

Draft Final Integrated Interim
Response Feasibility Report and
Environmental Assessment for
Actionable Elements

**NEW YORK-NEW JERSEY
HARBOR AND TRIBUTARIES
COASTAL STORM RISK
MANAGEMENT FEASIBILITY
STUDY**

**APPENDIX A-1G
OAKWOOD BEACH
CULTURAL RESOURCES
ASSESSMENT**

March 2026

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Note: this Actionable Element Site has not been recommended as part of this Final Integrated Interim Response FR/EA; however, this Appendix has been updated with the optimized plan features detailed in Chapter 6 of the Main Report. Refer to the Draft Report appendices for pre-optimization plan features of which are documented in Chapters 1-5 of the Main Report. Any additional comments received on this Actionable Element Site will be incorporated in the future if authorized for further study.

1 EXECUTIVE SUMMARY

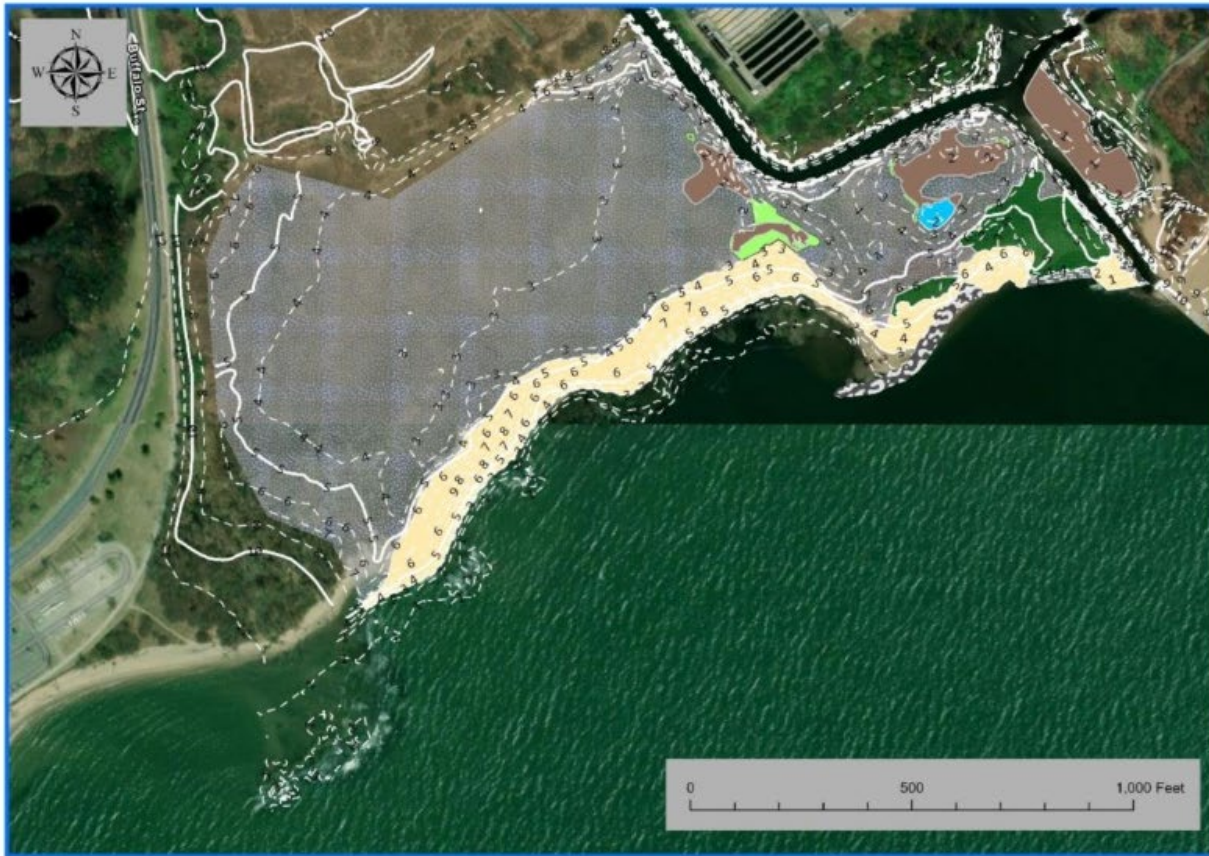
This Sub-Appendix supports the Integrated Interim Response Feasibility Report (FR) and Environmental Assessment (EA) and supplements the Oakwood Beach Environmental Assessment A-1. It provides detailed technical information specific to the Oakwood Beach Actionable Element (AE) to support the summary-level discussion presented in the main report. This document focuses on existing cultural resource conditions and the evaluation of potential adverse and beneficial effects associated with the No Action/Future Without Project Condition and the Action Alternative.

Cultural resources were evaluated in accordance with the National Environmental Policy Act (NEPA), Section 106 of the National Historic Preservation Act (NHPA), and applicable federal and state regulations. The Direct Area of Potential Effects (APE) for the AE encompasses approximately 62.2 acres in Staten Island, New York, with an Indirect (visual) APE extending up to one mile from proposed measures. Review of available data from the New York State Office of Parks, Recreation, and Historic Preservation (NYS OPRHP), New York State Museum (NYSM), National Oceanic and Atmospheric Administration (NOAA), National Park Service (NPS), and the New York City Landmarks Preservation Commission (LPC) identified two previously recorded SHPO-cataloged archaeological sites of undetermined National Register of Historic Places (NRHP) eligibility within the Direct APE. Two above-ground structures, the Tarlton Street Bridge and the Wastewater Treatment Plant, are present but are not eligible for listing in the NRHP. No NR-listed or NR-eligible properties, historic districts, cemeteries, shipwrecks, or LPC-designated landmarks were identified within the Direct APE.

Under the No Action Alternative, no measures would be implemented to address existing or future coastal flood risks. Cultural resources within the study area would remain vulnerable to ongoing and intensifying impacts from sea-level rise, storm surge, tidal erosion, and extreme weather events, resulting in continued degradation and potential loss over time.

The Action Alternative includes nature-based coastal resilience measures that have the potential to result in limited subsurface disturbance in areas of moderate terrestrial and submerged archaeological sensitivity during construction. Accordingly, the Action Alternative has the potential to result in adverse effects of low-to-moderate intensity to archaeological resources. These potential effects would be addressed through avoidance where feasible, archaeological monitoring or testing in sensitive areas, implementation of unanticipated discovery procedures, and execution of a Programmatic Agreement to ensure compliance with Section 106 of the NHPA. No adverse effects to above-ground historic properties or to historic properties within the visual APE are anticipated.

The Action Alternative is also expected to result in beneficial effects to cultural resources by reducing long-term exposure to coastal flooding and storm-related damage, restoring historically characteristic shoreline features, enhancing the cultural viewshed, and supporting the long-term preservation and resilience of cultural landscapes in the Oakwood Beach study area.




NY-NJ HARBOR AND TRIBUTARIES STUDY

Oakwood Beach Actionable Element

Existing Conditions
 Staten Island, New York

Date: 6/26/2025



U.S. ARMY
 CORPS OF ENGINEERS
 NEW YORK DISTRICT



Legend

Existing Contours
 - - - 5ft Interval Contours
 - - - 1ft Interval Contours

Existing Environmental Zones

Mud Flat Zone	Maritime Shrub Land Zone
Spartina Zone	Dune Beach Zone
Salt Panne Zone	
Existing Rip Rap	
Phragmites Zone	

Figure 1. Existing Conditions at Oakwood Beach

2 INTRODUCTION

All NYNJHAT Study Alternatives contained primary structural features, such as floodwalls, seawalls, and storm surge barriers as well as secondary, complimentary Nature-Based Solutions (NBS) and Nonstructural Measures. At the time of the release of the September 2022 Draft Integrated Feasibility Report and Tier 1 (Programmatic) EIS, only the structural measures had been included as those would provide the primary CSRSM function, and complimentary NBS and Nonstructural Measures would be identified for inclusion into all Alternatives at a future date. Following substantial public review period of 175+ days, and approximately 2,700+ comments received, many comments requested a need for, among other requests, more consideration for NBS to be incorporated into the Study. Following, Oakwood Beach was identified as a potential NBS site for consideration in the NYNJHAT Study.

The Oakwood Beach Actionable Element Site is a Coastal Storm Risk Management (CSRSM) nature-based measure of the NYNJHAT Study Overall Comprehensive Plan, managing high-frequency flood risk, by serving as a natural buffer and also working complementary to the South Shore of Staten Island Project (presently under construction) and to Great Kills Park. The proposed Actionable Element will also reduce wildfire risk for the impacted area, which has been a prevalent issue throughout New York State and in Staten Island, attributed to the abundance of existing non-native invasive common reed. This CSRSM-focused NBS wetland enhancement includes four primary components: removal of non-native invasive plants, creation of a vegetative mosaic with native plants and tidal channels, dune restoration, potential nearshore measures described in more detail below.

The AE will restore coastal habitat and improve shoreline resilience through the removal of approximately 22.38 acres of non-native invasive common reed (*Phragmites australis*) and the creation of a diverse native vegetative mosaic, including low and high salt marsh, maritime grassland, maritime dune, and upland shrubland and woodland buffers. Native plant communities, emphasizing *Spartina alterniflora*, *Spartina patens*, and *Distichlis spicata*, will be established, with salvage and reuse of existing native vegetation where feasible. A network of tidal channels and pools will be constructed within the restored wetland to enhance hydrologic connectivity and habitat function. Shoreline stabilization will be achieved through dune restoration using clean sand and the installation of offshore rock reefs designed to attenuate wave energy, protect the dune from erosion, stabilize tidal flats, and provide aquatic habitat. Additional features include targeted placement of riprap and coir mats for channel protection and erosion control, development of a maintained lawn trail to support operations, maintenance, and public access, and installation of two osprey nesting platforms within the restored maritime shrubland.

Federal and state laws require the USACE to consider effects on cultural resources. The Council on Environmental Quality's regulations implementing the National Environmental Policy Act (NEPA), as amended, require that Federal agencies consider the "unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas" and "the degree to which the [proposed] action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources" (40 CFR §1508.27(b)(3), (8)).

The USACE must also consider the effects of its undertaking on historic properties as defined in 54 U.S.C. §300308 of the National Historic Preservation Act (NHPA). The NHPA (54 U.S.C. §300101 et. seq.) distinguishes historic properties as any prehistoric or historic district, sites, building, structure, artifacts, or object included on, or eligible for inclusion on, the National Register of Historic Places (NRHP). Other Federal laws and regulations also protecting these resources include the Archaeological and Historic Preservation Act of 1974 (54 U.S.C. §§312501-

312508), and the Archaeological Resources Protection Act of 1979 (16 U.S.C. §§470aa-470mm). These Federal laws, specifically Section 106 and Section 110 of the NHPA, require Federal agencies to consider the effects of their actions on cultural resources and historic properties, including districts, sites, buildings, structures, and objects included or eligible for inclusion in the NRHP.

Section 106 of the National Historic Preservation Act (NHPA) (54 U.S.C. § 306108) and its implementing regulations (36 CFR Part 800) requires an assessment of the potential impact of an undertaking on historic properties that are within the proposed project's area of potential effects (APE). The NHPA defines the APE defined as the geographic area or areas "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist" (36 CFR 800.16(d)). Additionally, Section 110(f) of the NHPA (54 U.S.C. § 306107) requires USACE to minimize harm to all National Historic Landmarks (NHL) within the APE to the maximum extent possible.

For the NYNJHAT AE study, the APE for cultural resources extends beyond the study area to encompass the following: 1) areas where structural measures are implemented (to include construction, demolition, vibration, and auditory effects); 2) where non-structural measures are applied to historic properties, and 3) where structural or non-structural measures has the potential to affect the viewshed of historic properties. An effect is an alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the NRHP (36 CFR 800.16(i)). Examples of effects include visual intrusions, alterations of setting, noise, vibrations, viewsheds, and physical impacts. Indirect effects to historic properties are those caused by the undertaking that are later in time or farther removed in distance but are still reasonably foreseeable. Applicable state laws include the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) Section 14.09 of the New York State Historic Preservation Act and the New Jersey Register of Historic Places Act, (Laws of 1970, Chapter 268) and New Jersey Public Law 2004, Chapter 1. Federal agencies are required under Section 106 of the National Historic Preservation Act to "consider the effects of their undertakings on historic properties" and consider alternatives "to avoid, minimize or mitigate the undertaking's adverse effects on historic properties" [(36 CFR 800.1(a-c)] in consultation with the State Historic Preservation Officer (SHPO) and appropriate federally recognized Indian Tribes (Tribal Historic Preservation Officers -THPO) [(36 CFR 800.2(c)].

