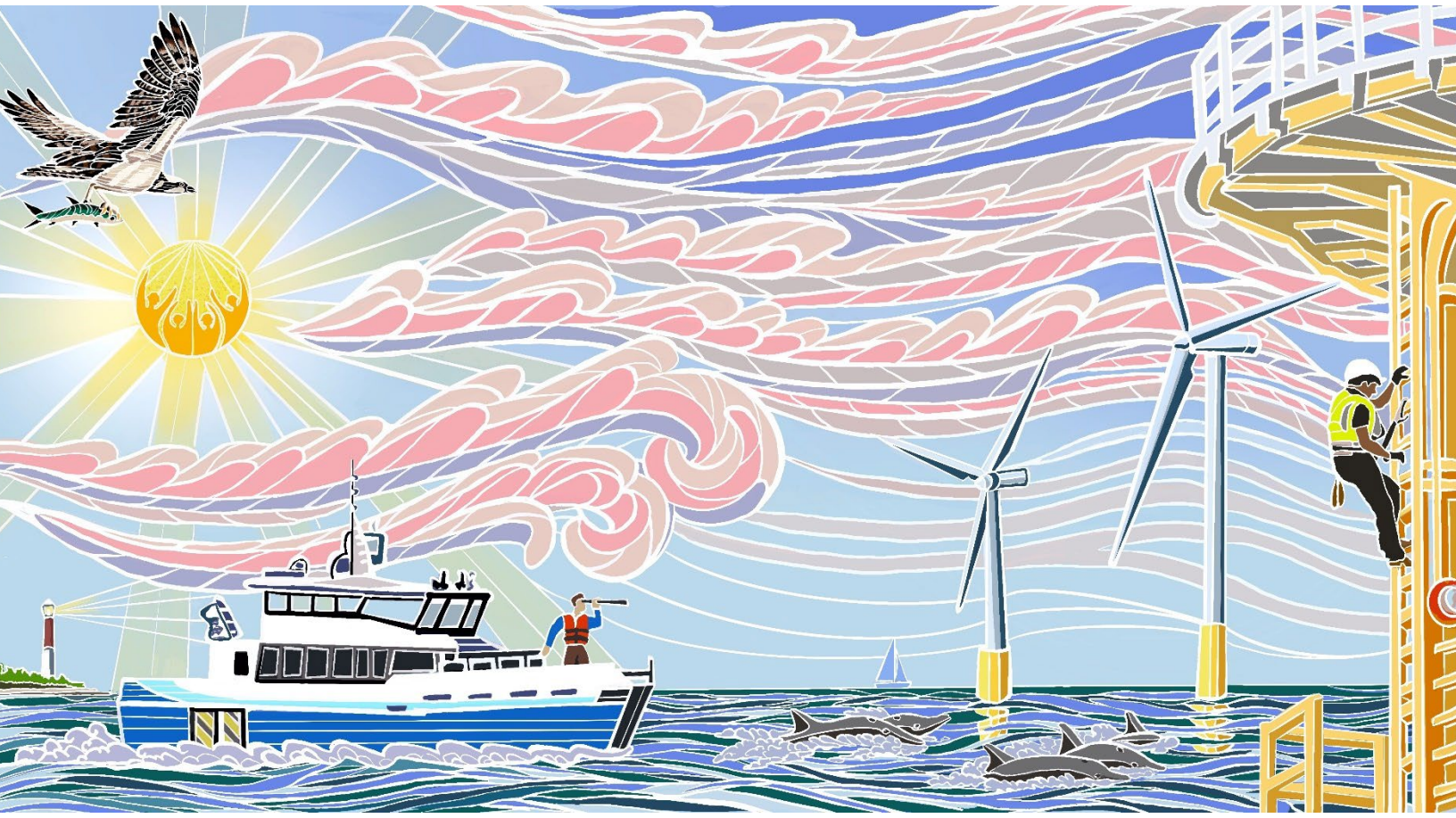

Appendix II-P2

Terrestrial Archaeological Resources Assessment (TARA) - New York

Public Summary

March 2024

Terrestrial Archaeological Resources Assessment – Public Summary

Atlantic Shores North Offshore Wind Project – Onshore Interconnection Facilities – New York

Kings and Richmond County, New York

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1.0 INTRODUCTION

1.1 Purpose of the Investigation

On behalf of Atlantic Shores Offshore Wind, LLC (Atlantic Shores), a 50/50 joint venture between EDF-RE Offshore Development, LLC, a wholly owned subsidiary of EDF Renewables, Inc. (EDF Renewables) and Shell New Energies US LLC (Shell), Environmental Design & Research, Landscape Architecture, Engineering, & Environmental Services, D.P.C. (EDR) has prepared this Terrestrial Archaeological Resources Assessment (TARA) for the proposed onshore interconnection facilities located in the Borough of Staten Island, Richmond County, New York and the Borough of Brooklyn, Kings County, New York (Figure 1). The information and results included in the TARA are intended to assist the New York State Historic Preservation Office (NYSHPO), the Bureau of Ocean Energy Management (BOEM), and other state and/or federal agencies in their review of the Project's Onshore Facilities under Article VII of the New York State Public Service Law, the New York State Environmental Quality Review Act (SEQRA), Section 14.09 of the New York State Parks, Recreation and Historic Preservation Law, and/or Section 106 of the National Historic Preservation Act, as applicable. This TARA was completed in support of the Atlantic Shores North Construction and Operations Plan (COP; EDR, 2022a) for Atlantic Shores' proposal to develop an offshore wind energy generation project (the Project) within BOEM Lease Area OCS-A 0549 (the Lease Area).

The purpose of this TARA is to inventory and characterize previously identified archaeological resources within the Preliminary Area of Potential Effects (PAPE) for Physical Effects to Above Ground Historic Properties and Terrestrial Archaeological Resources and evaluate the potential for unidentified terrestrial archaeological resources to be present within the PAPE. Additional phased Phase IB archaeological field survey has been recommended within targeted portions of the PAPE.

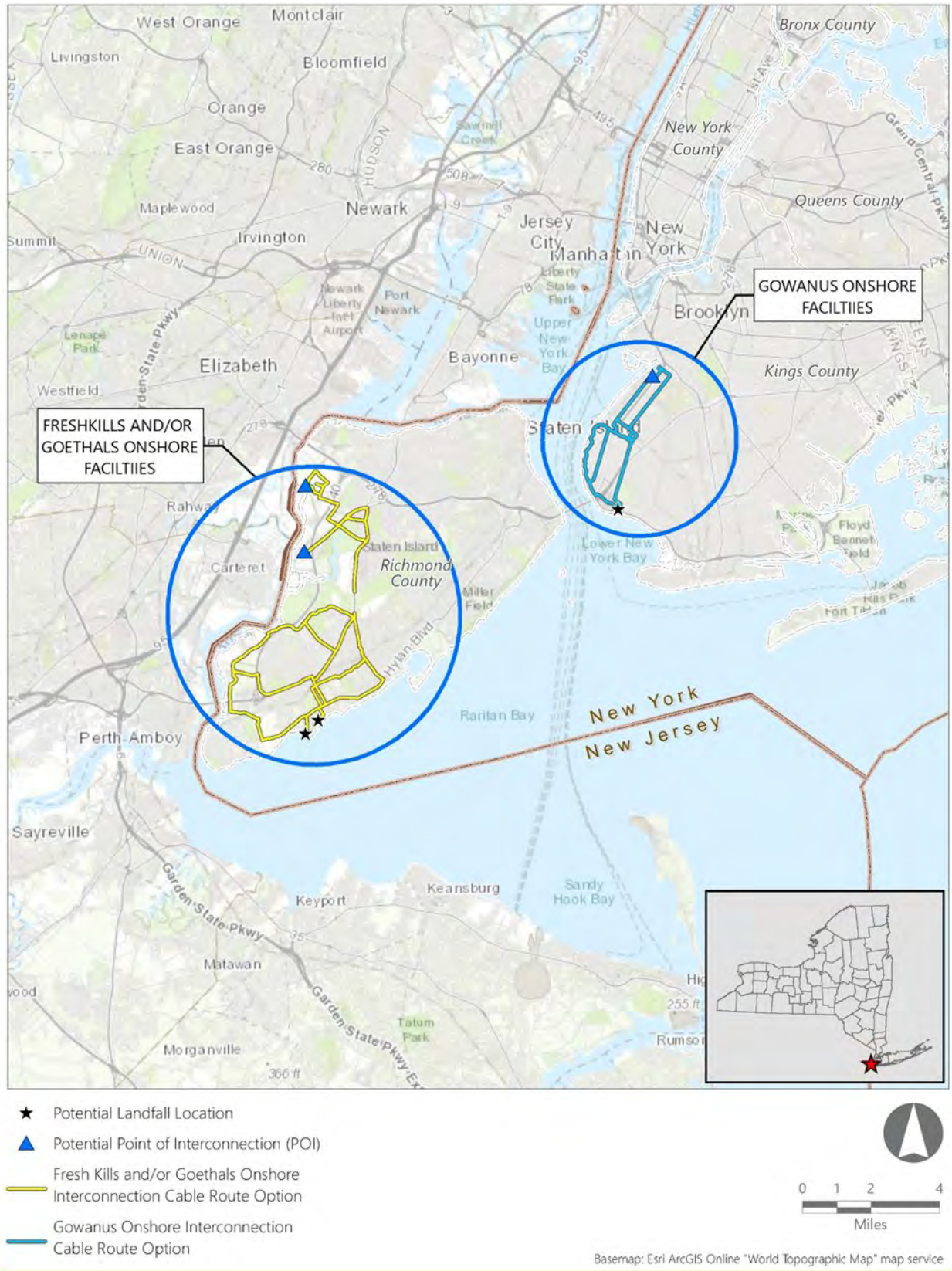
The Phase IB archaeological field survey effort is ongoing. BOEM has determined, in accordance with Section 106 regulations (36 CFR § 800.4 (b)(2), that a Phased Identification approach is appropriate for the survey, reporting, and consultation related to this outstanding archaeological investigation while property access permissions are acquired to conduct the remaining Phase IB archaeological investigations. The anticipated Phased Identification schedule is included in the Project's *Phased Identification Plan: Terrestrial Archaeological Resources* (EDR, 2023). which will be included as an

attachment to the future Memorandum of Agreement (MOA) between Section 106 consulting parties in the Environmental Impact Statement's (EIS) Finding of Effects.

