midden pits and both human (primary and secondary) and dog burials (ibid).

Later investigations of Old Place were completed by avocational archaeologists Albert J. Anderson and Donald L. Sainz and analyzed by New York State Archaeologist William A. Ritchie in the 1960s (Ritchie 1980). Ritchie concluded that the site contained projectile points and lithic tools associated with the Snook Kill, Poplar Island, Bare Island, and Levanna traditions dating between the Early Archaic and Woodland (ibid; LBG/PB 2007). The site also yielded shell-tempered ceramics with shell or cord markings as well as shell midden deposits (Ritchie 1980). The same individuals also conducted excavations in the Bowman's Brook area, where Skinner had previously identified the "type component of the Bowman's Brook Focus, East River Aspect" in 1906 (Ritchie 1980: 146). During those investigations, a hearth feature with projectile points was documented 17 inches below a previously disturbed layer (ibid).

The Old Place area has been the subject of more recent archaeological investigations. In 1994, archaeologist Eugene Boesch described the archaeological sensitivity of the general area as follows

*The wetlands at Old Place...probably contain localized, raised ground that was dry enough for Native Americans to establish small camps oriented towards the exploitation of marsh resources. The marsh has been generally filled (by as much as ten feet) so any such localities would be preserved. Some of those sites may have been associated, in part, with populations residing at the Bowman's Brook (and/or Old Place) habitation area(s)* (Boesch 1994: 22).

Recent archaeological investigations of the Old Place area were completed by the Public Archaeology Laboratory (PAL) between 2011 and 2014 in association with the construction of a new natural gas pipeline through northwestern Staten Island to the north of the project corridor. PAL's work resulted in the identification of a lithic workshop where thousands of artifacts were recovered, including projectile points, blades, bifaces, and lithic debitage in addition to ceramics, fire-cracked rock, and faunal remains.

The site dated to between the Paleoindian and Woodland periods and is believed to represent the long-term occupation and reoccupation of the area (PAL 2014).

### **BLOOMFIELD/WATCHOGUE AND CHELSEA SITES**

The Bloomfield site was described by Skinner (1909) as a collection of precontact artifacts found “more or less abundantly on all of the dunes and sand hills” in the location of a former oil tank farm north of the project corridor (ibid: 9). Also known as Beulah Point, it is believed to be connected to the nearby Chelsea site (NYSM site 4627). As described by Skinner, most of the data recovered from this site was associated with surface collections by avocational archaeologists and local residents. This location yielded artifacts including steatite beads, stone and brass projectile points, smoking pipes, and ceramics (ibid; Boesch 1994; Cantwell and Wall 2001). Boesch (1994) reported that this general location was later disturbed by the construction of the West Shore Expressway.

## A. INTRODUCTION

As described in **Chapter 4: “Precontact Period Archaeological Resources,”** the project corridor is situated in the vicinity of several previously documented archaeological sites. Furthermore, except in areas that historically featured steep slopes of 10 to 12 percent or more, the varied ecological setting of northern Staten Island prior to colonization and development would have provided a variety of attractive locations for long- or short-term settlement by the Indigenous groups that occupied the area. The preservation of potential precontact archaeological sites—which are typically found at shallow depths within 5 feet of the pre-development ground surface—is therefore dependent on the extent to which an area has been disturbed as a result of historical and modern development. Furthermore, such analysis must also identify those locations where project impacts (typically within a trench 3 to 8 feet wide and 6 to 10 feet in depth) could impact potentially undisturbed soil levels. A careful reconstruction of landscape modification since the early 20th century is therefore necessary to determine if the construction of modern roads and other facilities was extensive enough to have disturbed potential precontact archaeological resources or to determine if such sites could have been protected as a result of the deposition of protective layers of fill, etc.

Regarding historic period archaeological resources, given the project corridor’s length, a preliminary assessment was made to determine where more intensive cartographic analysis would be required in order to identify map-documented structures. Few historical maps of Staten Island published before the 20th century are sufficiently detailed or accurate to determine if map-documented structures are present within a given study area. The long and narrow nature of the project corridor makes cartographic analysis more difficult. However, many of the roads included within the project corridor are among the oldest on Staten Island. As such, the preliminary analysis completed as part of this chapter was designed to identify those portions of the project corridor that were not built roadways by the early 20th century with the implication that the locations of historical roads are less likely to contain historical structures or associated outbuildings. It is less likely that domestic shaft features likely to have been used for the deposition of household refuse (e.g., privies, cisterns, and wells) would have been located in the front yards of residential properties or in close proximity to public streets, as such features were typically located to the rear or side of a house for the purposes of convenience, modesty, and sanitation. The front yards of historical houses can therefore have reduced sensitivity for shaft features, which are often the only type of historic archaeological resource that can survive later urban development. This analysis therefore using the highly accurate 1907–1911 topographical survey (see **Figures 4-01 to 4-28**) to identify locations where the project corridor is not located within historical streetbeds or where the corridor extends sufficiently close to the side or rear yards of map-documented structures to warrant more intensive cartographic research. Any historical map research determined necessary is presented in the **Chapter 6, “Historic Period Archaeological Resources.”**

## B. ASSESSMENT OF DISTURBANCE AND LANDSCAPE MODIFICATION IN THE 20TH CENTURY

Given the great length of the project corridor, this section includes a comprehensive assessment of landscape modification and associated disturbance. As described previously, the project corridor was included within an extensive survey of Staten Island that was completed by the Richmond County Topographical Bureau between 1907 and 1911<sup>1</sup> (see **Figures 4-01 to 4-28**).

To complete this disturbance assessment, the information from this survey was compared with modern topographical information in order to identify any areas of landscape modification (e.g., areas that have been graded or filled). This involved the georeferencing of the 1907–1911 map sections to align them with the modern street grid and the overlay of topographical information obtained from Lidar information published by the City of New York in 2017 (New York City Department of Information Technology & Telecommunications 2019). The 1907–1911 map includes elevation data measured relative to the Richmond Borough Datum and the Lidar data was measured relative to the North American Vertical Datum of 1988 (NAVD88).<sup>2</sup> The Richmond Borough datum is located 2.092 feet below NAVD88. For example, an elevation of 10 feet above the Borough of Richmond Datum is 12.092 feet above NAVD88. Therefore, the Lidar elevations presented in **Figures 4-01 to 4-28** have been converted from NAVD88 to the Richmond Borough Datum for the purposes of this comparison. For the purposes of this assessment, all converted elevations have been rounded to the nearest whole number.

The review presented below divides the project corridor into smaller analytical segments. A summary of this disturbance assessment is included in **Table 5-1**.

**Table 5-1**  
**Summary of Disturbance Assessment**

<b>Project Corridor Segment</b>	<b>Summary of Landscape Modification</b>	<b>Need for Intensive Cartographic Research</b>
Goethals Substation	Former coastal wetland filled in the 20th century; project impacts not expected to extend beneath fill deposits	Not recommended
River Road between Goethals Substation and Bloomfield Road	Western portion of River Road within project corridor within the coastal wetland described above. Eastern portion on historical neck of land; area heavily modified through filling and grading during road construction in the 20th century	Recommended for eastern portion of River Road
Project Corridor between Chelsea Road and Staten Island Industrial Park	Area disturbed by historical and modern road construction (including the West Shore Expressway) and commercial development.	Not recommended except in location of West Shore Expressway and Glen Street
Staten Island Industrial Park	Area disturbed by historical and modern road construction	Not recommended

<sup>1</sup> The survey was completed between 1906 and 1913; however, the two sheets depicting the Proposed Action Area (Sheets 73 and 74) were both issued in 1913.

<sup>2</sup> A datum is the point from which surface elevations are measured (where the elevation is considered to be 0). Elevations of the same ground surface taken relative to different datum points will therefore differ despite the fact that they refer to the same location. Therefore, understanding the datum from which an elevation was measured is critically important to an analysis of historic elevations and landscape change. The elevations presented in the 1913 Topographic Survey are relative to a datum based on “Richmond High Water,” which is interpreted here as the modern Richmond Borough Datum.

**Table 5-1 (cont'd)**  
**Summary of Disturbance Assessment**

<b>Project Corridor Segment</b>	<b>Summary of Landscape Modification</b>	<b>Need for Intensive Cartographic Research</b>
Merrill Avenue and Morani Street between Staten Island Industrial Park and Canterbury Avenue	Area disturbed by historical and modern road construction	Recommended for modern location of Morani Street and adjacent to historical cemetery on Merrill Avenue
Canterbury Avenue and Dreyer Avenue between Victory Boulevard and Willowbrook Road	Area disturbed by modern road construction	Recommended for entire segment
Willowbrook Road and Holden Boulevard between Bradley Avenue and Suffolk Avenue	Area disturbed by historical and modern road construction	Not recommended
Holden Avenue and Tillman Street between Suffolk Avenue and Todt Hill Road	Area disturbed by modern road construction	Recommended for entire segment and in area near historical cemetery
Todt Hill Road and Slossen Avenue between Tillman Street and Windsor Road	Area disturbed by modern road construction	Recommended for entire segment
Windsor Road, Little Clove Road, and Clove Road between Slossen Avenue and Richmond Road	Area disturbed by historic and modern road construction	Recommended for entire segment and in vicinity of historical cemetery
Project Corridor between the Intersection of Clove and Richmond Roads and the Fox Hills Substation	Area disturbed by historic and modern road construction	Recommended for entire segment
Fox Hills Substation	Area disturbed by landscape modification and construction of existing substation and associated infrastructure	Not recommended
<b>Notes:</b> See Chapter 6, “Historic Period Archaeological Resources” for the additional cartographic research as recommended above.		

### GOETHALS SUBSTATION

As seen on the 1907–1911 topographical survey (see **Figure 4-01**), the location of the Goethals Substation was located within an area of coastal wetland or open water. This area was filled during the mid- to late-20th century. The ground surface of what is now the substation was generally at or close to an elevation of 0 feet relative to the Richmond Borough Datum (RBD), or approximately 2 feet NAVD88. The 2017 Lidar information indicates that the ground surface of the current substation property is currently situated between 6 and 8 feet RBD/8 to 10 feet NAVD88. The vegetated waterfront areas adjacent to the substation to the south and southeast slope downward to the water between elevations of -2 and 4 feet RBD/0 to 6 feet NAVD88. Following the area’s filling, it was developed for industrial uses included the existing substation. Subsurface impacts associated with the proposed project within this portion of the project corridor are therefore not expected to extend beneath the level of 20th century fill. Further archaeological analysis of this portion of the project corridor is therefore not recommended.

### RIVER ROAD BETWEEN GOETHALS SUBSTATION AND BLOOMFIELD ROAD

The western portion of River Road within this segment of the project corridor was historically situated within the same wetland area as the Goethals Substation (see **Figures 4-01 and 4-02**). The surface elevation of this portion of River Road has been raised from 0 feet RBD/2 feet NAVD88 to 4 to 6 feet RBD/6 to 8 feet NAVD88. Subsurface impacts associated with the proposed project within this portion of

the project corridor are therefore not expected to extend beneath the level of 20th century fill. Further archaeological analysis of this portion of the project corridor is therefore not recommended.

The eastern half of this segment of the project corridor was formerly located on a neck of land that extended into the wetland area west of what is now Bloomfield Avenue (see **Figures 4-02 and 4-03**). For the portion of River Road that runs at a northwest-southeast angle, the road runs through a modified hill, the peak of which was situated at an elevation of 10 feet RBD/12 feet NAVD88 and that sloped down to the southeast to an elevation of 0 feet RBD/2 feet NAVD88. This area has been modified through filling and grading, with the tallest part of the hill remaining at generally the same elevation and the lower areas filled through the addition of 2 to 4 feet of fill material. These modifications appear to have occurred in the second half of the 20th century during the area's industrial transformation. The pre-development ground surface is therefore expected to have been disturbed to some extent during the construction of the road and the reclamation of the surrounding wetland areas. Further cartographic research is recommended in this location to confirm the presence or absence of map-documented structures or other potential archaeological resource types.

### **PROJECT CORRIDOR BETWEEN CHELSEA ROAD AND STATEN ISLAND INDUSTRIAL PARK**

The roads included in this portion of the project corridor were almost entirely constructed by the time the 1907–1911 topographical survey was completed with the exception of the West Shore Expressway (see **Figures 4-03 through 4-05**). That portion of the corridor situated within Block 1725, Lots 500 and 510 (including a portion of Lois Lane) was historically part of the former line of Merrill Street. Despite the presence of older historical roads, a comparison of the c. 1911 and c. 2017 topography suggests that additional disturbance occurred as a result of the modernization of these roads and the development of the surrounding area in the 20th century. In some areas, hills were graded and low-lying areas filled, resulting in grade changes of 2 to 4 feet higher or lower than the historical locations. In other areas, the current ground surface elevation is at or within 1 foot of the historical ground surface. In the location of what is now the West Shore Expressway, the project corridor extends through an area formerly occupied by a small hill that appears to have been graded down by as much as 4 feet. The remainder of this area is at approximately the same elevation as the historical ground surface, indicating that the construction of the expressway would have disturbed the original ground surface. In the location of Block 1725, Lots 500 and 510 (including a portion of Lois Lane), the ground surface has been raised by as much as 4 feet in certain places as a result of commercial development and road alterations.

Given the extent to which the ground surface was disturbed as a result of both historical and modern road construction relative to the depth of proposed impacts, further cartographic analysis of this segment of the project corridor is not recommended for all areas except the location of the West Shore Expressway and Glen Street, which were not located within a historical road surface.

### **STATEN ISLAND INDUSTRIAL PARK**

The location of the project corridor through the center of Staten Island Industrial Park runs along or in the immediate vicinity of the historical line of Merrill Avenue (see **Figures 4-05 and 4-06**). Throughout this segment of the project corridor, the current ground surface is within 1 to 2 feet of the historical ground surface. In isolated areas, landscape modification associated with filling in or otherwise modifying waterways has raised the ground surface by 2 to 4 feet. Given the extent to which the ground surface was disturbed as a result of both historical and modern road construction and the installation of utilities, further cartographic analysis of this segment of the project corridor is therefore not recommended.



### **MERRILL AVENUE AND MORANI STREET BETWEEN STATEN ISLAND INDUSTRIAL PARK AND CANTERBURY AVENUE**

The 1907–1911 topographical survey indicates that this segment of the project corridor runs along the historical line of Merrill Avenue until its former eastern terminus at what is now Richmond Avenue, then known as Old Stone Road (see **Figures 4-06 through 4-10**). The current surface of the streetbed of Merrill Avenue is within 1 to 2 feet of the historical ground surface along this segment. The construction of the historical and modern roads and associated utilities is therefore expected to have disturbed the pre-development ground surface. An extant historical cemetery is situated on the northern side of Merrill Street between Hillman and Richmond Avenues. Further cartographic research is recommended to confirm the historical boundaries of the cemetery.

The portion of the project corridor situated on what is now Morani Street between Richmond Avenue and Victory Boulevard was historically an area occupied by woods and wetlands. The ground surface in this area has been raised by 2 to 6 feet in certain locations. Further cartographic research is recommended in this location to confirm the presence or absence of map-documented structures.

The portion of the project corridor located within or immediately adjacent to what is now Victory Boulevard ran through the historical streetbed known as Richmond Road. The current ground surface in this location appears to be within 0 to 2 feet of the historical ground surface. As described in **Chapter 2, “Summary of Previous Archaeological Analysis,”** a Phase I Archaeological Investigation of a portion of the area adjacent to the project corridor on the northern side of Victory Boulevard in the vicinity of the existing Expressway confirmed that the construction of modern roads resulted in disturbance to the area. Given the extent to which the ground surface was disturbed as a result of both historical and modern road construction and the installation of utilities, further cartographic analysis of this segment of the project corridor is not recommended.

### **CANTERBURY AVENUE AND DREYER AVENUE BETWEEN VICTORY BOULEVARD AND WILLOWBROOK ROAD**

The segment of the project corridor situated along Canterbury and Dreyer Avenues between Victory Boulevard and Willowbrook road is located in an area of open meadow, cultivated land, and residential property as shown on the ca. 1907–1911 topographical survey (see **Figures 4-10 and 4-11**). The comparison of current and historical surface elevation data indicates that the existing road surface is currently within 1 foot of the historical ground surface. This suggests that the construction of the road surface and any associated utilities directly impacted the ground surface. Given the presence of historical buildings adjacent to the project corridor, further cartographic research is recommended in this location to confirm the presence or absence of map-documented structures or other potential archaeological resource types.

### **WILLOWBROOK ROAD AND HOLDEN BOULEVARD BETWEEN DREYER AVENUE AND SUFFOLK AVENUE**

As described previously, Willowbrook Road is one of the oldest roads in the Staten Island area and was the main thoroughfare for the historical community of Willowbrook. As shown on **Figures 4-11 to 4-15**, the project corridor runs within or immediately adjacent to the historical road surface within this portion of the project corridor, then known as Gun Factory Road. A portion of modern Willowbrook Road between modern Britchard and Bradley Avenues is depicted as a “dirt-paved” road while the remainder of the thoroughfare was paved. What is now Holden Boulevard was a road historically known as King Street that extended as far east as a point just east of what is now Suffolk Avenue. The body of water

historically known as Willow Brook and its associated wetlands was situated southeast of the intersection of Willowbrook Road and Westwood Avenue.

That portion of Willowbrook road between Dreyer Avenue and a point south of Westwood Avenue includes areas of landfill to reclaim former streams associated with the pond to the east. The ground surface in this portion of the project corridor has been raised by 2 to 5 feet as a result of this filling effort. The road surface of the remainder of the streetbeds of what are now Willowbrook Road and Holden Boulevard appear to be within 1 to 2 feet of the historical ground surface (either above or below the historical elevation), including in the area of the former dirt road. Given the extent to which the ground surface was disturbed as a result of both historical and modern road construction and the installation of utilities, further cartographic analysis of this segment of the project corridor is not recommended.

### **HOLDEN AVENUE AND TILLMAN STREET BETWEEN SUFFOLK AVENUE AND TODT HILL ROAD**

The location of the project corridor within the streetbed of Holden Avenue east of Suffolk Avenue to the line of Todt Hill Road is in a location that was not developed with a streetbed in the early 20th century, as seen on the 1907–1911 topographical survey (see **Figures 4-15 through 4-17**). In this area, the project corridor passed through the larger campus of a private charitable institution known as the New York Nursery and Child’s Hospital, which extended as far east as Manor Road. The main buildings of the campus were located further to the north. The project corridor passes through what were formerly wooded areas south of the hospital facilities, and crosses through what were once woods, hills, dirt paths, and cultivated land. The campus included a cemetery that was situated more than 150 feet north of the project corridor.

The comparison of historical and modern elevations indicates that the majority of the streetbed of Holden Avenue between Suffolk Avenue and Todt Hill Road. In that portion of the streetbed situated between what are now Melba and Gower Streets, a small hill appears to have been graded down by 7 to 12 feet. Between Gower Street and Fanning Street, the ground surface appears to have been graded down by approximately 2 feet. Between Fanning Street and Manor Road, the ground surface appears to have been graded down by approximately 7 feet.

East of Manor Road and west of Todt Hill Road, the project corridor runs along what is now Tillman Street. Historically, this area was included within portions of smaller parcels that were identified on the 1907–1911 topographical survey as open meadow, cultivated fields, orchards, dense woods, and a small pond. Immediately east of Manor Road, the topographical comparison suggests that the location of the project corridor was graded down by approximately 7 feet. The road surface of the majority of the remainder of this portion of the project corridor is situated between 1 and 3 feet of the historical ground surface. At the eastern end of what is now Tillman Street between LaGuardia Avenue and Todt Hill Road, the historical survey depicts a steep hill. In the vicinity of this former hill, the ground surface appears to have been lowered by 2 to 12 feet. In the location of a former pond northwest of the intersection of Tillman Street and Todt Hill Road, the ground surface appears to have been raised by approximately 3 feet.

Given the presence of historical buildings adjacent to the project corridor, further cartographic research is recommended in this location to confirm the presence or absence of map-documented structures or other potential archaeological resource types.

### **TODT HILL ROAD/SLOSSEN AVENUE BETWEEN TILLMAN STREET AND WINDSOR ROAD**

A portion of a historical streetbed known as Todt Hill Road ran immediately adjacent to the project corridor between Tillman Street and a point north of Fine Boulevard where the road turns to the northwest. The remainder of this segment of the project corridor extended through an undeveloped area occupied by open meadow or fields, woods, streams, and narrow paths or roads. Along the project corridor between approximately Tillman Street and Norwalk Avenue, the ground surface appears to have been lowered by approximately 2 feet. Between Norwalk Avenue and Westwood Avenue, the ground surface appears to have been raised by 2 to 3 feet, presumably in association with the filling of swamps and streams depicted on the historical topographical survey in that location (see **Figures 4-17 through 4-19**). The road surface in the remainder of this portion of the project corridor appears to be within 2 to 3 feet of the historical ground surface (either above or below the historical elevation).

Given the presence of historical buildings adjacent to the project corridor, further cartographic research is recommended in this location to confirm the presence or absence of map-documented structures or other potential archaeological resource types.

### **WINDSOR ROAD, LITTLE CLOVE ROAD, AND CLOVE ROAD BETWEEN SLOSSEN AVENUE AND RICHMOND ROAD: WINDSOR ROAD, LITTLE CLOVE ROAD, AND CLOVE ROAD**

East of the line of Slossen Avenue, the project corridor continues along Windsor Road, Little Clove Road, Renwick Avenue, Milford Drive, and Clove Road. As shown on the 1907–1911 topographical survey (see **Figures 4-20 and 4-21**), Windsor Road, Little Clove Road, and Clove Road were all extant streets by the early 20th century and represent some of the oldest roads in Staten Island. Along Windsor Road between Slossen Avenue and Little Clove Road, the road surface of the historical road then known as Housman Avenue is within 1 to 3 feet of the modern ground surface. The modern road surface of Little Clove Road between Windsor Road and Renwick Avenue is typically situated between 2 and 3 feet below that of the historical road surface. In certain areas, streams have been filled in along this portion of the project corridor. The streetbeds of Renwick Avenue and Milford Drive were constructed in the 20th century after the creation of the historical topographical survey.

As shown on the historical survey, Renwick Avenue was historically in the vicinity of a large, tree-lined stream and open fields (see **Figures 4-21 and 4-22**). The modern road surface in this area is 7 to 12 feet lower than the historical ground surface as a result of the construction of the Staten Island Expressway. Milford Drive was situated in an area of open fields, dirt paths, residential properties, wooded areas, and steep hills. A historical cemetery was formerly situated near what is now the intersection of Clove Road and Richmond Road. Disturbance associated with the construction of the expressway appears to have disturbed the ground surface in the vicinity of what is now Milford Drive west of the western branch of Ocean Terrace appears to have resulted in the grading down of the historical ground surface by as much as 17 feet. The surface of the remainder of the streetbed of Milford Drive within the project corridor appears to be situated between 1 and 3 feet of the historical ground surface (either above or below the historical elevation).

East of Emerson Drive, the streetbed of modern Clove Road appears to have been extensively modified to create a level road surface in an area that was historically at the base of a very steep hill (see **Figures 4-21 and 4-24**). Along the western portion of Clove Road in this area, portions of the modern streetbed are 8 to 18 feet higher than the historical ground surface. At the eastern end, the modern streetbed appears to have been graded down, including in the area adjacent to the historical cemetery, by approximately 7 feet in

certain locations. The construction of that portion of Clove Road therefore appears to have resulted in extensive landscape modification to create a navigable road at the base of a very steep hill.

Given the presence of historical buildings and a cemetery adjacent to this portion of the project corridor, further cartographic research is recommended in this location to confirm the presence or absence of map-documented structures or other potential archaeological resource types.

### **PROJECT CORRIDOR BETWEEN INTERSECTION OF CLOVE AND RICHMOND ROADS AND THE FOX HILLS SUBSTATION**

East of the intersection of Clove Road and Richmond Road, the project corridor runs largely through historical streetbeds (see **Figures 4-22 through 4-28**). The ground surface of the historical streetbed of Clove Road between Richmond Road typically situated approximately 3 feet lower than the modern road surface. Between Neckar and Weser Avenues, a steep hill appears to have been graded, lowering the ground surface by 2 to 12 feet. The modern line of Mosel Avenue runs in the vicinity of a historical path. The modern road surface of Mosel Avenue appears to be situated between 2 and 7 feet lower than the historical ground surface as depicted on the historical survey except in the vicinity of the Staten Island Expressway, where the ground surface has been raised by approximately 8 feet.

Neither Stephen Street nor Kansas Street is depicted on the historical map, although the SIR tracks are visible. The ground surface of modern Stephen Street in this location is within 1 to 3 feet of the historical ground surface. Kansas Street, however, appears to be located in an area of 20th century landfill and the current road surface is between 3 and 8 feet higher than the historical ground surface, which was partially covered with swampland. Narrows Road between Kansas Street and Rockwell Avenue is in an area where a tall, steep hill was removed, resulting in the lowering of the grade by up to 12 feet near the top of the hill and raising the grade near the hill's former base by 3 to 10 feet. The streetbed of Clifton Avenue between Rockwell Avenue and Colton Street was similarly located on top of a steep hill as shown on the historical survey. The grading of this hill lowered the ground surface by 10 to 20 feet or more in certain locations. North of Donley Avenue, the streetbed of modern Clifton Avenue is within 1 to 3 feet of the historical ground surface though closer to Colton Street, the modern streetbed appears to be at an elevation that is up to 8 feet higher than the historical ground surface, again due to modifications associated with eliminated steep hills for the purposes of road construction. The ground surface of Colton Street between Clifton Street and Virginia Avenue was similarly altered to remove a steep hill, with the grade of the southern side having been lowered by up to 12 feet and the northern side having been raised by up to 8 feet.

Given the presence of historical buildings and a cemetery adjacent to this portion of the project corridor, further cartographic research is recommended in this location to confirm the presence or absence of map-documented structures or other potential archaeological resource types.

### **FOX HILLS SUBSTATION**

The tax lot on which the Fox Hills Substation is currently located includes a large tract of reclaimed swampland (see **Figure 4-28**). The wooded area in the southernmost portion of the substation parcel (south of the approximate line of Tone Lane) was an upland area at an elevation of approximately 80 to 85 feet RBD/82 to 87 feet NAVD88. This is within 1 foot of the current ground surface in this location. The former swamp was situated mostly south of the existing substation, though a portion of the project corridor would extend through its northern end. The upland area north of the swamp that makes up the majority of the developed footprint of the substation was historically situated near the top of a hill. The hill's summit was at an elevation of 100 feet RBD/102 feet NAVD88 and was located near what is now the intersection of Virginia Avenue and Colton Street. The hill sloped down to the north and west,

reaching elevations of approximately 80 to 85 feet RBD/82 to 87 feet NAVD along the SIR tracks west of the substation and 70 to 75 feet RBD/72 to 77 feet NAVD at the northern end of the substation. The location of the substation is currently level, with an approximate elevation of 80 feet RBD/82 feet NAVD near its border with the SIR tracks and elevations of 68 to 76 feet RBD/70 to 78 feet NAVD88 along its northern side. The construction of the existing substation therefore appears to have substantially altered the ground surface with the former hill graded down by as much as 2 to 15 feet in the southeastern corner of the substation. Filling and grading altered the hill elsewhere within the substation footprint to create a level surface for the development of the existing structures and related infrastructure. Given the extent to which the ground surface was disturbed as a result the construction of the existing substation and its associated infrastructure, further archaeological analysis of this segment of the project corridor is not recommended.

## A. HISTORICAL CONTEXT FOR NORTHERN STATEN ISLAND

The Dutch colony of New Netherlands became the British colony of New York in 1664, and though the Dutch were later able to reclaim the colony in 1673, they traded it back in 1674 for “the far more lucrative colony of Surinam” (Cantwell and Wall 2001: 181). Richmond County was established in 1683 and the area that is now New York City would remain under British control for the next hundred years. Under British rule, Staten Island’s open farmland and vast coastline became essential for the production of agricultural products and collection of marine resources for export to the city (Leng and Davis 1930).