3 METHODOLOGY

The focus of this Draft EA study is to present a preliminary assessment of Direct Areas of Potential Effects (APEs) and the Indirect Areas of Potential Effects/ Visual Impact Areas for the project's alternatives (Figure 2). The APE includes the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking", 36 CFR 800.16(d). For the NYNJHAT Project, the District shall consider potential direct, indirect, and cumulative effects to historic properties and all aspects of integrity, including their associated settings as applicable.

This study uses the broad term 'cultural resources' to apply to places, archaeological sites, buildings, structures, objects, cultural practices, historic properties or collections of these physical and nonphysical manifestations that have significance to humans. Definitions of cultural resources and other terms are summarized in a glossary.

3.1 DIRECT AREA OF POTENTIAL EFFECTS

This Draft EA preliminarily identifies known cultural resources and historic properties that could be directly affected by the AEs. The activities associated with the proposed undertaking include all new construction, improvements, and maintenance activities related to the proposed AEs. For this study, the direct APE for cultural resources is defined as the area within 100 m (328 ft) of each proposed project component and any temporary construction actions (e.g., access roads, staging areas, etc.). Temporary construction actions are typically developed relatively late in the planning process, and have not been designed as of this writing. The 100- meter APE around planned measures used herein to define the direct APE will circumscribe most, if not all, future planned temporary construction actions. The direct APE is the area in which an undertaking is most likely to have impacts on cultural resources and the potential to effect historic properties. The direct APE includes the area that may be affected by direct physical impacts, such as demolition, alteration, or disturbance of a resource or historic property.

In general, an undertaking has an effect on an historic property when the undertaking may alter characteristics of the property. Section 106 of the National Historic Preservation Act and 36 CFR 800.5 provide a useful definition of adverse effects, as well as helpful examples:

- (1) **Criteria of adverse effect.** An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.
- (2) **Examples of adverse effects.** Adverse effects on historic properties include, but are not limited to:
 - (i) Physical destruction of or damage to all or part of the property;
 - (ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance,

stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR 68) and applicable guidelines;

- (iii) Removal of the property from its historic location;
- (iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance; Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;
- (v) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- (vi) Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance [36 CFR 800.5].

3.2 INDIRECT AREA OF POTENTIAL EFFECTS/ VISUAL IMPACT AREA

This study provides preliminary identification of known cultural resources and historic properties that could be visually affected by the AEs. Visual analysis is part of the NEPA and Section 106 analyses and includes a broad look at the potential impacts to historic properties. By definition, a visual effect occurs whenever a proposed undertaking will be visible from an historic property. The mere existence of a visual effect does not automatically imply that the effect is adverse. An *adverse* visual effect occurs only when the addition of a new element to a landscape is found to diminish those aspects of a property's significance and integrity, such as its historic setting, which make it eligible for the State and National Registers of Historic Places (S/NRHPs).

Adverse visual effects are generally of two types, aesthetic or obstructive. An adverse aesthetic effect transpires when an undertaking's visual effect has a negative impact upon the perceived beauty or artistic values of an historic structure or landscape, thereby diminishing the appreciation, experience, or understanding of the resource. Common examples of adverse aesthetic impacts include the diminution or elimination of open space, or the introduction of a visual element that is incompatible, out of scale, in great contrast, or out of character with the historic resource or its associated setting. An adverse obstructive effect occurs when the proposed undertaking blocks any part of an historic property or eliminates scenic views historically visible from the property.

In keeping with USACE guidance, the APE for visual impacts on historic properties for the AEs cultural resource and historic property study is defined as those areas within one mile of proposed features which are within the potential viewshed (based on topography) of each Alternative. The New York State Department of Environmental Conservation (NYSDEC) defines *Visual Impact* as:

...when the mitigating effects of perspective do not reduce the visibility of an object to insignificant levels. Beauty plays no role in this concept. A visual impact may also be considered in the context of contrast. For instance, all other things being equal, a blue object seen against an orange background has greater visual impact than a blue object seen against the same colored blue background. Again, beauty plays no role in this concept [NYSDEC 2000:10-11].

The analysis takes into consideration the resource's geographical distance and the effect of topography on whether the Project is visible from historic resources.




NY-NJ HARBOR AND TRIBUTARIES STUDY

Oakwood Beach Actionable Element

Optimized Project Measures

Staten Island, New York

Date: 1/26/2026



U.S. ARMY
CORPS OF ENGINEERS
NEW YORK DISTRICT



Legend		Environmental Feature Zones	
Proposed Shrubs	Existing Rip Rap	Fence Limit	Maritime Dune
Proposed Trees	Maintained Path	Low Salt Marsh	Maritime Meadow
Proposed Coir Fiber	Ditch	High Salt Marsh	Maritime Shrubland
Proposed Rip Rap	Debris Fence	Short Maritime Grassland	Tall Maritime Grassland
		Tidal Channels	Tidal Pools
			Osprey Nests
			Optimized Dune Design Footprint
			Rock Reefs (Added During Optimization)

Figure 2. Project Measures and APE.

3.3 RESEARCH METHODS

This study is intended to provide a baseline of cultural and historical information that will inform preliminary planning decisions regarding cultural resources.

In addition to guidance from the USACE, the technical approach for the cultural resources and historic properties survey was conducted in accordance with the:

- (1) New York Archeological Council's (NYAC) *Standards for Cultural Resources Investigations and the Curation of Archeological Collections in New York State*;
- (2) New York State Office of Parks, Recreation, and Historic Preservation's (2005) *State Historic Preservation Office Phase I Archaeological Report Format Requirements*; and
- (3) Secretary of the Interior's Standards and Guidelines for Archaeological Documentation (48FR44734-37)

Background research for the project included a review of existing cultural resource reports, management plans, archaeological site files, historic maps, and nominations to the National Register of Historic Places (NRHP). All work was performed by and under the direct supervision of individuals meeting the Secretary of the Interior's professional qualifications standards (36 CFR 61). The background research and an assessment of the archeological sensitivity and State and National Registers of Historic Places sensitivity of the study area were conducted during the period of January through June 2025. Table 1 outlines the sources of background cultural resources information.

The New York State Office of Parks, Recreation and Historic Preservation (OPRHP) provided cultural resources data for the visual impact area in New York State. The results of the indirect area of potential effects will only include the proposed project locations in New York State. Potential visual impacts to architectural resources in New York, topographic viewshed only, are presented for the AE.

Geographically, New York is a city with 5 boroughs, 59 community districts and hundreds of neighborhoods. The locations and names of neighborhoods and communities in HATS regions in New York City were identified by reviewing the *New York City A City of Neighborhoods* map (City of New York Department of Planning 2014).

4 CULTURAL BACKGROUND OF OAKWOOD BEACH, STATEN ISLAND: FROM NATIVE AMERICAN INHABITANTS TO THE PRESENT

The historic cultural background narrative for the AE includes broad trends in sub-regional developments for historic time periods, specific to each of the three AEs. The historic background identifies information on specific topics of New York history and is presented below.

A 2014 report for Hudson-Raritan Estuary Comprehensive Plan (Harris et al. 2014) compiled cultural resources background information to serve as an appendix to the Feasibility Study and Programmatic Environmental Impact Statement for the Hudson-Raritan Estuary Ecosystem Restoration Program. The report provided a detailed cultural/historical overview for eight regions in northeastern New Jersey, New York City, and the lower Hudson River Valley. These areas are very similar geographically to planning regions presented in this study. The present study includes the Mid-Hudson and Upper Hudson Regions, which were not included in 2014, and combines the Arthur Kill and Lower Bay regions, which were separate in 2014. Please refer to that study for additional detailed information on the regions.

The 2022 Tier I Environmental Impact Statement and Cultural Resource Assessment: New York-New Jersey Harbor and Tributaries Study completed an initial investigation of the comprehensive study area to provide information about cultural resources that will contribute to the USACE's decision-making process in selecting a build alternative for the New York-New Jersey Harbor and Tributaries flood risk management system. To do so, the investigation included two parts: a historical review of the study area to provide contextual information for the cultural resources it contains; and preliminary assessments of the potential direct and indirect (i.e., visual) effects of each of the build alternatives on cultural resources. The historic context covered the USACE-defined study area, while the effects assessments are limited to areas near the planned build alternatives.

Each planning region's historic background was presented as its own project area and covered the period prior to European contact with Native American inhabitants of New Jersey and New York to the present time. There was some overlap in the historic contexts of the planning regions due to the proximity of the regions. This cultural background included broad trends in regional developments for historic time periods, including early explorers (1500-1625); colonial settlement (1625-1775), developments and changes in industrialization, urbanization, and agricultural activities; immigration and economic and urban expansion; suburban development; metropolitan development; and modern activities. For additional background beyond what is described below, see the Tier I Cultural Resource Appendix A8 of the Tier I HATS EIS.

4.1 INTRODUCTION

Staten Island offers a compelling lens through which to view New York City's broader patterns of demographic change, land use, and development. From its deep Native American roots through Dutch and British colonization, to its transformation into a patchwork of rural villages, industrial hubs, and suburban neighborhoods, Staten Island has been shaped by centuries of migration, transportation expansion, and environmental modification. The borough's evolution from Lenape homeland to agricultural outpost, to its current role as both a residential enclave and part of the city's ecological network, reflects its layered and often contested history. Understanding this trajectory is essential for appreciating the cultural and historical complexity of Staten Island today.

4.2 EARLY HISTORY AND NATIVE AMERICAN INHABITANTS (PRE-1625)

4.2.1 Precontact Period Overview

Human presence in the northeastern United States dates to approximately 12,000 to 13,000 years before present (B.P.). Archaeologists typically divide this prehistoric timeline into three major cultural periods: the Paleo-Indian (ca. 12,500–8,000 B.P.), Archaic (ca. 8,000–3,000 B.P.), and Woodland (ca. 3,000 B.P.–A.D. 1600) (Ritchie 1980; Kraft 1986). This framework provides context for understanding prehistoric settlement and land use in the Staten Island, New York–New Jersey metropolitan region.

4.2.2 Paleo-Indian Period (ca. 12,500–8,000 B.P.)

The earliest known human occupation of Staten Island occurred during the Paleoindian Period, following the retreat of the Wisconsin Glacier approximately 14,000 years ago, with radiocarbon evidence indicating initial occupation of the northeastern United States by about 13,000 B.P. (Boesch 1994; Levine 1990). During the late Pleistocene, the region was characterized by a cold, dry tundra environment, lower sea levels that placed Staten Island farther inland than today, and fauna including mammoth, mastodon, and caribou, as tundra conditions gradually transitioned to warmer, forested Holocene landscapes (Boesch 1994; Funk 1976; Ritchie 1980; Snow 1980). Paleoindian groups lived in small, highly mobile bands, relying primarily on hunting and animal processing, supplemented by gathered plant resources, with subsistence likely more diverse in the Northeast than classic big-game hunting models suggest (Fiedel 2000; Funk 1976; Levine 1990; Snow 1980). Artifact assemblages are dominated by lithic tools, including distinctive fluted Clovis-type projectile points, bifacial tools, scrapers, graters, knives, burins, and perforators, while organic materials are rarely preserved (Fiedel 2000; Funk 1976; Grumet 1995; Ritchie 1971). Preferred settlement locations included elevated, well-drained terraces with access to freshwater, upland forests, wetlands, major drainages, and high-quality lithic sources, often providing broad views of the surrounding landscape (Boesch 1994; Fiedel 2000; Funk 1976). Paleoindian materials on Staten Island are relatively scarce and consist primarily of isolated projectile points and small campsites documented at locations such as Port Mobil, Smoking Point, the Cutting site, Kreischerville, and Great Kills Park (Boesch 1994). Within or adjacent to Great Kills Park, only a single isolated fluted projectile point or knife (OPRHP A08501.000163), originally documented by Ritchie (1965), has been identified, and no additional Paleoindian sites are currently known within park boundaries (JMA 1987; Mangi 2005).

4.2.3 Archaic Period (ca. 8,000–3,000 B.P.)

The Archaic Period represents a long sequence of cultural adaptation following the transition from the glaciated Pleistocene to the temperate Holocene and is subdivided into the Early, Middle, Late, and Terminal Archaic based on changes in projectile point typologies, toolkits, subsistence practices, and settlement patterns. Archaic cultures in the Northeast are generally characterized as small, mobile hunting-and-gathering groups whose archaeological sites are typically small and lack permanent structures, fortifications, extensive storage features, or elaborate mortuary remains (Ritchie 1980). Subsistence strategies broadened during this period to include smaller game and a wide range of plant and aquatic resources as deciduous forest ecosystems developed, with settlement patterns often reflecting seasonal movement between coastal, riverine, and upland settings and, in some cases, semi-permanent occupations along waterways and estuaries (Tuck 1978; Boesch 1994).