The TARA was prepared by professional archaeologists who satisfy the qualifications criteria provided in the Secretary of the Interior's Standards for archaeology and historic preservation (Title 36 Code of Federal Regulations Part 61: Appendix A), as appropriate. The survey was conducted in accordance with the New York Archaeological Council's (NYAC's) *Standards for Cultural Resources Investigations and the Curation of Archaeological Collections in New York State* (NYAC *Standards*; NYAC, 1994) and the NYSHPO's *Phase I Archaeological Report Format Requirements* (NYSHPO, 2005), as appropriate. The results of any Phase IB field survey will be detailed in the full TARA report, which will be submitted to BOEM and the Consulting Parties prior to the Project's Record of Decision (ROD).

The full TARA is included as Appendix II-P2 of the Project's COP. A Historic Resources Effects Assessment (HREA) to identify and document aboveground historic properties with potential visibility of the proposed onshore interconnection facilities has been provided under separate cover and is included as Appendix II-N1 of the Project's COP. A TARA addressing archaeological resources and proposed onshore interconnection facilities within New Jersey is being prepared under separate cover and is included as Appendix II-P1 of the Project's COP. The Project will rely on existing Operations and Maintenance (O&M) facilities, which are not included in the PAPE.

Figure 1. Regional Project Location



1.2 Description of Preliminary Area of Potential Effects (PAPE)

Atlantic Shores is developing an offshore wind energy generation project within the Lease Area, located on the Outer Continental Shelf (OCS) within the New Jersey Wind Energy Area. Atlantic Shores proposes to construct, operate, and decommission the offshore wind energy generation facilities, offshore export cables, onshore interconnection cables, and onshore substations and/or converter stations. The Project will include up to 157 wind turbine generators, up to eight offshore substations, and up to ten cables installed within two offshore, export cable corridors (ECCs). Those cables will deliver energy from the offshore generation facilities to proposed landfall sites located in either Richmond County (the Lemon Creek, and/or Wolfe's Pond Landfall Sites) and/or Kings County (the Fort Hamilton Landfall Site), New York. From the landfall sites, onshore cables will follow onshore interconnection cable routes (onshore routes) proposed primarily within existing roadways to existing Points of Interconnection (POIs) for connection to the electrical grid. Along the onshore routes, onshore substations and/or converter stations are also proposed.

To facilitate BOEM's Section 106 review, Atlantic Shores has defined the PAPE for the Project. The PAPE included all locations under consideration where construction or operation of the proposed Projects has the potential to affect historic properties within the Project Design Envelope (PDE). According to BOEM, "A PDE approach is a permitting approach that allows a project proponent the option to submit a reasonable range of design parameters within its permit application, allows a permitting agency to then analyze the maximum impacts that could occur from the range of design parameters, and may result in the approval of a project that is constructed within that range" (BOEM, 2020). The PDE approach allows Atlantic Shores design flexibility and an ability to respond to advancements in industry technologies and techniques.

To support the assessment of potential physical effects to above ground historic properties and terrestrial archaeological resources within the PDE, Atlantic Shores established the NY Physical Effects PAPE which incorporates the maximum breadth and depth of all areas of onshore ground disturbing activity, or other construction activities that could result in demolition or alteration of existing sites, buildings, or other built features. The NY Physical Effects PAPE consists of two distinct sub-PAPEs each associated with either the Fresh Kills/Goethals or Gowanus POIs; The Fresh Kills/Goethals and Gowanus

Physical Effects PAPEs include the export cable landfall sites, the onshore transmission cable routes, the proposed onshore substation and/or converter station sites, and the POIs [1].

The PAPEs are based on the current PDE and are anticipated to be refined as the design of the Projects progresses. The breadth and depth of physical effects for the Onshore Interconnection Facilities are tabulated in Table 1.

Table 1. Summary of PAPEs for Physical Effects

Project Component	Maximum Horizontal Effect	Maximum Vertical Effect
Fresh Kills/Goethals Facilities	**606.33 ac. (245.37 ha)**	
Landfall Site(s)		
Lemon Creek Landfall Site	0.76 ac. (0.31 ha)	16.8 ft. (5.12 m)
Wolfe's Pond Landfall Site	2.74 ac. (1.11 ha)	16.8 ft. (5.12 m)
Onshore Stations and Or Converter Station(s)		
Arthur Kill Road Substation and/or Converter station	174.29 ac. (70.53 ha)	60 ft. (18.3 m)
River Road Substation and/or Converter Station	150.16 ac. (60.77 ha)	60 ft. (18.3 m)
Fresh Kills/Goethals Onshore Interconnection Cable Route Options[b]		
Fresh Kills/Goethals Onshore Route	276.76 ac. (112.00 ha) 20 ft. (6 m) width of Open Trenching	Open Trenching 11.5 ft. (3.5 m) Specialty Installation 30 ft. (9 m)
Gowanus Facilities	**144.93 ac. (59.65 ha)**	
Landfall Site(s)		
Fort Hamilton Landfall Site	10.89 ac. (4.41 ha)	16.8 ft. (5.12 m)
Onshore Substation and/or Converter Station(s)		
Sunset Industrial Park Substation and/or Converter Station Site	6.50 ac. (2.63 ha)	60 ft. (18.3 m)
Gowanus Onshore Interconnection Cable Route Options[b]		
Gowanus Onshore Route	126.28 ac. (51.10 ha) 20 ft. (6 m) width of Open Trenching	Open Trenching 11.5 ft. (3.5 m) Specialty Installation 30 ft. (9 m)

a. Trenchless portions of the PAPE, including planned HDD and/or jack and bore locations, are included as part of the Onshore Routes. The maximum vertical effect of these installations is described as "Specialty Installation" in this table.

The final Area of Potential Effects (APE) will be formally determined by BOEM in consultation with NJHPO as part of the Section 106 consultation process. The process for identifying and evaluating

[1] The existing substation POIs are not included within the PAPEs. Since the design and construction of any required upgrades at these locations will be the responsibility of the facility owners, this TARA does not include an assessment of any POI as no specific actions or effects are proposed by Atlantic Shores at these existing facilities.

effects on historic properties resulting from the construction and operation of the Project will involve consultation with BOEM and the NJHPO, Native American Tribes/Nations, and other consulting parties with a demonstrated interest in the historic properties (e.g., historic preservation organizations).

1.3 Description of Onshore Facility Sites

Atlantic Shores is considering multiple options for onshore transmission, including multiple sites and locations for the Project's Onshore Facilities. A description of each potential Facility Site is included below.

- Atlantic Shores has identified two potential Landfall Sites that may be utilized along the Fresh Kills/Goethals Onshore Route (Figure 2):
    - The **Lemon Creek Landfall Site** is located on an approximately 0.95-acre (0.39-hectare [ha]) paved public parking lot on the grounds of Lemon Creek Park. Recent aerial photography depicts the southernmost portion of the landfall site as partially wooded. The site is bounded to the north and east by paved roadways (Sequine Avenue and Johnston Terrace)
    - The **Wolfe's Pond Landfall Site** is located on an approximately 3.40-acre (1.38-ha) paved parking lot on the grounds of Wolfe's Pond Park. Recent aerial photography depicts the southern and southwestern portion of the landfall site as partially vegetated with grass and pine trees. The site is bounded to the northeast by a paved roadway (Chester Avenue)
- The **Fresh Kills/Goethals Onshore Interconnection Cable Route (Fresh Kills/Goethals Onshore Route)** is an approximately 36.40-mile (mi.) (58.58-kilometer [km]) underground transmission route that largely uses existing linear corridors to connect the Lemon Creek and/or Wolfe's Pond Landfall Site(s) to a planned onshore substation and/or converter station and the existing Fresh Kills Substation POI and/or Goethals Substation POI (Figure 2). In order to pursue a conservative estimate of potential effects while Project plans are in development, all routing options for the proposed Larrabee Onshore Route are included in the PDE.

- Atlantic Shores has identified two potential locations for the proposed **Fresh Kills/Goethals Onshore Substation and/or Converter Station** in the vicinity of the Fresh Kill/Goethals Onshore Route (Figure 2):
    - The **Arthur Kill Road Substation and/or Converter Station Site** is an approximately 208-acre (84-ha) parcel consisting of scrub brush, mixed woodlands, and the Kinder Morgan Terminal comprised of a solar panel facility in the south and a pipeline terminal in the north and west. The eastern and southwestern portions of the site consist of mixed woodlands and secondary growth. The site is bounded to the south by paved roadways (Ellis Road and Arthur Kill Road), to the north and west by Arthur Kill, and to the east by deciduous woodlands.
    - The **River Road Substation and/or Converter Station Site** is an approximately 150-acre (60.8-ha) parcel consisting of scrub brush, wetlands, and mixed woodland. A roadway, Water Street, intersects through the Site and connects it to the existing Goethals Substation POI.
- The **Fort Hamilton Landfall Site** is located in Brooklyn on approximately 12.2 acres (4.92 ha). The site is located on baseball fields associated with Ben Vitale Ballfield and is bounded to the south by the Belt Parkway, to the west by roadways (John Wayne Avenue and Sterling Dr) and a hospital parking lot, and to the north and east by baseball fields. (Figure 3).
- The **Gowanus Onshore Interconnection Cable Route (Gowanus Onshore Route)** is an approximately 14.76-mi. (23.75-km) collection of underground transmission route options that largely uses existing linear infrastructure corridors to connect the Fort Hamilton Landfall Site to a proposed onshore substation and/or converter station at Sunset Industrial Park and the existing Gowanus Substation POI (Figure 3). All of the proposed routing options are included in the PDE.
- The **Sunset Industrial Park Substation and/or Converter Station Site** is an approximately 15.25-acre (6.17-ha) parcel currently occupied by paved lots and multiple businesses. The site is bounded to the west and south by the Gowanus Canal/ New York Bay, to the north by 19th Street, and to the east by 3rd Avenue (Figure 3).