Staten Island proved to be a key asset to the British during the Revolutionary War. In 1776, unsuccessful peace negotiations were held the “Conference House” on the southern tip of Staten Island, which continues to stand in what is now known as Conference House Park (Historical Records Survey 1942). Despite New York City’s loyalty to the British during the war, after the American victory the conversion to the new American government was relatively smooth. Land previously owned by British loyalists was divided and sold, which brought about a surge in population and development in the outer boroughs. This trend continued through the 19th century. The 1733 Popple map depicts a number of small towns across Staten Island, though the only villages shown in northern Staten Island included Richmond Town (then known as “Cuckold’s Town”) south of the project corridor and Port Richmond (then known as “Castletown”) to the north of the project corridor along the waterfront. The 1781 Taylor and Skinner map depicts the construction of a number of early roads connecting the four quadrants of Staten Island, including precursors to portions of modern Richmond Avenue, Willowbrook Road, Victory Boulevard, and Clove Road in the vicinity of the project corridor. In 1788, the island was officially divided into four townships, Westfield, Castleton, Southfield, and Northfield, with the project corridor passing largely through portions of Northfield and Southfield

Between 1840 and 1880, the population of Staten Island nearly quadrupled. This surge was caused in part by the increasing population density in Manhattan, which drove many people to the outer boroughs. The 1844 Hassler survey and the 1898 USGS map (see **Figure 3**) show that the project corridor was situated in the vicinity of, but not immediately within, several Staten Island neighborhoods in the 19th century, including Old Place and Bloomfield (historically known as Watchogue or Merrill Town) approximately one mile north of the western end of the project corridor; Chelsea approximately one mile south of the western end of the project corridor; Bulls Head, Willow Brook, Springville, and Todt Hill at various distances south of the central segment of the project corridor; and Stapleton and Fort Tompkins to the northeast and east of what is now the Fox Hills Substation. The map also depicts several streets within the project corridor, including Richmond Avenue; Victory Boulevard; Willowbrook Road; Manor Road; Todt Hill Road; Little Clove Road/Clove Road; and Richmond Road. Limited development had occurred along these early road segments, which were lined with small farmsteads. Large portions of the project corridor were occupied by coastal wetland/swamp or wooded areas.

The region’s prosperity caused the counties in the New York City region to become increasingly codependent, both economically and culturally. Transportation development efforts increased in Staten Island in the mid- to late-19th century, with the construction of SIR (Leng and Davis 1930). Staten Island was the site of several prominent industrial facilities and the role of industry in the area grew after the

Civil War (Davis 1896). It was therefore suggested that the counties around New York Harbor be consolidated under the name New York City. Although there was some resistance from some Staten Island residents, it officially became a borough of New York City on New Year's Day, 1898 (Burrows and Wallace 1999).

As part of the integrated city, Staten Island flourished throughout the 20th century. Increased mass transit connected all the boroughs and allowed more people to live outside of Manhattan while still having access to the city's varied resources. The remainder of the 20th century saw continued growth and increasing population density throughout Staten Island.

## **B. IDENTIFICATION OF MAP-DOCUMENTED STRUCTURES**

As described in **Chapter 5, "Assessment of Disturbance and Landscape Modification,"** certain segments of the project corridor that were not located along historical streetbeds were identified for additional cartographic research. The 1907–1911 topographical survey (see **Figures 4-01 to 4-28**) is the most accurate map of historical buildings in Staten Island. As described previously, that map depicts few map-documented structures within the project corridor. The goal of the cartographic research was to attempt to identify the presence of map-documented structures within or in sufficiently close proximity to the project corridor that could potentially indicate the presence of historic archaeological resources that could have survived subsequent disturbance and landscape modification associated with road construction (e.g., domestic shaft features such as privies, cisterns, and wells). The following maps were used for this cartographic research: 1844 Hassler coastal survey; 1850 Sidney map; 1853 Butler map; 1859 and 1860 Walling maps; 1866 Colton map; 1874 Beers atlas; 1887 Beers map; 1898 and 1907 Robinson atlases; and the 1917 Bromley atlas. Where coverage was available, Sanborn maps published in 1917, 1937, and 1950 were also consulted. Where relevant, maps were supplemented with aerial photographs taken in 1924; 1951; and 1996 through the present.<sup>1</sup> Further research regarding cemeteries in the immediate vicinity of the project corridor is presented in the following section

### **EASTERN PORTION OF RIVER ROAD BETWEEN CSX ROW AND CHELSEA ROAD**

The eastern half of River Road between the CSX railroad ROW and Chelsea Road was located on a neck of land that extended into the coastal wetland area that occupied the western half of River Road adjacent to the Goethals Substation (see **Figures 4-01 and 4-02**). Historical maps indicate that the historical community of Bloomfield was situated near the intersection of Chelsea and Bloomfield Roads. Neither are depicted on the 1844 Hassler survey which depicts the modern location of River Road within a large tract of woodlands. The 1850 Sidney, 1853 Butler, 1859 and 1860 Walling, and 1866 Colton maps depict precursors to Bloomfield Avenue and Chelsea Avenue in this location. The 1874 and 1887 Beers maps depict similar conditions, and may appear to depict an informal road or driveway in the location of a portion of what is now River Road immediately west of Chelsea Road. The 1907 Robinson atlas identifies this road as "Water Street" though the name was changed to River Road by the publication of the 1917 Bromley atlas. The 1859 through 1907 maps depict the home of "J. Bush" northwest of what is now the intersection of what is now River Road and Chelsea Road. This house appears to be depicted on the 1907–1911 topographical survey, which does not indicate that it was in close proximity to either road and suggests that the location of River Road was more than 100 feet to the south and downhill from the closest house. Therefore, there do not appear to have been any historical map-documented structures within the portion of River Road that was constructed in the 20th century, nor were there any in

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<sup>1</sup> All referenced aerial photographs are accessible at: <https://maps.nyc.gov/then&now/>.

sufficiently close proximity that deeply buried shaft features associated with such buildings would be expected to be present within the streetbed of River Road.

### **WEST SHORE EXPRESSWAY BETWEEN GULF AVENUE AND GLEN STREET**

A small portion of the project corridor runs through a landscaped area within the footprint of the West Shore Expressway and then turns north along a portion of what is now Glen Street, which was not a historical road as shown on the 1907–1911 topographical survey (see **Figures 4-04 and 4-05**). No map-documented structures were identified within this area. The 1874 Beers atlas identifies this portion of Staten Island as an undeveloped portion of the larger A.B. Decker estate and the 1917 Bromley atlas identifies it as the undeveloped property of John B. Parker. This area is not depicted on Sanborn maps published in 1917, 1937, or 1950. The West Shore Expressway was constructed in the mid-20th century.

### **MORANI STREET BETWEEN RICHMOND AVENUE AND VICTORY BOULEVARD**

The location of what is now Morani Street between Richmond Avenue and Victory Boulevard was not in the location of a historical road (see **Figure 4-09**). The 1844 Hassler, 1850 Sidney, and 1853 Butler maps indicate that Richmond Avenue and Victory Boulevard are older historical streets formerly known as Plank Road and Richmond Turnpike, respectively. While houses lined both roads, the location of what is now Morani Street was situated within a former agricultural area adjacent to and between the residential properties. The 1874 Beers atlas depicts the modern streetbed within undeveloped parcels owned by A.A. Crocheron, H. Vroome, and others who are not identified. The 1887 Beers atlas depicts similar conditions, but suggests that the street ran through a subdivided portion of the former Crocheron property that was at that time owned by N.G. Egbert but which remained undeveloped. The 1907 Robinson atlas depicts the northern branch of Morani Street within a dedicated parcel or easement that continued the line of Merrill Avenue east of Richmond Avenue, although no street was mapped or built in that location and the area was undeveloped. The southern branch of Morani Street was included within an undeveloped 17.1-acre property owned by John W. Darcey. The 1917 Bromley atlas continues to depict the area as undeveloped and partially included within the Darcey property.

The 1917 Sanborn map depicts a small (10- to 15-foot-square) wood frame outbuilding within what is now the streetbed of Morani Street immediately east of the terminus of Merrill Avenue that is identified as a blacksmith shop. The map shows the Bullshead Creek running a short distance to the east and the remainder of the location now occupied by Morani Street as vacant. The 1937 Sanborn map depicts a slightly larger wood frame outbuilding in the vicinity of the former blacksmith shop that is identified as an automobile garage. By the publication of the 1950 Sanborn map, the former garage was demolished and the remainder of the footprint of Morani Street remained vacant. Aerial photographs confirm that Morani Street and the associated housing developments that surround it were constructed in the second half of the 20th century.

### **CANTERBURY AVENUE AND DREYER AVENUE BETWEEN VICTORY BOULEVARD AND WILLOWBROOK ROAD**

The locations of modern Canterbury and Dreyer Avenues between Victory Boulevard and Willowbrook Road were not historical roads as shown on the 1907–1911 topographical survey (see **Figures 4-10 and 4-11**). The 1844 Hassler survey indicates that these locations were included within agricultural fields and woodlands north of Peck Creek, later known as Willow Brook. The 1850 Sidney and 1853 Butler maps depict no houses on the south side of what is now Victory Boulevard (then Richmond Turnpike) east of the location of what is now Loop Road and west of the precursor to modern Willowbrook Road. The historical home of H. Vroome is depicted west of the location of what is now Loop Road on the south side of Victory Boulevard, and it appears that Vroome may have owned all the land in the area. The 1853



Butler map identifies the name “Dr. C.C. Schmidt” on the west side of Willowbrook Road north of the former brook, but does not depict a corresponding house. No houses or landowners are identified in the same area on the 1859 and 1860 Walling maps or the 1866 Colton map, though more extensive development is depicted on the east side of Willowbrook Road and south of the former brook, where a grist mill and associated buildings were located. The 1874 and 1887 Beers maps continue to depict this part of the project corridor within an undeveloped portion of the 30-acre Vroome property. The 1874 map depicts a small building on the north side of the former Willow Brook, which could be one of two barns shown in the same general location more than 150 feet to the south of the project corridor on the 1907–1911 topographical survey.

The 1907 Robinson and 1917 Bromley atlases reflect the subdivision of the former Vroome farm and indicate that the portion formerly located along the west side of Willowbrook Road was now owned by the estate of E. Dreyer. The Dreyer property was developed with a wood frame house located north of what is now Dreyer Avenue that was known as “Willow Brook Manor.” The map also shows the two previously mentioned barns. More detail regarding this property is visible on the 1907–1911 topographical survey, which depicts the house approximately 36 feet north of the project corridor. A large porch lined the southern façade, with views facing the Willow Brook. A small outbuilding, possibly an outhouse, was situated to the northwest of the house approximately 95 feet north of the project corridor. What is now Dreyer Avenue crossed through a former driveway or path that led south from the house towards the barns on the northern shore of the brook. A second driveway extended east from the house to connect to what is now Willowbrook Road, then known as Gun Factory Road. The rear of the house therefore appears to have been to the north and west of the building. The house and associated outbuildings are depicted on the 1917 Sanborn map, but the 1937 and 1950 Sanborn maps suggests that they were demolished to facilitate the construction of the Willow Brook Golf Course. Modern Canterbury Avenue, Dreyer Avenue, and the associated housing developments that surround them were constructed in the second half of the 20th century.

#### **HOLDEN AVENUE AND TILLMAN STREET BETWEEN SUFFOLK AVENUE AND TODT HILL ROAD**

The historical limits of the streetbed of Willowbrook Road (then known as Gun Factory Road) terminated at a point just east of what is now Suffolk Avenue. As such, the modern streetbed of Holden Boulevard and Tillman Streets extended through undeveloped property as far east as Todt Hill Road (see **Figures 4-14 through 4-17**). The 1844 Hassler survey depicts this area as undeveloped agricultural fields bisected by a precursor to what is now Manor Road. The intersection of what is now Manor Road and Victory Boulevard formed the heart of the Centreville (later Castleton Corners) neighborhood.

#### *AREA BETWEEN SUFFOLK AVENUE AND MANOR ROAD*

The portion of this segment of the project corridor situated west of Manor Road was included within several agricultural, residential, and institutional properties. The 1850 Sidney and 1853 Butler maps depict this area as largely undeveloped, with the home of “J. McLean” situated on the west side of Manor Road to the south of the project corridor and—shown only on the 1853 map—the home of “W. Fellows” to the northwest. The 1859 and 1860 Walling and 1866 Colton maps identify the homeowner as “Mrs. Fellows.” The 1874 Beers map is the first to depict the area in detail, and indicates that between Suffolk and Melba Streets, the project corridor passed through or near undeveloped agricultural property owned by J.H. & H. Wellbrook, J.C. McAndrew, and Andrew Schmid. Between the vicinity of Melba Street and Manor Road was the 20-acre estate of “Mrs. Fellows,” which was developed with a large residence north of the project corridor and a smaller structure adjacent to the western side of Manor Road.

The 1887 Beers map continues to identify the undeveloped Wellbrook and Schmid parcels while the former Fellows property is identified as a 27-acre property and referred to as “Child’s Nursery.” This appears to reflect the transition of this general area from private residential and agricultural uses to institutional and charitable uses. The New York Nursery and Child’s Hospital was founded in 1854—as a successor to similar organizations—and provided maternity and healthcare services to impoverished women and children in New York City, which at the time was limited to Manhattan (New York Nursery and Child’s Hospital 1910; Walsh 1919). Though based in Manhattan, the institution maintained facilities on Staten Island starting in 1870 to act as a “country home” to provide fresh air and a rural setting for the children in its care (New York Nursery and Child’s Hospital 1910).

The 1898 Robinson atlas continues to identify Wellbrook as the owner of the undeveloped parcel at the western end of this segment of the project corridor and Lienau Sus [sic] as the owner of the former Schmid parcel and the property to the south. The 1907 Robinson atlas identifies the owner of the former Wellbrook property as Michael I. Schwartz and the owner of the former Schmid property as Moritz Glauber, though the parcel boundaries had changed by that time. Both parcels remained undeveloped in the vicinity of the project corridor. The atlas also reflects the expansion of the Nursery and Child’s Hospital property. The 1907–1911 topographical survey depicts only tree-covered hills, cultivated fields, and dirt paths in the vicinity of the project corridor west of Manor Road. A cemetery on the grounds of the Nursery and Child’s Hospital property is described in detail later in this chapter. The topographical survey depicts a building in the same general location as the former Fellows residence approximately 50 feet north of the project corridor east of the line of what is now Fanning Street. The 1917 Bromley atlas depicts the same property boundaries, but does not show any buildings anywhere on the Nursery and Child’s Hospital property. The 1917 Sanborn map similarly shows the institutional property as largely vacant except for small wood frame buildings near its northern end. The 1837 and 1950 Sanborn maps do not depict the majority of this portion of Staten Island, but suggest that the former Nursery and Child’s Hospital campus had been subdivided for potential development and that Holden Boulevard was mapped but not built west of Manor Road.

#### *AREA BETWEEN MANOR ROAD AND TODT HILL ROAD*

East of Manor Road, the project corridor historically passed through several agricultural and residential properties. The 1844 Hassler map indicates that a residential parcel was situated near what is now the southeast corner of Manor Road and Tillman Street and identifies open fields to the east. The 1850 Sidney and 1853 Butler maps identify the house as that of “P. Flood” and the latter map indicates that an orchard was situated to the east of the house. The 1859 and 1860 Walling and 1866 Colton maps identify the owner of the house as “Mrs. McCan [sic].” The 1874 Beers atlas depicts the property of “Mrs. McCann” along the eastern side of Manor Road between Ocean Terrace to the south (a historical road) and the line of what is now Westwood Avenue to the north. The McCann house is depicted to the north of the project corridor. The 1887 Beers map continues to suggest that the McCann family owned the larger property, but identifies “M. Eckstein” as the occupant of the house. East of the McCann property, the project corridor extended through undeveloped parcels owned by T.C. Bogart and A. Schmid, as shown on the 1874 and 1887 Beers maps. The 1898 Robinson atlas identifies the former McCann house as the property of Mary A. Tully. The atlas also identifies the owners of the properties to the east as “Formerly [the estate of] T.C. Bogart” and Alfred H. Burow [sic].

The 1907–1911 topographical survey depicts the former McCann/Tully house approximately 50 feet to the north of the project corridor. The survey depicts a circular ornamental driveway to the west of the house that connected it to Manor Road. The house was surrounded to the west, south, and east by porches, suggesting that the project corridor was situated on the side or front façade of the house. The survey also depicts an orchard to the east and southeast of the house and a cultivated field to the east of

the orchard. East of the former McCann property, the project corridor extended through undeveloped parcels. The former Bogart and Schmid parcels to the east are depicted on the survey as wooded hills with slopes of more than 10 percent.

By the publication of the 1907 Robinson atlas, the former McCann property had been subdivided for a proposed housing development known as “Area Park.” The map indicates that Tillman Street had been constructed by that time and the former McCann house appears to be visible on the map northeast of the intersection of Tillman Street and Manor Road. East of Area Park and west of Todt Hill Road, the project corridor ran through undeveloped parcels owned by the estate of John Scott; Moritz Glauber; and David J. Tysen. The 1917 Bromley atlas depicts nearly the same conditions, although it identifies the owner of the former John Scott parcel as Walter Scott.

The 1917 Sanborn map reflects additional development of the lots north and south of Tillman Street immediately west of Manor Road but does not depict the area to the east. The 1937 and 1950 Sanborn maps reflect the proposed subdivision of the former Scott parcel, including the proposed—but not developed—extension of Tillman Street to the east. Aerial photographs indicate that the rest of the streetbed and the adjacent residential development were constructed in the second half of the 20th century.

#### **TODT HILL ROAD/SLOSSEN AVENUE BETWEEN TILLMAN STREET AND WINDSOR ROAD**

Todt Hill Road is located in the vicinity of an older colonial road, though its continuation along Slossen Avenue was constructed in the late 20th century (see **Figures 4-17 through 4-19**). The older road led down the steep slopes of Todt Hill to connect with what is now Victory Boulevard to the north. The 1850 Sidney, 1853 Butler, 1859 and 1860 Walling, and 1866 Colton maps depict a wooded area in the location of what is now Slossen Avenue north of the older line of Todt Hill road and all houses in the area were adjacent to Todt Hill Road or what is now Victory Boulevard north and northwest of the project corridor.

The 1874 Beers atlas indicates that north of Todt Hill Road, the project corridor extended through undeveloped properties owned by L. Tyson, W. Vanderbilt, A. Schmid (also spelled Schmidt), A. Vroom, and one unidentified individual. The 1898 Robinson atlas continues to depict the undeveloped Tyson and Vanderbilt properties south of what is now Schmidts Lane. North of Schmidt’s Lane, the former Schmid property had been divided into smaller parcels. The project corridor extended through what remained of a portion of the estate of A. Schmidt as well as residential parcels owned by John Burgher and H.D. Smith, the latter of which included the former Vroom parcel. Both the Burgher and Smith properties were developed with structures and a wood frame barn on the Burgher property was located in the immediate west of the project corridor.

The 1907 Robinson atlas depicts the same conditions but reflects further subdivision of the Smith parcel and the development of additional houses on the east side of Todt Hill Road west of the project corridor. The map identifies the owner of the vacant parcel immediately south of modern Windsor Road (then Houseman Street) as M. L. Reader. The former vacant Tyson parcel at the point where modern Slossen Avenue and Todt Hill Road diverge had been developed with a house owned by J. Wood. The former Vanderbilt property to the north have been divided into a vacant parcel owned by George Vanderbilt at the southeast corner of what is now Schmidt’s Lane (then Chestnut Street) and Todt Hill Road and a residential property owned by M.W. Johnson to the south, adjacent to the Wood parcel. The project corridor ran in the vicinity of the rear (eastern) lot line of these parcels.

Similar property divisions are visible on the 1907–1911 topographical survey. While the former Johnson home is shown along Todt Hill Road more than 100 feet west of the project corridor, the rear of the former Wood house—which appears to still be extant at 225 Todt Hill Road—was 25 to 35 feet west of

the project corridor. The historical survey depicts a small driveway leading southwest from the house to Todt Hill Road, suggesting that the house's front façade faced the street. The house was situated at the base of the steep hill (slope greater than 11 percent) that was part of the Todt Hill geological feature to the east of Todt Hill Road. The property boundaries depicted on the topographical survey suggest that the extreme rear lot line of the Wood parcel was situated east of the project corridor. The remainder of the project corridor crossed through open fields, wooded hills, or vacant parcels along the modern route of Slossen Avenue.

The 1917 Bromley atlas continues to depict the Wood property, but also reflects the increased development of this portion of Staten Island in the early 20th century. A greater number of houses was constructed on the eastern side of Todt Hill Road north of its divergence with what is now the line of Slossen Avenue. The project corridor may have extended through or in close proximity to the rear yards of some of these houses, but except for the Wood house, was situated more than 100 feet from any residences. North of what is now Schmidt's Lane, the project corridor extended through undeveloped parcels or in areas of developed parcels that were more than 100 feet from buildings as depicted on the map.

The 1937 and 1950 Sanborn maps are the first to depict a three-block-long portion of Slossen Avenue north of the line of Schmidt's Lane. The map also depicts a house on the formerly vacant land at what is now the northern terminus of Slossen Road south of Windsor Road. The house featured an automobile garage to the rear, as did many of the houses along Todt Hill Road, some of which may have entered the project corridor. This area was dramatically reconfigured following the construction of the Staten Island Expressway and the completion of the line of Slossen Avenue in the second half of the 20th century.

### **RENWICK AVENUE AND MILFORD DRIVE BETWEEN LITTLE CLOVE ROAD AND RICHMOND ROAD**

The lines of Windsor Road and Little Clove Road between Slossen Avenue and Renwick Avenue run along the locations of historical roads and in the vicinity of a geological feature known as Emerson Hill (see **Figures 4-22 through 4-24**). The lines of Renwick Avenue and Milford Drive extend through former agricultural and residential areas outside of historical streetbeds. The 1844 Hassler map depicts the historical lines of Little Clove Road and Clove Road to the north of this area and indicates that they were the only built streets in the area at that time. Southeast of the historical intersection of Little Clove and Clove Roads were largely undeveloped agricultural fields while a steep hill was located to the southeast. The curved line of Clove Road west of Richmond Road follows the line of this hill. The 1853 Butler map depicts the entire area south of both Little Clove and Clove Roads as steeply sloped. The 1844, 1850 Sidney, and 1853 Butler maps depict three buildings on the south side of these roads at the base of the slopes: residential properties associated with the Ellingwood and Blake families south of Little Clove Road and west of Clove Road and a Baptist Church southwest of the intersection of Clove Road. The Baptist Church maintained a cemetery on its property that is described in greater detail below.

The location of what is now Renwick Road and the portion of Milton Drive located west of Ocean Terrace were included within a large industrial facility used as an iron mine in the 19th century (AKRF 2018). The 1874 Beers atlas depicts the property owner as "Cooper, Hewett, & Co." and the 1887 Beers atlas as the "Staten Island Iron Ore Company." A small residential property was located east of the mine and west of the historical line of Ocean Terrace that was owned by N.D. Ellingwood in 1874 and A. Whiteman in 1887. That parcel contained a house located more than 1,000 feet south of Clove Road and at a significant distance from the project corridor. By the publication of the 1898 Robinson Atlas, both properties had been consolidated into a larger parcel owned by Charles H. Deere.

As seen on the 1874 Beers atlas, the project corridor extended through several undeveloped residential and agricultural parcels between the historical lines of Ocean Terrace and Richmond Avenue. Of these, the corridor was situated within the front yards of larger parcels with the exception of a small property owned by the estate of D. Vanduzer. The Vanduzer house fronted on Little Clove Road to the north and the project corridor passed through its rear yard to the south of the house. The 1898 and 1907 Robinson atlases continue to indicate that the only buildings situated on the south side of Little Clove Road and Clove Roads in this area were situated on that parcel—later owned by the Mathez family. The 1907 Robinson atlas depicts the additional construction of buildings adjacent to the Mathez home to the west on a parcel owned by Jules Racine. The buildings on both properties are clearly depicted on the 1907–1911 topographical survey, which indicates that both residences were surrounded by a variety of outbuildings. A stable on the Mathez property appears to have extended into the line of the project corridor, which was situated more than 140 feet south of the location of the property’s former residence. The project corridor therefore appears to have passed through an area used for the boarding of animals. The remainder of the project corridor extended through open fields.

East of Emerson Drive, the project corridor extended through the steep hills adjacent to the historical road. With the exception of the Baptist Church and its associated cemetery, historical maps depict no structures or developments on the south side of Clove Road west of Richmond Avenue. It is likely that the hill proved to be an impediment to historical development in this location. By the publication of the 1937 and 1950 Sanborn maps, a small number of additional houses had been constructed along the southern side of Clove Road near this segment of the project corridor.

#### **PROJECT CORRIDOR BETWEEN INTERSECTION OF CLOVE AND RICHMOND ROADS AND THE FOX HILLS SUBSTATION**

The 1907–1911 topographical survey depicts macadam-paved precursors to Clove Road between Richmond Road and Mosel Avenue and Mosel Avenue between Clove Road and Steuben Street (see **Figures 4-25 through 4-28**). The remaining road segments within the project corridor between Mosel Avenue and the Fox Hills Substation were not included within historical roadways, including those portions of Steuben Street, Kansas Avenue, Narrows Road North, Clifton Avenue, and Colton Street that are within the project corridor. The 1844 Hassler survey depicts the location of this portion of the project corridor within a large, wooded area located west of a large hill. The closest residential developments were located along Richmond Road to the west and within the historical community of Clifton/Fort Tompkins along Fingerboard Road to the east and south. The 1850 Sidney and 1853 Butler maps continue to depict this wooded area, the owners of which are identified as J.W. Osgood in 1850 and G.P. Osgood in 1853.

The 1859 and 1860 Walling and 1866 Colton maps continue to depict this portion of the project corridor as a large, undeveloped area. These maps also reflect the initial development of the community known as “Concord” to the west of the SIR tracks. As seen on these maps, a street grid included Mosel Avenue and a portion of Steuben Street was initially planned and/or built as part of the development of that neighborhood. The 1874 and 1887 Beers maps depict the location of project corridor within large, irregularly shaped and undeveloped parcels owned by a variety of individuals.

The 1907 Robinson atlas continues to depict this portion of the project corridor as undeveloped, though adjacent areas appear to have been subdivided for residential development. The intersection of Rockwell Avenue and Virginia Avenue (then known as Pennsylvania Avenue) was built by this time to the west of the project corridor. Two wood frame houses were built on the development by that time, both west of the project corridor on the south side of Rockwell Avenue and east of what is now Virginia Avenue. These houses appear to be extant on the properties known as 10 and 12 Rockwell Avenue. The lines of Clifton Street, Pennsylvania Avenue, and Maryland Avenue were mapped but not developed across a portion of

the project corridor near what is now the intersection of Clifton Avenue and Colton Street; however, the alignment of this portion of modern Clifton Avenue is different than what was originally proposed.

The 1907–1911 topographical survey depicts a small house near the northeast corner of Mosel Avenue and Steuben Street but depicts a property line indicating that the project corridor was situated in an unrelated parcel. The survey shows the houses at 10 and 12 Rockwell Avenue but does not depict either Rockwell Avenue or Virginia Avenue. The houses were situated between 25 and 50 feet north/northwest of the project corridor as shown on the survey. The project corridor passed through a hill to the rear of the houses that sloped down to a pond located to the southeast. The slope of the hill in the vicinity of the project corridor was greater than 20 percent. The remainder of this portion of the project corridor is shown on the survey as undeveloped and steeply sloping land. The 1917 Bromley atlas reflects increased residential development in the Concord area, but continues to depict the project corridor east of the SIR tracks as a largely vacant area with swamps and ponds. The area is not mapped on the 1917 Sanborn map. The 1937 and 1950 Sanborn maps reflect proposed subdivisions and streets through the area, but indicates that none were developed at that time.