The Early Archaic Period (ca. 10,000–8,000 B.P.) is relatively poorly represented in the Northeast, possibly due to less favorable climatic conditions, but is well documented on Staten Island through diagnostic bifurcated and stemmed projectile points such as Kanawha, LeCroy, Stanley, Hardaway, and Palmer, along with scrapers, choppers, and ground stone woodworking tools (Funk 1976; Ritchie and Funk 1971; Snow 1980). Early Archaic components have been identified at the Hallowell, Ward's Point, Old Place, Charleston Beach, and Richmond Hill sites, including a hearth at Richmond Hill radiocarbon dated to 7,410 B.C. ± 120 years, suggesting that Staten Island experienced earlier occupation than more northerly portions of New York due to the earlier arrival of temperate conditions (Funk 1976; Ritchie and Funk 1971; Boesch 1994).

The Middle Archaic Period (ca. 8,000–6,000 B.P.) reflects adaptation to fully established Holocene environments, with exploitation of diverse floral and faunal resources and technological innovations such as stone gouges and axes, semi-lunar knives, grinding stones, mortars, pestles, net sinkers, plummets, and atlatl weights (Dincauze 1971; Snow 1980). Diagnostic projectile point types include Neville, Stark, and Merrimack. Middle Archaic sites are comparatively few on Staten Island and include Ward's Point, Old Place, Chemical Land, and Harik's Sandy Ground (Boesch 1994).

The Late Archaic Period (ca. 6,000–4,000 B.P.) is marked by narrow stemmed projectile points, including Lamoka, Wading River, Sylvan Lake (Sylvan Stemmed), Taconic, Bare Island, Brewerton, and Poplar Island types, often manufactured from argillite, indicating well-established regional trade and interaction networks with New Jersey and Pennsylvania (Fiedel 1986; Lenik 1989, 1992; Ritchie 1971). Subsistence practices emphasized the scheduled exploitation of seasonally available resources, with increased reliance on marine and estuarine environments, as evidenced by large shell middens along coastal and riverine sites (Ritchie 1980; Schaper 1993; Snow 1980). On Staten Island, Late Archaic occupations include semi-permanent estuarine sites such as Pottery Farm, Bowman's Brook, Smoking Point, and Goodrich, as well as interior stream sites including Sandy Brook, Wort Farm, and Arlington Avenue, with hunting camps commonly located on sandy knolls such as those in Clay Pit Pond Park (Boesch 1994).

The Terminal Archaic Period (ca. 3,700–2,700 B.P.) exhibits technological and subsistence developments that foreshadow the Woodland Period, including broad-bladed projectile point types such as Susquehanna, Perkiomen, and Orient Fishtail, and the introduction of carved steatite vessels (Ritchie 1971, 1980; Snow 1980). Because steatite does not occur naturally on Staten Island, these vessels reflect participation in long-distance exchange networks extending to quarry sources in Maryland, eastern Connecticut, and Rhode Island (Lenik 1989). Terminal Archaic sites on Staten Island, including Pottery Farm, Ward's Point, Old Place, and Travis, are typically situated along the coast or major waterways (Boesch 1994). No archaeological sites specifically dated to the Archaic Period have been documented within Great Kills Park.

4.2.4 Woodland Period (ca. 3,000 B.P.-A.D. 1600)

The Woodland Period is distinguished from earlier prehistoric periods by significant changes in technology, subsistence, and settlement, including the widespread adoption of ceramics, more intensive and diversified subsistence practices, often incorporating horticulture, and increasing trends toward sedentism, larger settlements, and more complex social organization (Ritchie 1980; Versaggi 1999). Woodland sites are relatively ubiquitous on Staten Island and reflect progressively longer, more intensive, and more continuous occupation of site locations, as evidenced by higher artifact densities and the presence of features such as storage pits and large habitation areas (Boesch 1994; Lenik 1989). The Woodland Period is subdivided into Early,

Middle, and Late subperiods based on material culture, subsistence strategies, and settlement practices.

The Early Woodland Period (ca. 3,000–2,000 years B.P.) is characterized by continuity in earlier lithic traditions alongside the introduction of ceramic technology. Diagnostic artifacts include Vinette I pottery, thick, grit-tempered vessels decorated with impressed cordage or fabric and projectile point types such as Meadowood and Rossville, the latter often associated with coastal shell middens (Lenik 1989; Ritchie 1971, 1980; Tuck 1978). Early Woodland sites are widespread across Staten Island, particularly along coastal margins and stream drainages (Boesch 1994).

The Middle Woodland Period (ca. 2,000–1,000 years B.P.) reflects increasing sedentism and more complex social and economic organization, including participation in long-distance exchange networks involving lithic materials and smoking pipes. This period is marked by cord-marked and decorated ceramics and diagnostic projectile point types such as Fox Creek, Rossville, Jack’s Reef, and Greene points (Funk 1976; Kostiw 1995; Ritchie 1971; Snow 1980). Middle Woodland sites in southeastern New York commonly occur near large streams, estuaries, and coastal settings, with smaller special-use or activity sites located on interior bluffs and minor drainages. On Staten Island, a notable Middle Woodland site was excavated in 2009–2010 on the New York City Department of Environmental Protection Bluebelt property near Lemon Creek (HPI 2009a, 2009b, 2010a, 2010b).

The Late Woodland Period (ca. 1,000–400 years B.P.), including the Bowman’s Brook and subsequent Clasons Point phases in southeastern New York, is characterized by the development of permanent or semi-permanent villages, seasonal mobility, and intensified use of coastal, estuarine, and upland resources (Ritchie 1980). Subsistence during this period was primarily oriented toward marine resources, supplemented by horticulture, most notably maize cultivation, and seasonal hunting and gathering (Lenik 1989; Ritchie 1980; Snow 1980). Diagnostic artifacts include Levanna and Madison triangular projectile points and a range of distinctive ceramic types such as Bowman’s Brook Incised and Stamped, East River Cord Marked, Munsee Incised, Castle Creek Beaded, and Wickham Punctate and Incised (Lenik 1989; Ritchie 1980). Late Woodland sites on Staten Island include large village sites near major rivers, tidal pools, and small coves, as well as smaller interior sites used for seasonal activities (Boesch 1994).

Numerous prehistoric sites dating to the Woodland Period have been documented along Staten Island’s south shore. Coordination with the New York State Museum Anthropology Survey indicates that three recorded archaeological sites, NYSM Site #4617, #4628, and #8481, are located in the project vicinity. Site 4617 reportedly contains remnants of a shell midden, Site 4628 yielded evidence of occupation, and Site 8481 (the Oakwood or Great Kills Site), first reported by Alanson Skinner in the early twentieth century, represents a prehistoric camp situated southwest of the present Oakwood Beach Water Pollution Control Plant near a former pond and marsh that would have provided an important freshwater source (Greenhouse Consultants 1990). Based on favorable physiographic characteristics and similarities to nearby site-rich areas, the New York State Museum has previously assessed the project area as having high archaeological sensitivity. No archaeological sites specifically dated to the Woodland Period have been documented within Great Kills Park.

4.3 HISTORIC CONTACT PERIOD (CA. A.D. 1500–1700)

During the Late Woodland and Early Contact periods, Staten Island and the lower Hudson Valley were home to Munsee-speaking groups of the Lenape (Delaware) cultural tradition (Burrows and

Wallace 1999; Cantwell and Wall 2001; Goddard 1978; Grumet 1995; Jackson 1995; Snow 1980; Trelease 1960). These groups spoke a common dialect of the Eastern Algonquian language and shared similar ways of living, including hunting, fishing, farming, and building. They lived in longhouses about 20 feet wide and up to 100 feet long, arranged in small clusters rather than large villages (Goddard 1978; Snow 1980). Early European accounts also mention several specific groups on Staten Island, such as the Canarsie, Raritan, Hackensack, Tappan, and Neversink peoples (Goddard 1978; Morris 1898; Trelease 1960).

The Contact Period began in the early 1500s and became more pronounced after Henry Hudson explored the Lower Hudson River in 1609, providing the first detailed records of European and Native American interactions on Staten Island (Brasser 1978; Clute 1877; Morris 1898, 1900). Dutch colonization, driven largely by the fur trade, quickly affected local Lenape communities, changing their economy, social relationships, and material culture (Burrows and Wallace 1999; Goddard 1978; Flick 1933). These interactions ranged from trade to violent conflict. Pressure from European settlement, competition for resources, and intertribal conflicts eventually forced many Lenape groups to move inland, with some resettling in the Midwest and Canada by the 19th century (Ruttenber 1872; Weslager 1972).

Archaeological evidence of the Contact Period includes small amounts of European-made items, such as metal tools, kettles, glass beads, and cloth, mixed with traditional Native American artifacts (Lenik 1989; LBA 1989). On Staten Island, Contact Period sites have been identified at Ward's Point, Old Place, Corsons Brook, Travis, New Springfield, and the PSS6R site in Woodrow, showing how Indigenous life was transformed by early European colonization (Boesch 1994; HPI 1996). No Contact Period sites have been documented within Great Kills Park.

4.4 CONTACT PERIOD AND EARLY COLONIAL SETTLEMENT (1609-1683)

European settlement on Staten Island began with Henry Hudson's 1609 exploration of the Hudson River, during which he mapped the island and named it Staaten Eylandt (Island of the States). Early attempts at colonization did not occur until 1639, when the Dutch, under Captain David Pietersen De Vries of the Dutch West India Company, tried to establish a settlement near present-day Fort Wadsworth. Hostile interactions with Native American inhabitants destroyed this first effort, and subsequent attempts in 1642 and 1650 also failed. By 1660, the Dutch successfully established two settlements: Oude Dorp (Old Town) at the site of earlier efforts and Nieuwe Dorp (New Town) further south near present-day Miller Field. Oude Dorp was chosen for its agricultural potential, nearby fishing grounds via New Creek, and timber resources from adjacent forests (JMA 1978:60; Steinmeyer 1987:20).

Following the English takeover of New Amsterdam in 1666, Staten Island became part of the newly formed Colony of New York. In 1670, Governor Francis Lovelace arranged a land purchase from the Lenape, although differing concepts of land use and ownership likely limited mutual understanding of the agreement (LPC 2011:2). By the early 1670s, most Native inhabitants had departed or been displaced, and the English regained permanent control of Staten Island in 1674 under the Treaty of Westminster (Steinmeyer 1987:24).

In 1677, British naval officer Christopher Billopp received a land grant of 932 acres at the island's southern tip, where he constructed a residence that later became known as the Conference House, now a National Historic Landmark and listed on the National Register of Historic Places. By 1687, the Manor of Bentley expanded to 1,600 acres, encompassing present-day Tottenville, Richmond Valley, Pleasant Plains, and part of Prince's Bay. Billopp was also a participant in the transatlantic slave trade and a slaveholder (Hunter Research 2020). Around 1695, the King's

Highway, now Amboy Road, was laid out across his property, linking the southern settlements to ferry points in the island's northeast (Leng and Davis 1930; McMillen 1968). In 1683, the entire island was designated Richmond County, named after the Duke of Richmond in Yorkshire, England.

Over the following century, the British made additional land grants along the shoreline between Dover (formerly Oude Dorp) and Nieuwe Dorp, although the original settlement at Dover was eventually abandoned.

4.5 BRITISH RULE AND THE AMERICAN REVOLUTION (1685–1785)

During the colonial period, Staten Island maintained a largely rural character, with small Dutch farms or bouweries producing livestock, grain, fruits, and vegetables, while fishing and farming remained the dominant economic activities well into the 19th century (Leng and Davis 1930:610). By 1698, the island had a population of 729, including some enslaved individuals, which grew to 1,889 by 1737 and nearly 3,000 by the 1770s (JMA 1978:61-62; Mangi 2005:65). Most residents remained Loyalists during the Revolutionary War, and the British took advantage of Staten Island's strategic location, fortifying the bluff above the west side of the Verrazano Narrows and using the south shore to garrison nearly 30,000 troops in July 1776 under General William Howe (Salwen et al. 1984:C24; JMA 1978:61-62; Mangi 2005:65). The Billopp family, prominent Loyalists, remained influential, and the Conference House hosted a notable but unsuccessful peace negotiation on September 11, 1776, between American delegates Benjamin Franklin, John Adams, and Edward Rutledge and British representatives Admiral Lord Richard Howe and Henry Strachey (Leng and Davis 1930; Peace Conference at Staten Island, 2025). Most British forces soon moved to Brooklyn, leaving a small garrison on Staten Island until 1783, which caused limited property damage but generally little further military action.