Figure 2. Proposed Fresh Kills/Goethals Onshore Interconnection Cable Route and Associated Facility Sites

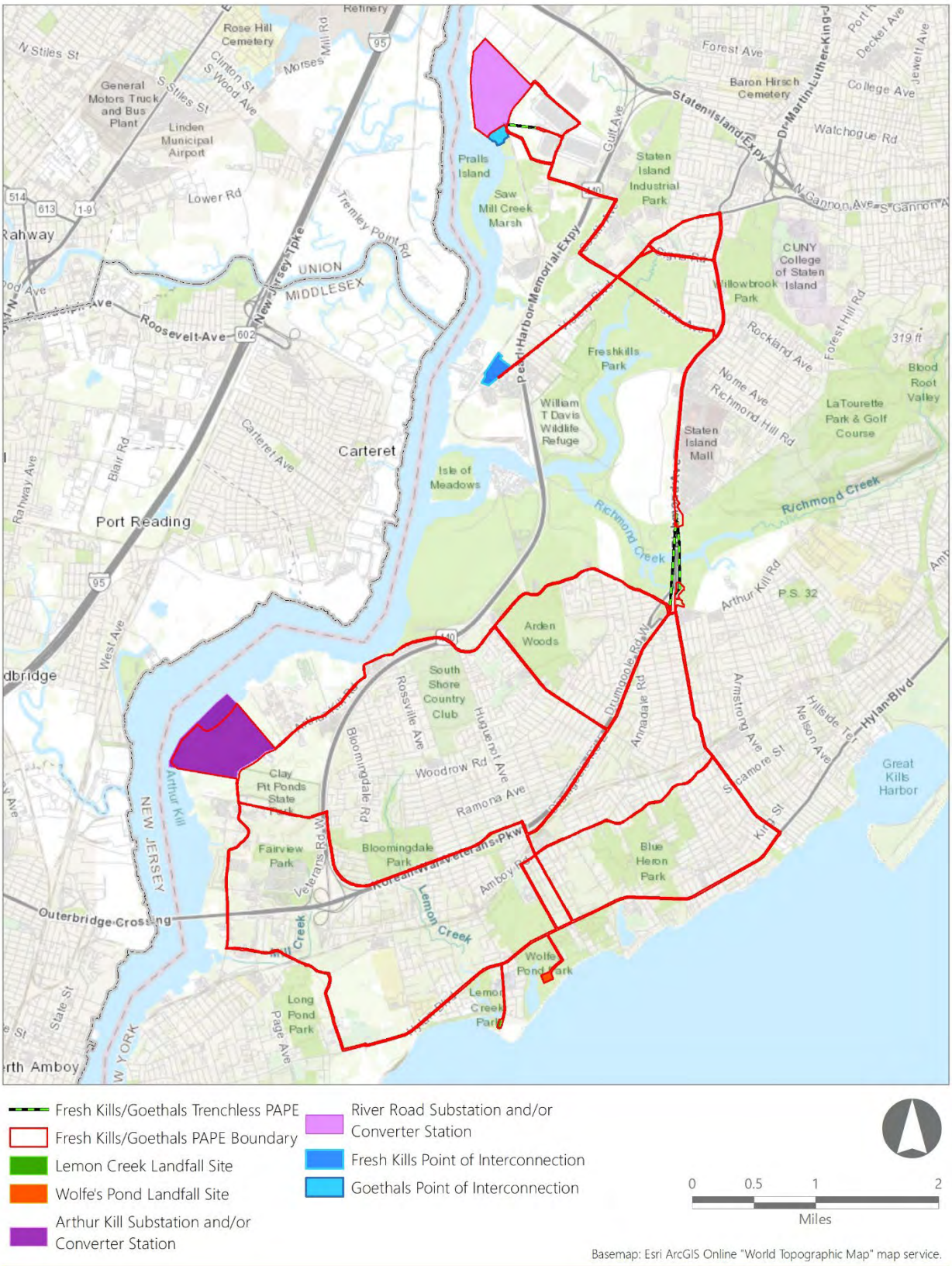
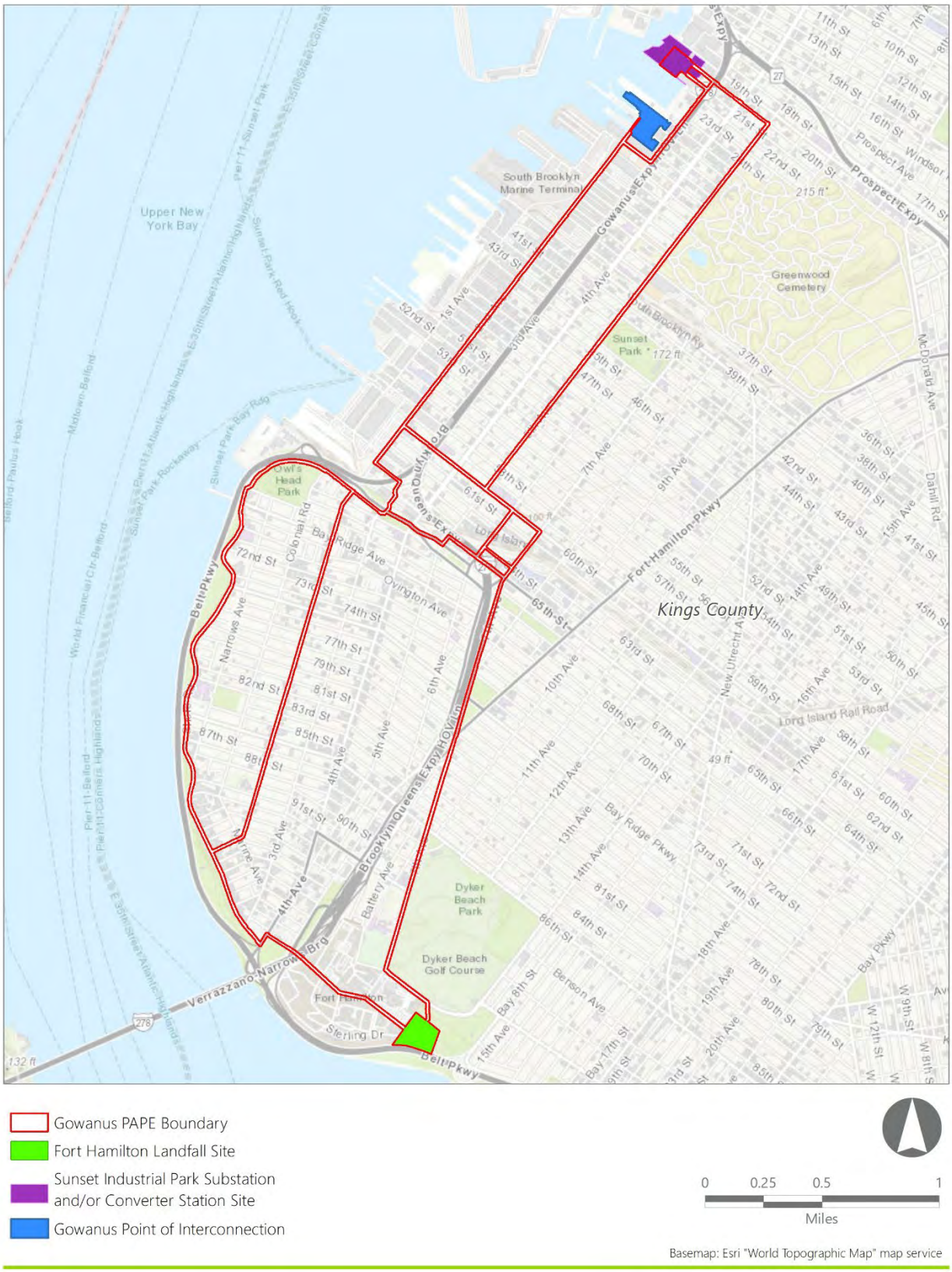


Figure 3. Proposed Gowanus Onshore Route and Associated Facility Sites



1.4 Methods of Investigation

To inventory and characterize previously identified archaeological resources and evaluate the potential for unidentified terrestrial archaeological resources to be present within the PAPE, EDR conducted the following research:

- Archaeological reconnaissance of the Onshore Facility Sites to assess and document existing conditions
- Local and regional histories review
- Review of the NYSHPO's Cultural Resource Information System (CRIS) website
- Review of archaeological site forms within a 0.5-mi. (0.8-km) buffer of the PAPE
- Review of digitally available previous cultural resources surveys encompassing or intersecting portions of the PAPE
- Historical map review
- Topographic survey
- Lidar and hillshade analysis
- Mapping of buried utilities
- Review of as-built road drawings
- Present and past aerial photography review
- Soils assessment, including available soil boring data.

Informed by a synthesis of the research listed above, the PAPE was categorized into "Disturbed" and "Potentially Undisturbed" areas. Following discussions with NYSHPO, and BOEM staff, the "Disturbed", "Potentially Undisturbed", and "Paved" areas within the PAPE were further subdivided to correspond to the archaeological sensitivity categories described in the NYAC *Standards* (NYAC, 1994). The criteria applied by EDR to determine these categories are outlined below:

- Excluded from field survey consideration – Disturbed areas. Slopes greater than 15%. Areas of previous subsurface archaeological testing/survey.