### **C. CEMETERIES IN THE VICINITY OF THE PROJECT CORRIDOR**

Prior to the 19th century, many families with large estates in rural areas like Staten Island maintained family cemeteries on their land (Meade 2020). If individuals were not interred on their own property, they were often buried in small church or town/community cemeteries (ibid). Four historic period cemeteries have been documented adjacent to the project corridor (ibid).

The first is the Merrell (also spelled Merrill) Family Cemetery, a preserved burial place located on Block 1580, Lot 40 on the northern side of Merrill Avenue between Hillman and Richmond Avenues. The cemetery is believed to have been established by the late 17th century and was in use through at least the 1990s (Davis 1889; Salmon 2006; Meade 2020). The buildings to the east of the cemetery were constructed in 1997, at which time the developer completed a cleanup of the burial ground and constructed a retaining wall and fence along its eastern side and the remainder of the cemetery was enclosed with a fence shortly after (Crane and Dickinson 1997). The cemetery's current boundaries are consistent with the mapped boundaries as shown on the 1907–1911 topographical survey; however, the 1874 Beers atlas depicts a smaller cemetery boundary fronting only on what is now Jardine Avenue and not extending as far south as Merrill Avenue, which was built by that time. The 1898 and 1907 Robinson maps depict the southern boundary of the cemetery at Merrill Avenue. It therefore appears that the cemetery likely did not extend south into the roadbed of Merrill Avenue and therefore did not enter the project corridor.

What is now the line of Holden Boulevard between Gansevoort Boulevard and Manor Road was formerly part of the larger campus of the New York Nursery and Child's Hospital, a private charitable institution and medical facility. The cemetery was in use on the block situated north of Holden Boulevard between Mountain View Avenue and Melba Street between circa 1870 and 1921 (Meade 2020). The cemetery boundary is clearly depicted on the 1907–1911 topographical survey, which indicates that it was approximately 150 feet north of the line of Holden Boulevard/the project corridor. There is no indication that the cemetery extended further to the south during its use.

A large communal colonial cemetery is reported to have been located in the vicinity of the landform known as Todt Hill that was used for burials in the 17th century (Inskeep 2000; Salmon 2006). The exact location of the burial place is unknown, as are details about the time period in which it was in active use or the number of burials that occurred there. However, despite the ambiguity, the burial place is suspected to have been located southeast of the project corridor in the vicinity of what is now Deere Park southeast of the intersection of Todt Hill Road and Tillman Street (Meade 2020).

The final historical burial place located in close proximity to the project corridor is the Clove Meeting House/Old Clove Baptist Church Cemetery—also known as the South Clove Road Cemetery—located on Block 832, Lot 100 on the south side of Clove Road west of its intersection with Richmond Road. The cemetery was in use between 1809 and 1868 and is currently owned and maintained by New York City Parks (Salmon 2006; Meade 2020). The cemetery’s boundaries since the early 20th century and the 1907–1911 topographical survey depicts the burial place in the same location as the modern tax lot. The adjacent Staten Island Expressway was constructed next to the cemetery in the 1960s, and it has been reported that while “the cemetery didn’t survive unscathed...it remained on the map” (Carse 2008). The line of Clove Road as shown on the 1907–1911 map is similar to that seen in the present day south of the Expressway. The cemetery adjacent to the road is at a much higher elevation than the road, which was graded down during the construction of the adjacent thoroughfare. The cemetery’s southern border is lined with a retaining wall. Historical images of the cemetery taken in the late 1920s in the collection of the New York Public Library<sup>1</sup> appear to depict a similar, if less extreme, slope downward between the cemetery and the adjacent road. The cemetery therefore appears to have been consistently situated south of and uphill from the line of Clove Road. It is therefore not expected that graves would have been situated within the road to the north.

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<sup>1</sup> <https://digitalcollections.nypl.org/items/510d47dd-955f-a3d9-e040-e00a18064a99>

## A. CONCLUSIONS

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

### PREVIOUS DISTURBANCE

The topography of the project corridor has been significantly altered through grading or filling, predominately associated with the construction of historical and modern roads and the existing Goethals and Fox Hills Substations. As described in **Chapter 5, “Assessment of Disturbance and Landscape Modification,”** a detailed comparison of current and historical topography suggests that the construction of the existing roads resulted in extensive disturbance across the entire corridor. In many locations, the ground surface of existing roads is within 1 to 2 feet of the historical ground surface or well below the historical elevations. In certain areas, the ground surface is higher in elevation. These changes appear to relate to efforts made to eliminate steep slopes to create navigable roads for modern automobiles and are therefore related to larger-scale landscape modification efforts that would have resulted in disturbance. Therefore, it does not appear that a layer of fill thick enough to potentially have projected the historical ground surface was deposited across the project corridor in a manner that would have prevented disturbance. Certain areas where wetlands, ponds, streams, and other bodies of water were filled would be expected to have deeper fill levels. However, the depths of project-related impacts (6 to 10 feet across most of the project corridor) are not expected to extend below the depths of these deeper fill levels.

### PRECONTACT SENSITIVITY ASSESSMENT

As described in **Chapter 4, “Precontact Period Archaeological Resources,”** the precontact sensitivity of project sites in New York City is generally evaluated by a site’s proximity to level slopes (less than 12 to 15 percent), watercourses, well-drained soils, and previously identified precontact archaeological sites (NYAC 1994). The project site is located in close proximity to both fresh water and marine resources and in an area with varying topography, including level high ground. Previous archaeological investigations by professionals and amateurs have confirmed that there was an extensive Indigenous presence across northern Staten Island throughout all phases of human occupation prior to European colonization. Level areas within the project corridor near sources of fresh water and saltwater resources would therefore have been extremely likely to have been the site of long- or short-term occupation, resource exploitation, or tool manufacture by Indigenous populations. Those locations within the project corridor that prior to urban development and road construction featured slopes greater than 10 percent would be expected to have been less desirable settings for human activity.

However, precontact period archaeological sites are typically found at shallow depths within 5 feet of the historical ground surface. Given the extensive landscape modification that occurred as a result of the construction and maintenance of historical and modern roads, utility installation, and other modern disturbances as documented previously, it is not likely that precontact archaeological sites survived within



the project corridor. While it is possible that in areas of filled wetlands, precontact ground surfaces could have been preserved at great depths below the fill layer, the impacts of the proposed project are not expected to result in large-scale impacts below the depth of any fill. Therefore, the project corridor is determined to have low sensitivity for precontact archaeological resources.

### **HISTORIC SENSITIVITY ASSESSMENT**

Much of the project corridor was constructed along some of the oldest roads in Staten Island, including those that were initially built along Indigenous roads or colonial thoroughfares. In many places, the roads predated any historical developments along the project corridor, indicating that structures were not located within the majority of the roads themselves. The extent of landscape modification and disturbance that occurred as a result of the construction of the modern roads and associated utilities is expected to have resulted in the disturbance of older road surfaces and associated surficial deposits. No map-documented structures built before the 20th century were identified within the project corridor in those locations that were not developed as roads before the publication of the 1907–1911 topographical survey. The project corridor appears to have been sufficiently distant from any map-documented residential buildings that were built before the 20th century and could have been associated with deeply buried domestic shaft features (e.g., privies, cisterns, and wells) that could have survived the extensive disturbance associated with the later development of the modern roads. While four cemeteries have been documented adjacent to or in close proximity to the project corridor, the boundaries of the cemeteries appear to be well-documented and the burial places to not appear to have extended into the streetbeds through which the project corridor would run. The project corridor is therefore determined to have low sensitivity for archaeological resources dating to the historic period.

### **B. RECOMMENDATIONS**

The project corridor is determined to have low sensitivity for archaeological resources dating to either the precontact or historic periods. Therefore, no further archaeological analysis is recommended. The project corridor is in the vicinity of four historic period cemeteries. While it is not expected that the project corridor extends through any burial places, given the proximity of the corridor to these burial places, in the event that human remains are unexpectedly encountered during the construction of the proposed project, the “Unanticipated Discovery of Human Remains Protocol” previously developed by Con Edison would be implemented (see **Appendix A**). Con Edison has also previously prepared a “Unanticipated Discovery of Archaeological Features Protocol” (see **Appendix A**). These protocols outline the steps that would be followed in the event of the unanticipated discovery of human remains or other archaeological resources and identify the parties to be contacted in the event of such discoveries.

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**Con Edison Transmission Line: Goethals to Fox Hills Substations—Phase 1A Archaeological Documentary Study**

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## Figures





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1 inch equals 2,250 feet



- Proposed Feeder Alignment
- Existing Substations

**Notes:**  
1. The proposed project lies within the "Arthur Kill" and "The Narrows" NYSDOT 7.5 minute topoquads.

**Project Location Overview**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 1**      **JANUARY 2023**





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 1 inch equals 2,250 feet



- Existing Substations
- Proposed Feeder Alignment

**Project Location -  
 Aerial Overview**  
 -----  
 Consolidated Edison Company of NY Inc.  
 Goethals to Fox Hills 138kV  
 Underground Transmission Feeder  
 Staten Island, Richmond County, NY

**Figure 2**      **DECEMBER 2022**



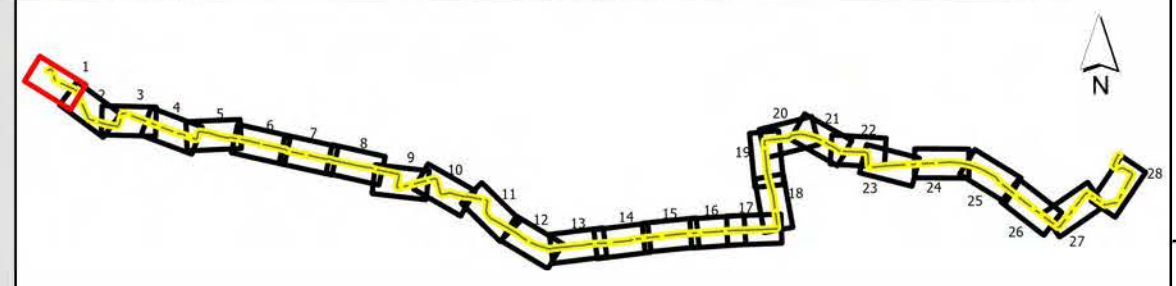
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- Proposed Manhole Siting
- Proposed Feeder Alignment
- Existing Substation



**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY




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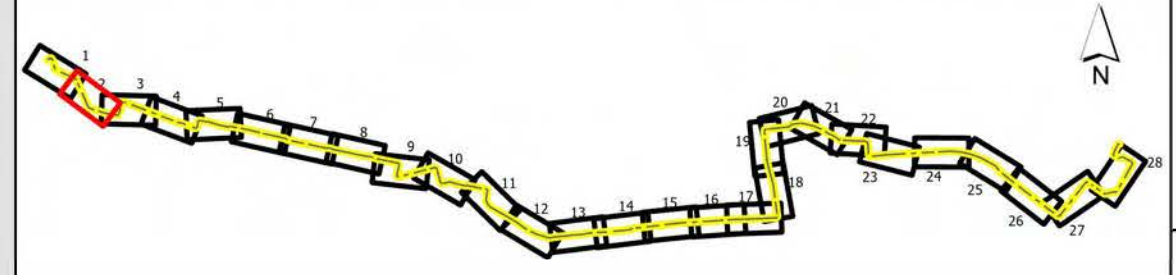


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1 inch equals 100 feet

-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



### Project Aerials

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

Figure 2-02


DECEMBER 2022



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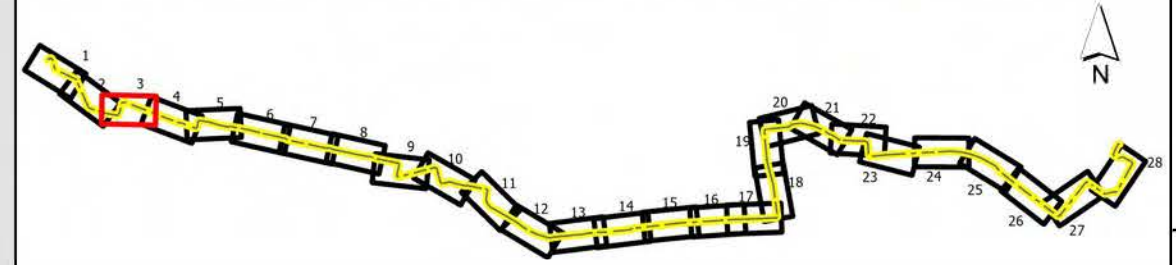
Saw Mill  
Creek Marsh



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Feet  
1 inch equals 100 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



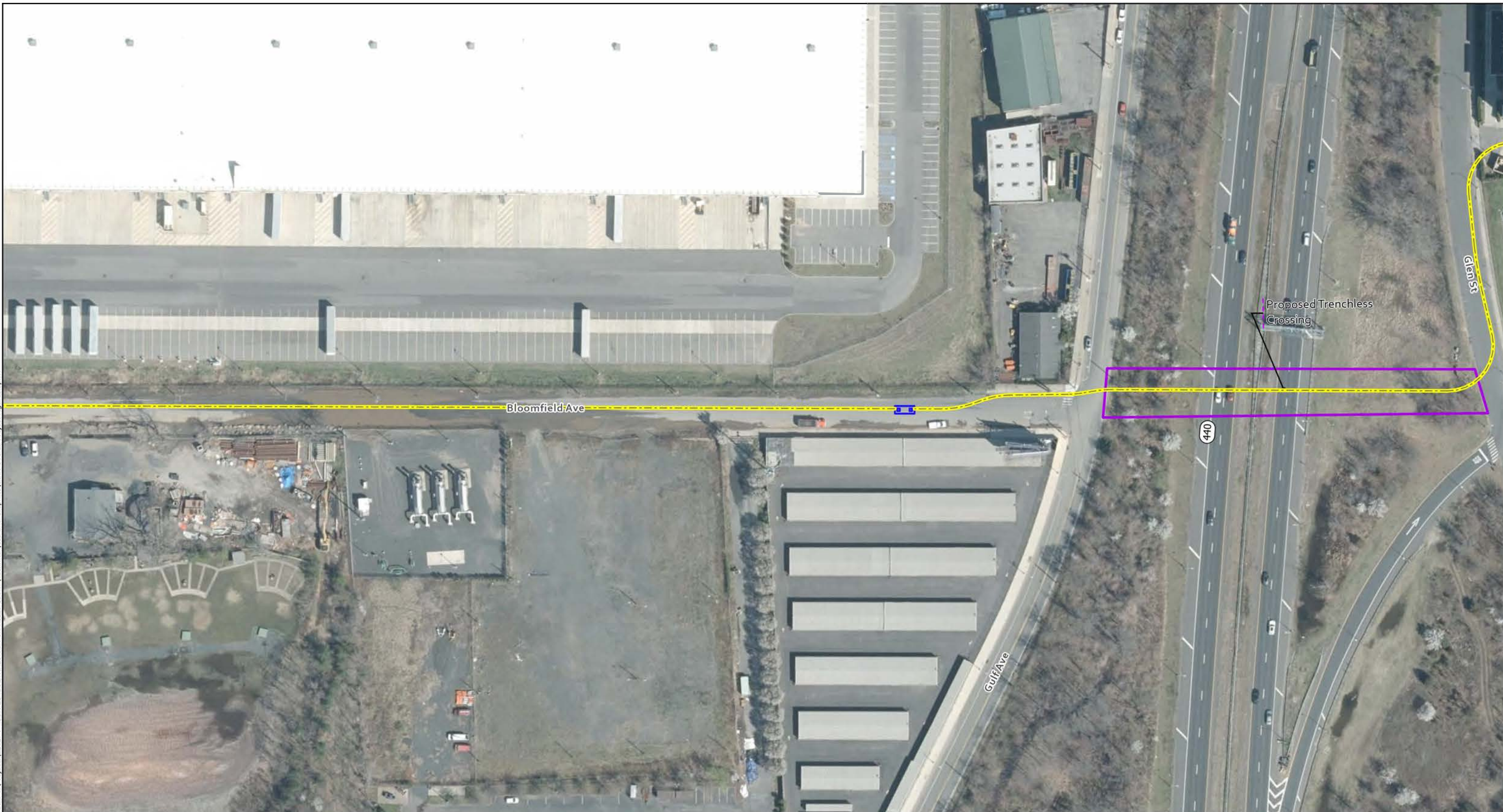
**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 2-03**      **DECEMBER 2022**






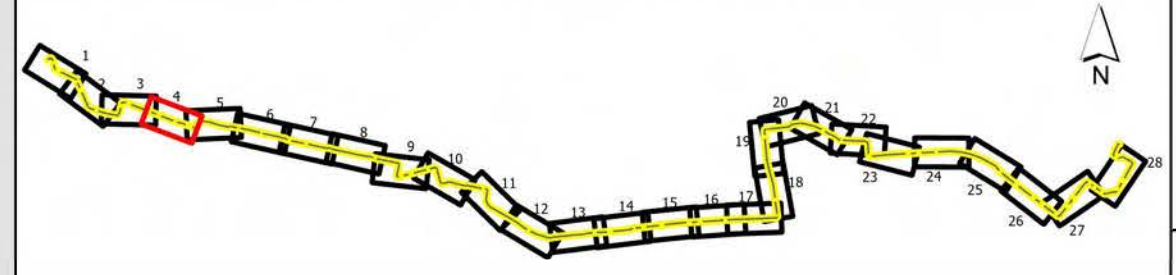
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Feet  
1 inch equals 100 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 2-04**      **DECEMBER 2022**



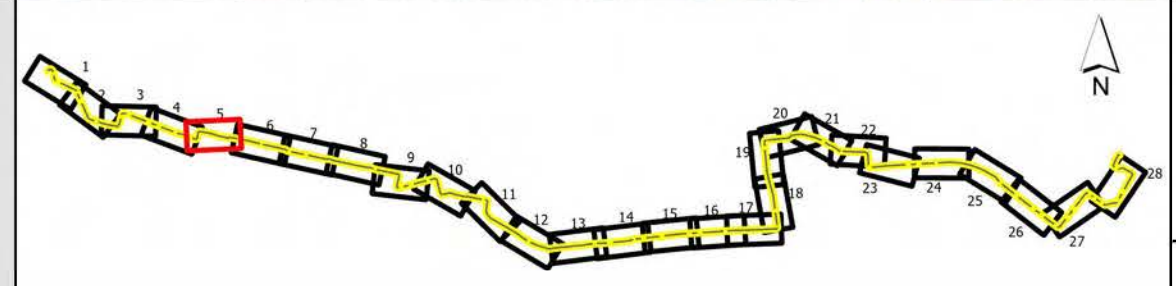


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- Proposed Manhole Siting
- Proposed Feeder Alignment
- Existing Substation




**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 2-05**      DECEMBER 2022






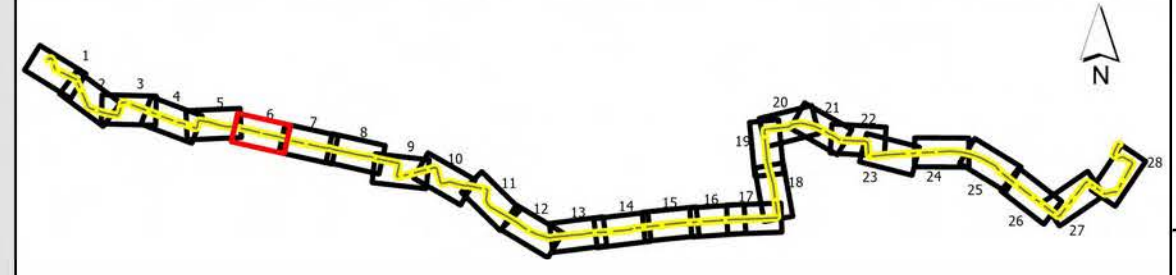
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-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



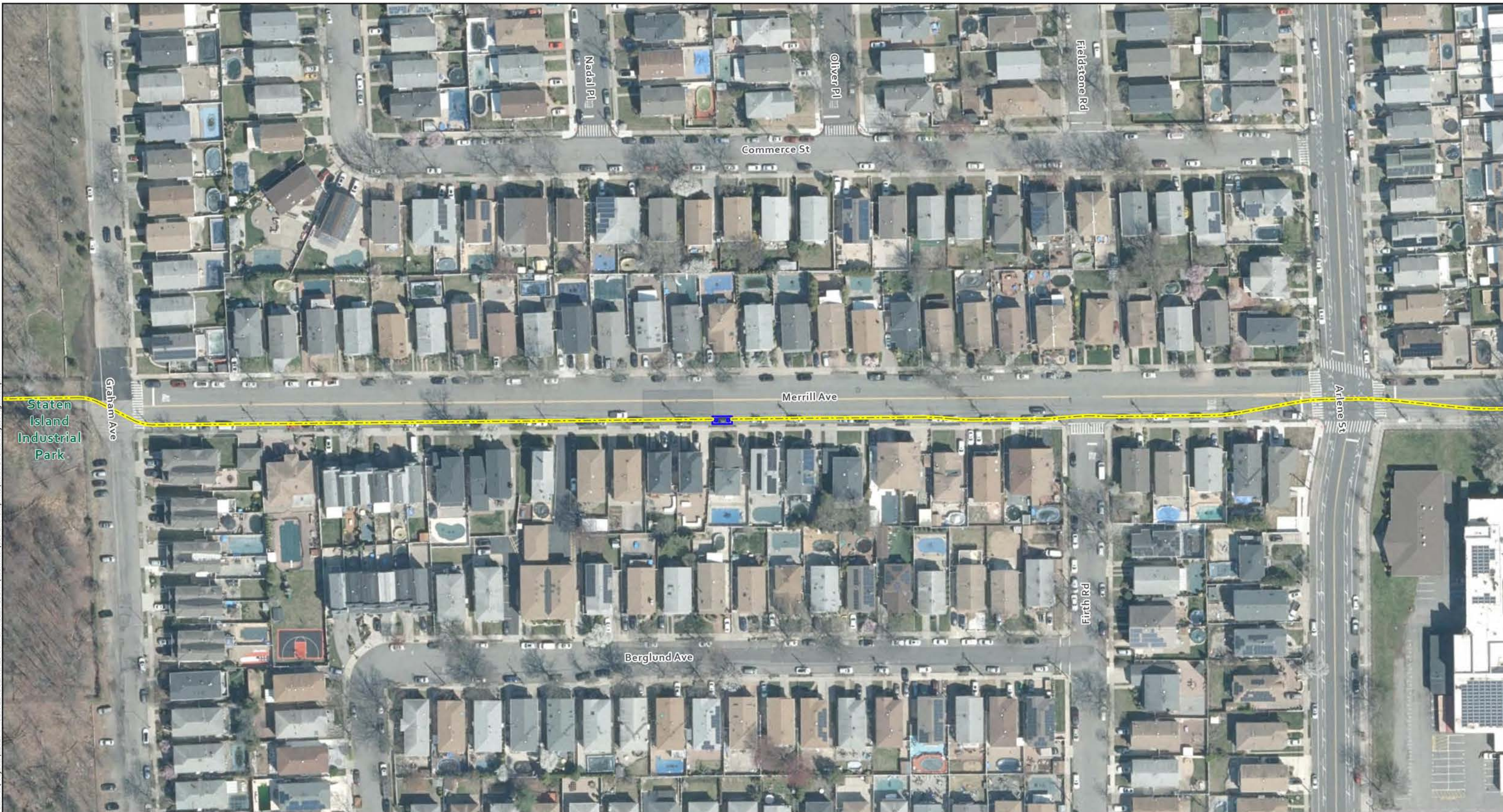
**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 2-06**      DECEMBER 2022






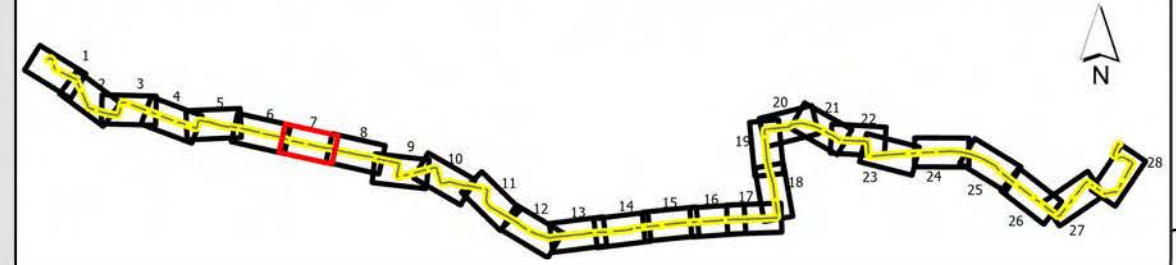
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-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



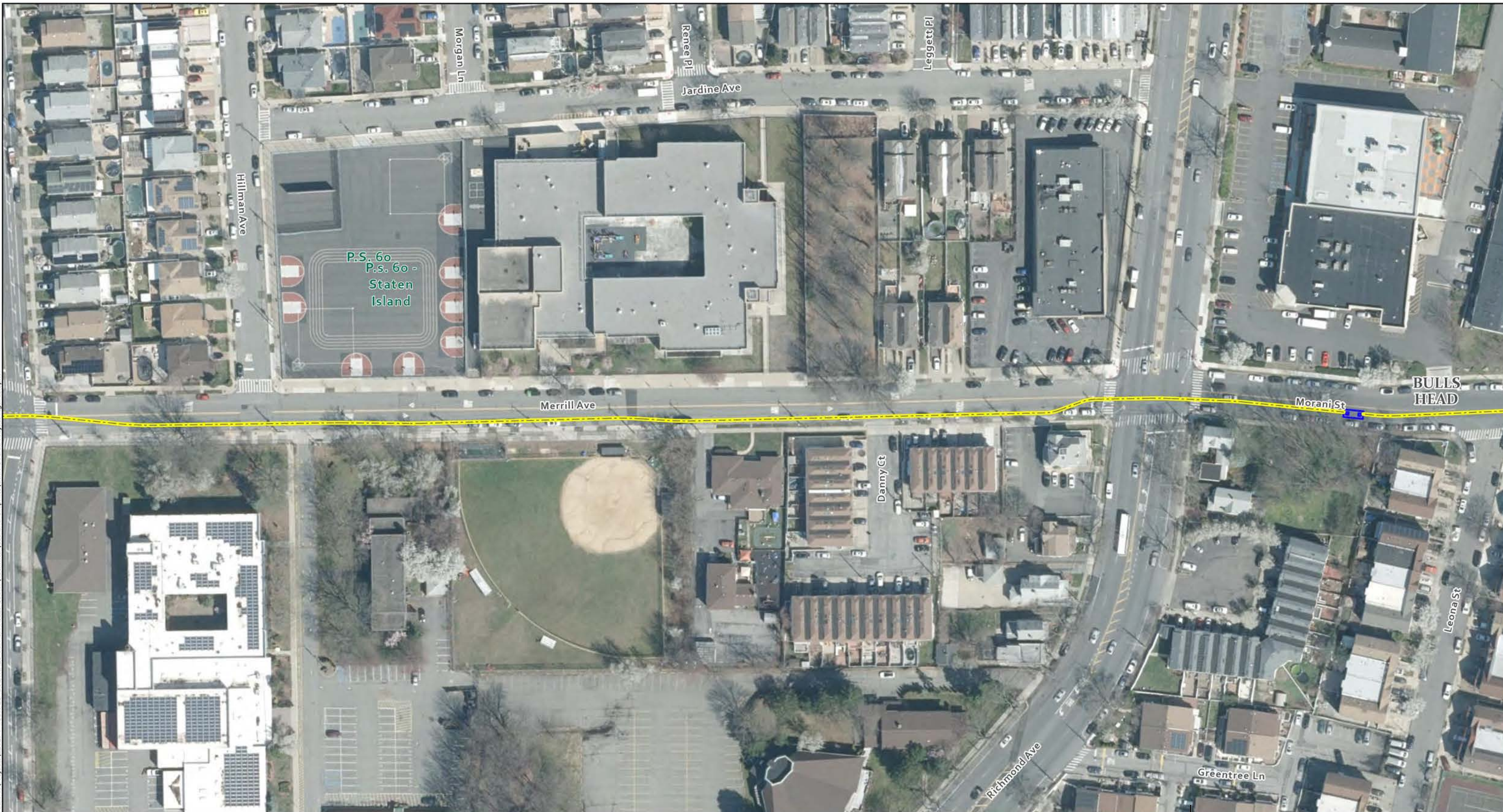
**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY




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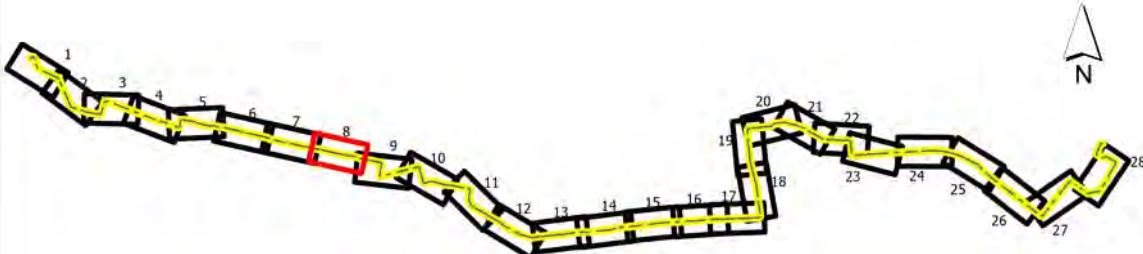


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Feet  
1 inch equals 100 feet

-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



### Project Aerials

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

Figure 2-08

DECEMBER 2022



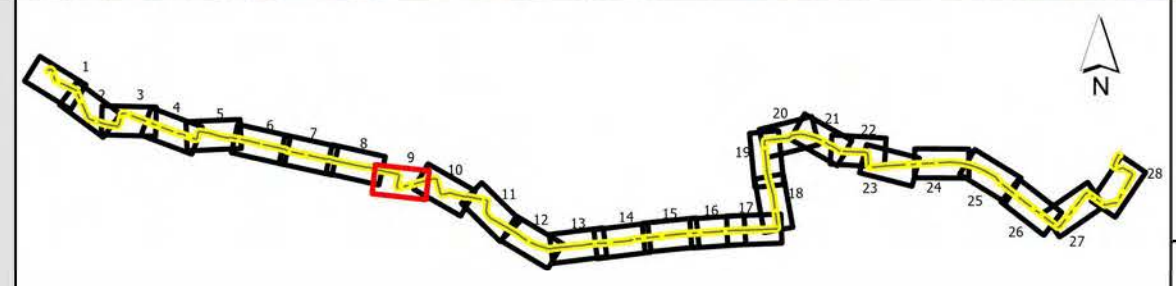


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- Proposed Manhole Siting
- Proposed Feeder Alignment
- Existing Substation



**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY




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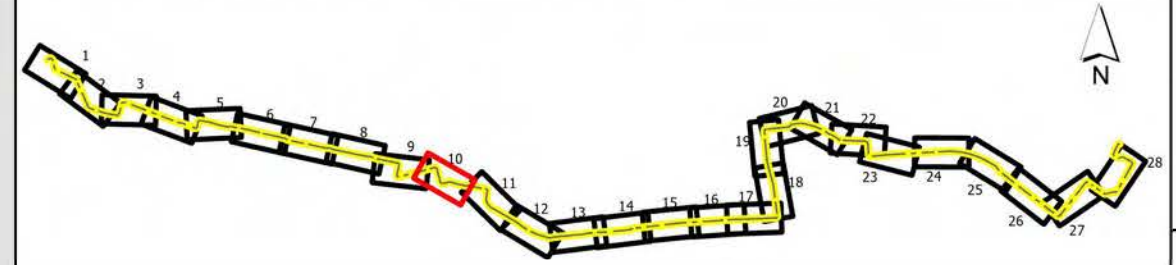


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1 inch equals 100 feet

-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



### Project Aerials

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

Figure 2-10

DECEMBER 2022

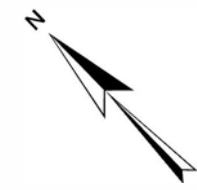




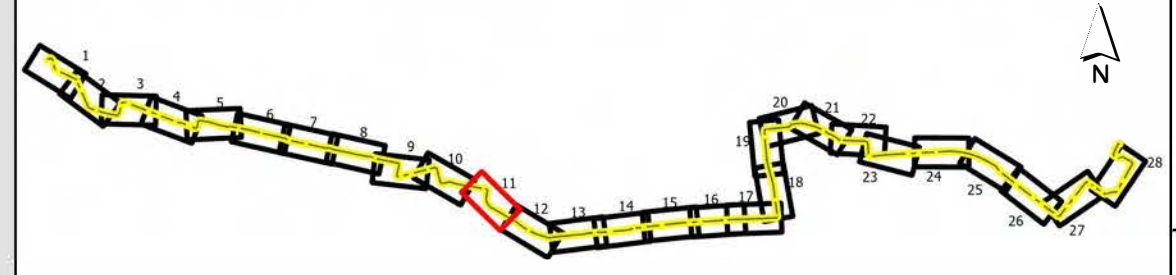
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Feet  
1 inch equals 100 feet



- Proposed Manhole Siting
- Proposed Feeder Alignment
- Existing Substation



### Project Aerials

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 2-11**

**DECEMBER 2022**

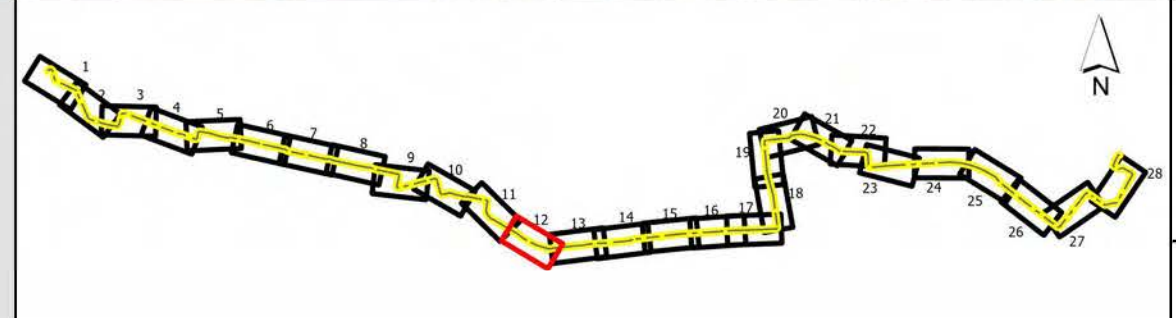




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- Proposed Manhole Siting
- Proposed Feeder Alignment
- Existing Substation



**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

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**Figure 2-12**      **DECEMBER 2022**

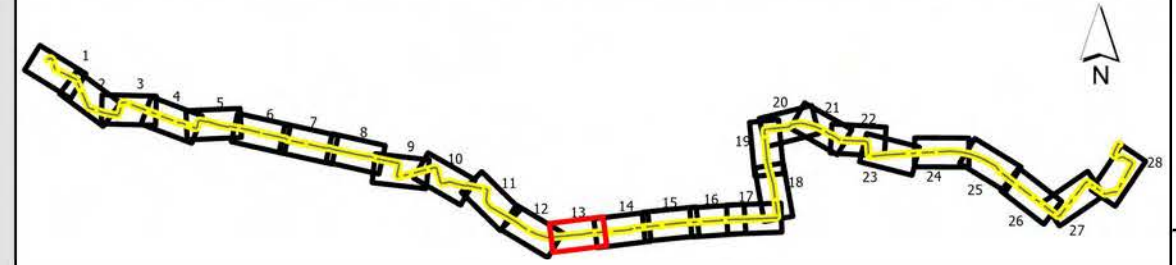


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Feet  
1 inch equals 100 feet

-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



### Project Aerials


Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

Figure 2-13

DECEMBER 2022






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Feet  
1 inch equals 100 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation




**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 2-14**      **DECEMBER 2022**






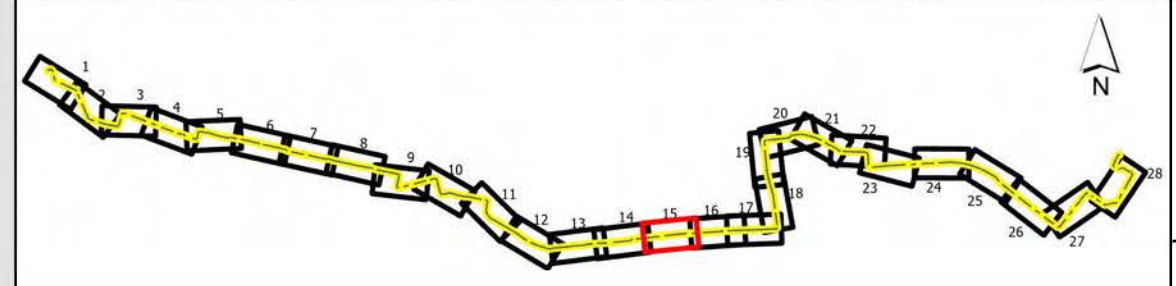
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-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



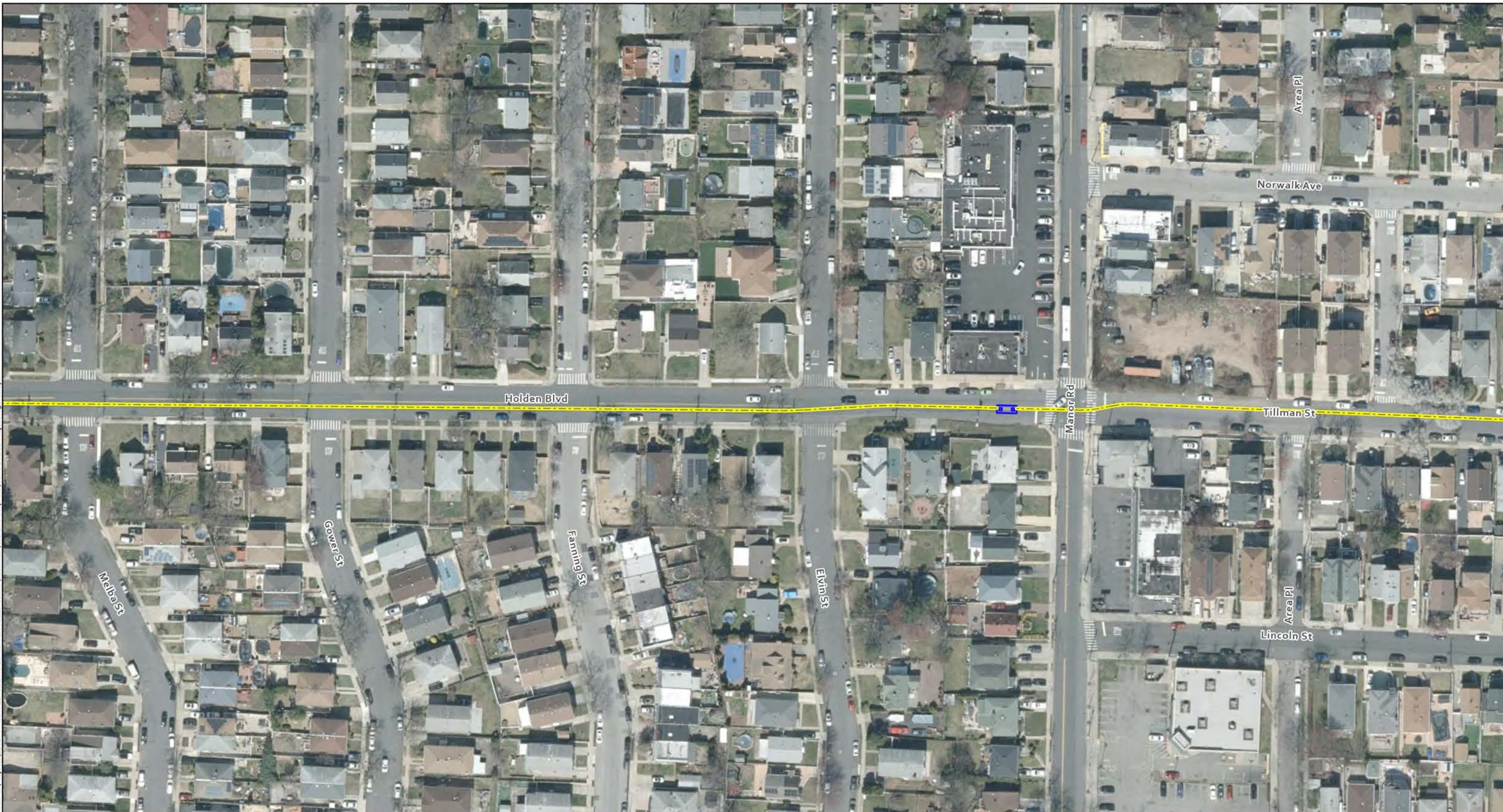
**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY




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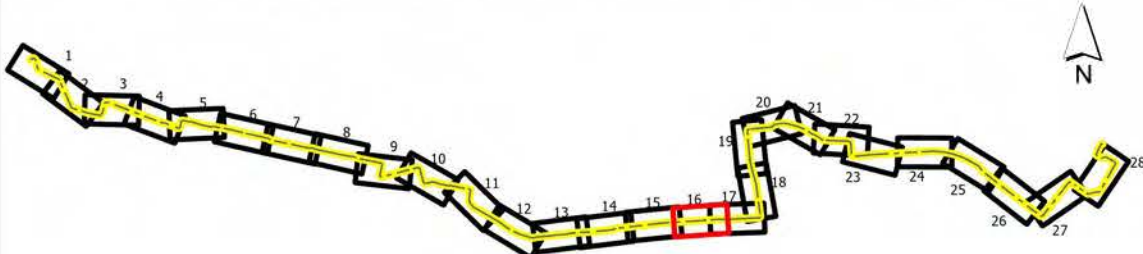


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-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



### Project Aerials

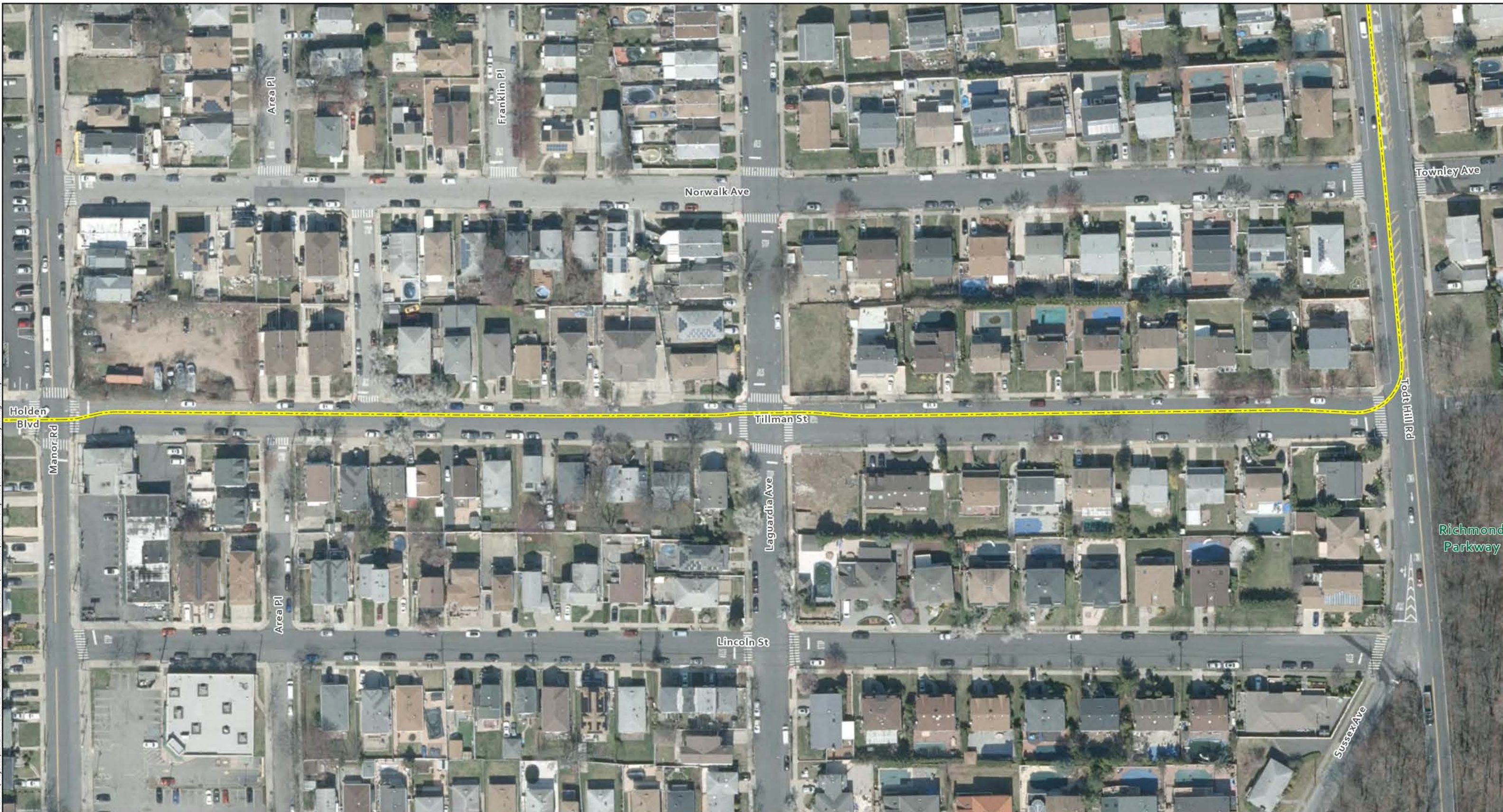

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

Figure 2-16

DECEMBER 2022






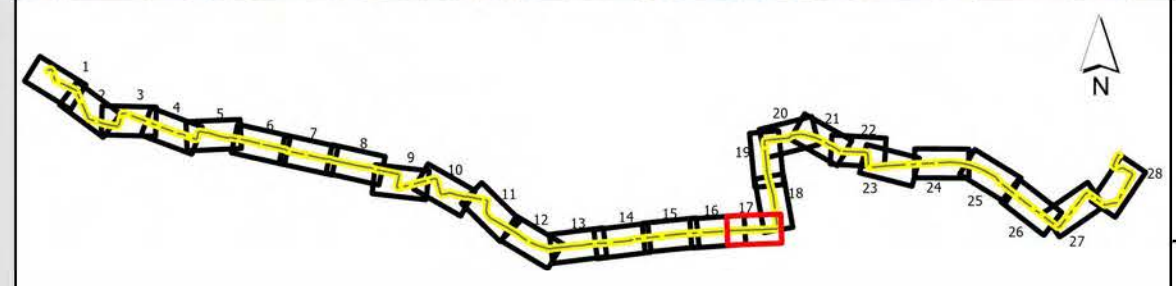
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0 50 100  
Feet  
1 inch equals 100 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 2-17**      **DECEMBER 2022**






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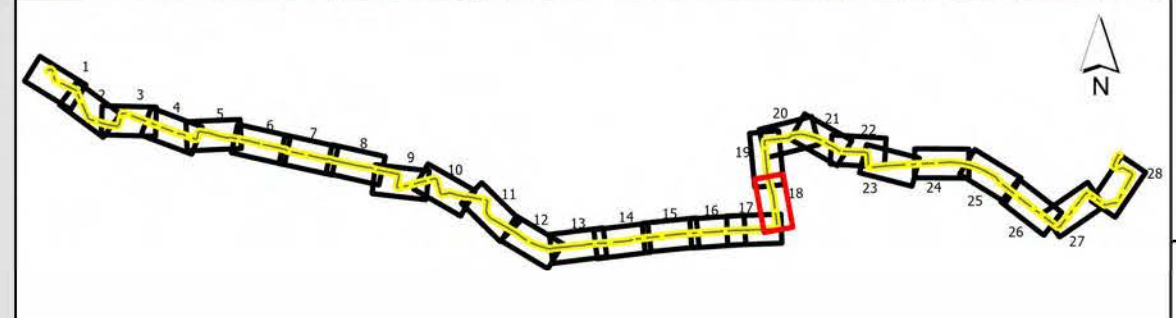


**AKRF**

0 50 100 Feet  
1 inch equals 100 feet

North arrow pointing up.

-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



**Project Aerials**

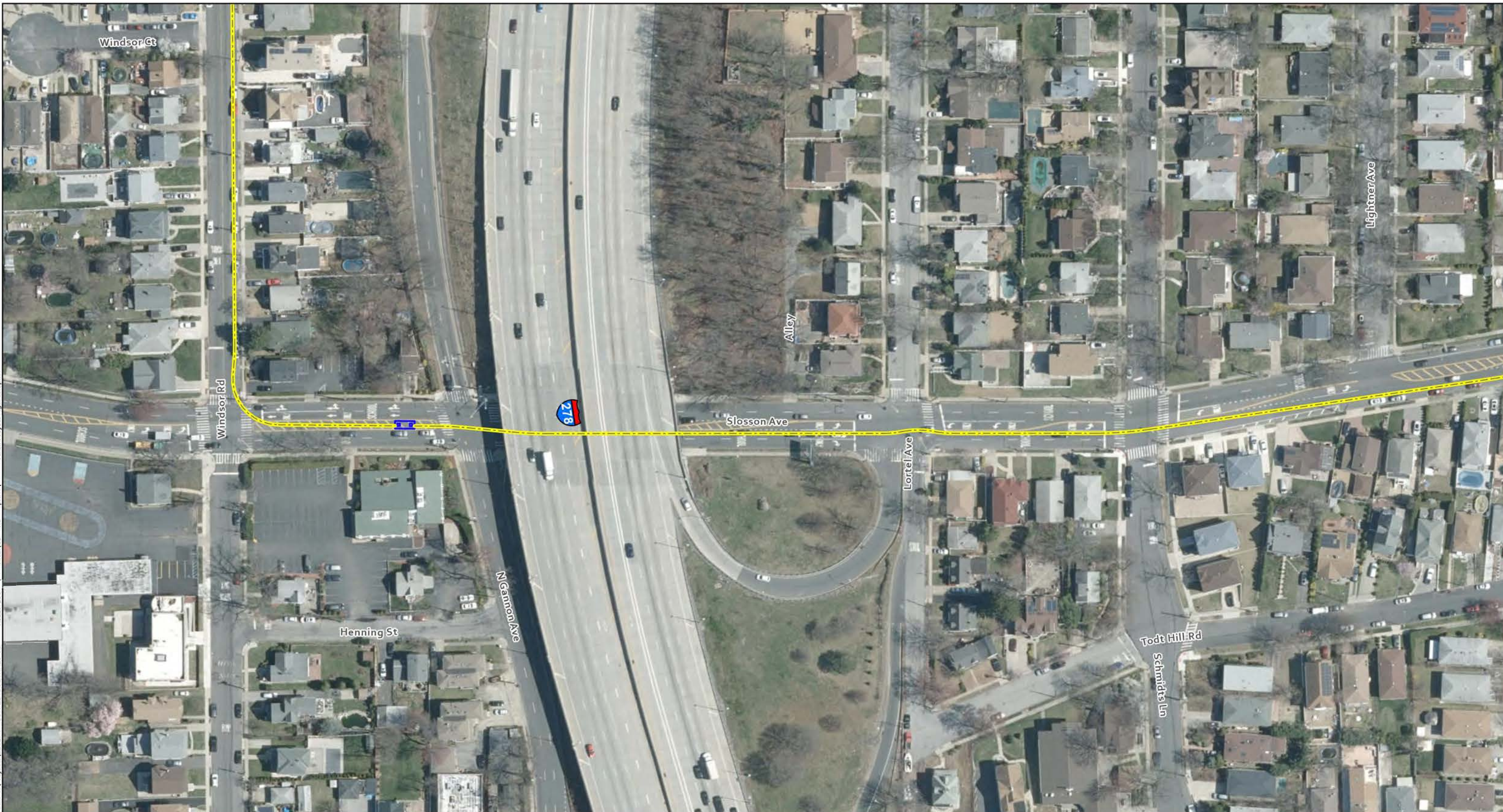

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

---


**Figure 2-18**      **DECEMBER 2022**






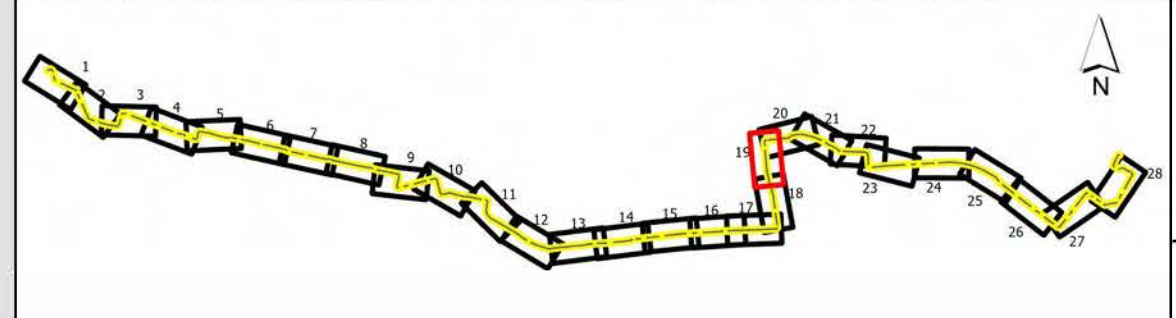
Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH Overall Project Figures.aprx

0 50 100 Feet  
1 inch equals 100 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

---

**Figure 2-19**      DECEMBER 2022



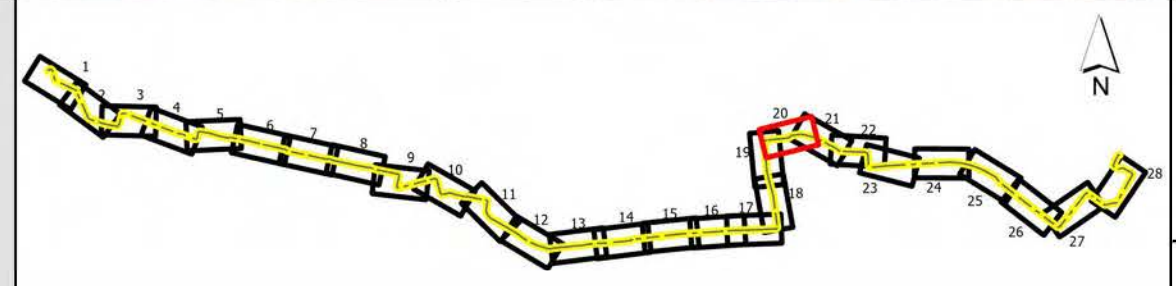


Path: V:\Projects\22074 - CON ED GOETHALS TO FOX HILLS 138KV Technical\GIS and Graphics\GFH Overall Project Figures.aprx