Outside of the war, Staten Island continued as a quiet agricultural community with small-scale fishing and local services such as ferries and blacksmith shops. By 1709, the Daniel Lake family constructed a tide-powered gristmill on Mill Creek near Great Kills Harbor, one of 19 mills on the island, set in a marshy meadow (JMA 1978:61-62)(Figure 3).

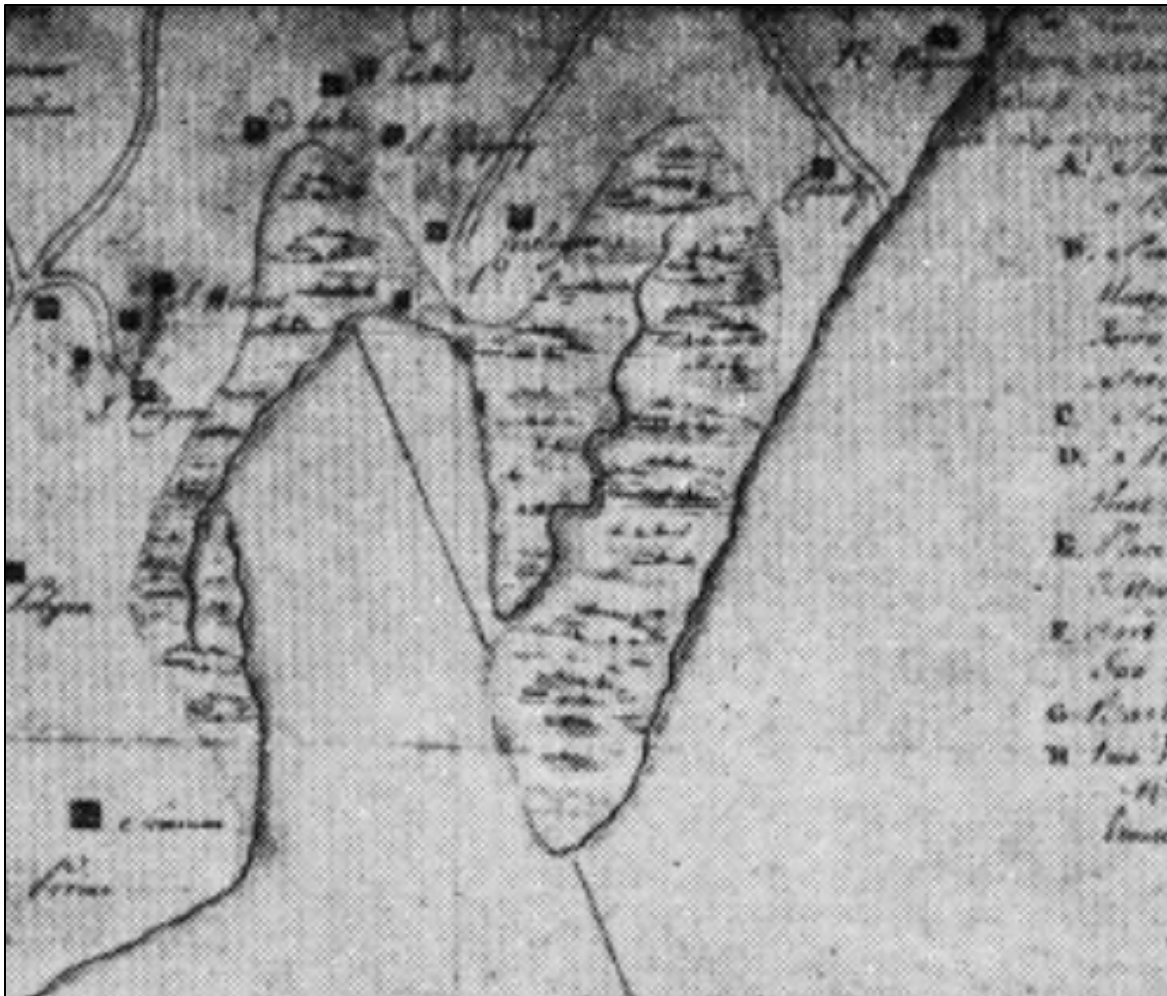


Figure 3. Plan No. 31 du Camp Anglo-Hessois dans Staten Island. 1780 & 1783.

4.6 AGRICULTURE, OYSTERING, AND INDUSTRIALIZATION (1785-1880)

Following the Revolution, Staten Island was reorganized into four towns in 1788, with Middletown added in 1860. The Village of Edgewater was incorporated in 1866 from several east shore settlements (Cramer 2004; Leng and Davis 1930). Development remained concentrated near ferry landings, the most prominent operated by Cornelius Vanderbilt, who introduced steamship service in 1817.

Staten Island's oyster industry flourished during the 19th century, becoming a significant local employer and economic driver. Near the project area, Dr. E. Clark owned two structures along Old Mill Road in 1859, over a mile north of the proposed area of effect (Figure 4; Walling 1859).



Figure 4. Map of Staten Island, Richmond County, New York City, from surveys under the direction of H. F. Walling(1859)

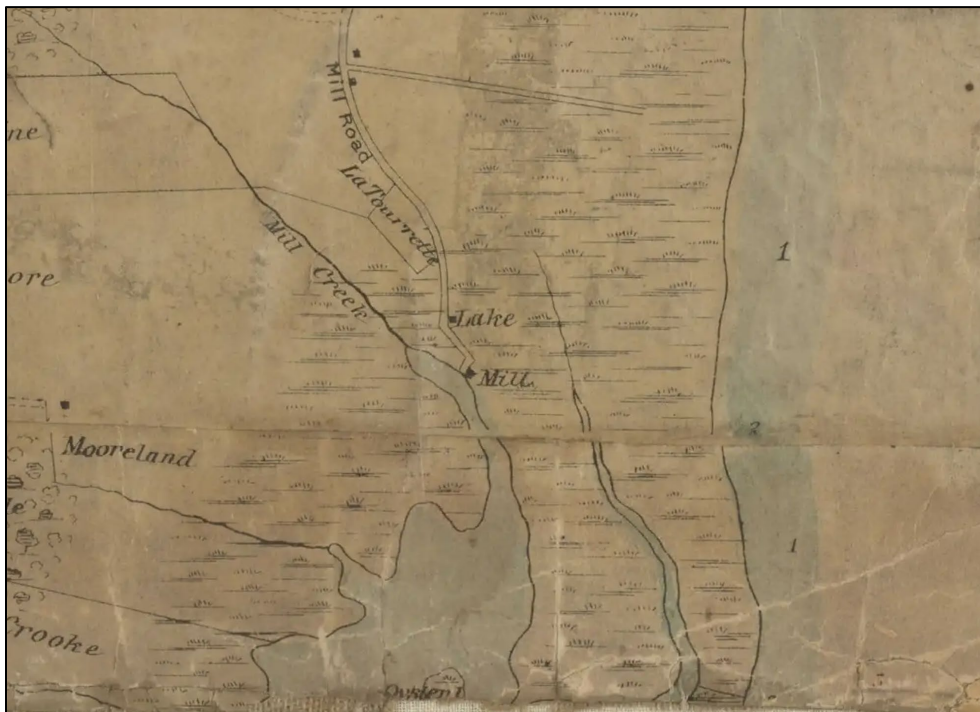


Figure 5. Map of Staten Island (Richmond County) New York also cities of Bayonne and Perth Amboy, village of Woodbridge, New Jersey shewing topography, farms, shore soundings (Dripps 1872)

The Corleyou mill later became associated with a “Loveridge” family, possibly the miller rather than the owner. The mill appears on maps as a grist mill through 1874 but was reportedly derelict by 1890 and demolished by 1896 (Baugher-Perlin and Bluefeld 1980). A tidal-powered mill on the Lake property included a dam and gate system that stored floodwater for use at ebb tide. The mill primarily served local needs and was not a commercial enterprise. The Lake family farmstead and a burial ground (1740–1850) were located beneath what is now the Oakwood Beach Water Pollution Control Plant (Figure 5) (New York Times, May 23, 1993).

Two additional structures labeled as “Fish Houses” near the beach in 1850 (Loveridge properties) may have been abandoned by 1887(Figure 6)

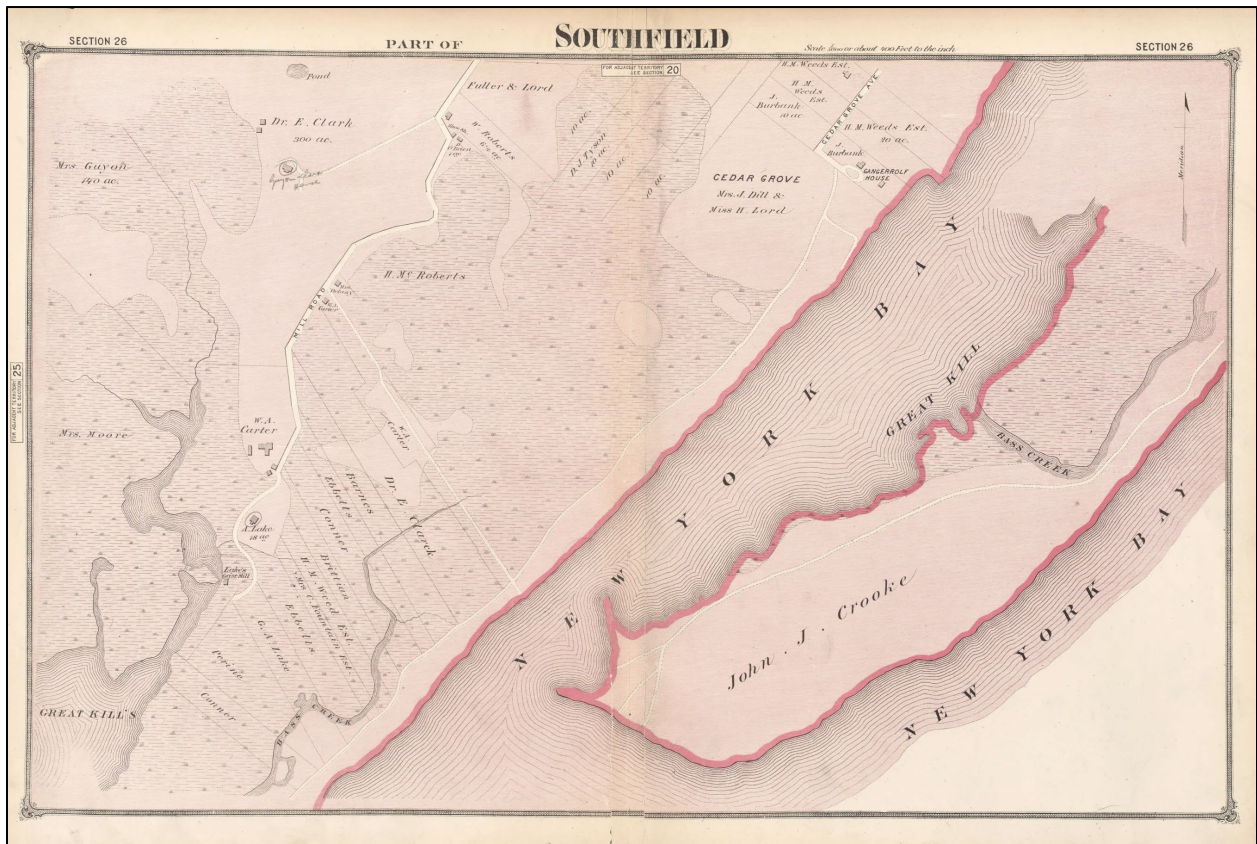


Figure 6. Part of Westfield & Southfield, southern portion of Great Kills (beers 1874)

4.7 POST-CONSOLIDATION AND SUBURBAN DEVELOPMENT (1880–1980)

Following the Revolutionary War, Staten Island's strategic location at the Narrows continued to influence its development. The abandoned British fortifications were recognized for their defensive potential, and New York State acquired land on the bluff beginning in 1794, with additional purchases through 1902, ultimately creating the 226-acre site of Fort Wadsworth (Black 1983:42; Salwen et al. 1984:C24). Fort Richmond and Fort Tompkins were constructed along with three earthen batteries, Forts Hudson, Morton, and Smith, though Fort Tompkins was not completed until a reconstruction in 1859–1876. Fort Richmond was rebuilt between 1847 and 1864, and the other batteries were remodeled. Staten Island also hosted Union training camps during the Civil War, including Camp Scott at Oude Dorp/Dover and Camps Vanderbilt, Yates, and Lafayette near Nieuwe Dorp, and additional batteries were added during the 1860s and 1870s (Baughner-Perlin and Bluefeld 1980:22; JMA 1978:62; National Park Service 1995:27). By 1902, these fortifications were formally named Fort Wadsworth.