- Low sensitivity – Mapped wetlands and poorly drained soils. Potentially undisturbed areas adjacent to paved roadways (within which the onshore cables are actually sited) where depth to culturally sterile subsoil is less than approximately 2.0 feet (ft.). These areas will be pedestrian surveyed (and may be subject to limited judgmental subsurface archaeological testing [i.e., shovel testing] if deemed appropriate based on observed field conditions).
- Medium sensitivity, included in "Potential Phase IB Survey Areas" for shovel testing – Potentially undisturbed areas outside of road and railroad/bike path ROWs, mapped wetlands, and poorly drained soils. Potentially undisturbed areas adjacent to paved roadways and bike paths (within which the onshore cables are actually sited) where depth to culturally sterile subsoil is greater than approximately 2.0 ft. These areas will be subject to systematic shovel testing.
- Medium-High sensitivity, included in "Potential Phase IB Survey Areas" for shovel testing – Potentially undisturbed areas within approximately 500 ft. of surface freshwater and/or 1,000 ft. of previously identified archaeological sites. These areas will be subject to systematic shovel testing. Potentially undisturbed areas which are completely paved within 1,000 ft. of previously identified archaeological sites are recommended for archaeological monitoring.

In those portions of the proposed onshore routes with Medium to Medium-High sensitivity that overlap with paved roadways or bike paths not suitable for shovel testing, then shovel test pits (STPs) would be excavated within the public ROW on the road shoulder adjacent to the paved areas, as a proxy for what may be beneath the paved areas. This testing strategy is based on methodologies utilized when evaluating the onshore facilities for similar offshore wind projects reviewed by BOEM (EDR, 2020 and 2022b). All Phase IB shovel testing and associated reporting will be presented in the TARA and will be submitted to BOEM and Consulting Parties prior to the Project's ROD.

2.0 FRESH KILLS/GOETHALS PHYSICAL EFFECTS PAPE

2.1 Environmental Setting

Sea levels along the east coast of North America reached their lowest point during the Last Glacial Maximum of the Late Pleistocene, between approximately 26,500 and 20,000 years before present (BP) Pleistocene glaciation created significantly lower sea levels than at present due to the massive amount of seawater absorbed into ice sheets in the northern hemisphere. According to Gornitz, (2007), in North America, sea levels were as much as 394 ft. (120 meters [m]) lower than present day, which exposed large expanses of the eastern North American continental shelf. In particular, lower sea levels from the late Pleistocene to the early Holocene extended the coastal plain by 60 to 80 mi. (97 to 129 km) to the east (Stanzeski, 2005: 58). According to Stanford and Bradley (2012: 91), "during the last ice age the western Atlantic shelf was a vast and environmentally rich plain stretching from the Grand Banks off Newfoundland to Florida and around the Gulf of Mexico." The extension of the eastern coastal plain provided new habitats for plants and animals, as well as humans.

Following this period, deglaciation began in the Northern hemisphere at approximately 20,000 BP and in Antarctica at approximately 14,500 BP. While physically distant from North America, deglaciation in Antarctica between 14,500 and 10,000 BP drastically increased the rate of global sea level rise (Clark et al., 2009). In eastern North America, rising sea levels gradually inundated the coastal plain between approximately 20,000 and 10,000 BP, with the rate of sea level rise increasing between approximately 14,500 and 10,000 BP due to deglaciation within Antarctica. These rising sea levels temporarily created biotically rich estuarine environments which were eventually inundated (Stanford and Bradley, 2012: 111). Sea levels along the east coast of North America continued to rise from 10,000 BP to the present, although at much reduced rates. As ice sheets melted during the late Pleistocene and early to middle Holocene (between approximately 20,000 and 4,000 BP), global sea levels rose and submerged large areas of once habitable land, including land east of the present-day New York shoreline. Global sea levels stabilized at current levels at approximately 4,000 BP, but seaward coastal conditions and estuaries continued to evolve.

The effects of glaciation on New York City were significant, as the southernmost boundary of the Laurentide Ice Sheet reached present-day Brooklyn, Queens, and Staten Island between 22,000 and 20,000 BP. Ice covered Manhattan Island, the northern tip of Staten Island, and the northern half of

Long Island. Vegetation consisted of shrub willows, birches, sedges, grasses, and tundra herbs, which provided a food source for a variety of fauna. As the ice sheet began to recede approximately 18,000 BP, large deposits of sediment and debris were left, and landforms were incised in the environment including moraines, lakes and ponds, kettle holes, peat bogs, meltwater streams, and valleys. The terminal moraine, and the boulders left behind as the glacier receded, formed much of the higher ground throughout New York City. Staten Island and Brooklyn were once connected by the terminal moraine; however, glacial floodwaters 13,000 years BP created the Narrows, naturally severing the neighborhoods. By 6,000 BP, the New York City archipelago emerged, which included Manhattan, Staten Island, and Long Island, among others (Broad, 2018; McCully, 2006).

The Fresh Kills/Goethals Physical Effects PAPE (Fresh/Kills Goethals PAPE) is located within the Hudson Highlands physiographic province. The Hudson Highlands physiographic province consists of relatively rugged topography with bedrock-controlled landforms being prevalent. The dominant condition is that of a rocky upland with little or no soil cover. Minor landforms are kames, kame terraces, outwash, deltas, alluvial fans, and floodplains, which are either depositional glacial or alluvial features. Morainic tills and ice-contact deposits are widespread, and, in some areas, moraines are conspicuous features. Valley bottoms often have alluvial veneers underlain by lacustrine sediments, because temporary glacial lakes occupied many of the valleys during periods of glacial activity. Swamps occur in kettle holes, in depressions in alluvium, and on other low-lying areas with feeble or poor drainage outlets (NYSDOT, 2013).

The northern portion of the PAPE is located within the Manhattan Prong sub-province, located within the Hudson Highlands. The Manhattan Prong includes a portion of Staten Island, all of Manhattan Island, and a small portion of western Long Island and most of Westchester County. The ridges and valleys trend north-north-east and south-southwest, giving the entire area a gently fluted surface or moderate relief. The maximum relief is 800 ft. above mean sea level (amsl) in the north, and sea level in New York City along the coast. The topography is predominantly controlled by the bedrock with superimposed glacial deposits, alluvial deposits and swamps being the minor features. Glacial till, which is mostly sandy, lies over a highly irregular bedrock surface. Many swamps occur either in the poorly drained water-laid deposits or in pockets in the bedrock surface (NYSDOT, 2013).

The Fresh Kills/Goethals PAPE ranges from -2.0 ft. (-0.6 m) amsl at Richmond Creek to a high of approximately 117 ft. (35.7 m) amsl in the Charleston neighborhood of Staten Island. Bodies of water that intersect through the PAPE include tributaries of the Atlantic Ocean, namely Richmond Creek and Lemon Creek, the former of which comprises the principal drainages of the route. Three unnamed tributaries to Richmond Creek also intersect through the PAPE.

2.2 Historic Context

The following cultural context summarizes the Native American and Euro-American settlement of coastal New York and Staten Island as they relate to cultural resources which may be present in the vicinity of the Fresh Kills/Goethals PAPE.

The earliest people to occupy coastal New York would likely have focused their subsistence along the coastal plains and estuaries which are now submerged under the Atlantic Ocean. Therefore, due to rising sea levels, many of the earliest archaeological sites in the region are now underwater. In fact, archaeological sites representing the Paleoindian, Early Archaic, and Middle Archaic Periods (i.e., the period between 13,000 and 6,000 BP) are rare in this region. It is also possible sites from these periods, if they are on the modern-day terrestrial coast, have been overlooked because they often consist of relatively small, low density lithic scatters lacking diagnostic artifacts and dateable carbon-bearing features. This is reflective of the fact that these earliest human groups were highly mobile, existed in relatively low population densities, and did not use ceramic technologies (Ritchie, 1959; Ritchie and Funk, 1973; Braun, 1974; Funk, 1976; Cantwell and Wall, 2001; Stanford and Bradley, 2012).

The Late Archaic Period (6,000-3,500 BP) is characterized by somewhat high residential mobility, which was likely patterned seasonally. Population density was higher during this period than during previous periods and settlement was characterized by small, seasonally occupied settlements located on upland hills and ridges as well as sandy plateaus. This settlement pattern took advantage of the wide variety of natural resources, including marine resources that were available in the coastal regions after the stabilization of sea levels. Diagnostic artifacts and features that indicate a Late Archaic period occupation include Snook Kill projectile point types, as well as evidence of cremation burials in shallow pits (Braun, 1974; Funk, 1976).

The Transitional Period (4,000-3,000 BP) is defined by somewhat high residential mobility, likely on a seasonal basis to pursue small scale exploitation of terrestrial and marine resources, especially shellfish. Coastal camp sites dating to the Transitional Period often contain shell middens. This period is characterized by the material culture associated with the Orient Phase, which includes formal cemeteries and distinctive Orient Fishtail projectile points which were often made of quartz. An important technological change from the Late Archaic Period was the appearance of soapstone (steatite) vessels. The large Transitional Period cemeteries identified on Long Island were the first recovery of evidence for early ceremonial life, which included complex cremation burials on hilltops with ocean views, large amounts of red ochre, and burial goods of projectile points, fire-starting kits, wood carving kits, and steatite bowls. The ceremonial significance of these cemeteries is further demonstrated by the fact that they are located a significant distance away from identified Orient Phase village sites in the region, and that it would have required significant effort by many people to construct the hilltop sites, which were built by hand (Braun, 1974; Ritchie and Funk, 1973; Funk, 1976; Cantwell and Wall, 2001).

The Early Woodland Period (3,000-2,300 BP) is characterized by a foraging tradition combined with an intensive exploitation of marine resources. Increased sedentism during this period resulted in large communities converging on more permanent settlements. These large, semi-permanent settlements leave a more distinct material culture trace, and as a result are more archaeologically visible than the smaller campsites dating to earlier periods. Material culture dating to this period is most often included in the Middlesex Phase, which includes the first appearance of early ceramic technology (transitioning to clay vessels from steatite), large shell middens/shell rings, and large villages. Early Woodland Period ceramics tend to be coarser due to mixing crushed rock for the temper and are rarely decorated extensively (Funk, 1976; Tuck, 1978; Cantwell and Wall, 2001).