0 50 100  
Feet  
1 inch equals 100 feet



- Proposed Manhole Siting
- Proposed Feeder Alignment
- Existing Substation



**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 2-20**      **DECEMBER 2022**






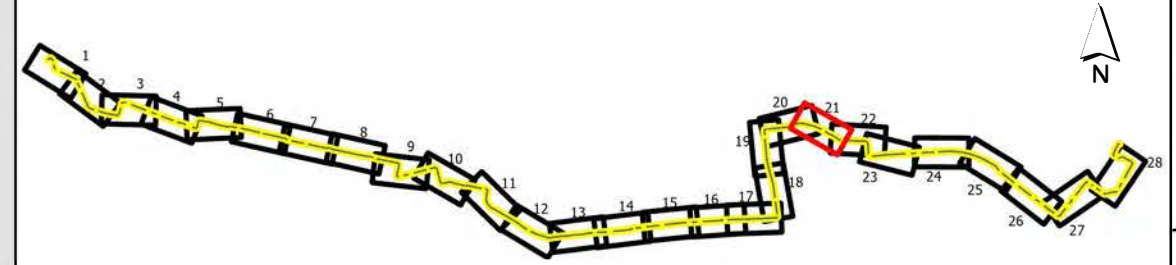


Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH Overall Project Figures.aprx



0 50 100  
Feet  
1 inch equals 100 feet

-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



**Project Aerials**

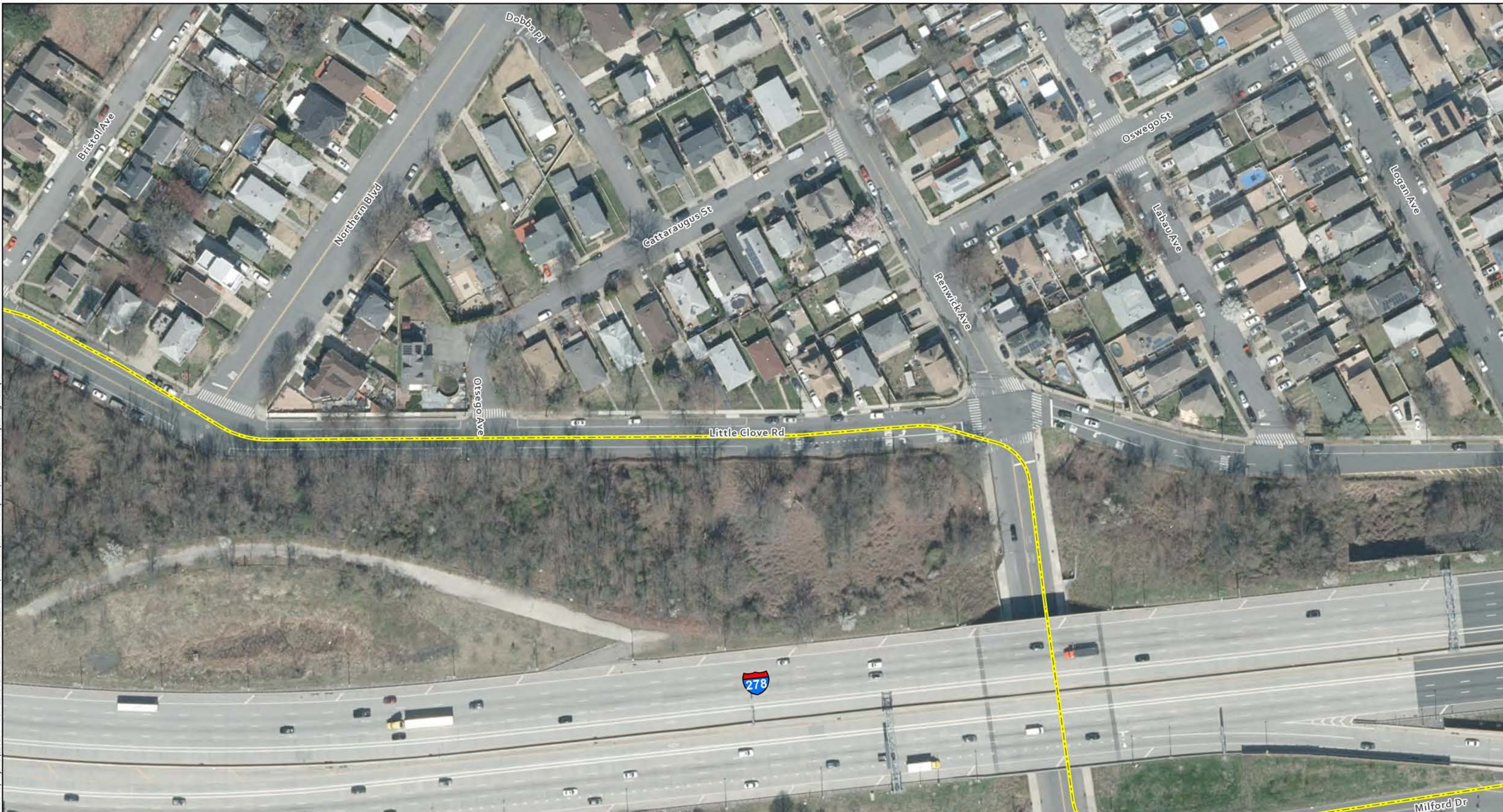
Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 2-21**

**DECEMBER 2022**






Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH Overall Project Figures.aprx

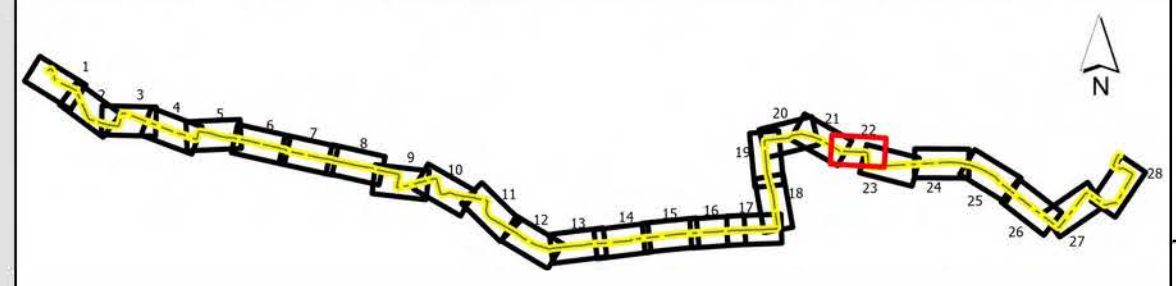


**AKRF**

0 50 100  
Feet  
1 inch equals 100 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 2-22**      DECEMBER 2022



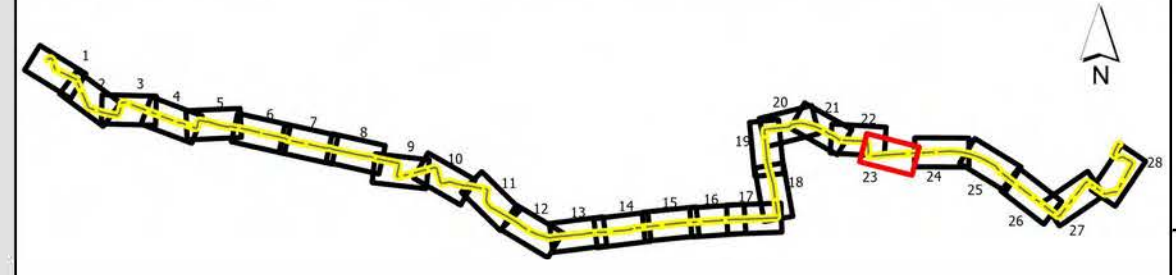


Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH Overall Project Figures.aprx

0 50 100 Feet  
1 inch equals 100 feet



- Proposed Manhole Siting
- Proposed Feeder Alignment
- Existing Substation

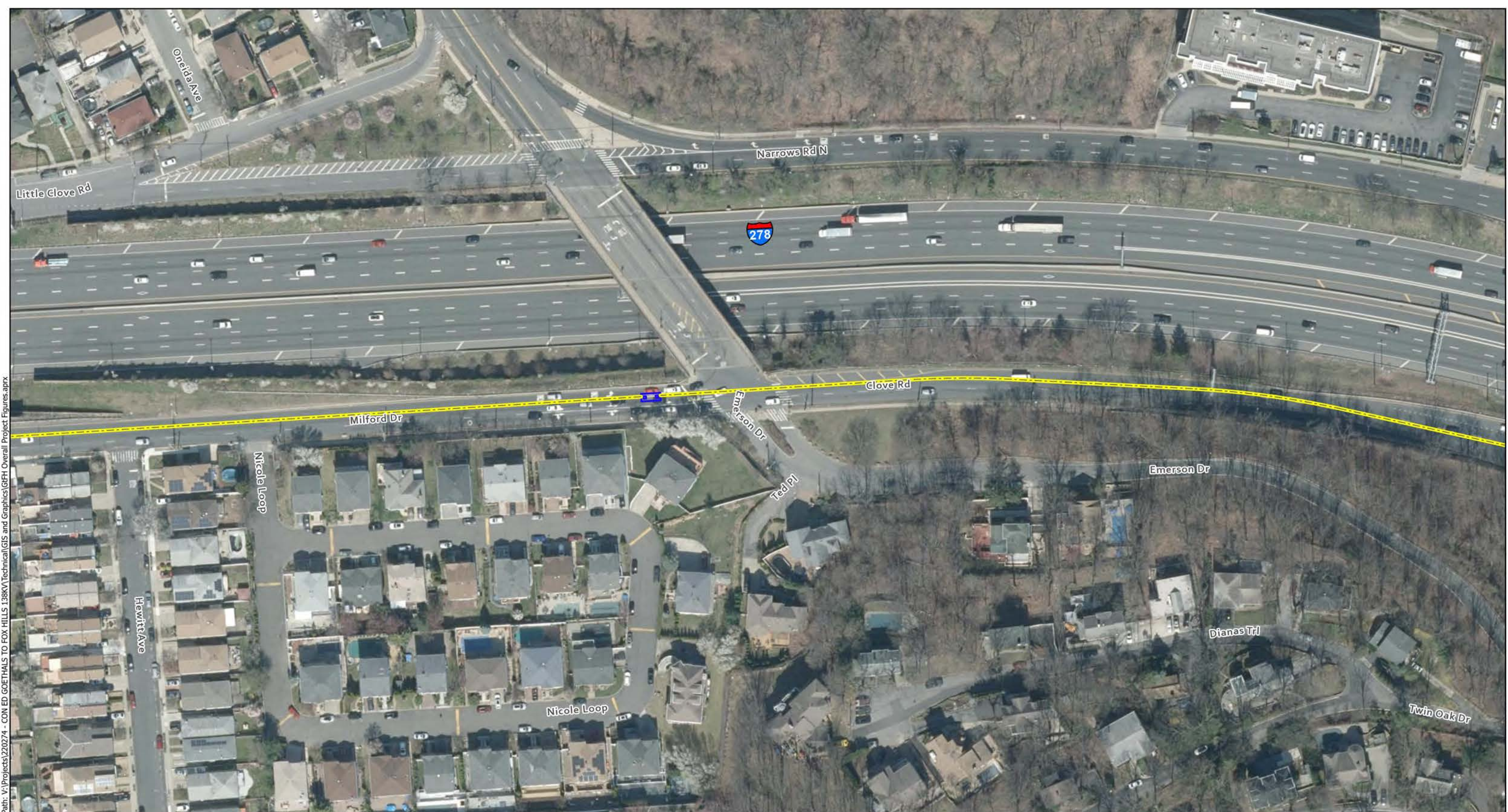


**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 2-23**      DECEMBER 2022



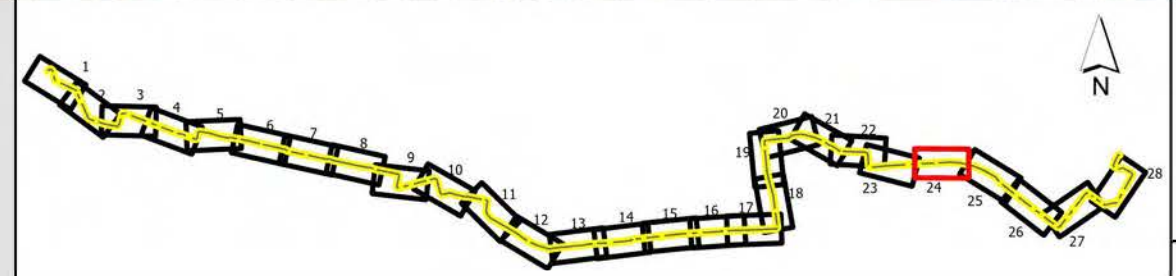


Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GIF\Overall Project Figures.aprx

0 50 100  
Feet  
1 inch equals 100 feet



- Proposed Manhole Siting
- Proposed Feeder Alignment
- Existing Substation

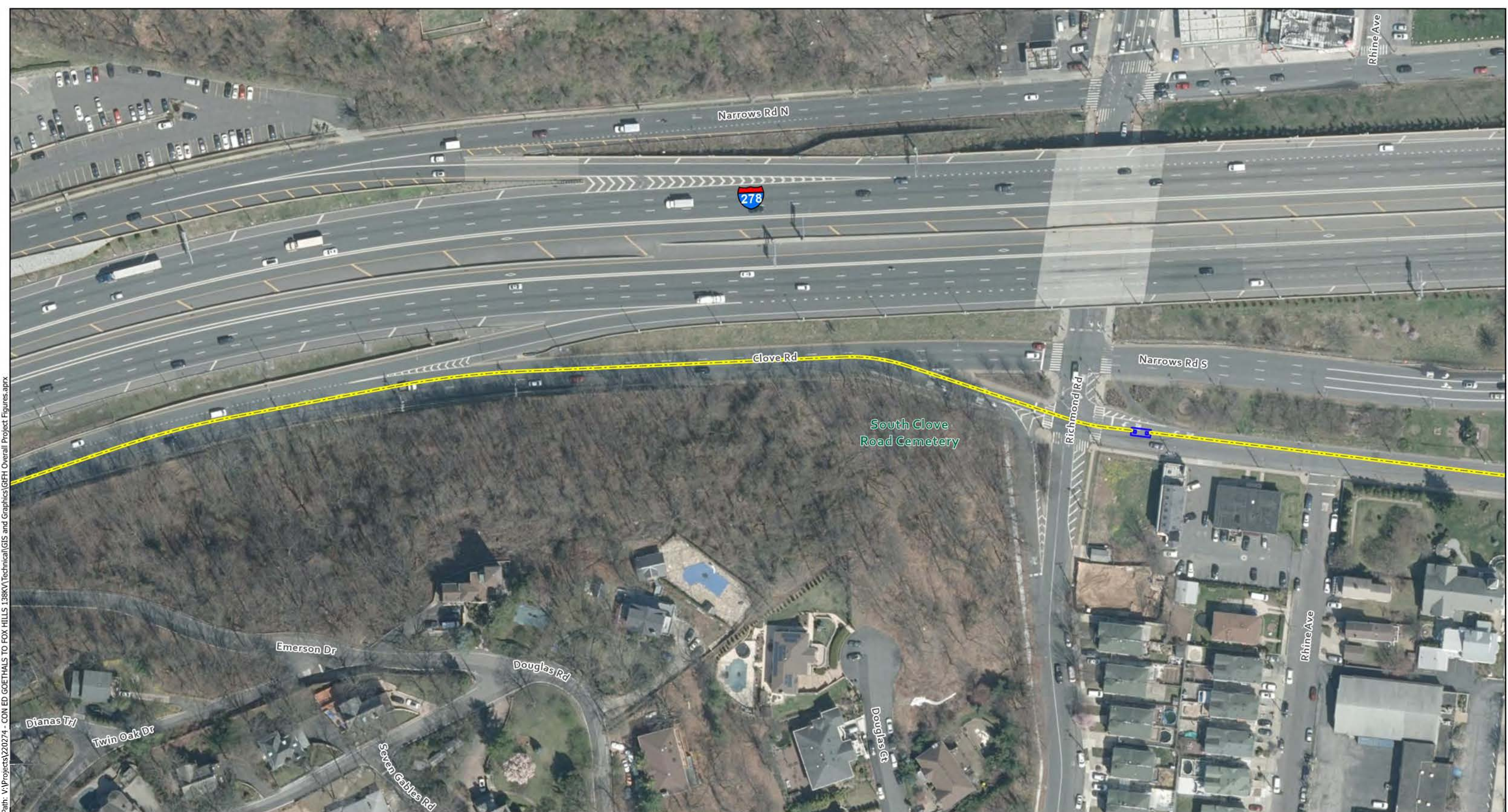


**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 2-24**      DECEMBER 2022



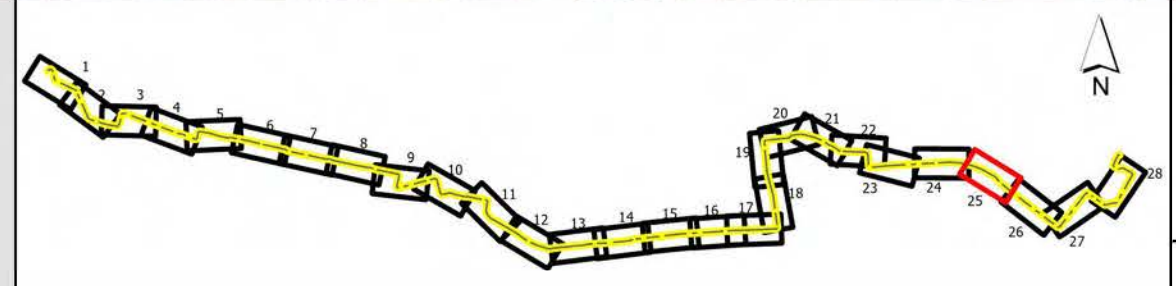


Path: V:\Projects\20274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH Overall Project Figures.aprx

0 50 100  
Feet  
1 inch equals 100 feet



- Proposed Manhole Siting
- Proposed Feeder Alignment
- Existing Substation



**Project Aerials**  
 Consolidated Edison Company of NY Inc.  
 Goethals to Fox Hills 138kV  
 Underground Transmission Feeder  
 Staten Island, Richmond County, NY

**Figure 2-25**      DECEMBER 2022



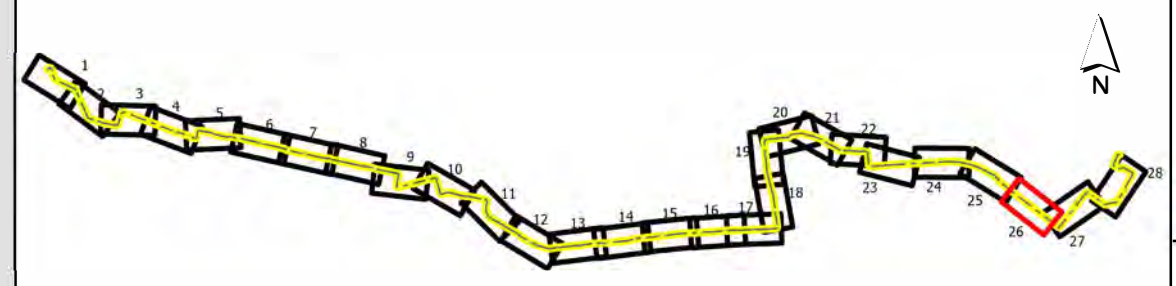


Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH Overall Project Figures.aprx

0 50 100  
Feet  
1 inch equals 100 feet



- Proposed Manhole Siting
- Proposed Feeder Alignment
- Existing Substation



**Project Aerials**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

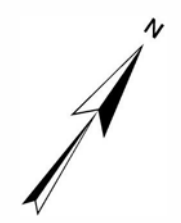
**Figure 2-26**      DECEMBER 2022






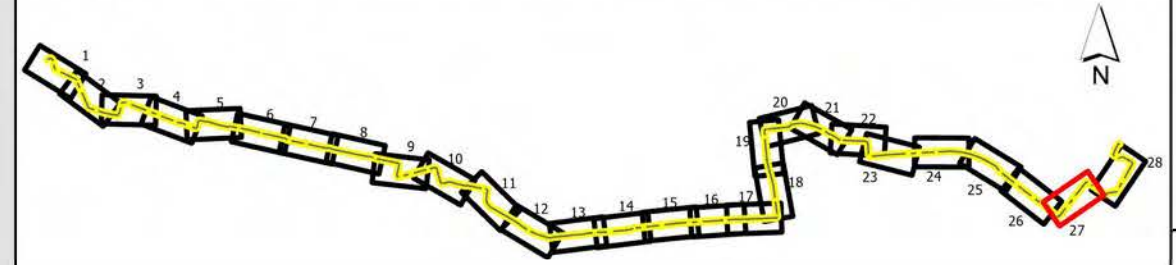


Path: V:\Projects\20274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFFH Overall Project Figures.aprx

0 50 100 Feet  
1 inch equals 100 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substation



**Project Aerials**  
 Consolidated Edison Company of NY Inc.  
 Goethals to Fox Hills 138kV  
 Underground Transmission Feeder  
 Staten Island, Richmond County, NY

**Figure 2-27**      **DECEMBER 2022**



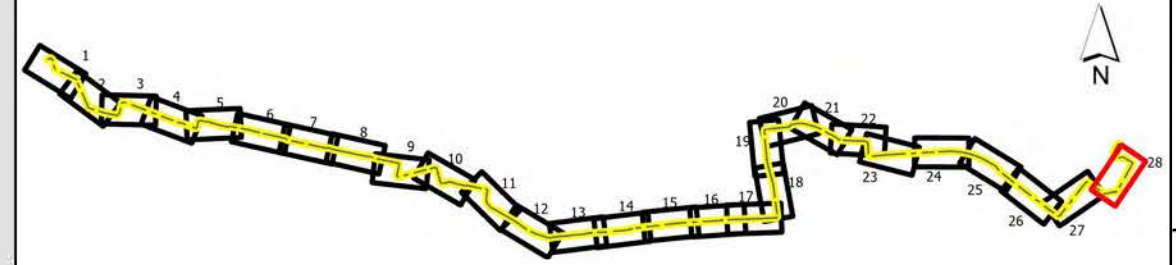
Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV Technical\GIS and Graphics\GFH Overall Project Figures.aprx



0 50 100 Feet  
1 inch equals 100 feet



- Proposed Manhole Siting
- Proposed Feeder Alignment
- Existing Substation

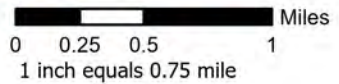


**Project Aerials**  
 Consolidated Edison Company of NY Inc.  
 Goethals to Fox Hills 138kV  
 Underground Transmission Feeder  
 Staten Island, Richmond County, NY

**Figure 2-28**      DECEMBER 2022



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- Existing Substations
- Proposed Feeder Alignment

### 1898 USGS Map

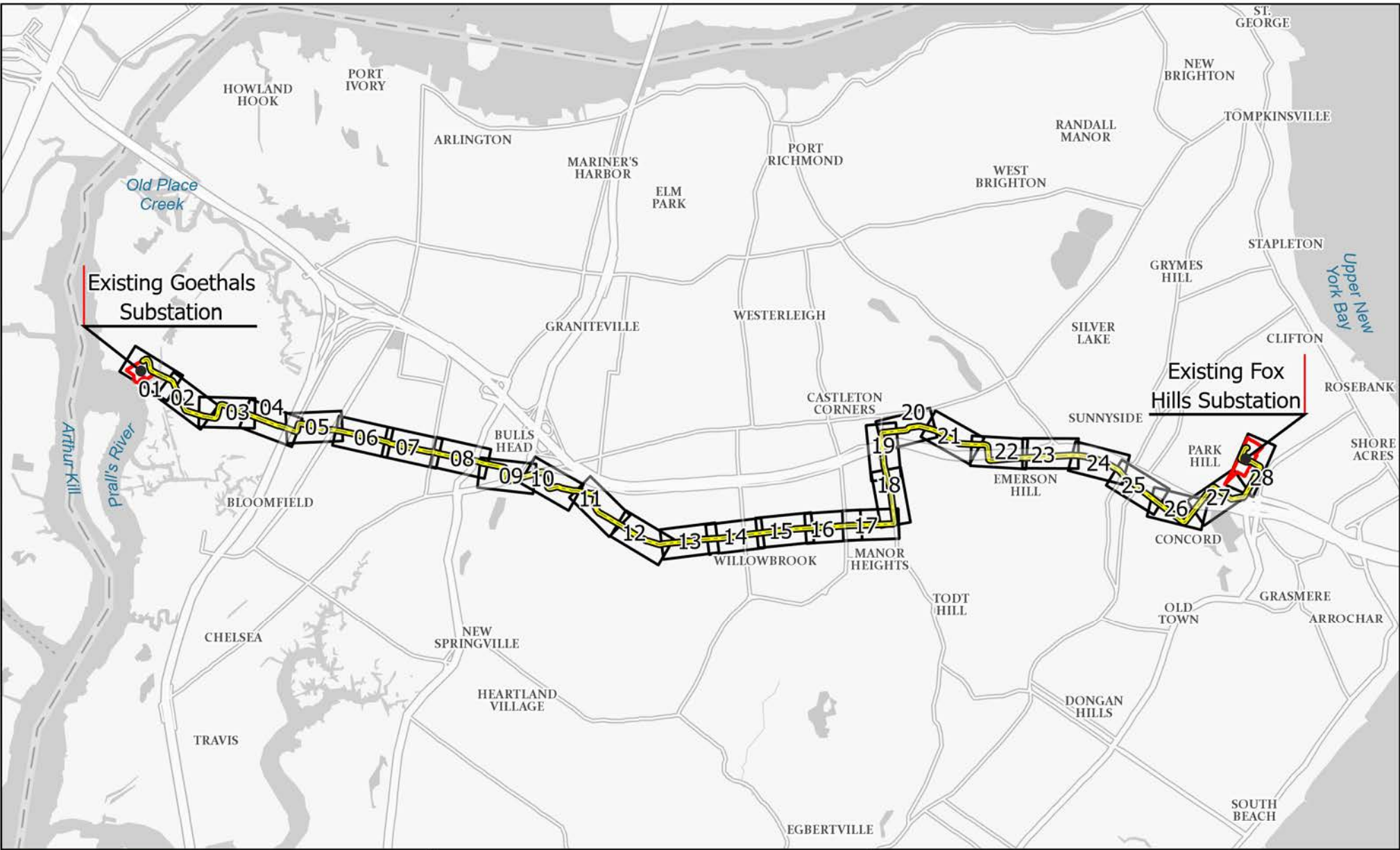
Consolidated Edison Company of NY Inc.  
 Goethals to Fox Hills 138kV  
 Underground Transmission Feeder  
 Staten Island, Richmond County, NY