Outside of military use, Staten Island remained primarily agricultural and maritime throughout the 19th century, with small Dutch farms or bouweries producing livestock, grain, fruits, and vegetables (Leng and Davis 1930:610), supplemented by shellfishing, fishing, and small service businesses. Population grew from 729 in 1698 to nearly 3,000 by the 1770s, some of whom were enslaved individuals (JMA 1978:61-62; Mangi 2005:65). Settlements such as those along Great Kills Harbor included mills operated by families like the Lake and Corleyou families. The Daniel Lake tide-powered gristmill, constructed between 1709 and 1723 on Mill Creek, served local needs and appears on maps through 1874; the mill was derelict by 1890 and demolished by 1896 (Baughner-Perlin and Bluefeld 1980; New York Times, May 23, 1993). Two additional "Fish Houses" near the beach, shown in 1850 on Loveridge properties, may have been abandoned by 1887.

Transportation improvements facilitated growth and development in the late 19th and early 20th centuries. Cornelius Vanderbilt established a ferry service by 1812, and by the 1880s, the Staten Island Rapid Transit (SIRT) connected the island to Manhattan and New Jersey, supporting industrial growth and a workforce that expanded from just over 1,500 in 1880 to more than 15,500 by the 1920s (Miller 2003:112; Stark 2006:12-29; Jackson 2010). Colton's 1884 map and subsequent surveys depict properties such as the Clark dwelling with its orchard, fields, and stables (Figure 7; Figure 8;). which may have been used by the Presbyterian Church of Sea and Land (Bromley 1917). A second dwelling, attributed to the Lake family, appears on maps from 1884 through 1911, with an associated family cemetery later covered by construction. Crookes Point and Great Kills Harbor remained largely undeveloped salt marsh into the mid-20th century, though a shipyard and a fisherman's house occupied the point in the 1800s, followed by squatters in the 1920s (Figure 13; Figure 14).

By the 1920s, Crooke's Point had been purchased by the City of New York, and squatters built 78 bungalows on the point. A short-term lease in 1930 revealed code violations, and the cottages were demolished at lease expiration (Baughner-Perlin and Bluefeld 1980:92). Early efforts to develop Great Kills Harbor as a public park began in 1930, with bulkheading starting in 1932. Progress was delayed by the Great Depression, but in the 1940s, extensive dredging and approximately 15 million cubic yards of sanitation-controlled fill reconnected Crooke's Point to the mainland, creating Great Kills Park (NPS 2009).



Figure 7. Map of Staten Island, Richmond County, State of New York Colton 1884



Figure 8. Beers' new map of Staten Island (1887)

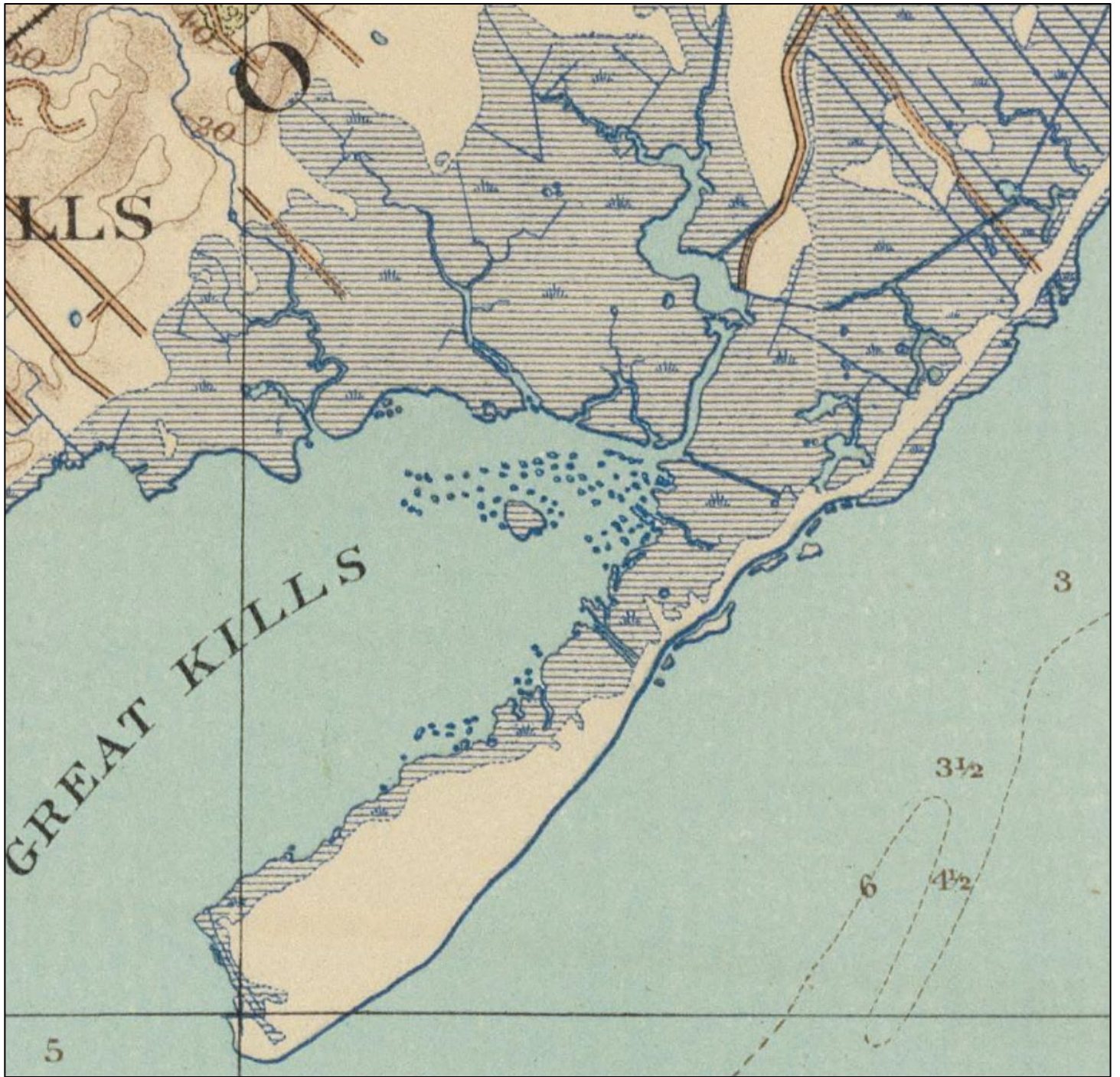


Figure 9. A Topographical atlas of Staten Island, 1890.



Figure 10. New Standard Map of the Borough of Richmond, Rand-McNally 1903



Figure 11. Map of the Borough of Richmond, City of New York, E. Belcher Hyde 1906.

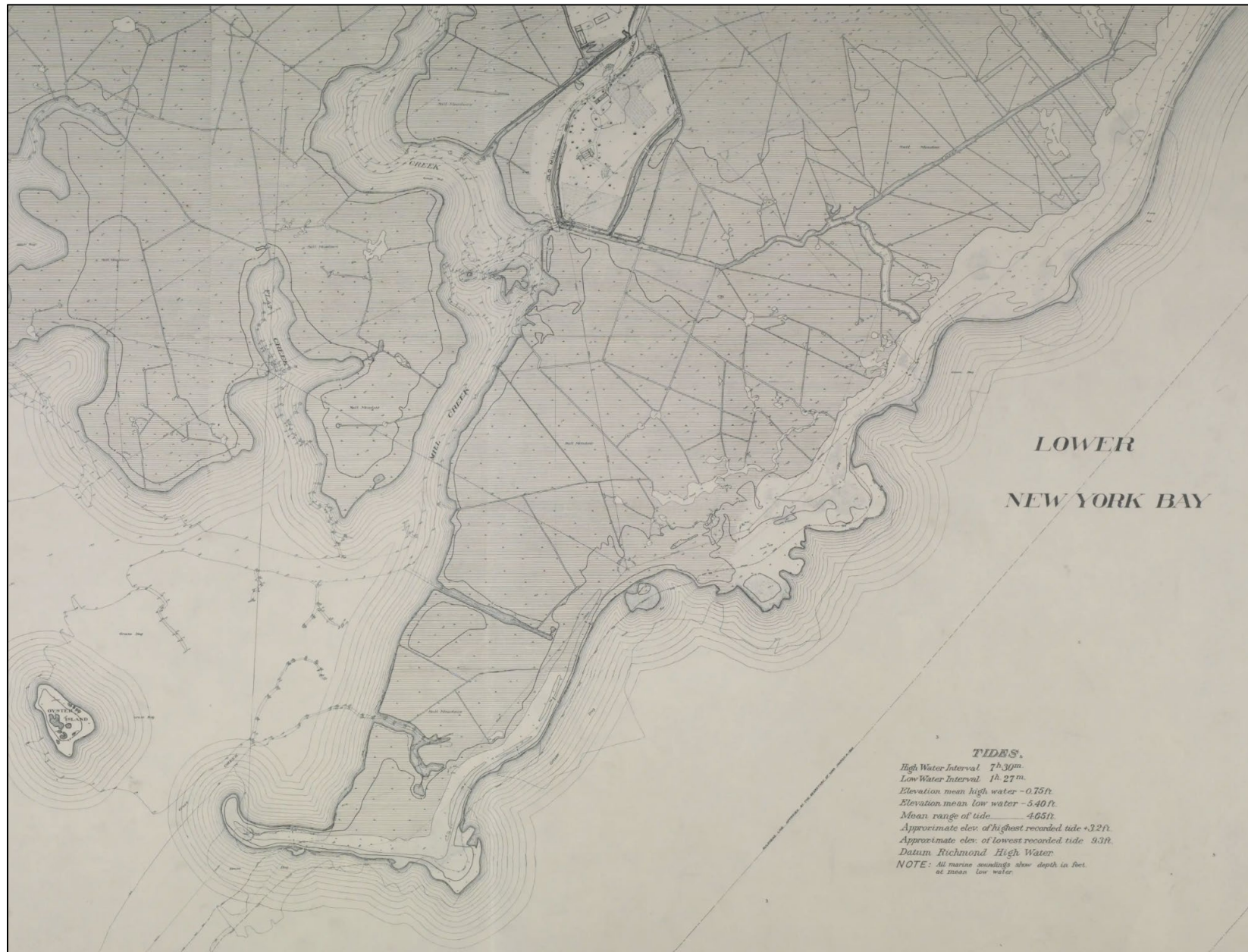


Figure 12. Sheet Nos. 79 & 80. [Include Oyster Island, Lockman's Creek, Flat Creek and Mill Creek Estuaries.] 1906-1913.