The Middle Woodland Period in coastal New York (2,300-1,000 BP) is typified by small scale egalitarian societies relying heavily on foraged resources, such as hunting large terrestrial game, waterfowl, fishing marine resources, and gathering local greens, nuts, berries, and seeds. At this time, the stabilization of the sea levels and local coastal environments led to the development of incredibly productive estuarine environments. While agricultural practices did begin in this period in eastern New York State, they were incorporated toward the end of the period and always remained small-scale endeavors. Archaeological collections in coastal New York include net sinkers and lithic toolkits of the Fox Creek Phase, with

projectile points largely made of non-local argillite, as well as caches of sheet mica and pottery decorated in styles from the Delaware Valley (e.g., net impressed, zone incised). These exotic materials indicate extensive trade relationships extending down to the southern Atlantic seaboard (Funk, 1976; Fitting, 1978; Cantwell and Wall, 2001).

During the Late Woodland Period, groups occupied small sedentary villages, with evidence of large storage and trash pits, and engaged in intensive marine and riverine resource exploitation, as well as terrestrial hunting. The East River Aspect, which includes Bowmans Brook, Clasons Point, and Massapeag Phases, are all hallmarks of this period. These phases include a wide variety of projectile point types and a high frequency of projectile points made of quartz. Large shell rings, middens, and highly decorated ceramics are also prevalent during this period. The clay vessels made in this period were larger, rounder, and thinner, which made them ideal for cooking stews and storing agricultural produce. Identified burials from this period in coastal New York reveal postholes around the bodies, and historic documents describe burials protected from scavengers by hedge rows or constructed wooden palisades. These burials are typically located close to village sites and include relatively few grave goods. Ossuaries were also used during this period, for primary burials and secondary bone bundle burials. Primary records from Europeans during the contact era document how communities displaced by European encroachment would exhume the remains of their family and friends in bundles for transportation to their new homes. A significant amount of dog burials has been identified dated to this period, with their remains placed in individual burials and in ossuaries alongside humans. Based on the perception of the domesticated dog in Lenni Lenape oral history, dogs buried in ossuaries are thought to be the guardians and guides of the bridge that leads to the afterlife (Smith, 1950; Funk, 1976; Lightfoot and Cerrato, 1988; Cantwell and Wall, 2001; Bernstein and Lenardi, 2005).

In the period of contact between Native Americans and Europeans in the sixteenth and seventeenth centuries, the Munsee ("People of the Stony County"), and Unami ("People Down River") Lenape of the norther dialect inhabited present day northern New Jersey, eastern Pennsylvania along the Upper and Middle Delaware River Basin, New York City (including the boroughs of Staten Island and Brooklyn), western Long Island, and the lower Hudson Valley. Most information concerning this period of contact comes from written records from European colonists, with little support from the archaeological record. Indigenous archaeological sites along the coast and near upland regions have poor

stratigraphic integrity and have been historically further compromised by substantial development and erosion.

Although the Lenni-Lenape and other regional Indigenous groups initially invited trade with settlers, they soon suffered disease, racial prejudice, and violence at the hands of European colonizers, initiating the first of several Indigenous migrations out of their homeland to move north or west in the mid seventeenth century. In 1670, the Lenni-Lenape sold Staten Island to the English and by 1718, the northern Haudenosaunee Nations (formerly known as the Iroquois) assumed control of Lenni-Lenape affairs and government as more people sought refuge in Haudenosaunee lands. By the turn of the 19th century, there were less than 100 Lenni-Lenape people still living in their ancestral homeland. (Bayles. 1887; Goddard. 1978; Hahn, 2006; Scott and Burton, 2013; NLLTN, 2022).

Staten Island was first settled by the Dutch in the mid-seventeenth century. The first Dutch settlement was established by Captain David Pietersz de Vries in 1639 at a spring called the Watering Place (what is now Tompkinsville). The New Netherlands colonies came under English control in 1664 following the Dutch defeat in the Second Anglo-Dutch War. For the following century, settlers from the Netherlands, French Huguenot refugees, and increasingly, settlers from England and Scotland, colonized coastal areas between the Hudson and Delaware Rivers under English crown charter and protection. Colonial settlements at this time also included a significant number of enslaved Africans involved in agricultural labor. Richmond County was formed in 1683 as one of the original ten counties in the colony of New York. During the American Revolution, the large English faction of the European population living on Staten Island remained loyalist, while the Dutch and French Huguenot settlers sympathized with the colonist minority. Despite being a loyalist community, British troops landed on the island in 1776 and, within a month, took possession of their livestock, stored food reserves, and lumber from the forests. Although no significant battles took place on Staten Island, American colonists from New Jersey conducted raiding parties during the British occupation (Bayles, 1887; Kroessler. 2005)

Nineteenth century industries on Staten Island were focused on agriculture, fishing (notably oystering), and shipbuilding. Farms on the island provided much of the produce sold in the New York City markets. Foraging for oysters had a long history in the region and supported the Lenni-Lenape for centuries, which many Euro-Americans continued. Free black oystermen from the south settled at Blazing Star (present-day Rossville) in the 1830s, and likely operated a station for the Underground Railroad at the

Zion African Methodist Church. However, the natural oyster beds were fished out by the early 1800s, and Staten Islanders began cultivating privately owned plots of oysters. By the time the Arthur Kill beds were closed in 1917 from pollution, the beds around the island had been producing approximately 200,000 bushels of oysters annually. Other successful industries on the island include textile dyeing and printing, German breweries, brick and terra cotta manufactures, and linoleum manufacture (the origin of Linoleumville, just north of Fresh Kills) (Bayles, 1887; Kroessler, 2005).

As the birthplace of Cornelius Vanderbilt, Staten Island played an important role in the establishment of railroads in New York City and State. Vanderbilt made his fortune via the transition from sail to steam ferry operations, and he owned the eastern ferry terminals where eventual rail lines would connect. With his help, the Staten Island Railroad Company was chartered in 1851, and the line was operational in 1860. However, after several financial issues Vanderbilt was forced to sell his shares of the company. Erastus Wiman then bought the line from Law and incorporated the line as the Staten Island Rapid Transit in 1880. In order to obtain the rights to a ferry terminal for the proposed new North Shore Line, Wiman also sold a controlling interest in the line to Robert Garrett, President of the Baltimore & Ohio Railroad (B&O), for financial assistance with the expansion. However, electric trolleys were installed on the island between 1892 and 1894, with which the railroad was not able to compete, and led to a final bankruptcy for the company, solidifying B&O's ownership of the lines and associated ferries (Bayles, 1887; Minn, 2009).

Staten Island remained incorporated in New York State until 1898 when it became the Borough of Richmond, later renamed to the Borough of Staten Island in 1975. Development and settlement around the north and eastern coasts of Staten Island sharply increased in the late-nineteenth century and early-twentieth century, while the interior and southern coast remained relatively sparsely populated along roadways. However, there is a marked increase in roadway networks by the mid-twentieth century. During this time, the Staten Island Rapid Transit Railroad extended from Tottenville up to Stapleton and the Central Railroad of New Jersey entered the island at Gulf Port and circumnavigated the northeastern coast down to South Beach. A 1923 law requiring the lines have electric traction with the trains forced the railroad to be electrified, which was completed in 1925. Funding from the Federal Public Works during the 1930s provided the means to alter the line for at-grade crossing elimination, despite B&O fighting against the upgrades in the United States Supreme Court. The company would eventually sell the line to Metropolitan Transportation Authority in 1971.

The development in transportation and residential areas in Staten Island paralleled the increase in population. By the late nineteenth century, the population of Staten Island had risen to over 51,000 people, from 3,800 people in 1790. The influx of Italian immigrants moving into to the Borough between 1870 and 1920 also contributed to a major shift in culture and demographics. Today, Italian Americans make up about 36% of Staten Island's population and has a higher percentage of Italian Americans than any other county in the United States (Kroessler, 2005; Minn, 2009).

Starting in the late twentieth century and continuing into the present day, efforts have been made to revitalize the infrastructure and landscape of Staten Island. Fresh Kills Landfill opened in 1948, but by the 1980s it was the largest landfill in the world. After protest from nearby residents, it closed in 2001, though temporarily reopened to receive rubble from the World Trade Center. Since then, the landfill has been in the process of revitalization as the Freshkills Park. Some sections have been open for several years, such as the Schmul Park in Travis, the Owl Hollow Soccer Fields in Arden Heights and the New Springville Greenway near the Staten Island Mall. Remaining sections and associated infrastructure are planned to open by 2036. Another example is the Clay Pit Ponds State Park Preserve which was once the site of nineteenth century mining for white kaolin clay. The abandoned pits remaining from the extensive mining are now ponds in the wetland preserve. Within the preserve is the Gericke Farm, originally purchased by Herbert Gericke in 1946 who was among the first farmers in the nation to grow organic produce. The farm was sold to New York State in 1979 and today it is one of the last working farms in New York City. The New York State Office of Parks, Recreation, and Historic Preservation operates special programs on the farm in conjunction with the City Department of Education (Kroessler, 2005; O'Conner, 2015; Freshkills Park, 2022; NYDEC, 2022).

2.3 SUMMARY OF FRESH KILLS/GOETHALS PAPE RESULTS

The results of the TARA can be summarized as follows with respect to the archaeological potential of the Fresh Kills/Goethals PAPE:

- Prior ground disturbance was identified within all proposed or potential components of the Fresh Kill/Goethals Physical Effects PAPE, which includes the proposed Lemon Creek and Wolfe's Island Landfall Sites, Fresh Kills/Goethals Onshore Route, and the Arthur Kill Road and River Road Substation and/or Converter Station Sites. "Urban Land," and other anthropogenic soil units are prevalent throughout the PAPE. Depth to culturally sterile subsoil outside of

historic fill and anthropogenic soils is variable but typically ranges between 0.5 to 2.0 ft. (0.15 to 0.6 m).