**Figure 3**

**DECEMBER 2022**



Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



0 0.25 0.5 1 Miles  
1 inch equals 0.75 mile



- Existing Substations
- Proposed Feeder Alignment

**Overview Map Key -  
1907-1911 Topographical Survey**

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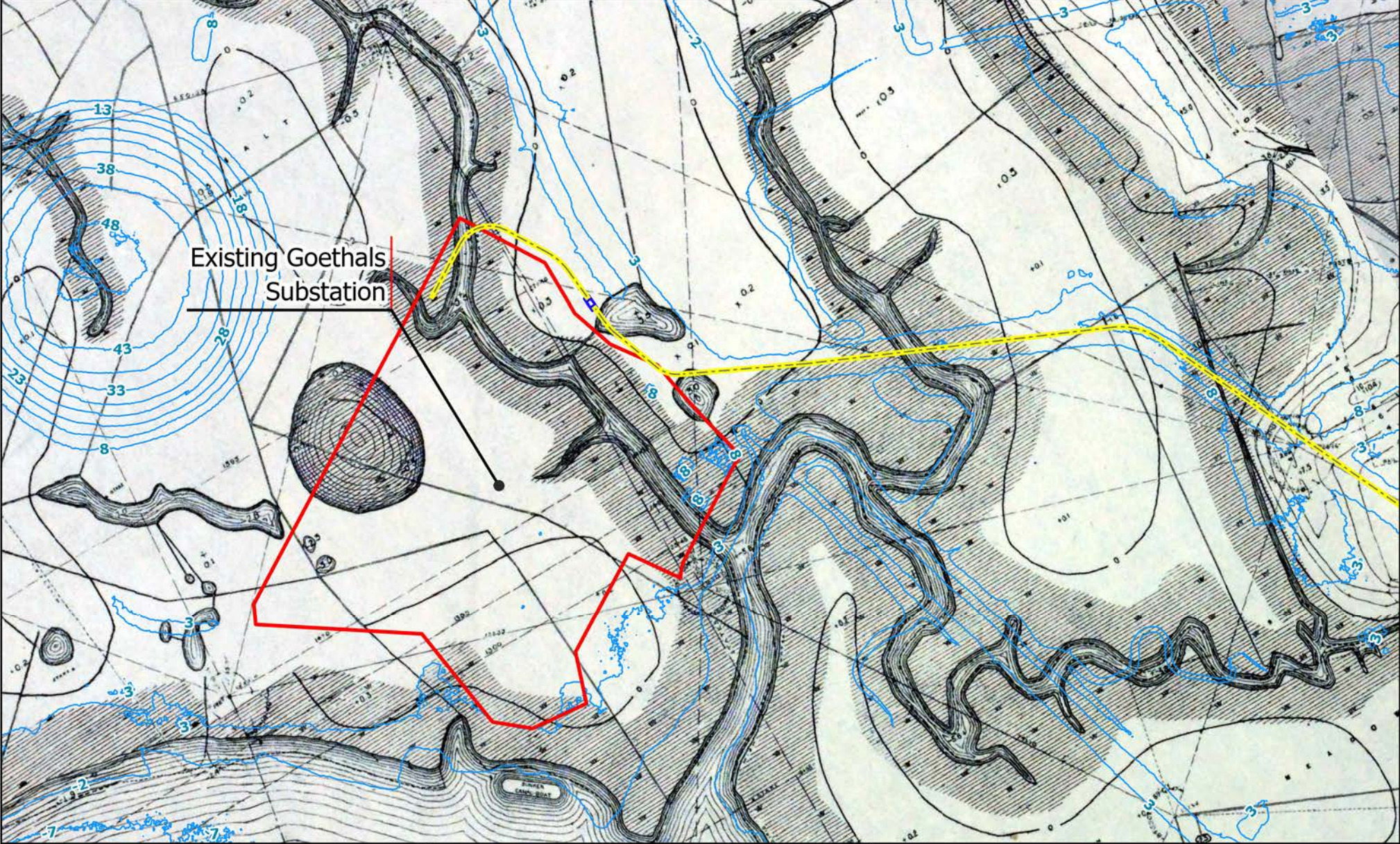
**Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY**

**Figure 4**

**DECEMBER 2022**







Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substations
-  Contours (5ft)

\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

Figure 4-01

DECEMBER 2022






Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

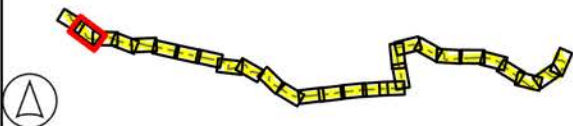
\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

Figure 4-02

DECEMBER 2022






Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

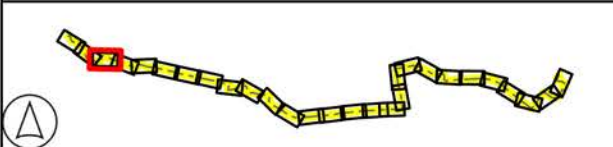
### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

Figure 4-03

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Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



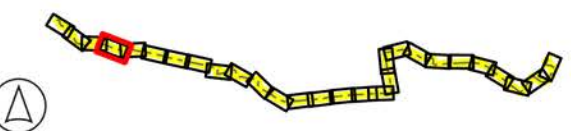
0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY




\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

Figure 4-04


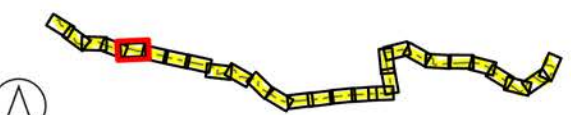
DECEMBER 2022






Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx

0 50 100 200 Feet  
1 inch equals 200 feet

-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

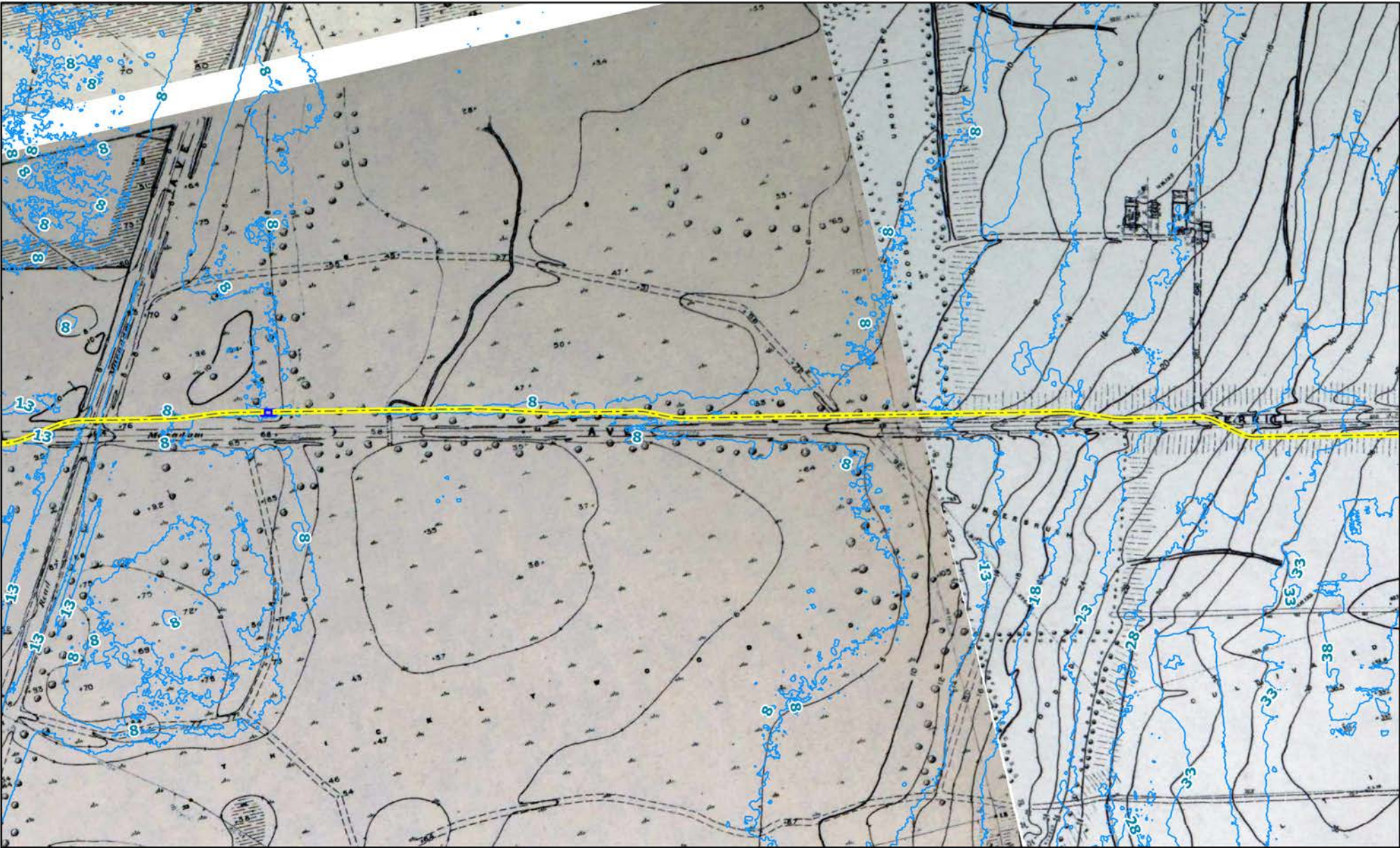
**1907-1911 Topographical Survey**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 4-05** DECEMBER 2022






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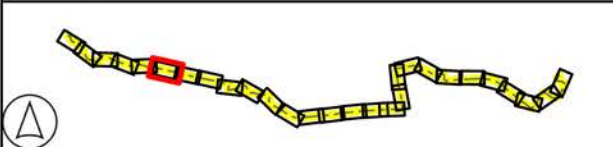
0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

**1907-1911 Topographical Survey**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



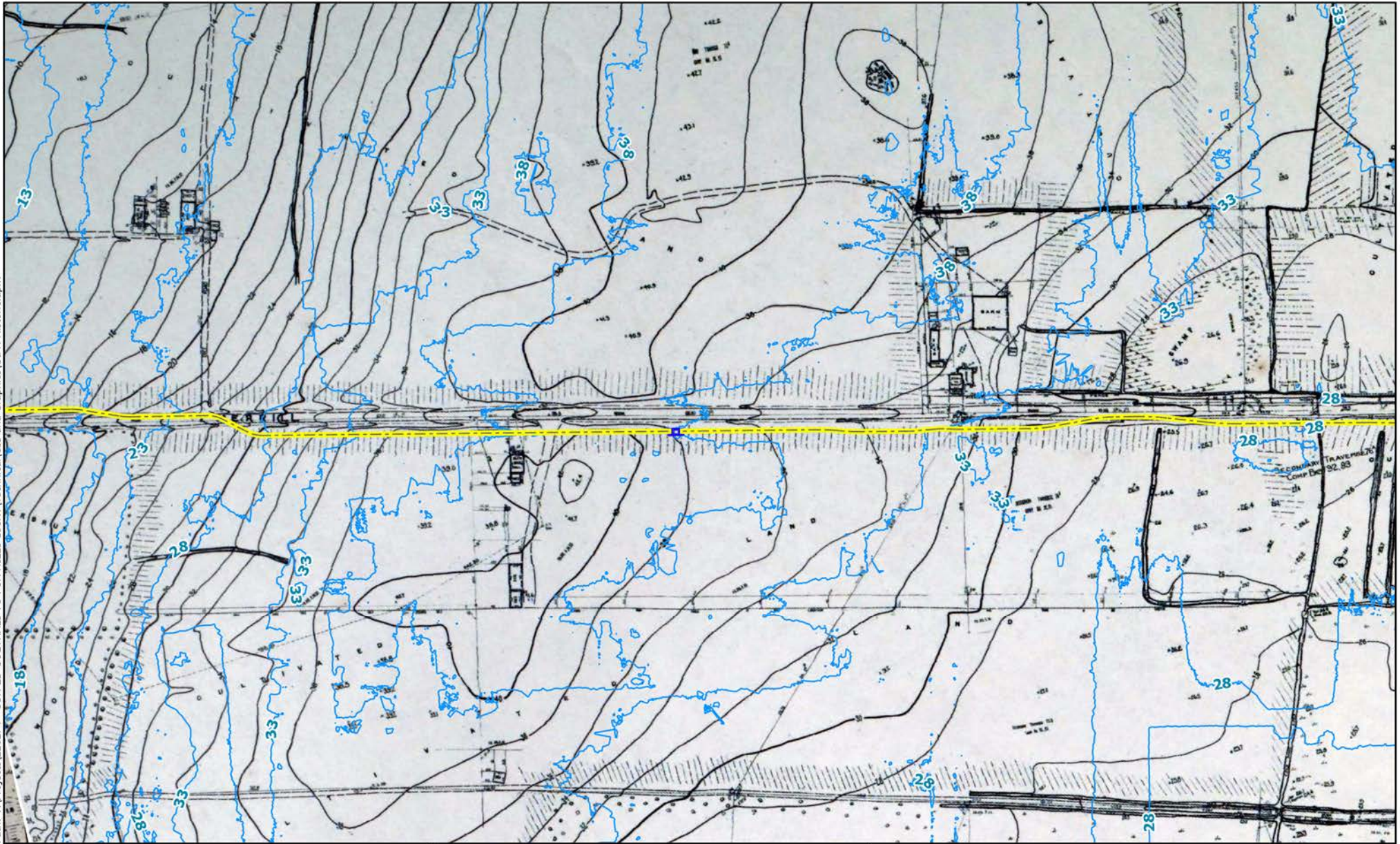
\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-06**

DECEMBER 2022





Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

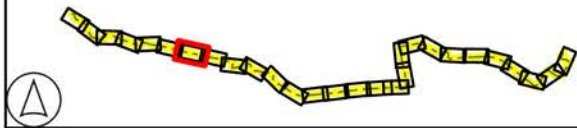
### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

Figure 4-07

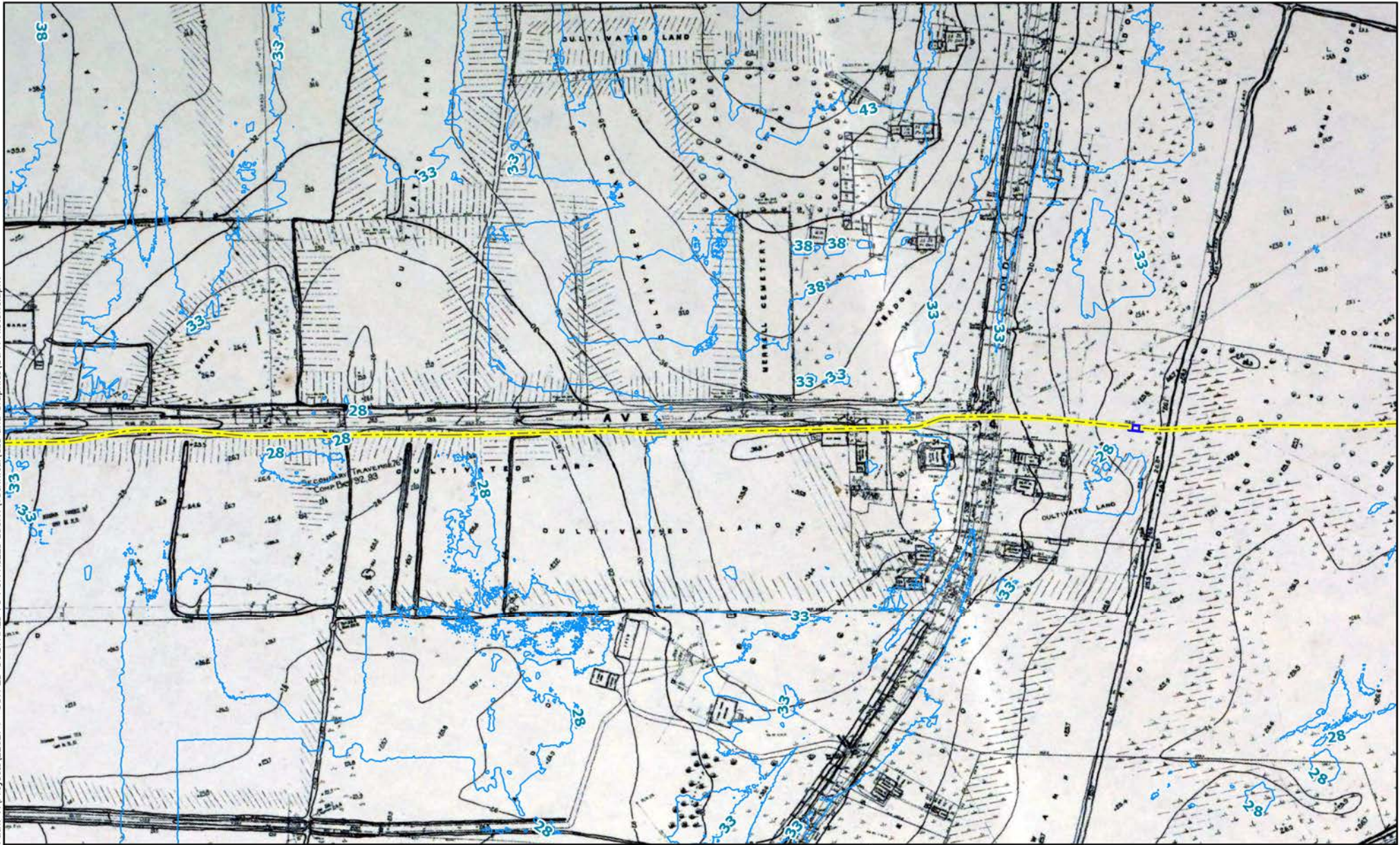
DECEMBER 2022

\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.






Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

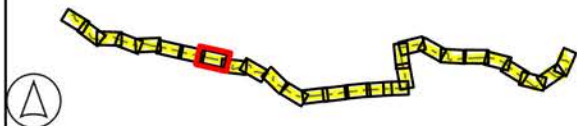
### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

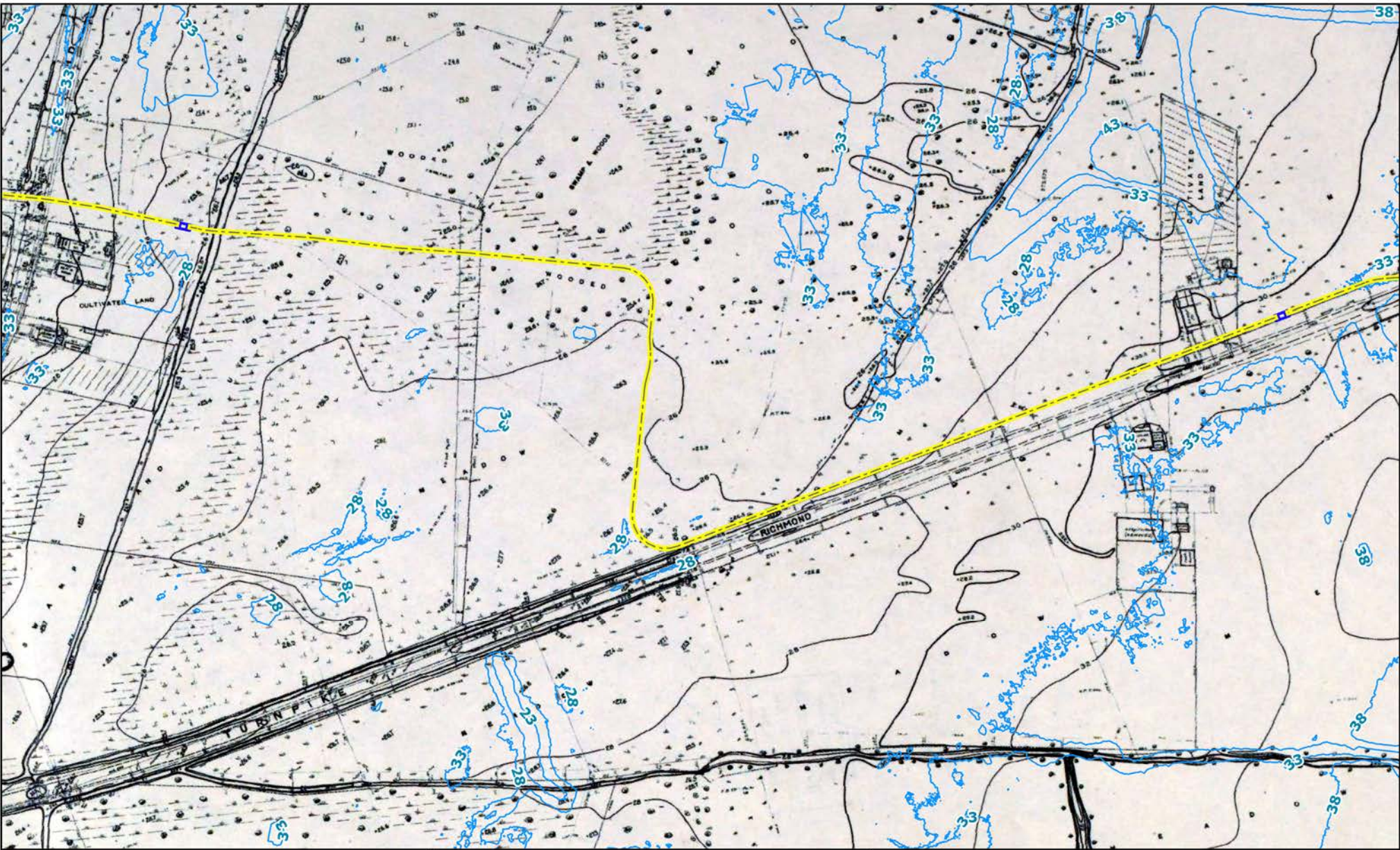
Figure 4-08

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Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



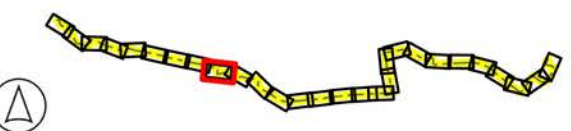
0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



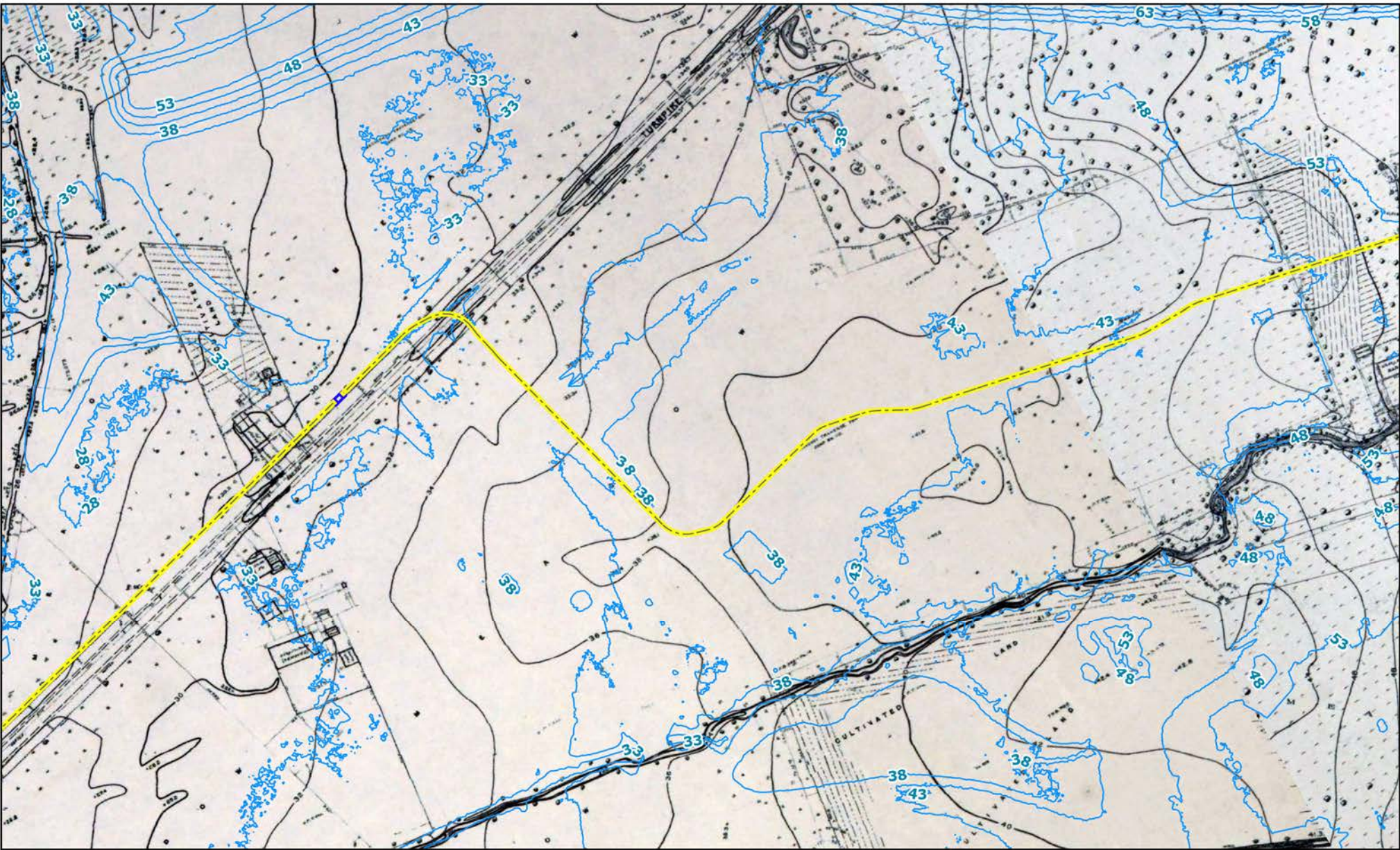
\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-09**

DECEMBER 2022






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0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



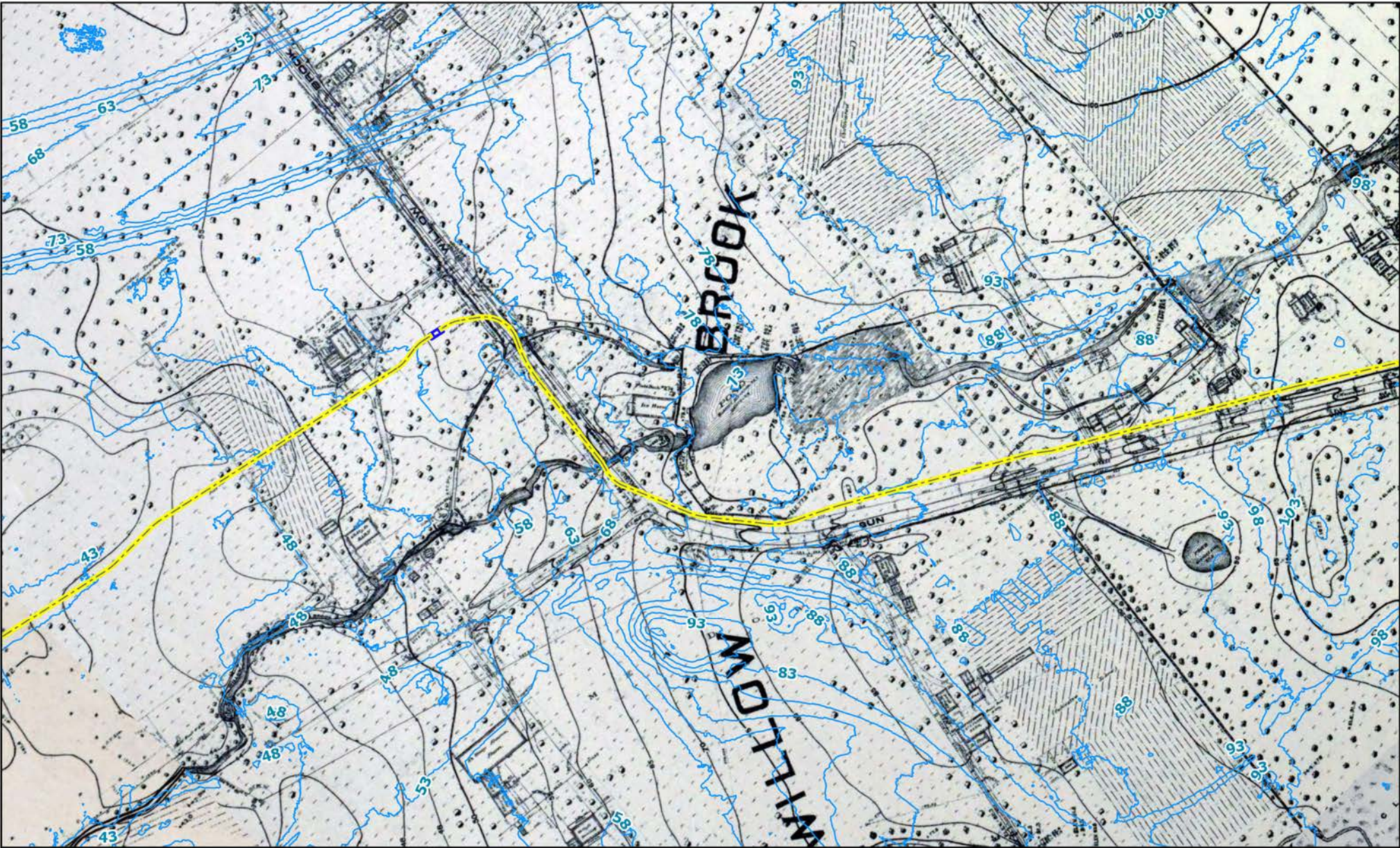
\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