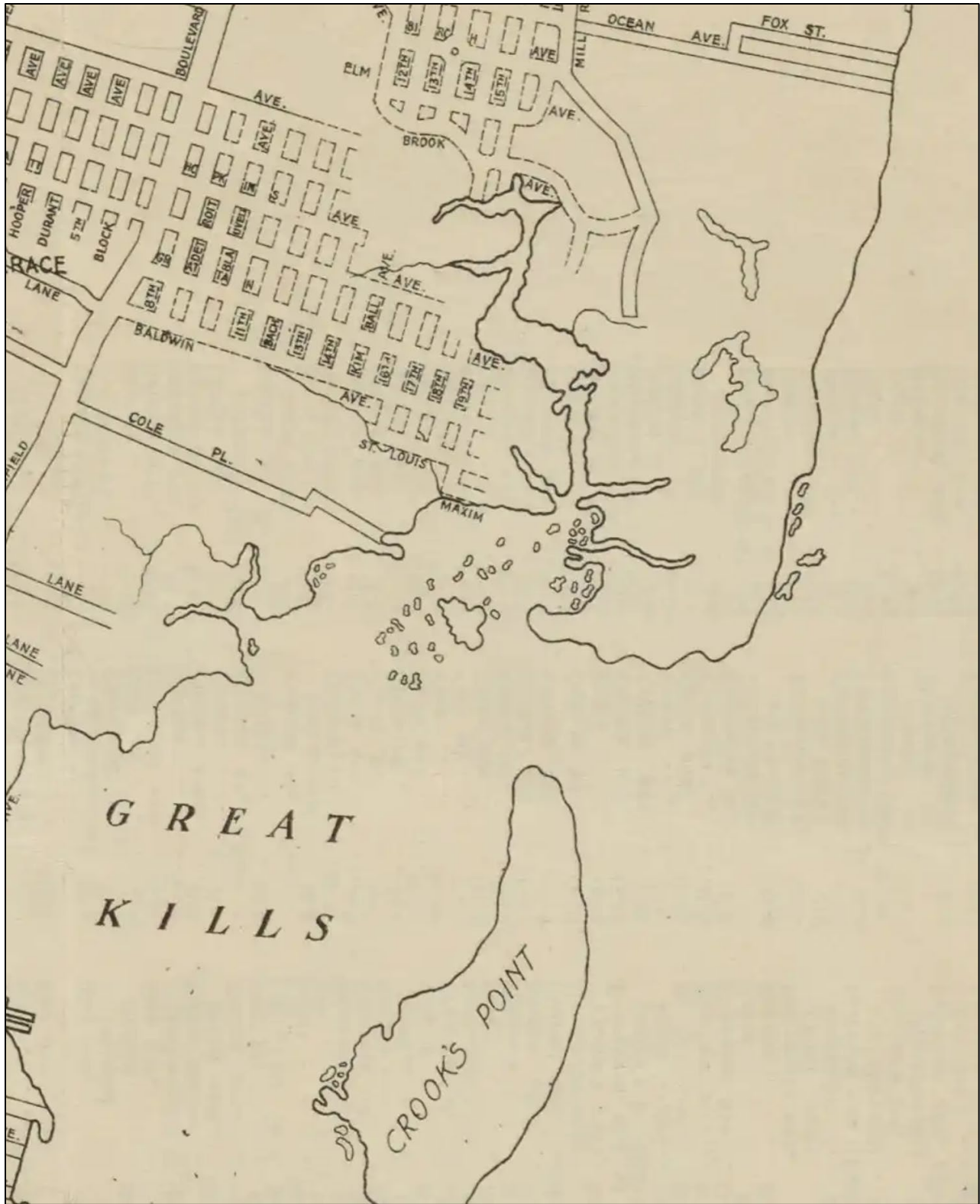


Figure 13. Hammond's complete map of Staten Island, N.Y., Borough of Richmond, New York City, 1920.



Figure 14. Richmond Borough Congressional Districts, 1921.

The Great Kills Park bathhouse was completed in 1952, providing restrooms, showers, and 6,600 lockers. Between 1955 and 1959, topsoil was added using a mixture of clay and sludge reclaimed from city sewage, a cost-effective method to finish the parkland (Wrenn 1975:89–91). Additional amenities, including a 10,000-foot boardwalk, boat house, athletic fields, playgrounds, picnic areas, and parking, were gradually built, patterned after Jones Beach and Orchard Beach (Wrenn 1975:90). After decades of planning, the park opened on July 1, 1949, and later came under the jurisdiction of the National Park Service in 1972 as the Great Kills Unit of the Gateway National Recreation Area (Baugher-Perlin and Bluefeld 1980:92–95; NPS 2009).

4.8 SUBURBANIZATION AND MODERNIZATION (1980–PRESENT)

Throughout much of its history, Great Kills and Oakwood Beach were regarded as quiet coastal communities with a fishing village reminiscent of other East Coast settlements (Leng and Davis 1930:487). Today, the area is primarily residential and forms part of the Great Kills Park, Staten Island Unit of Gateway National Recreation Area. The Oakwood Beach Water Pollution Control Plant, has since been expanded multiple times and remains a dominant feature of the local landscape, and is directly northwest of the proposed AE.

5 RESEARCH RESULTS

5.1 CULTURAL RESOURCE SURVEYS

The NYSHPO lists 6, cultural resource surveys within or near the 100-meter Direct APE.

20SR00366: This investigation was conducted in support of the proposed South Shore of Staten Island Coastal Storm Risk Management Project (Hunter Research 2020). The work was performed by Hunter Research, Inc., under contract to Princeton Hydro, on behalf of the U.S. Army Corps of Engineers (USACE), New York District. This study built upon a prior Phase I feasibility study conducted by Panamerican Consultants, Inc. in 2005. Through geoarchaeological analysis, it evaluates the potential for deeply buried prehistoric archaeological resources within the project alignment. In addition, it includes historical research on the Lake tide mill site in Great Kills. The geomorphological and archaeological assessment found that much of the project area has low potential for intact buried land surfaces or significant archaeological deposits. However, two areas within the project's Area of Potential Effect (APE) were identified as having archaeological sensitivity.

10SR60383: This 2010 investigation (Historical Perspectives, 2010) was a component of the New York City Department of Parks and Recreation's (DPR) proposed Cedar Grove Beach Rehabilitation Project, located within Great Kills Park on Staten Island, New York. The project site, owned by DPR, encompassed approximately 34 acres south of Ebbitts Street and includes portions of Block 4105, Lot 50, and Block 4108, Lot 45. This area contained 42 one- to one-and-a-half-story seasonal beach bungalows, a clubhouse, a barn, and five ancillary garage structures, collectively known as the Cedar Grove Beach Club. The majority of these buildings were slated for demolition. Further work included the removal of above-grade foundation remnants and debris on the beach near Ebbitts Street and Cedar Grove Court. DPR served as the lead agency for this undertaking. The area south of Cedar Grove Beach contained the majority of the bungalows and the beach itself had been heavily disturbed by previous building construction, utility installation, beach modification, and sand deposition for shoreline expansion, including the installation of stone piers. This portion of the property was determined to have low to no archaeological sensitivity. Between Cedar Grove Beach Place and Cedar Grove Avenue was determined to have been disturbed in discrete areas due to building and utility activity and showed signs of erosion. Clearly disturbed zones were considered to have low to no archaeological sensitivity, while areas with less visible disturbance may retain moderate archaeological sensitivity, pending verification of ground integrity. The area North of Cedar Grove Avenue demonstrated some disturbance has occurred around existing or former buildings, the historically undeveloped areas remain largely intact. Locations farther inland from the shoreline, on higher elevations and near marshlands were determined to possess high archaeological sensitivity, particularly where no visible disturbance had occurred.

11SR61269: The New York City Department of Environmental Protection (DEP) developed a stormwater drainage plan for the New Creek Watershed in 2011 (Historical Perspectives 2011). The environmental review process, including an archaeological sensitivity evaluation conducted by the New York City Landmarks Preservation Commission (LPC) and the New York State Office of Parks, Recreation and Historic Preservation (NYSHPO), began in 2010. As part of the standard coordination for a Draft Environmental Impact Statement (DEIS), both LPC and NYSHPO requested a research-based archaeological assessment, specifically, a Phase IA Archaeological Documentary Study, to evaluate the archaeological sensitivity of three watershed areas: Oakwood Beach, New Creek, and South Beach (requests dated April 14 and April 29,

2010, respectively). Historical Perspectives, Inc. (HPI) was contracted by AKRF to conduct the Phase IA study for the New Creek Watershed and associated Best Management Practice (BMP) sites. The study concluded that the proposed BMP NC-4 site and part of BMP NC-6 exhibit high sensitivity for precontact archaeological resources. The remaining BMP sites and proposed outfall locations showed no precontact archaeological sensitivity. None of the BMP or outfall locations (including those outside the current study area) demonstrated historic-period archaeological sensitivity. The assessment of both precontact and historic-period sensitivity across the New Creek Watershed was conducted at a general level. However, the degree of prior disturbance across the watershed, due to development and earthmoving activities, varied by location. As such, archaeological sensitivity should be evaluated on a site-specific basis when future work is considered.

05SR55788: Panamerican Consultants, Inc., under contract to Northern Ecological Associates of Fredonia, New York, conducted a Phase I cultural resource investigation along approximately 6 miles of Staten Island's southern shoreline, extending from Fort Wadsworth to Crescent Beach (USACE 2005). The environmental conditions within the project area were determined to have a low probability of yielding later prehistoric sites or materials. Historical maps from the late 18th century depict an extensive marshland just behind the shoreline. While such environments may have been suitable for resource exploitation, they were unlikely to support permanent or long-term habitation. It is more probable that small-scale or short-term encampments occurred on nearby higher ground, rather than within the marsh itself. These landforms, although adjacent to the study area, hosted some prehistoric sites not directly within the project footprint (USACE 2005).

The field survey did not identify any near-surface late prehistoric artifacts or features. However, the possibility of deeply buried early prehistoric sites beneath the current beach, near-shore areas, or filled historic marshlands remains. Investigations along Oakwood Beach primarily uncovered modern materials dating from the mid-20th century to the present. A minor historic artifact component was recovered from the area of the Cedar Grove Beach Club community bungalows, and evidence of former structures—including foundations and construction debris, was also documented. However, no evidence was found of other previously documented historic structures, such as the Oakwood Lighthouse (USACE 2005).

78SR58972: Beginning in the late 1970s, the National Park Service conducted an inventory of cultural resources within the Gateway National Recreation Area, identifying several Native American sites in the Great Kills Park area, including a Paleo-Indian fluted point find spot (John Milner Associates 1978). Milner detailed that Bolton (1934) first reported on the Great Kills Harbor Site (08501.000165), which he referred to as *Shawcopshee*, “the probable name of the Great Kills, which may have been the refuge, for about 16 years, of the Nayack natives when they moved from Long Island.” Milner interpreted the evidence of prehistoric activity at the head of the kills as suggestive of short-term occupation, but not long-term or permanent residence (Bolton 1934). If Bolton's interpretation was correct, Milner hypothesized that the site represented a short-term campsite rather than a permanent village.

Following Bolton's initial report, the Staten Island Institute of Arts and Sciences acquired a collection of artifacts from the site, at which time it received its numerical site designation (John Milner Associates 1978). Milner's 1978 report further documented that another nearby site, also referred to as a Great Kills Harbor Site (08501.000166), had yielded artifacts that had been housed in the Institute's collection for several years. Milner proposed that this site and the

previously described STD-GK (08501.000165) likely represented the same archaeological locality.

To the southwest of the current study area, the Crookes Point Site (08501.000162) also produced artifacts that are now in storage at the Staten Island Institute of Arts and Sciences. These materials were recovered prior to extensive landfilling activities and the construction of a bulkhead that now surrounds Great Kills Harbor. The museum's collection includes chipped stone tools and ceramics. Based on this evidence, Milner suggested that the Crookes Point site likely functioned as a seasonal camp, though it was probably destroyed during mid-20th-century landfilling activities (Milner 1978).

Another relevant site is 08501.000163, located on the northern shoreline of Great Kills Harbor. This site appears in the survey files of the New York State Museum and Science Service and was originally reported by Parker (1922), who referred to it simply as "a shell heap." Milner concluded that any remaining evidence of the site was almost certainly buried beneath as much as forty feet of landfill brought into Great Kills Park during the 1940s (Milner 1978).

LPC Reports: A literature review and sensitivity assessment was conducted by the U.S. Army Corps of Engineers in connection with the proposed construction of two levees situated east and west of the Oakwood Beach Sewage Disposal Plant (Rakos 1994). The assessment determined that the area exhibited potential sensitivity for prehistoric occupation. Investigations conducted at the southern end of the Oakwood Beach alignment identified a Native American site, which was ultimately destroyed by private development (Rakos 1996).

Subsequent archaeological testing was performed by U.S. Army Corps archaeologists in the vicinity of the proposed westernmost levee alignment (Rakos 1996). A total of 15 shovel tests were excavated in the area bounded by Merkel Place, Dougdale Street, and Mill Road, with most tests encountering an undisturbed former plow zone. Four shovel tests yielded evidence of prehistoric activity in the form of lithic flakes and a worked core, with each test producing one artifact, and a second possible flake recovered from one of them. Two additional shovel tests, located approximately 200–300 feet southeast of the others, encountered fill deposits, with one pit exhibiting standing water. These latter tests may have been situated east of the area of higher ground.

In a separate investigation, three backhoe trenches were excavated at the eastern end of the Oakwood Beach Water Pollution Control Plant in preparation for the plant's planned expansion (Roberts and Ponz 1990). A previous analysis had indicated that this area should be considered sensitive for possible prehistoric remains (Roberts et al. 1990). However, the trenches encountered 7.5 to 9 feet (2.2–2.7 meters) of fill. Only one trench reached the underlying organic marsh deposits, and none of the trenches extended below those layers to reach the strata where prehistoric materials would be expected.