- Atlantic Shores has elected to site the buried onshore cables within existing, previously disturbed road ROWs, where disturbance during construction and installation of the existing infrastructure likely exceeded the depth of potential archaeological deposits. This siting strategy avoids or significantly reduces potential impacts to adjacent undisturbed soils and avoids or minimizes the risk of potentially encountering undisturbed archaeological deposits throughout most of the Fresh Kills/Goethals PAPE.
- Two previously recorded archaeological sites and 24 New York State Museum (NYSM) areas are mapped within or intersecting with the Fresh Kill/Goethals PAPE. In addition, most of the PAPE is located within an NYSHPO determined Archaeological Sensitive Area. Information about these areas is scarce. One NYSM site and the 24 NYSM areas are Native American sites described variously as camps, traces of occupation, village, and middens. One NYSM area is reported to contain burials. Note that NYSM areas typically indicate areas of elevated archaeological sensitivity since the sites lack spatial specificity and were never formally delineated. As such, EDR considered all NYSM areas as locations of elevated sensitivity rather than discrete sites to be avoided.
- A total of 147 previously recorded archaeological sites, 20 NYSM sites, and 47 NYSM areas are within 0.5 mi (0.8 km) of the Fresh Kills/Goethals PAPE. Additionally, one archaeological district is immediately adjacent to the PAPE. Of the 54 sites associated with this district, 46 are within 0.5-mi. (0.8-km) of the PAPE. Of the sites with USN identifiers, there are 106 historic-period sites, six multicomponent sites, 35 Native American Sites, and one site with no information. Of the NYSM sites and areas, one NYSM site dates to the historic period as one of the oldest free black communities in New York. Eight NYSM sites/areas have no information available. The remaining NYSM sites and areas are Native American sites described variously as camps, hamlets, villages, workshops, middens, and traces of occupation. SThe number of archaeological resources within the vicinity indicates generally elevated archaeological sensitivity of the area on which the Fresh Kills/Goethals PAPE is sited.
- Historical map review demonstrates that much of the Fresh Kills/Goethals PAPE remained relatively undeveloped until the late nineteenth and early twentieth century, when various

areas of the PAPE were developed for roads, railroads, and various structures that resulted in multiple periods of extensive earthmoving and grading throughout the PAPE. MDS are mapped around the Lemon Creek Landfall Site and much of the Fresh Kills/Goethals onshore route, concentrated in the southern and western portions of the route along Arthur Kill Road, Hyland Boulevard, Huguenot Avenue, and Richmond Avenue.

- One reported former cemetery is located near the Wolfe's Pond Landfall Site, five cemeteries are located adjacent to the Fresh Kills/Goethals Onshore Route, and one cemetery is located near the Arthur Kill Road Substation and/or Converter Station Site. These cemeteries are all located outside of the PAPE and no ground disturbance will occur within the cemeteries during construction associated with the proposed project components. The Project's Monitoring Plan and Post Review Discovery Plan (MPRDP; Section 4.1.2) will be in effect for all construction and installation activities, providing guidance and instructions to all contractors on how to proceed in the event (however unlikely) of encountering potential grave shafts or burials.
- Pedestrian survey (with the possibility of judgmental shovel testing) is recommended in any Low sensitivity, "Potentially Undisturbed" areas adjacent to paved roadways (within which the onshore cables are sited) where depth to culturally sterile subsoil is less than approximately 2.0 ft. as well as in any wetlands or areas of steep slope.
- Targeted archaeological testing and/or additional archaeological monitoring is recommended within portions of all proposed or potential components of the Fresh Kill/Goethals Physical Effects PAPE, indicated as Medium and Medium-High sensitivity "Potential Phase IB Survey Areas." In addition, the Project's MPRDP (Section 4.1.2) for terrestrial archaeological resources will be in effect for all construction and installation activities, providing guidance and instructions to all contractors on how to proceed in the event (however unlikely) of encountering unanticipated cultural resources during work in the Fresh Kills/Goethals PAPE

3.0 GOWANUS PHYSICAL EFFECTS PAPE

3.1 Environmental Setting

The Gowanus Physical Effects PAPE (Gowanus PAPE) is geographically adjacent to the Fresh Kills/Goethals PAPE. Therefore, much of the same environmental history discussed in Section 2.1 applies here, namely the history of glaciation, the transformation of the eastern coastline, and the discussion of the Hudson Highlands physiographic province, Manhattan Prong section.

The Gowanus Onshore Route begins at the Fort Hamilton Landfall Site and continues north for approximately 4 mi. (6.4 km). The elevations within the Gowanus PAPE range from 7.64 ft. (2.33 m) amsl in the grounds of the Sunset Industrial Park Substation and/or Converter Station to 91.63 ft. (27.93 m) amsl in the Sunset Park neighborhood of Brooklyn. No major drainages intersect through the Gowanus Onshore Route.

3.2 Historic Context

A summary of the Native American and Euro-American settlement of Coastal New York as it relates to cultural resources which may be present in the vicinity of the Gowanus PAPE was presented in Section 2.2. The following is additional context information specific to the Gowanus PAPE as it applies to Kings County (Borough of Brooklyn).

Brooklyn (originally Breuckelen) was formed in1646 from Dutch settlements in New Netherland and re-established under colonial English rule in 1664. Kings County was established in 1683 and its boundaries became coextensive with the City of Brooklyn in 1896. Two years later the city became one of the five New York City boroughs. The Canarsee, a Delaware Nation Tribe, inhabited Brooklyn until a majority of the tribe left by the late 1600s after signing their land away between 1636 and 1684. European settlers were primarily Dutch, with some Norwegian, and Flemish, with a large faction of enslaved Africans (Stiles, 1884; Manbeck, 2005).

By the late-eighteenth century and early-nineteenth century, Brooklyn had developed into a wealthy suburb of Manhattan. Affluent residents took the ferry to the island and enjoyed increasing business along the shoreline, as well as city mandated sanitation and new brick sidewalks at home in Brooklyn. The population in nineteenth century Brooklyn grew exponentially. In 1771, Kings County recorded

just over 2,000 residents, but with the development of the shoreline near the ferry, the population tripled between 1790 and 1810. Brooklyn's population became the second largest in New York State by 1840 and the third largest in the nation by 1860 (Custer, 1911; Manbeck, 2005).

During the nineteenth century, Brooklyn was largely an agricultural community, with industry focused along the shoreline and ferries. Produce from the farms went to markets in Manhattan. By the turn of the twentieth century, the farmland was sold for development, and the industries in northern Manhattan utilized the ports along Brooklyn's coast for their expansion. Third Avenue, which is the oldest road in Brooklyn, became a popular location for these growing industries. Large industries that started in the 1800s along this road and area include shipbuilding, glue manufacturing, printing, ceramics, petroleum, glassmaking, iron founding, sugar, pharmaceuticals, breweries, and pencil manufacturing (Stiles, 1884; Custer, 1911; Manbeck, 2005; FNY, 2010).

The industrial and population boom in Brooklyn was facilitated by the development of improved transportation systems in the region, with ferries, stagecoaches, turnpikes, toll roads, steam ships, and railroads. In the early-eighteenth century, ferry service between Brooklyn and Manhattan became more popular, and the first stagecoach operation carried passengers from Brooklyn to Sag Harbor. Robert Fulton's ferry service across East River for commuting city workers began using steam powered boats in 1814 and was able to provide a ferry within every seven minutes for passengers. Gowanus Creek in Red Hook was altered in the mid-1800s for the construction of a canal that would accommodate the ever-increasing growth of industry along the coast. The Erie Basin was constructed in 1924 as the official terminus for the Erie Barge Canal and was the busiest canal for commercial shipping until the 1950s (Stiles, 1884; Custer, 1911; Manbeck, 2005).

The first railroad company to operate in Brooklyn was established in 1832, the Brooklyn and Jamaica Railroad Company, which became the Long Island Railroad Company two years later. When steam-powered engines largely replaced the horse drawn railroad carriages after the Civil War, Brooklyn saw a second boom of development in the late-nineteenth century, from six private railroad companies operating in the county, until they were each incorporated into the Brooklyn Rapid Transit Company in 1896. The first subway opened in 1908. After declaring bankruptcy, the Brooklyn Rapid Transit Company was bought out by the Brooklyn-Manhattan Transit Company in 1923, but by 1940, the subway system was owned and operated by the city. Construction on the Brooklyn Bridge began in

1868 and opened in 1883. It was the first permanent link across the East River, and played a large role in uniting the cities, which ultimately led to their consolidation. In 1898, Brooklyn became a borough of New York City (Stiles, 1884; Custer, 1911; Flagg, 2005; Manbeck, 2005).

Brooklyn in the early-twentieth century continued to grow, and since 1930, Kings County maintained the highest populated county in New York State as of 2005. Approximately 35% of the population in 1910 was European, including Irish, Italian, Jewish, Polish, Norwegian, Danish, Swedish, and Finnish immigrants. The creation of the New York City Housing Authority in 1934 gave the city control in addressing the housing crisis during the Great Depression (including the Red Hook Houses project in 1939), and then later for veterans after WWII (Manbeck, 2005). The population of Kings County shifted dramatically in the second half of the twentieth century, as a significant portion of the white population moved to the suburbs of Long Island while, increasingly, African American, Latin American and Asians moved into the borough. In 1944 the white population in Brooklyn was approximately 96%, which decreased to 41% by 1980. The shifting dynamics led to increased racial tension in the region, with incidents of violence and riots. However, the recent influx of immigrants coming to the city in the late-twentieth and early twenty-first centuries has contributed to a shift in culture. Today, more neighborhoods have been established as historic districts, and overall gentrification has persuaded a new generation to reside in and revitalize the city (Manbeck, 2005).