Figure 4-10

DECEMBER 2022






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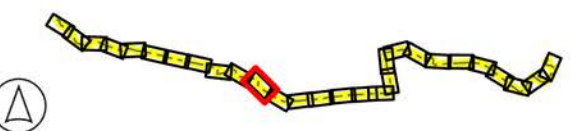
0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



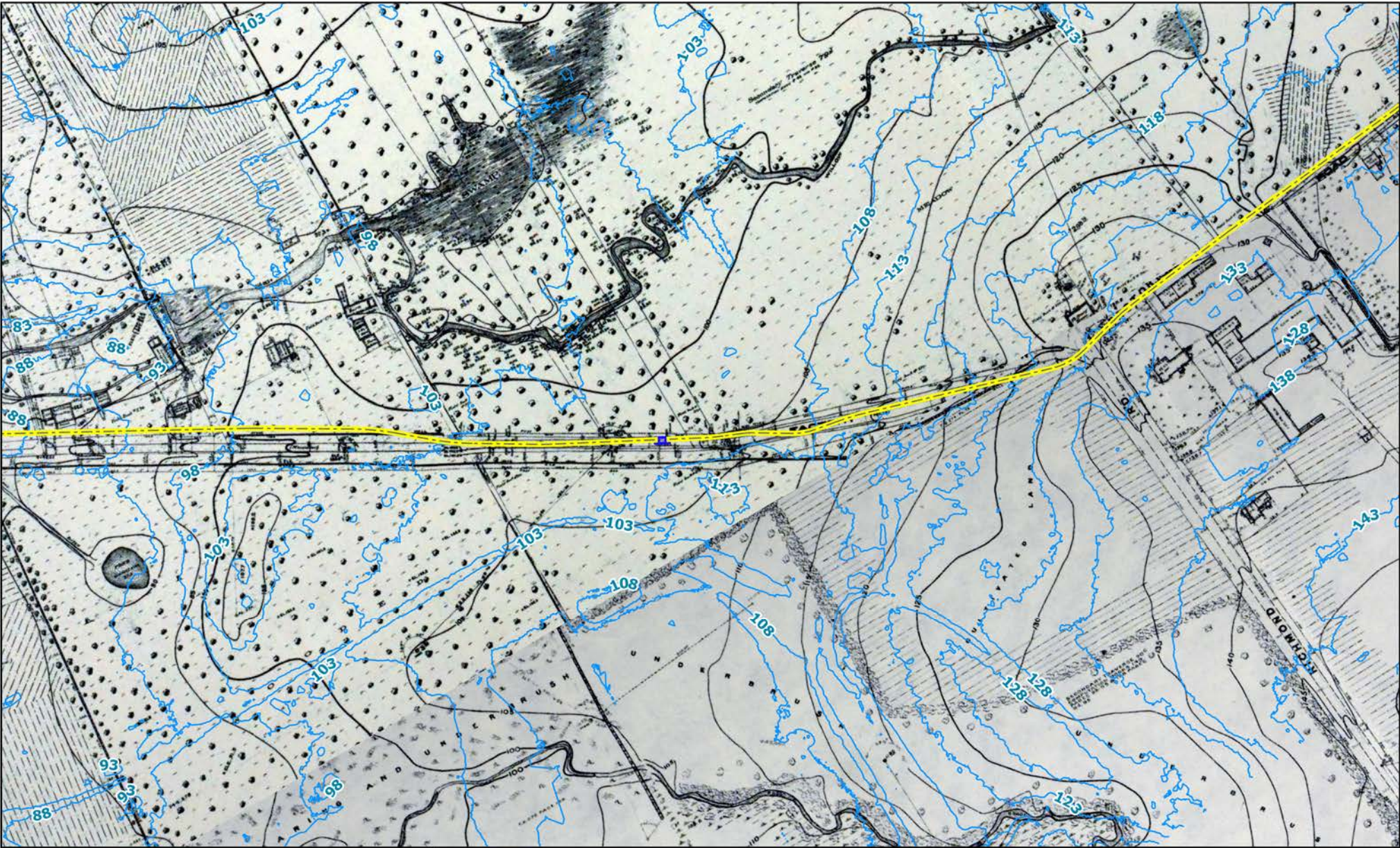
\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-11**

DECEMBER 2022






Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH Historic.aprx



0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)



\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

### 1907-1911 Topographical Survey

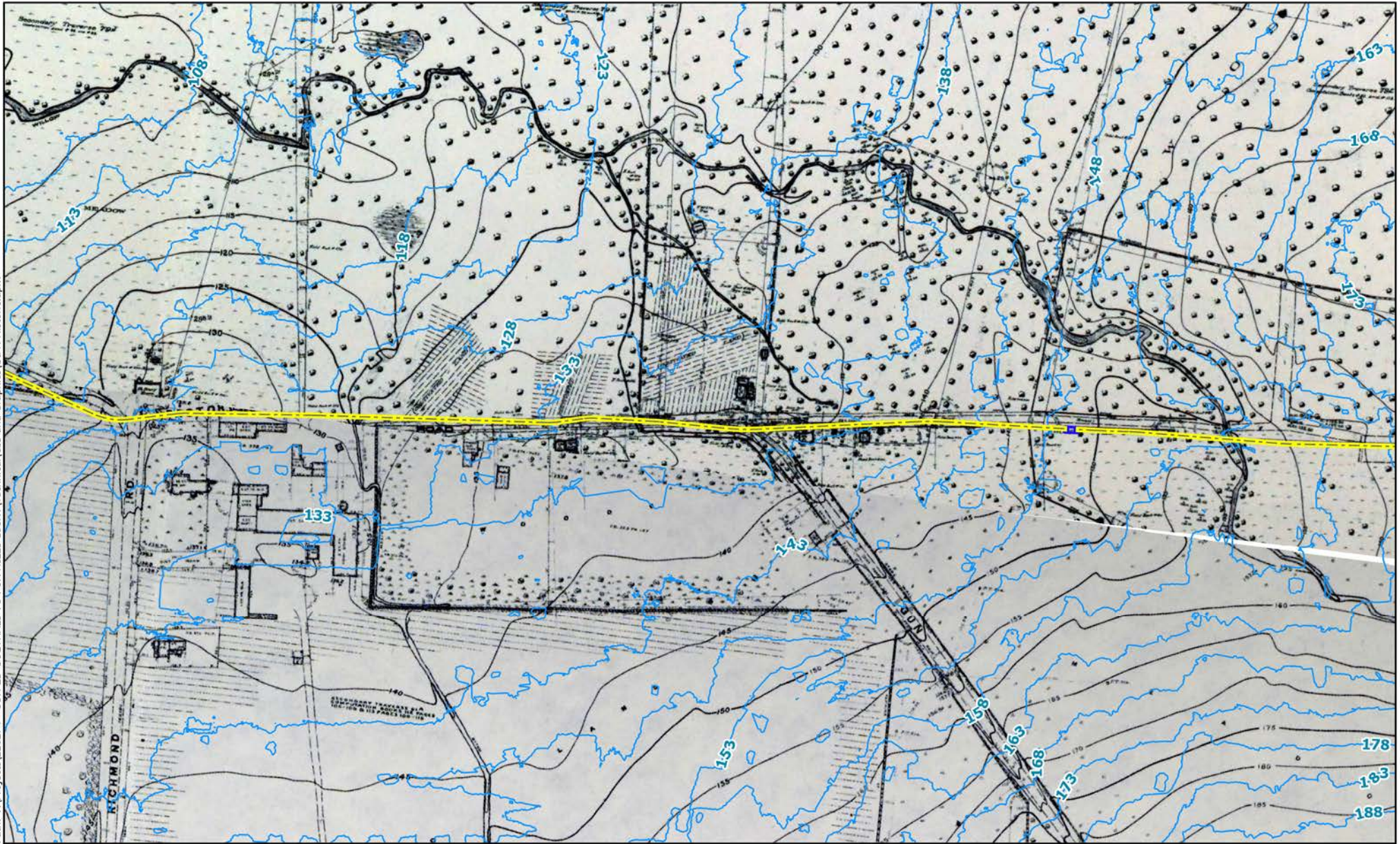

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

Figure 4-12



DECEMBER 2022






Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx

0 50 100 200 Feet  
1 inch equals 200 feet

-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

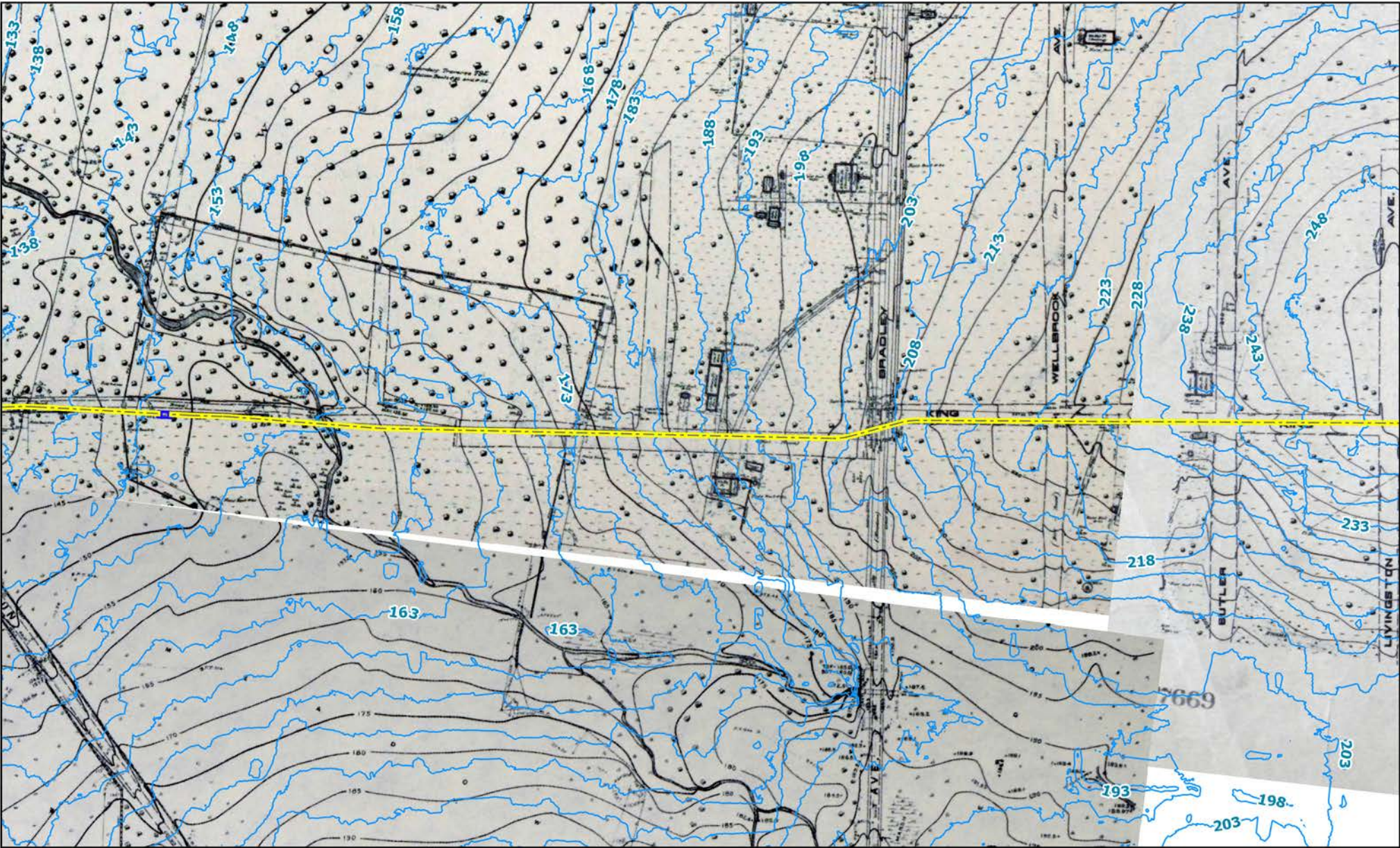
**1907-1911 Topographical Survey**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 4-13** **DECEMBER 2022**






Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



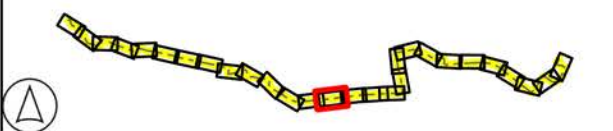
0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

**1907-1911 Topographical Survey**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

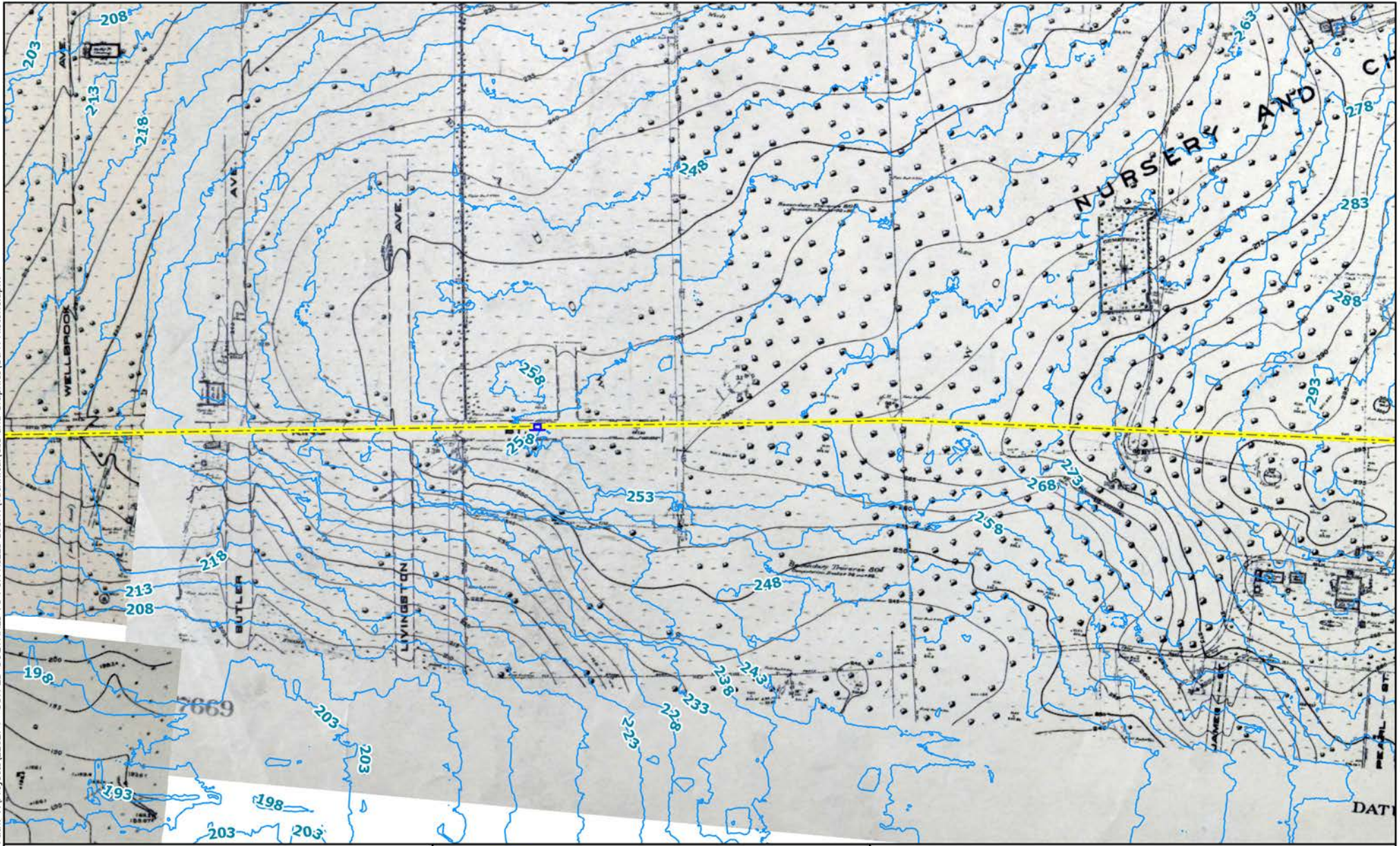


\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-14**

**DECEMBER 2022**





**AKRF**

0 50 100 200 Feet  
1 inch equals 200 feet

- Proposed Manhole Siting
- Proposed Feeder Alignment
- Contours (5ft)

\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**1907-1911 Topographical Survey**

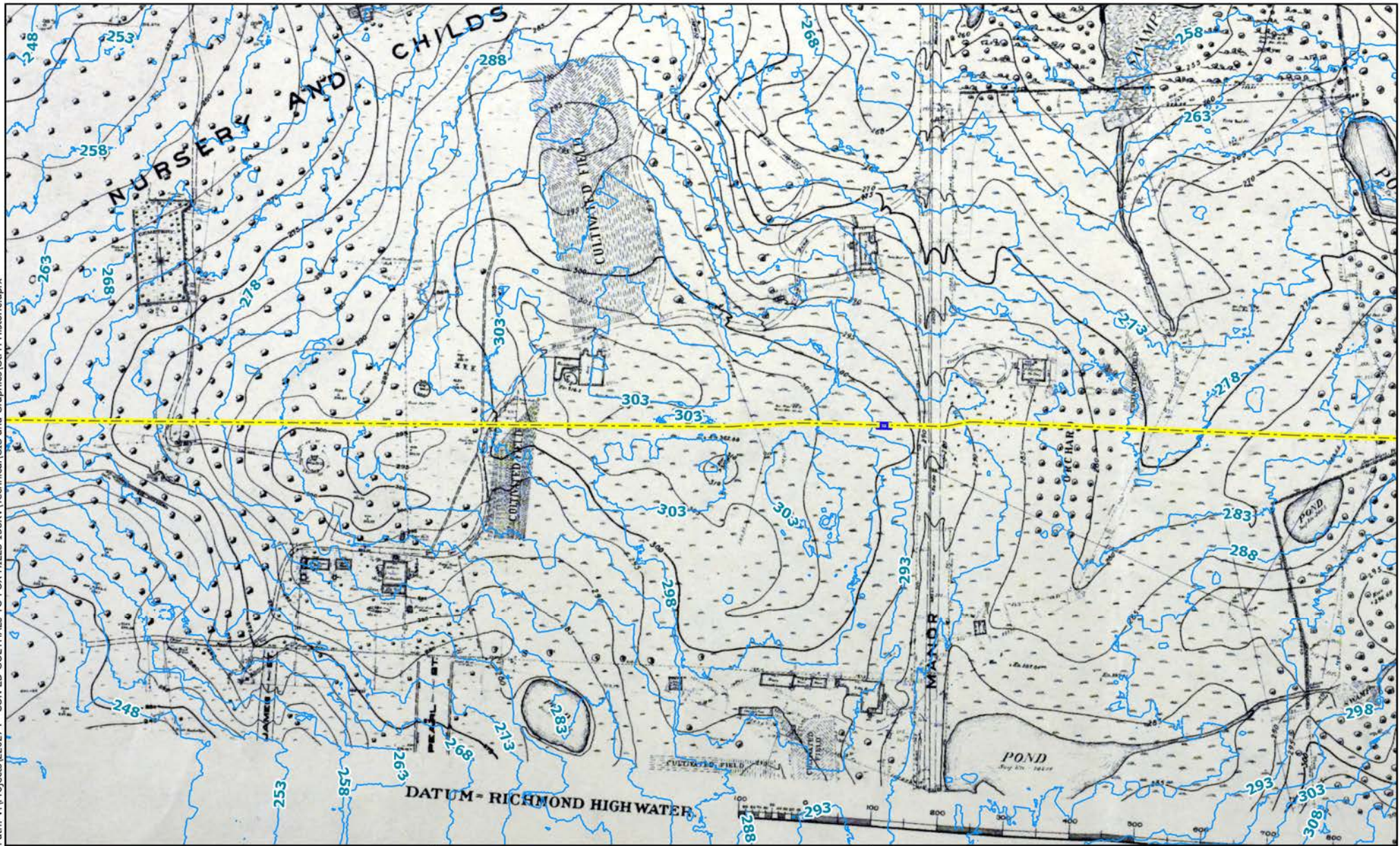
Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 4-15**

**DECEMBER 2022**



Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH Historic.aprx



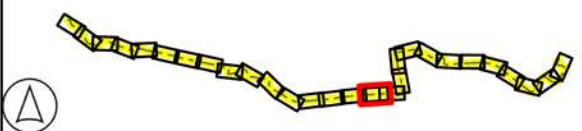
0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



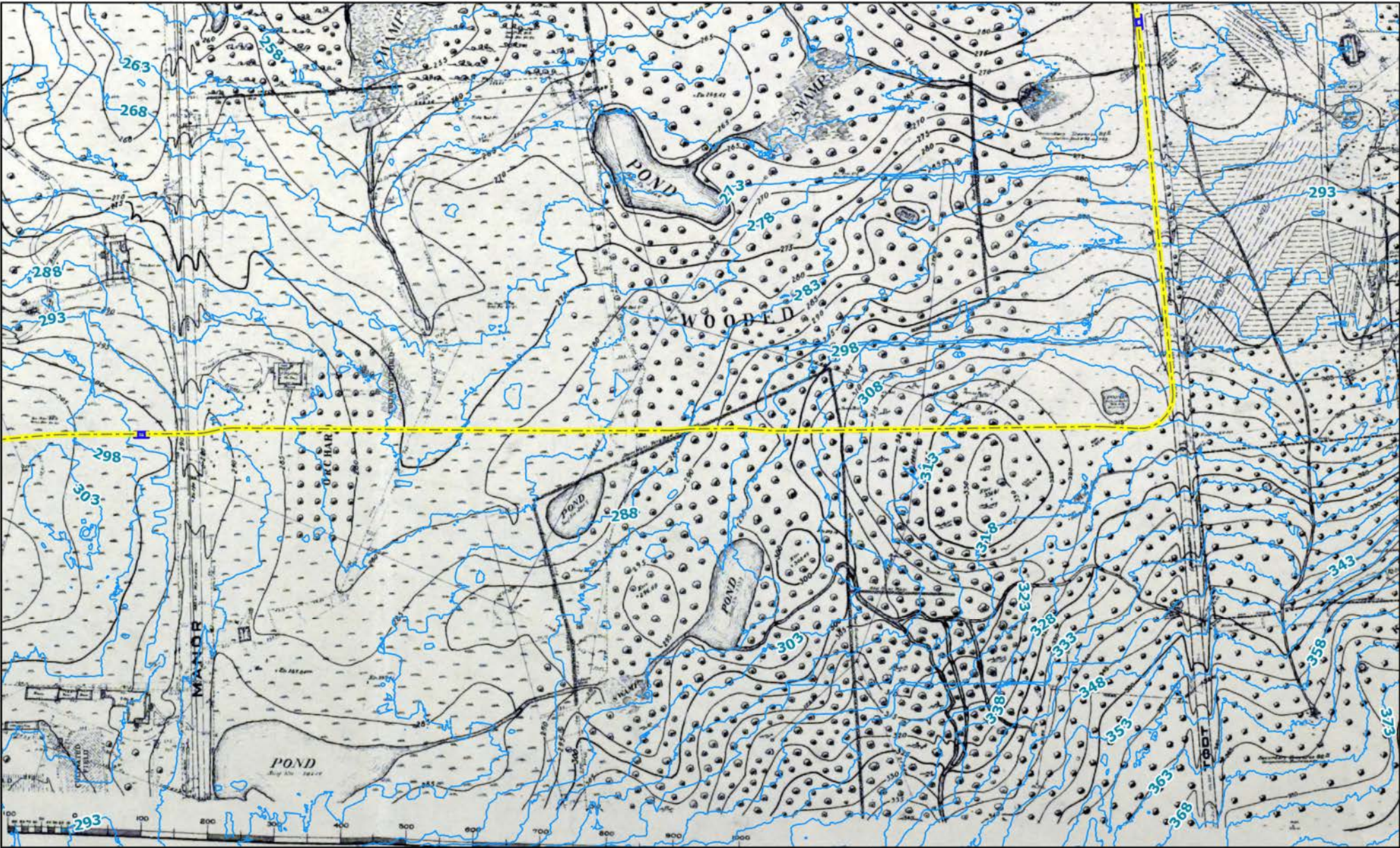
\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-16**

DECEMBER 2022






Path: V:\Projects\20274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH Historic.aprx



0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

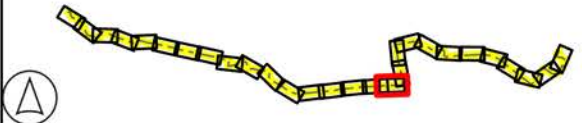
### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

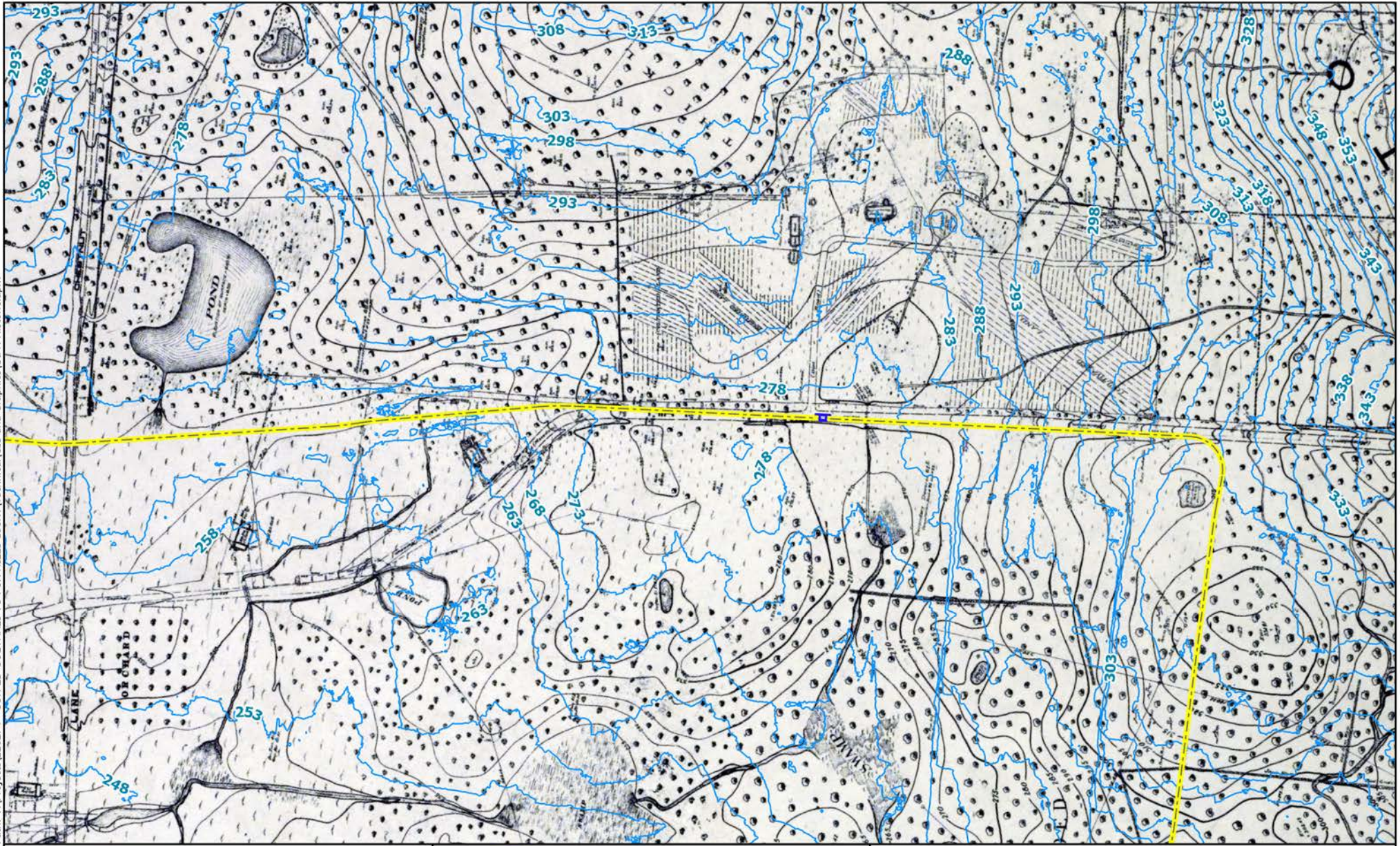
\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