6 EXISTING CONDITIONS

Cultural resources and historic properties are vulnerable to the impacts of storm surges, flooding, and sea-level rise. These types of exposures can diminish the physical and historic integrity of archaeological sites, historic buildings, and cultural landscapes through physical damage or destruction. Integrity is essential for historic properties to retain their designations as National Historic Landmarks, State / National Register listed or eligible resources, NYC Landmarks, National Historic Landmarks and / or NPS parks or site units, examples of all of which are present throughout the study area.

6.1 ABOVEGROUND RESOURCES

World Heritage Sites. There are no United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites within the study area.

Traditional Cultural Properties. A Traditional Cultural Property (TCP) is “one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in the community’s history, and (b) are important in maintaining the continuing cultural identity of the community” (Parker and King 1998:1). Currently, there is no comprehensive list of such properties within the study area.

Ethnographic Resources. In NPS parlance, ethnographic resources are “sites, structures, objects, landscapes, and natural resources or features of traditional importance to a contemporary cultural group through associations three generations or more in length” (Rockman et al. 2016:19). Currently, these resources have not been quantified for the study area. If they are present, they may be connected to Native American Nations, as well as ethnic groups from more recently arrived populations from Europe, Asia, Africa, South America, Australia, and other regions of North America.

Cultural Landscapes. A cultural landscape is “a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values” (NPS 2021). The National Park Service defines four types of cultural landscapes, which are not mutually exclusive: Historic Designed Landscapes; Historic Sites; Historic Vernacular Landscapes; and Ethnographic Landscapes. No cultural landscapes are present within the study area.

Museum Collections. The NYNJHAT AE Study Area does not contain any of the 145 museum collections associated with the rich and varied cultural history of New York and New Jersey, the United States, and other collections from around the world.

6.2 ARCHAEOLOGICAL AND SUBMERGED CULTURAL RESOURCES

Submerged Cultural Resources. The submerged cultural resources portion of the Direct APE is defined as the depth and breadth of the geographic areas potentially affected by any bottom-disturbing activities. The marine/riverine Direct APE also includes maritime/riverine cultural resources landward of the shoreline (i.e., onshore) and resources offshore of the AEs and tributaries.

The New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP) has information on more than 1,000 shipwreck sites and reported losses, though there may be as many as 10,000 shipwrecks in state waters (NPS 2022a).

Potential For Encountering Submerged Native American Sites. Preceramic-period sites in the Northeast are typically located on high ground along major river terraces, often near confluences, offering views of expansive land areas. During this time, river systems were larger, longer, and more dynamic, shaped by glacial meltwater that moved glacial outwash boulders, cobbles, and pebbles, materials that could serve as lithic resources. As sea levels rose, river mouths were submerged, creating bays, estuaries, and salt marshes that expanded over the retreating coastal plain. These environments would have been attractive to early human settlers for habitation or resource exploitation. Such areas, especially lee and back-bay settings, may also help preserve archaeological sites, as estuarine sedimentation can protect older or contemporaneous deposits from erosion caused by rising sea levels (Panamerican 2020:17). The APE for the AE is considered sensitive for submerged Native American sites.

Potential Native American Archaeological Sites. For Native American archaeological sites, areas of interest include the margins of streams, lakes, ponds, and estuarine environments. Channel facies are typically identified as concave-shaped reflectors, while potential reflectors might include deltaic features (wedge-shaped deposits), characterized by alternating layers with varying reflective properties and indicative slope (Panamerican Consultants 2020:18). The APE is a moderate to high potential for Native American Archaeological Sites.

Geomorphology and Submerged Prehistoric Resources. The potential for submerged prehistoric resources within the study area is closely tied to the geomorphology of river and harbor bottoms, shaped by post-Pleistocene sea-level changes and subsequent marine processes. The configuration of the seafloor reflects various processes, including multiple glacial advances, isostatic rebound (uplift), marine incursion, and modern seafloor processes. Data gathered from cores, seismic remote sensing, and sediment studies help reconstruct the geological history of the region, providing insights into the areas most likely to contain preserved prehistoric sites (Panamerican 2020:3).

Archaeological Site and Shipwreck Inventory. Studies of shipwrecks in the New York/New Jersey Harbor area have revealed that numerous vessels have been lost in the region since the early seventeenth century. The waters surrounding New York have served as a major route for ships spanning every era in U.S. history, making it home to a wide array of shipwreck sites, many of which remain undocumented and unidentified.

Estimates of the number of shipwrecks in the region vary, ranging from hundreds to thousands. The coastlines of Long Island and New Jersey form a natural "funnel" that directs maritime traffic into New York Harbor, leading to a higher concentration of shipwrecks than anywhere else along the East Coast of the United States, possibly with the exception of Cape Hatteras on the Carolina Outer Banks [Sheard 1998:8].

Numerous accounts have been written about the hazards faced by ships navigating the approach to New York New Jersey Harbor. These vessels were often lost due to adverse weather conditions, lack of navigational aids, marine accidents, or grounding near the surf zone. In many cases, ships could not be salvaged, resulting in the degradation of their hulls. According to Rattray (1973:50), the southern shore of Long Island is notorious for shifting sandbars that extend along the entire length of the island. These dangerous features, along with other factors, made the

approach to New York New Jersey Harbor, and the harbor itself, a prime location for shipwrecks and maritime disasters (Panamerican Consultants 2020:35). As the nearshore environment of the AE has not been surveyed for maritime resources, the potential for an unrecorded shipwreck on this dynamic portion of Staten Island is considered relatively moderate.

National Register Listed and Eligible Resources. According to the NYSHPO's Cultural Resource Information System (CRIS), no National Register listed or eligible resources are in the study area. However, there are 2 individual aboveground historic resources (both historic properties are not NR Eligible), and 1 National Recreation Area. There are an additional 2 known archaeological sites that have yet to be investigated to determine whether they are eligible for NRHP. These two archaeological sites, Great Kills Harbor (08501.000165), Lake's Tide Mill and Homestead which was an early 18th century grist mill along Mill Creek belonging to Arthur Lake and demolished in 1896 and further disturbed by the construction of the current waste water treatment plant, and the Prehistoric, multicomponent Great Kills Park site (08501.000168), are discussed at length in Section 5.

New York State Museum Archaeological Sites. The NYSM has no records for archaeological sites or archaeological areas in the study area.

National Historic Landmarks (NHLs). National Historic Landmarks are historic properties that illustrate the heritage of the United States. There are currently more than 2,600 NHLs designated which represents an outstanding aspect of American history and culture (NPS 2022a). There are many types of NHLs which include historic buildings, sites, structures, objects, and districts. There are no identified NHLs within the study area.

National Park Service Sites. National Park Service Sites are administered by the federal government. The single NPS site, Gateway National Recreation Area: Great Kills Park, in the study area contains a wide variety of cultural resources. The Great Kills Park represents over 400 years of American history, and was once home to the second permanent European Settlement in Staten Island. This is one of the most iconic and visible parks in the harbor area.

New York City Landmarks. The New York City Landmarks Preservation Commission (LPC) administers the city's Landmarks Preservation Law. It is responsible for protecting New York City's architecturally, historically, and culturally significant buildings and sites by granting them landmark or historic district status and regulating them after designation (NYC LPC 2022).

NYC LPC landmarks are designated in four categories: individual landmarks, interior landmarks (i.e., building interiors), scenic landmarks, and historic districts. The National Register is separate from the LPC although many of New York City's individual landmarks and historic districts are also listed on the National Register. There are more than 37,600 landmark properties in New York City, most of which are in 152 historic districts and historic district extensions in all five boroughs (NYC LPC 2022). None of the NYC Scenic Landmarks are in the study area.

No NYC Landmark individual properties or historic districts have been identified as partially in or adjacent to the 100-m Direct APEs for the project alternative (see Sections 3.1).

7 CULTURAL RESOURCE LIST AND POTENTIAL TO EFFECT DETERMINATION

As presented in the Environmental Appendix, Cultural Resource Categories within the Study Area have been reviewed to determine if there is a potential for the Alternatives to effect, either adversely or beneficially, Resource Categories starting with an initial screening to identify *if* there is a potential for adverse effects (Yes – Y; or No – N) by the measures of each Alternative, followed by an assessment of the magnitude of those identified potential adverse effects, rated on a scale of 0 (No Adverse Effects) to minus 5 (–5, Significant Adverse Effects), by Alternative. Each cultural resource and historic property includes a summary discussion of the anticipated and reasonably foreseeable effects of each Alternative, additionally reflected by qualitative magnitude of effect ratings.

Cultural resources and historic properties are vulnerable to the impacts of storm surges, flooding, and sea-level rise. These types of exposures can diminish the physical and historic integrity of archaeological sites, historic buildings, and cultural landscapes through physical damage or destruction. Integrity is essential for historic properties to retain their designations as National Historic Landmarks, State / National Register listed or eligible resources, NYC Landmarks, and / or NPS parks or site units, examples of all of which are present throughout the study area.

7.1 CULTURAL RESOURCE QUALITATIVE RATING METHODOLOGY AND SCORING PROCESS

A rating methodology was developed, adopted, and enhanced from the September 2022 Draft Integrated Report and Tier 1 EIS to qualitatively assess as well as the current Draft EA Qualitative Rating Methodology to compare the adverse impacts of each resource within the Study Area. While environmental impact frameworks provide a broad lens for evaluating project effects, cultural resources require a more nuanced and specialized approach due to their historical, archaeological, and intangible values. Environmental models often emphasize biophysical metrics such as land use, hydrology, or emissions, which can overlook the complex regulatory, contextual, and community-based significance of historic properties and their role as cultural resources. Under Section 106 of the National Historic Preservation Act, federal undertakings must consider not only physical alterations but also visual, auditory, and contextual impacts to historic properties and archaeological sites. Therefore, a more refined framework tailored to historic properties and their interplay as cultural resources is essential to adequately assess both adverse and beneficial effects, guide meaningful mitigation, and ensure compliance with federal preservation mandates. This approach enables more precise evaluations and protects cultural heritage in ways that environmental scoring systems alone cannot achieve.

This table represents the overview of the resources identified in the September 2022 Draft Report as potentially occurring within the Study Area to determine if the Comprehensive Plan would affect said resources. These same resources were again reviewed for the AE Site and assessed in the same manner as summarized below. The difference between the September 2022 Draft Report assessment and this one is that this one includes the negative and positive markers to establish the presence/absence of adverse and/or beneficial effects.

Cultural Resources Impact Evaluation Framework

Resource Categories:

- Above-Ground: Historic structures, viewsheds, cultural landscapes

- Below-Ground: Archaeological sites (terrestrial and submerged)
- Project Phases Considered: Construction, Operation & Maintenance
- Impact Types: Adverse (Negative) Effects, Beneficial Effects

Evaluation Factors:

- Impact Magnitude (Intensity/Extent)
- Geographic Scope (Local/Regional)
- Temporal Scope (Short-/Long-Term)
- Regulatory Thresholds (e.g., NEPA, NRHP eligibility, Section 106 compliance)
- Mitigation Potential (Avoidance, Minimization, Treatment, Enhancement)

Table 1. Adverse Effects Rating Table (With Mitigation Evaluation Built In)

Impact Rating	Score	Description	Example	Mitigation Category
High	-5	Permanent destruction of resource; exceeds regulatory thresholds; mitigation insufficient to reduce impact to an acceptable level.	Demolition of an NRHP-listed building without documentation or alternatives.	Mitigation possible; however, total, irreplaceable loss of resource.
Mod-High	-4	Significant adverse effect; mitigation necessary and substantial , but cannot eliminate loss of integrity.	Cut through historic landscape with unavoidable impacts.	Partial mitigation (e.g., detailed documentation, interpretive signage, data recovery).
Moderate	-3	Impact is localized and within thresholds; mitigation can fully address resource loss or damage.	Archaeological site disturbed by utilities, but full data recovery is planned.	Effective mitigation (e.g., redesign, excavation, relocation, HABS/HAER documentation).
Low-Mod	-2	Minor adverse impact; mitigation simple and sufficient to avoid significance loss.	Short-term construction next to historic structure with vibration monitoring.	Standard BMPs or buffer zones.
Low	-1	Temporary, negligible effects; no mitigation required.	Minor access near site boundary.	No mitigation necessary.
No Impact	0	No effect on cultural resources.	Boring in fully disturbed, tested area.	Not applicable.

Table 2. Beneficial Effects Rating Table (With Enhancement Evaluation)

Benefit Rating	Score	Description	Example	Mitigation Enhancement Category
High	+5	Regionally significant enhancement of a cultural resource or site; measurable, long-term improvement; promotes public engagement.	Adaptive reuse of a historic building as public space with interpretation.	Preservation + Public Benefit (e.g., funding, easements, partnerships).