3.3 Summary of Gowanus PAPE Results

The results of the TARA can be summarized as follows with respect to the archaeological potential of the Gowanus PAPE:

- Prior ground disturbance was identified within the proposed Gowanus Onshore Route, Sunset Industrial Park Substation and/or Converter Station Site, and Fort Hamilton Landfall Site. "Urban Land," and other anthropogenic soil units are prevalent throughout the PAPE. Depth to culturally sterile subsoil outside of historic fill and anthropogenic soils in the Gowanus PAPE is variable but typically ranges between 0.5 to 2.0 ft. (0.15 to 0.6 m).
- As noted previously, Atlantic Shores has elected to site the buried onshore cables within existing, previously disturbed road ROWs, where disturbance during construction and installation of the existing infrastructure likely exceeded the depth of potential archaeological deposits. This siting strategy avoids or significantly reduces potential impacts to adjacent

undisturbed soils and avoids or minimizes the risk of potentially encountering undisturbed archaeological deposits throughout most of the Gowanus PAPE

- Two previously recorded NYSM areas intersect with the Gowanus PAPE. Information about these areas is scarce but both are Native American sites described variously as camps, middens, and caches. In addition, portions of the Gowanus Onshore Route are located within an NYSHPO Archaeological Sensitive Area. Note that NYSM areas typically indicate areas of elevated archaeological sensitivity since the sites lack spatial specificity and were never formally delineated. As such, EDR considered all NYSM areas as locations of elevated sensitivity rather than discrete sites to be avoided.
- Four previously recorded archaeological sites are located within 0.5 mi. (0.8 km) of the Gowanus PAPE. All four sites are Euro-American in cultural affiliation, with dates ranging from the early eighteenth century to the early twentieth century.
- Historical map review demonstrates that areas of the Gowanus PAPE were among some of the first areas in Brooklyn to be settled by the mid-nineteenth century. These areas continued to be heavily developed for the next 100 years. The Fort Hamilton Landfall Site remained undeveloped until the early to mid-twentieth century, when it was developed for ballfields. MDS along the Onshore Route are largely concentrated along coastal regions and roads. Road and structure construction throughout the PAPE has resulted in multiple periods of extensive earthmoving and grading.
- Two reported cemeteries are located near the Gowanus Onshore Route. No ground disturbance associated with the construction of the proposed project components will occur within the cemeteries since they are both outside of the PAPE. The Project's MPRDP (Section 4.1.2) will be in effect for all construction and installation activities, providing guidance and instructions to all contractors on how to proceed in the event (however unlikely) of encountering potential grave shafts or burials.
- Pedestrian survey (with the possibility of judgmental shovel testing) is recommended in any Low sensitivity, "Potentially Undisturbed" areas adjacent to paved roadways (within which the onshore cables are sited) where depth to culturally sterile subsoil is less than approximately 2.0 ft. as well as in any wetlands or areas of steep slope.

- Targeted archaeological testing and/or additional archaeological monitoring is recommended within portions of the proposed Fort Hamilton Landfall Site, Sunset Industrial Park Substation and/or Converter Station Site, and Gowanus Onshore Route indicated as Medium and Medium-High sensitivity "Potential Phase IB Survey Areas." In addition, the Project's MPRDP (Section 4.1.2) will be in effect for all construction and installation activities, providing guidance and instructions to all contractors on how to proceed in the event (however unlikely) of encountering unanticipated cultural material and/or cultural features during work in the Gowanus PAPE.

4.0 SUMMARY AND CONCLUSIONS

4.1 Summary of TARA Results and Recommended Phase IB Survey

The results of background research, archaeological reconnaissance, and desktop assessment described in the TARA indicate that the proposed Onshore Facilities associated with the Fresh Kills/Goethals and Gowanus Physical Effects PAPEs have been significantly disturbed due to transportation infrastructure development (principally roadways and railroads) and adjoining business and residential neighborhoods.

Since Atlantic Shores has elected to site the buried onshore cables within existing, previously disturbed road ROWs, where disturbance during grading, construction, and installation of the existing infrastructure likely exceeded the approximately 1.0 to 2.0 ft. (0.3 to 0.6 m) depth to subsoil, there is a very low likelihood for intact archaeological resources to be located within the Fresh Kill/Goethals or Gowanus Onshore Routes. However, in areas outside of mapped soil disturbance, or in areas of potentially intact eolian soils deposits, the likelihood for intact archaeological resources (below surface disturbances) increases.

Since there is very little likelihood for intact or potentially significant archaeological resources to be located within those portions of the PAPE categorized as "Disturbed" in the Archaeological Reconnaissance and Desktop Assessment Results, and they have been excluded from field survey consideration.

Pedestrian survey (with judgmental shovel testing if deemed appropriate based on observed field conditions) is recommended in any Low sensitivity, "Potentially Undisturbed" areas adjacent to paved roadways (within which the onshore cables are actually sited) where depth to culturally sterile subsoil is less than approximately 2.0 ft. as well as in any wetlands or areas of steep slope.

Targeted archaeological shovel testing is recommended within those portions of the proposed Onshore Facilities that are sited within areas of the PAPE categorized as Medium and Medium-High sensitivity and "Potentially Undisturbed". This includes portions of the proposed Lemon Creek, Wolfe's Pond, and Fort Hamilton Landfall Sites; portions of the Arthur Kill Road and River Road Substation and/or Converter Station Sites, and targeted areas of the Fresh Kills/Goethals and Gowanus Onshore

Routes. A summary of the sensitivity and the identified "Potential Phase IB Survey Areas" for each proposed Onshore Facility Site is included in Table 2.

Table 2. Summary of identified "Potential Phase IB Survey Areas" for Proposed Onshore Facility Sites

Onshore Facility Site	Archaeological Sensitivity	Recommended Additional Measures to Identify Archaeological Resources
Fresh Kills/Goethals Physical Effects PAPE 606.33 ac.		**Combined Phase IB STP Survey 108.03 ac. (17.82%)**
Landfall Site(s)		
Lemon Creek Landfall Site 0.76 ac.	Disturbed, Medium-High	Targeted Phase IB STP Survey 0.09 ac. (11.84%) Archaeological Monitoring
Wolfe's Pond Landfall Site 2.74 ac.	Disturbed, Medium-High	Targeted Phase IB STP Survey 0.49 ac. (17.88%) Archaeological Monitoring
Onshore Substation and/or Converter Station Site(s)		
Arthur Kill Road Substation and/or Converter Station Site 174.29 ac.	Disturbed, Low to Medium-High	Targeted Phase IB STP Survey 39.03 ac. (22.40%) Archaeological Monitoring
River Road Substation and/or Converter Station Site 150.16 ac.	Disturbed, Medium	Targeted Phase IB STP Survey 64.18 ac. (42.74%) Archaeological Monitoring
Fresh Kills/Goethals Onshore Interconnection Cable Route Options		
Fresh Kills/Goethals Onshore Route 276.76 ac.	Disturbed, Low to Medium-High	Targeted Phase IB STP Survey 16.80 ac. (6.07%) Archaeological Monitoring
Gowanus Physical Effects PAPE 144.93 ac.		**Combined Phase IB STP Survey 6.00 ac. (4.14%)**
Landfall Site(s)		
Fort Hamilton Landfall Site 10.89 ac.	Disturbed, Medium	Targeted Phase IB STP Survey 3.45 ac. (31.68%) Archaeological Monitoring
Onshore Substation and/or Converter Station Site(s)		
Sunset Industrial Park Substation and/or Converter Station Site 6.50 ac.	Disturbed, Medium	Archaeological Monitoring
Gowanus Onshore Interconnection Cable Route Options		
Gowanus Onshore Route 126.28 ac.	Disturbed, Low to Medium-High	Targeted Phase IB STP Survey 2.54 ac (2.01%) Archaeological Monitoring

Any alternate routing options or substation and/or converter locations removed from Project consideration prior to conducting any potential Phase IB archaeological field survey for the Projects will result in the omission of any corresponding "Potential Phase IB Survey Areas" from the field effort. Additional "Potential Phase IB Survey Areas" may be added within portions of the PAPE categorized as "Potentially Undisturbed" if Project updates or alterations call for the use of roadside ROW or additional areas outside of the current siting.

4.1.1 Potential Phase IB Survey Methodology

If potential additional measures to identify archaeological resources are deemed appropriate, Atlantic Shores anticipates following the general survey methodology described below for any necessary Phase IB archaeological survey (as described herein).

Prior to initiating the archaeological fieldwork, New York 811 will be contacted to request a utility mark-out. The utility mark-out will enable the archaeologists to avoid excavation in the area of existing utilities and help identify additional previously disturbed areas where no archaeological work is necessary.

The archaeological survey would consist of the hand excavation of STPs in a 50-by-50-ft. (15-by-15-m) grid or transects in areas identified as "Potentially Undisturbed". In Medium to Medium-High sensitivity areas of proposed ground disturbance that overlap with paved roadways or bike paths not suitable for subsurface archaeological testing (i.e., shovel testing), STPs would be excavated within the public ROW on the road shoulder adjacent to the paved areas, as a proxy for what may be beneath the paved areas. This testing strategy is based on methodologies utilized when evaluating the onshore facilities for similar offshore wind projects evaluated by BOEM (EDR, 2020 and 2022b). Note that excavation will not occur in areas consisting of wetlands, inundated terrain, or slopes in excess of 15 to 20%, as these areas are not required to be tested under the NYAC *Standards* (NYAC, 1994).

STPs will measure approximately 18 to 20 inches (in.) (45 to 50 centimeters [cm]) in diameter and be excavated to a depth of at least 4.0 in. (10 cm) into a sterile subsoil stratum or to the practical limits of hand excavation (typically 3.0 to 4.0 ft. [0.9 to 1.2 m] below the ground surface). No machinery or heavy equipment will be used during excavation. The locations of all STPs will be recorded with sub-meter accurate global navigation satellite system (GNSS) equipment and noted on field maps. Stratigraphic

profiles, including depth, soil color, and texture, for all shovel tests will be recorded digitally on standardized field record forms.