Figure 4-17

DECEMBER 2022










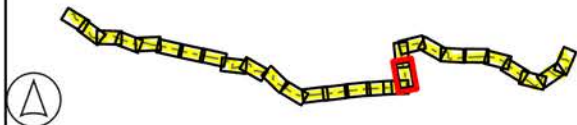
0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



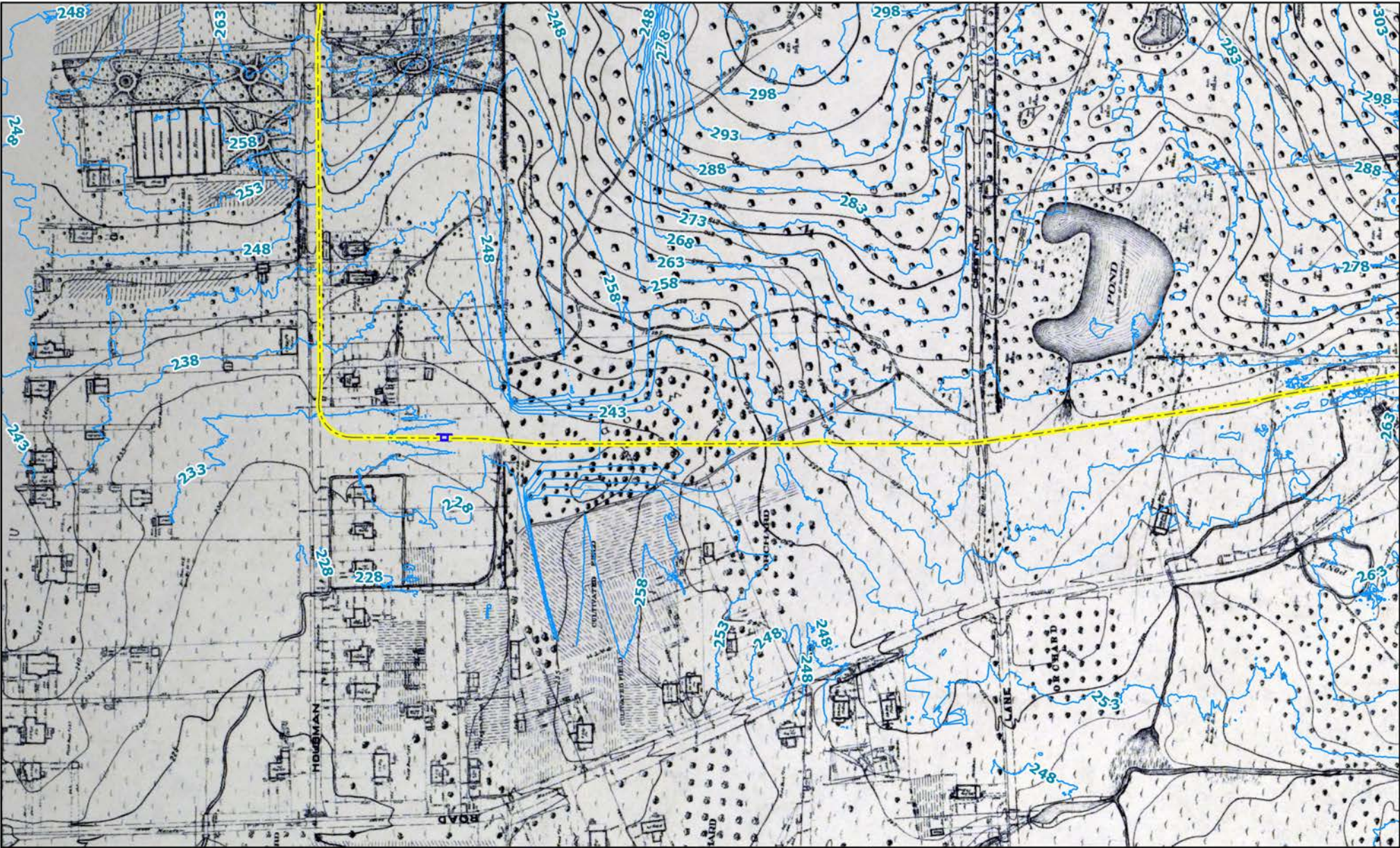
\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-18**

DECEMBER 2022




Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



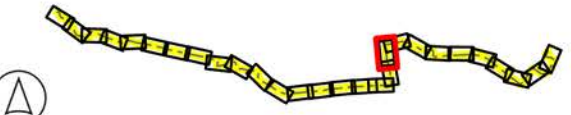
0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



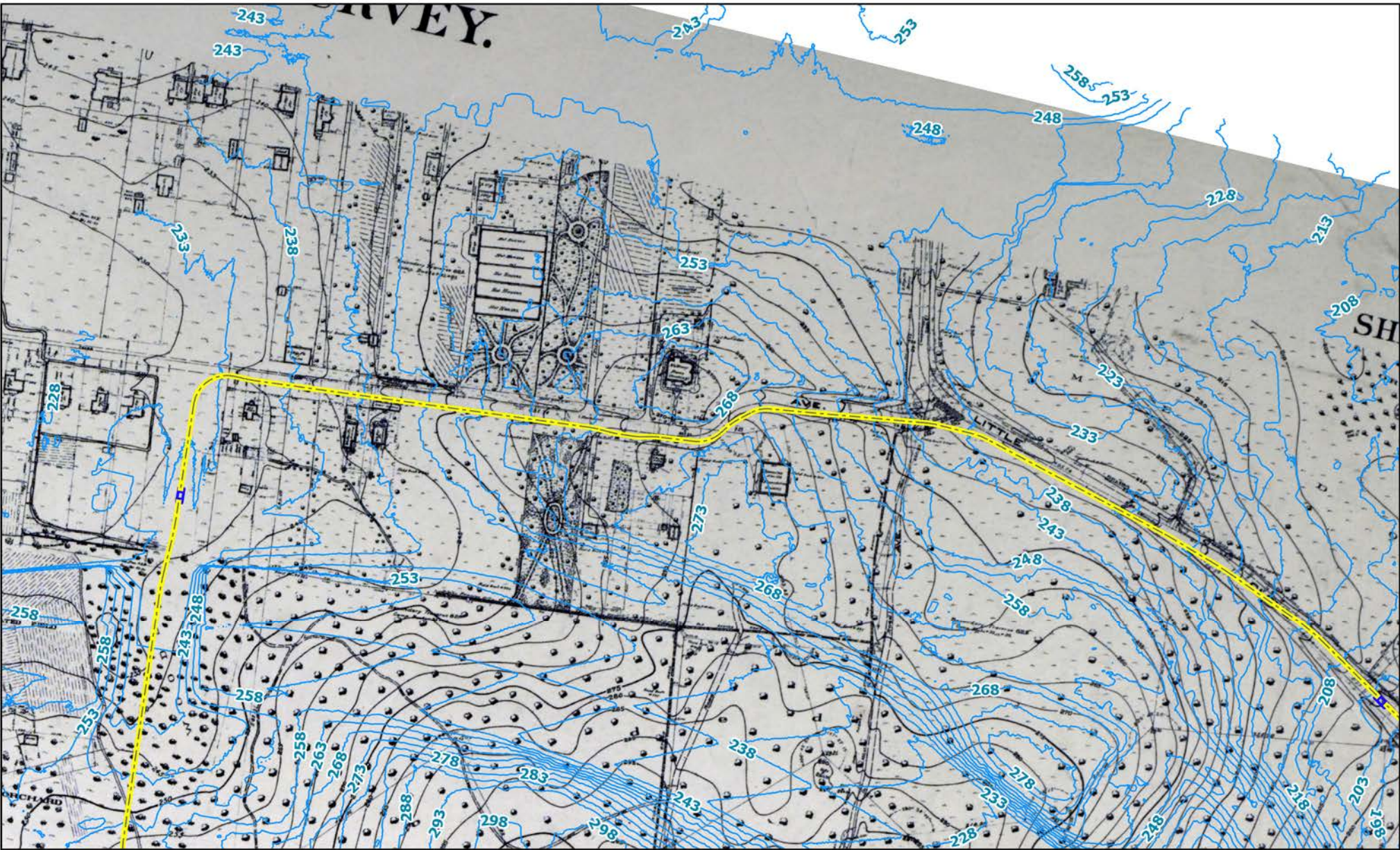
\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-19**

DECEMBER 2022






Path: V:\Projects\20274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



AKRF

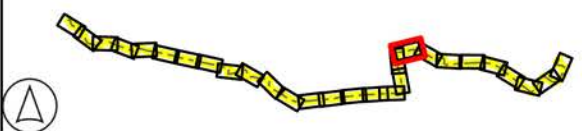
0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY




\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-20**



**DECEMBER 2022**






Path: V:\Projects\202074 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx

0 50 100 200 Feet  
1 inch equals 200 feet

-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**1907-1911 Topographical Survey**

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

**Figure 4-21**      **DECEMBER 2022**



Path: V:\Projects\20274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH Historic.aprx



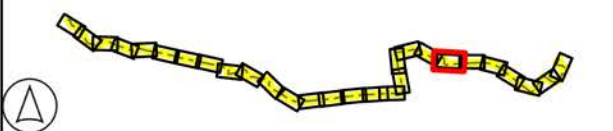
0 50 100 200 Feet  
1 inch equals 200 feet



- Proposed Manhole Siting
- Proposed Feeder Alignment
- Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

Figure 4-22




DECEMBER 2022



Path: V:\Projects\202074 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx

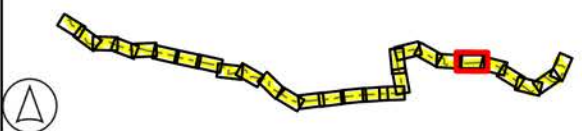


0 50 100 200 Feet  
1 inch equals 200 feet

-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



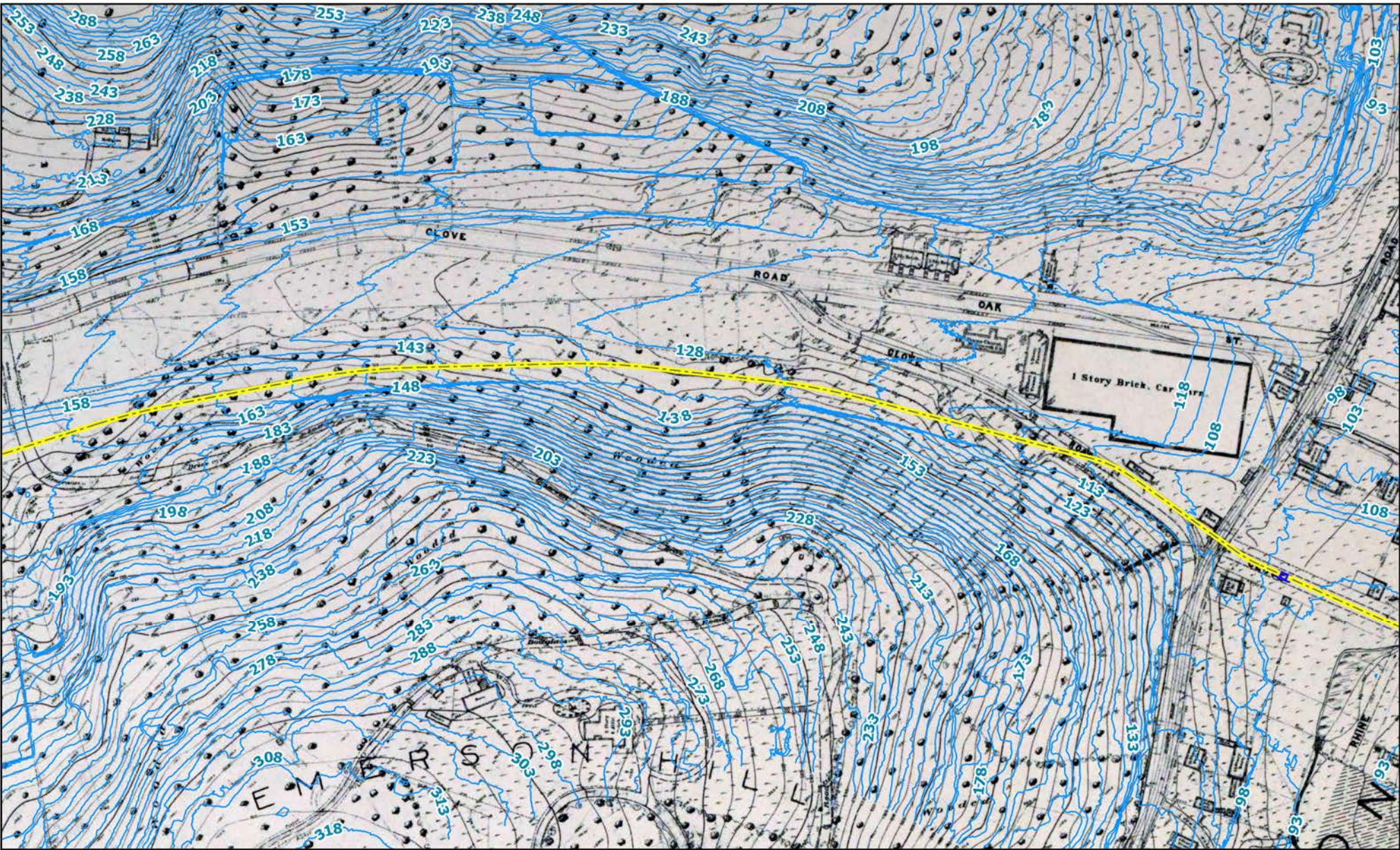
\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-23**

DECEMBER 2022






Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV Technical\GIS and Graphics\GFH\_Historic.aprx



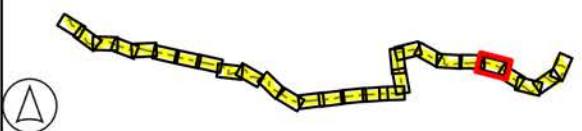
0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-24**




DECEMBER 2022



Path: V:\Projects\20274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH Historic.aprx

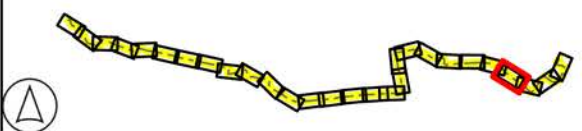


0 50 100 200 Feet  
1 inch equals 200 feet

-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-25**

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Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Contours (5ft)

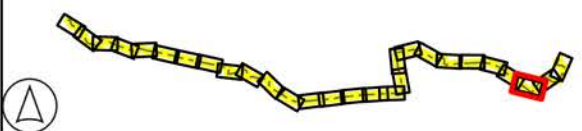
\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY

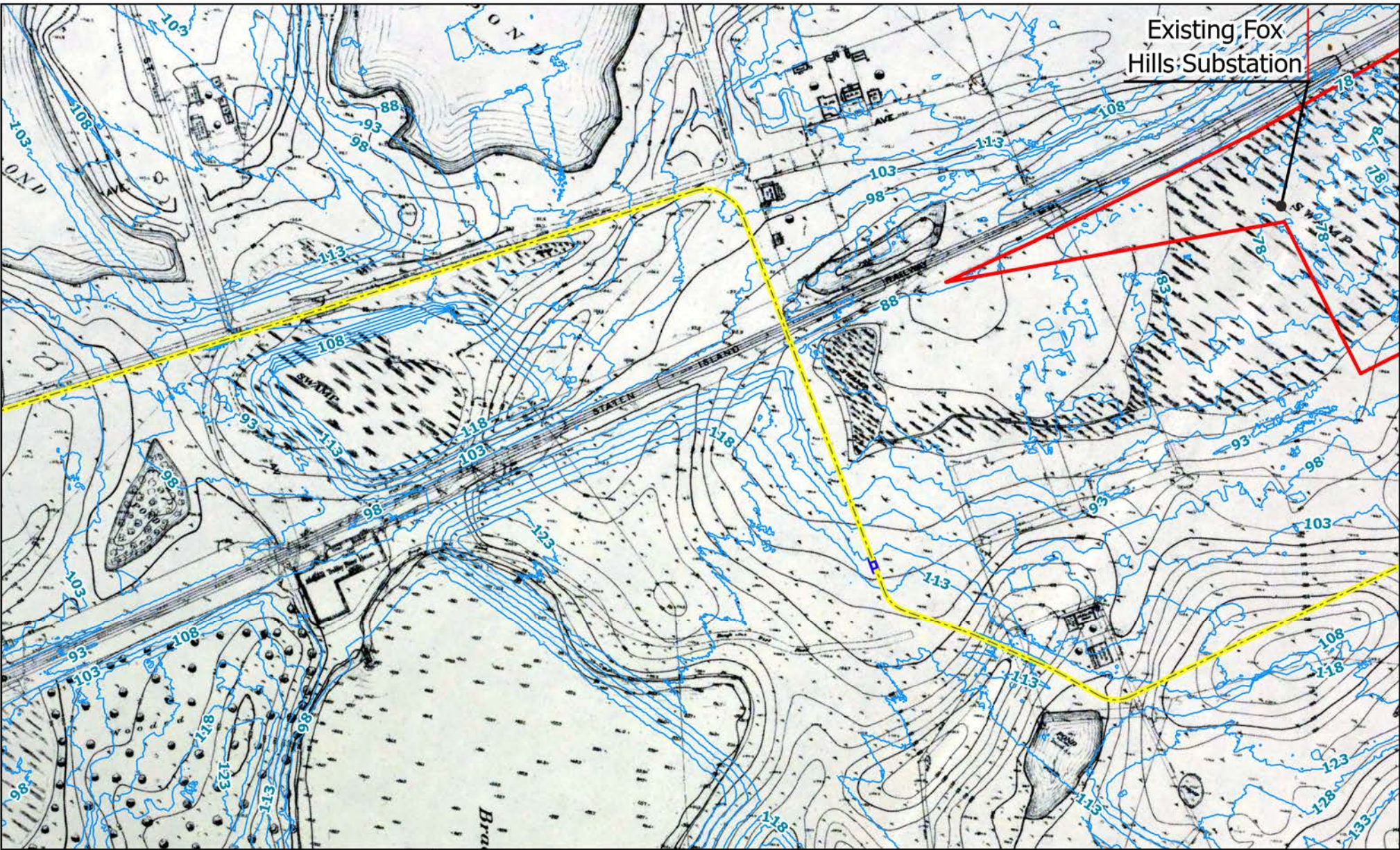
Figure 4-26

DECEMBER 2022









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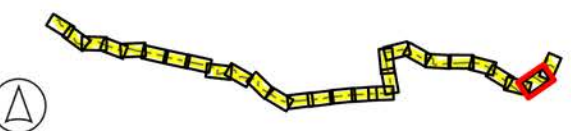
0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substations
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



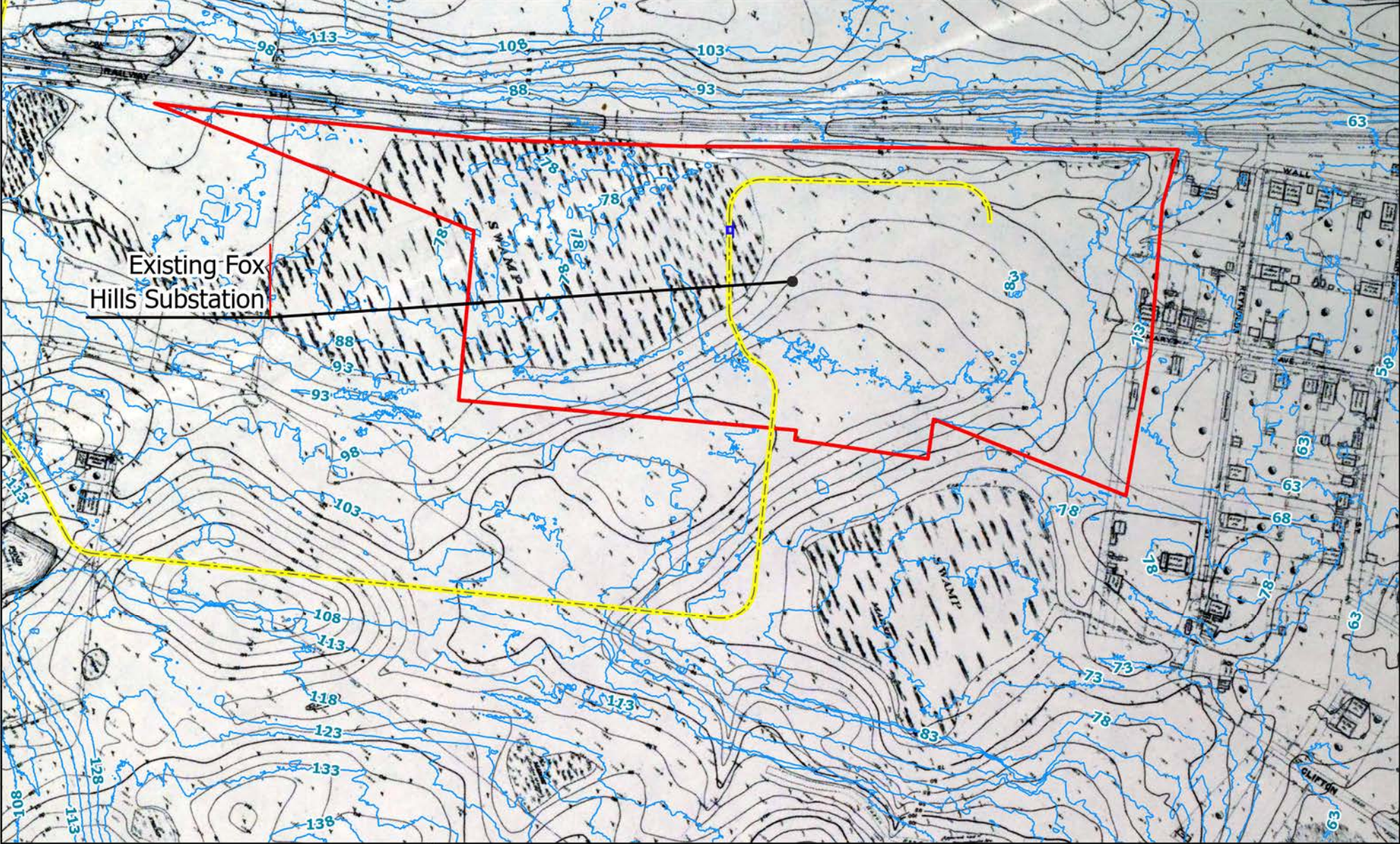
\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-27**

DECEMBER 2022







Path: V:\Projects\220274 - CON ED GOETHALS TO FOX HILLS 138KV\Technical\GIS and Graphics\GFH\_Historic.aprx



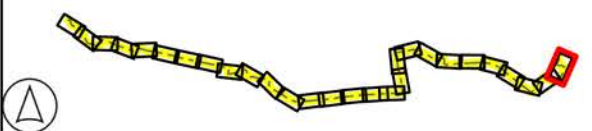
0 50 100 200 Feet  
1 inch equals 200 feet



-  Proposed Manhole Siting
-  Proposed Feeder Alignment
-  Existing Substations
-  Contours (5ft)

### 1907-1911 Topographical Survey

Consolidated Edison Company of NY Inc.  
Goethals to Fox Hills 138kV  
Underground Transmission Feeder  
Staten Island, Richmond County, NY



\*Contours were derived from NYC 2017 LiDAR data and converted from NAVD88 to Richmond Borough Datum.

**Figure 4-28**

DECEMBER 2022



**Appendix A**

**Unanticipated Discovery Protocols Developed by Con Edison**



## **II. UNANTICIPATED DISCOVERY OF HUMAN REMAINS PROTOCOL**

The following procedures must be adhered to in the event that human remains or suspected human remains (including both intact graves and disarticulated human remains) are identified during construction, whether anticipated or not:

1. When human remains are discovered during or after excavation, the excavation contractor must stop work immediately in the area of the human remains and provide for a distance of 50 feet (15.2 meters) around the human remains. The location of the human remains must be secured to protect the human remains and avoid potential impacts.
2. In all instances, on-site Con Edison personnel must immediately call the New York Police Department (NYPD) at 911 and the Office of Chief Medical Examiner (OCME) at 212-227-2030 and ask the operator to direct the call to the Forensic Anthropology Unit. OCME will determine whether the site is of forensic interest. If the site is of forensic interest, Con Edison personnel and the excavation contractor must follow OCME's instructions.
3. If the project is currently under review by LPC or was previously reviewed by LPC, Con Edison EH&S Natural Resources personnel must immediately call LPC's Archaeology Department at 212-669-7817 or LPC's main number at 212-669-7855.
4. If the site is located within state lands (e.g. parkland or state-owned rights of way), Con Edison EH&S Natural Resources personnel must notify the New York State Museum at 518-474-5877.
5. If the site is located within federal or tribal lands, Con Edison EH&S Natural Resources personnel must immediately call the responsible federal agency official or Native American tribe official. Con Edison EH&S Natural Resources personnel must subsequently provide written confirmation to the federal agency official or Native American tribe official.
6. At all times human remains must be treated with the utmost dignity and respect.
7. Con Edison EH&S Natural Resources personnel must notify other relevant parties as instructed.
8. In the event that the human remains are to be moved or removed from the site, Con Edison EH&S Natural Resources personnel must contact the New York City Department of Health and Mental Hygiene and the New York State Department of Health to inquire about disinterment and related permits. Con Edison may need to retain a registered funeral director or undertaker to apply for such permits. Such permits may not be necessary if the disinterment is ordered by OCME.
9. Following removal of the human remains as outlined above, EH&S, in consultation with the Law Department, may then grant clearance to the excavation contractor to restart work.



### **III. UNANTICIPATED DISCOVERY OF ARCHAEOLOGICAL FEATURES PROTOCOL**

- When excavating in previously undisturbed locations or in areas that contain minimal prior disturbance, Con Edison crews could encounter potentially significant archaeological features. An archaeological feature implies the presence of historic human activity or occupation, and can be a collection of artifacts or remnants of artifacts.
  
- In the event potentially significant archaeological features are discovered during or after excavation, the excavation contractor must stop work immediately in the area of the features and provide for a distance of 50 feet (15.2 meters) until the significance of the feature can be evaluated by Con Edison EH&S Natural Resources personnel and work in the area of the feature is authorized to proceed. Con Edison's EH&S Natural Resources personnel must be notified in order to properly identify the features and make the necessary notifications to either the NYC Landmarks Preservation Commission or the NYS Historic Preservation Office.
  
- Here are some examples of significant archaeological features that could be found in previously undisturbed areas within our service territory:
  - Large stone implements (e.g. axes, gouges)
  - Historic pottery, glassware, and other housewares
  - Privies, cisterns, wells, and other colonial infrastructure
  - Large iron or other metal objects, including farm implements (e.g. hoes, rakes, plows, sleigh parts)
  - Transportation related objects (e.g. wooden wagon wheels, tracks, trolley support)
  - Ship and boat hulls and hardware
  - Gravestones, marked granite, coffin remnants, and hardware
  - Canons, canon balls, and other historic ordinances
  - Burial pits (darkened soil, textile, shell-lined) and/or human remains (for human remains, the protocol set forth in section II of this GEHSI should be followed)
  
- Here are some examples of material that is not considered to be a potentially significant archaeological feature:
  - Discarded/abandoned modern-day items (e.g. trash, concrete, construction and demolition debris, furniture, automobile parts, cinder blocks, modern bricks, etc.)
  - Geological materials (e.g. natural rocks, unmilled wooden logs, vegetative debris)