All soils excavated from STPs would be screened through 0.25-in. (0.6-cm) mesh hardware cloth over tarps (to avoid leaving soil piles) to allow for the identification of artifacts. The presence of clearly modern materials, such as plastic fragments, modern bottle glass fragments, or twentieth-century architectural materials in shovel tests will be noted on field forms, but these materials will not be collected for subsequent analysis. All STPs will be backfilled immediately upon completion. All shovel tested areas will be restored to match pre-existing conditions.

If artifacts or other archaeological materials (e.g., lithic artifacts/stone tools, projectile points, pottery sherds, indications of a former building) are recovered from STPs, then additional STPs at closer intervals may be excavated to determine if an archaeological site is present. If artifacts are recovered from an isolated shovel test, then up to eight additional radial STPs will be excavated at 3.3- and 10-ft. (1.0- and 3.0-m) intervals around the original STP to determine whether the artifacts represent an isolated find or may indicate the presence of a more substantial archaeological site. If any archaeological finds are observed, these will be collected and returned to the archaeologists' laboratory facility where they will be washed, rebagged in labeled, clean, 4-milimeter. archival quality plastic bags and inventoried in accordance with the NYAC *Standards* (NYAC, 1994).

Results of any subsequent Phase IB archaeological survey, as well as tabulated field record forms and a complete inventory of all potential archaeological finds, will be included in a subsequent revision or in an addendum to this TARA report which will be submitted to BOEM and the Consulting Parties prior to the Project's ROD. The report will be prepared in accordance with applicable portions of the NYSHPO's *Phase I Archaeological Report Format Requirements* (NYSHPO, 2005).

4.1.2 Archaeological Monitoring

To further mitigate the potential (however unlikely) for encountering archaeological resources during installation of the Onshore Facilities, Atlantic Shores has prepared a MPRDP for Terrestrial Archaeological Resources, which includes stop-work and notification procedures to be followed if a cultural resource is encountered during installation. The MPRDP will be included as an attachment to the future MOA executed among BOEM and Section 106 consulting parties in EIS Finding of Effects

and will memorialize specific measures that Atlantic Shores will take to resolve adverse effects to identified historic resources and to minimize potential effects to other historic properties in the event of a post-review discovery. The plan outlines the steps for dealing with potential unanticipated discoveries of cultural artifacts and/or features, including human remains, during the construction of the proposed Onshore Facilities. In summary the MPRDP:

- Presents to regulatory and review agencies the plan Atlantic Shores and its contractors and consultants will follow to prepare for and potentially respond to unanticipated cultural resources (i.e., terrestrial archaeological) discoveries;
- Includes provisions and procedures allowing for a Cultural Monitor (Archaeologist) and Tribal Monitors to be present during construction and installation activities conducted in targeted areas of concern as identified in the TARA and through consultation with Native American Tribes; and
- Provides guidance and instruction to Atlantic Shores personnel and its contractors and consultants as to the proper procedures to be followed in the event of an unanticipated cultural resource (i.e., terrestrial archaeological) discovery.

Based on the results of the archaeological reconnaissance and desktop assessment, EDR recommends monitoring in portions of the Fresh Kills/Goethals and Gowanus PAPEs within areas of heighted archaeological sensitivity lacking exposed ground surface suitable for traditional Phase IB subsurface testing. Note that scope of monitoring is subject to change and areas may be added or refined following Section 106 consultation with BOEM, NYSHPO, and consulting Native American Tribes, and other consulting parties.

4.2 Conclusions

Atlantic Shores has proposed Onshore Facilities be primarily located within paved roadways, industrial lots, and parking lots where disturbance during construction and installation of the existing infrastructure likely exceeded the depth of potential archaeological deposits. The results of background research, archaeological reconnaissance, and desktop assessment described herein indicate that the proposed Onshore Facility Sites have been significantly disturbed due to transportation infrastructure development (principally roadways) and adjoining business and residential neighborhoods.

There is a very low likelihood of intact or potentially significant archaeological resources to be located within those portions of the PAPE categorized as "Disturbed" in the Archaeological Reconnaissance and Desktop Assessment Results, and they have been excluded from field survey consideration.

Pedestrian survey (with judgmental shovel testing if deemed appropriate based on observed field conditions) is recommended in any Low sensitivity, "Potentially Undisturbed" areas adjacent to paved roadways (within which the onshore cables are actually sited) where depth to culturally sterile subsoil is less than approximately 2.0 ft. as well as in any wetlands or areas of steep slope.

Targeted archaeological shovel testing is recommended within those portions of the proposed Onshore Facilities that are sited within areas of the PAPE categorized as Medium and Medium-High sensitivity and "Potentially Undisturbed" (Table 2). This includes portions of the proposed Lemon Creek, Wolfe's Pond, and Fort Hamilton Landfall Sites; portions of the Arthur Kill Road and River Road Substation and/or Converter Station Sites, and targeted areas of the Fresh Kills/Goethals and Gowanus Onshore Routes.

Two previously recorded archaeological sites and 24 NYSM areas, are mapped within or intersecting with the Fresh Kill/Goethals PAPE. In addition, the majority of the PAPE is within a NYSHPO determined Archaeological Sensitive Area. Information about these sites and areas is scarce. One NYSM site and the 24 NYSM areas are Native American sites described variously as camps, traces of occupation, villages, middens, and burials. Note that EDR considered all NYSM Areas as locations of elevated sensitivity rather than discrete sites to be avoided since these sites lack spatial specificity and were never formally delineated. Due to the level of urban development in the Fresh Kills/Goethals PAPE, and the lack of information on these previously recorded archaeological sites, targeted Phase IB archaeological shovel testing is recommended in "Potentially Undisturbed" portions of the PAPE that overlap these NYSM sites and areas, where depth to culturally sterile subsoil is greater than approximately 2.0 ft. (0.6 m).

A total of 147 previously recorded archaeological sites, 20 NYSM sites, 47 NYSM areas, and one archaeological district are located within 0.5 mi. (0.8 km) of the Fresh Kills/Goethals PAPE. Of the sites with USN identifiers, there are 106 historic-period sites, six multicomponent sites, 35 Native American sites, and one site with no information. Of the NYSM sites and areas, one is an African American historic

period site, eight have no information available, and the remaining are Native American sites. Note that EDR considered all NYSM areas as locations of elevated sensitivity rather than discrete sites to be avoided since these sites lack spatial specificity and were never formally delineated. Of the total 147 resources, 60 previously recorded archaeological sites, 18 NYSM sites and one archaeological district are located adjacent to the Fresh Kills/Goethals PAPE. The archaeological district contains 54 previously identified archaeological sites. Of the 54 sites within the district, 46 sites are within 0.5 mi. (0.8 km) of the PAPE and six sites are located adjacent to the PAPE. Due to the level of urban development in the Fresh Kills/Goethals PAPE, targeted Phase IB archaeological shovel testing is recommended in "Potentially Undisturbed" portions of the PAPE within 1,000 ft. of the previously recorded archeological resources listed above, where depth to culturally sterile subsoil is greater than approximately 2.0 ft. (0.6 m). Note that additional mitigation or avoidance measures may be recommended depending on the results of Phase IB testing in these areas. Archaeological monitoring is also recommended in areas with Medium-High Sensitivity where the ground surface is unsuitable for traditional Phase IB testing and/or sites adjacent to the PAPE where burials were uncovered.

Two previously recorded NYSM areas intersect with the Gowanus PAPE. Information about these areas is scarce but both are Native American sites described variously as camps, middens, and caches. In addition, portions of the Gowanus Onshore Route are located within an NYSHPO Archaeological Sensitive Area. Note that EDR considered all NYSM areas as locations of elevated sensitivity rather than discrete sites to be avoided since these sites were never formally delineated. Due to the level of urban development in the Gowanus PAPE, targeted Phase IB archaeological shovel testing is only recommended in "Potentially Undisturbed" portions of the PAPE that overlap these NYSM areas, where depth to culturally sterile subsoil is greater than approximately 2.0 ft. (0.6 m).

An additional four previously recorded archaeological sites are located adjacent to the Gowanus PAPE. All four sites are Euro-American in cultural affiliation, with dates ranging from the early eighteenth century to the early twentieth century. One site has been determined eligible for listing on the NRHP. No ground disturbance from construction associated with the Gowanus Onshore Route will occur within that site. Areas of the Gowanus PAPE located within 1,000 ft. of the remaining three sites are considered to have Medium-High sensitivity for the presence of archaeological resources and are recommended for targeted Phase IB archaeological shovel testing. Note that additional mitigation or avoidance measures may be recommended depending on the results of Phase IB testing in these areas.

Archaeological monitoring is also recommended in areas with Medium-High Sensitivity where the ground surface is unsuitable for traditional Phase IB testing.

Furthermore, EDR recommends that qualified professional archaeologists and/or Tribal representatives monitor the installation of the onshore facilities in areas of the PAPE with heightened archaeological sensitivity lacking adjacent exposed ground surface for traditional Phase IB subsurface testing. This testing strategy and monitoring proposal is based on methodologies utilized when evaluating proposed onshore facilities for similar offshore wind projects reviewed by BOEM, insight gained through EDR's involvement in consultation with Native American tribes (EDR, 2020 and 2022b), and the NYAC *Standards*. It is anticipated that the exact locations and scope of this monitoring will be determined in consultation with BOEM, NYSHPO, and consulting Native American Tribes during Section 106 consultation regarding the Project.

Additionally, Atlantic Shores has prepared an MPRDP for Terrestrial Archaeological Resources, which includes stop-work and notification procedures to be followed if a cultural resource is encountered during installation. The MPRDP will be included as an attachment to the future MOA to be executed among BOEM and Section 106 consulting parties in EIS Finding of Effects.

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