Mod-High	+4	Strong enhancement locally or regionally; mitigation or restoration improves condition or setting.	Viewshed restoration at a historic site through invasive species removal.	Restoration + Setting Rehabilitation.
Moderate	+3	Measurable benefit to one or more cultural resources; increased protection or documentation.	Phase III recovery with public education materials produced.	Public interpretation, research access, stewardship agreements.
Low-Mod	+2	Some improvement beyond existing condition; resource protected or documented more completely.	HABS documentation of vulnerable site.	Archival mitigation + limited outreach.
Low	+1	Minor benefit, such as improved access, visibility, or documentation.	Signage for nearby unmarked historic feature.	Minimal enhancement.
No Impact	0	No beneficial effect beyond current condition.	Routine maintenance in non-sensitive areas.	Not applicable.

Both rating methodologies analyses and qualitative scoring informed the effects assessments and the EQ account for Plan Selection and identifying the environmentally preferred alternative for each Actionable Element site. Scores for adverse impacts were rated for each resource on a scale of 0 to -5, with 0 being no impact to the resource, and -5 being significant impacts to the resource that would be considered complete loss of said resource.

Existing Conditions and consequences of the No Action and Action Alternative were assessed, including the adverse and beneficial effects. Qualitative scores are summarized below accounting for the highest direct and indirect adverse effect and beneficial effects discussed in the supportive effects analyses found in Section 7.

Table 3. Cultural Resources Impact Summary Table

Resource Qualitative Rating	Adverse Effects		Beneficial Effects		NO ACTION TOTAL SCORE	ACTION TOTAL SCORE
	No Action	Action	No Action	Action		
Construction/Footprint						
Historic Structures	0	0	0	0	0	0
Viewshed / Historic Setting	-1	0	0	1	-1	1
Terrestrial Archaeological Resources	-1	-1	0	0	-1	-1
Submerged Archaeological Resources	0	0	0	0	0	0
O&M Assumptions						
Historic Structures	0	-1	0	1	0	0
Viewshed / Historic Setting	0	0	0	3	0	3
Terrestrial Archaeological Resources	0	0	0	0	0	0
Submerged Archaeological Resources	0	0	0	0	0	0
<i>Mitigation (if applicable, otherwise 0)</i>	0	0	0	0	0	0
Subtotal Resource Score with mitigation						
ACTION TOTAL SCORE (calculated, additive, with mitigation)					-2	3

8 EFFECTS DETERMINATION

8.1 NO ACTION/FUTURE WITHOUT PROJECT CONDITION

8.1.1 Adverse Effects

The No Action or No-Build Alternative was assessed in relation to the project's purpose and need. Under this scenario, no measures would be implemented to address future flood risks, which are anticipated to worsen due to relative sea level rise. As a result, this alternative would leave existing aesthetic, visual, historical, and cultural resources vulnerable to damage. Archaeological sites within the study area face the risk of deterioration or destruction from coastal flooding and sea-level rise. Additionally, submerged cultural resources and historic properties may be affected by underwater storm activity and alterations in seawater flow patterns associated with flooding and rising sea levels.

Cultural resources and historic properties along the coast of Staten Island are increasingly threatened by environmental changes. The impact of recent extreme weather events underscores this vulnerability. For instance, Hurricane Sandy in 2012 significantly affected the New York–New Jersey Harbor region and caused widespread damage across 26 states. Floodwaters from the storm reached depths of up to nine feet in Staten Island, and other low-lying communities. Historic buildings, landmarks, and archaeological sites across Staten Island face growing threats from flooding, tidal erosion, and intensified storm activity as climate-related impacts escalate.

8.1.2 Beneficial Effects

No beneficial effects of no action are anticipated, as the area would continue to be vulnerable to coastal flood risk and damages. Therefore, this effects category is representative as no impact, with a corresponding Impact Score of 0.

8.2 ACTION ALTERNATIVE

The Direct APE for the AE in Staten Island, New York is approximately 62.2 sq acres. This Direct APE intersects: 2 SHPO-cataloged archaeological sites (of which neither are listed in the NRHP, and have not been investigated sufficiently to determine their NR-eligibility); 0 NYSM archaeological areas; 2 above-ground historic properties that are not NR eligible (Tarlton Street Bridge and the Wastewater Treatment Plant); 0 NR-listed individual properties; 0 NR-listed historic districts; 0 LPC landmarks; and a National Recreation Area (Great Kills Unit of the Gateway National Recreation Area) (Table 37). The NOAA ENC database lists 0 shipwrecks in the Oakwood Beach portion of the Direct APE. The SHPO data does not indicate there are any cemeteries in the APE.

8.2.1 Adverse Effects

Although the alternative includes a known archaeological site and is designated as sensitive for prehistoric archaeological resources, the site has been extensively modified by past development, fill, and infrastructure activities. As such, any intact archaeological deposits are expected to be deeply buried and isolated, reducing their vulnerability to disturbance from planned surface-level work. However, certain components of the project, such as tidal channel excavation and dune regrading and nearshore excavation, creation of artificial reefs, may involve limited subsurface impacts. These potential effects warrant an adverse effect with low-to-moderate impact rating for terrestrial archaeological resources and submerged archaeological resources during construction. No adverse effects are anticipated for above-ground historic structures. However, targeted archaeological monitoring or testing in higher sensitivity zones will be necessary to avoid

unanticipated impacts and ensure compliance with Section 106 of the National Historic Preservation Act.

Routine operations and maintenance activities at Oakwood Beach, including beach nourishment, dune maintenance, and inspection or repair of coastal protection features, will have no potential to disturb previously identified or currently unknown archaeological resources through repeated ground disturbance and sediment movement. The implementation of established cultural resource protection measures, such as avoidance where feasible, monitoring during ground-disturbing activities and supplemental cultural resource investigations through the utilization of a Programmatic Agreement to avoid, minimize or mitigate any potential for adverse effects on historic properties.

8.2.2 Beneficial Effects

The Oakwood Beach Alternative is expected to yield moderate beneficial impacts to cultural resources, particularly in the form of landscape restoration that enhances the cultural viewshed and reestablishes the ecological and visual character of the shoreline. The creation of a vegetative mosaic with native plants, the reintroduction of tidal channels, and dune restoration will help restore a historically and environmentally significant shoreline buffer. These improvements align with long-term resilience and sustainability goals and reflect traditional environmental knowledge systems tied to Indigenous and early land use patterns.

Additionally, the removal of non-native invasive species will improve the interpretive integrity of the site and support the area's role as a natural defense system, benefiting the larger NYNJHAT Study area and adjacent South Shore and Great Kills Park. These landscape-scale improvements provide lasting scenic, educational, and ecological value that reinforce the cultural identity of the region.

9 ENVIRONMENTAL CONSEQUENCES OAKWOOD BEACH, NEW YORK STUDY AREA

The Direct APE for the AE in Staten Island, New York is approximately 62.2 sq acres. This Direct APE intersects: 2 SHPO-cataloged archaeological sites (of which neither are listed in the NRHP, and have not been investigated sufficiently to determine their NR-eligibility); 0 NYSM archaeological areas; 2 above-ground historic properties that are not NR eligible (Tarlton Street Bridge and the Wastewater Treatment Plant); 0 NR-listed individual properties; 0 NR-listed historic districts; 0 LPC landmarks; and a National Recreation Area (Great Kills Unit of the Gateway National Recreation Area) (Table 37). The NOAA ENC database lists 0 shipwrecks in the Oakwood Beach portion of the Direct APE. The SHPO data does not indicate there are any cemeteries in the APE.

This Section provides the results of a preliminary review of cultural resources data available in the NYS OPRHP databases, as well as the NOAA ENC database and the NYC Landmarks Preservation Commission’s internet accessible geographic information system, for proposed measures for the AE. To protect archaeological sites, in compliance with Federal and State laws, their locations and names are not provided in this EA report. The features for the AE involve the construction of structures that have a potential to affect directly historic properties and cultural resources in both terrestrial and submerged environments. The proposed alternative is in an area that would be considered to have a moderate probability for terrestrial and submerged cultural resources to occur. At the most general level, Native American archaeological sites are most likely to be located near water; by definition, submerged resources are in water and early non-Native American settlements clustered near water, particularly in the time before plumbing and sanitary sewer systems. For further discussion and analysis of project features please see the main report.

Table 4. Cultural Resources within the 100-meter Direct APE

Historic Property Type	Number of properties in Oakwood Beach APE
National Historic Landmark	0
Historic District, NR-listed	0
Historic District, NR-eligible	0
Individual aboveground property, NR-listed	0
Individual aboveground property, NR-Ineligible	2
NYC LPC individual landmarks	0
NYC LPC landmark districts	0
Archaeological site, NR-listed*	0
Archaeological site, NR-eligible*	0
Archaeological site, undetermined eligibility*	2
NYSM archaeological site	0
NYSM archaeological area	0
Shipwreck	0
National Recreation Area	1
Cemeteries	0

Preliminary Totals of Cultural Resources within 100 meters (328 ft) of the Alternative (Direct APE) (after data from the NYSHPO, NYSM, NPS, NOAA, and the NYC LPC).

Undetermined SHPO Archaeological Sites: Great Kills Harbor (08501.000165), LAKE'S TIDE MILL AND HOMESTEAD, GREAT KILLS PARK (08501.000168)
SR/NR Ineligible Building: Tarlton Street Bridge (08501.003712), Wastewater treatment plant (08501.003363)

9.1 Cultural Resources Within Visual Impact Area (Indirect Effects)

The measures included in the study will enhance existing views, depending on location and scale. Construction of nature based measures may positively affect scenic byways, improve existing residential views, and/or increase access to historic coastal sites (USACE 2019). Aesthetic valuation, a judgement of value based on appearance of an object and emotional responses, of the public is ongoing and will be updated as stakeholder input is aggregated, but was not used to determine the preliminary impact rating.

Aerial photographs, LiDAR and field observations were analyzed for each alternative of visual effect, that will later be considered in determining the build alternative. This includes project visibility and viewsheds from neighbors and travelers as well the influence of topography, vegetation, and structures. An inventory of existing landscape character, viewers and visual quality is the baseline for this documentation. Characterization of visual quality of landscape compositions based on intrinsic characteristics of natural, and existing roadway features; stakeholder values, public interest, real estate and scenic designations may be altered by the implementation of the proposed structural measures but will greatly manage the impact from coastal storms. Generally, implementing the alternative could provide direct benefits by reducing the severity of damage to coastal sites and residences.

In support of the aesthetic viewshed analysis, USACE undertook a preliminary identification of known cultural resources that could be visually affected by the project in accordance with the New Jersey Historic Preservation Office's (2004) Guidelines for the Preparation of Cultural Resource Management Archaeological Reports; New York Archeological Council's (NYAC) Standards for Cultural Resources Investigations and the Curation of Archeological Collections in New York State; New York State Office of Parks, Recreation, and Historic Preservation's (2005) State, Historic Preservation Office Phase I Archaeological Report Format Requirements; and the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation (48FR4473437), and the USACE NYNJHATS OSE Report (2022). Visual analysis, as a component of the NEPA and Section 106 analyses, includes a broad look at the potential impacts to historic properties. By definition, a visual effect occurs whenever a proposed undertaking will be visible from an historic property. The mere existence of a visual effect does not automatically imply that the effect is adverse.

Background research for the project included a review of existing cultural resource reports, management plans, archaeological site files, historic maps, and nominations to the National Register of Historic Places (NRHP). The analysis takes into consideration the resource's geographical distance and the effect of topography on whether the Alternative is visible from historic resources. A visibility analysis that takes the built environment and vegetation into account are beyond the scope of the Study. Additional discussion and evaluation of the visual impacts from each Alternative is available in the following Sections.

Measures proposed for the AE will not involve the construction of structures that have a potential to indirectly affect historic properties, there are no historic properties impacted by the Action Alternative, and will not alter the visible environment (i.e., setting) of those resources. For this

study, the visual impact study area (Indirect APE) includes those places within one mile (1.6 km) of proposed measures for the alternative that are in the potential viewshed (based on topography). This Visual Impact Area, or Zone of Visual Influence (ZVI), encompasses parts of coastal Staten Island, New York City. As of this writing, this preliminary visual impact analysis is an initial screening of impacted historic properties and will be refined in subsequent iterations.

Additional visual assessment for the measures proposed at Oakwood Beach was deemed unnecessary because the design elements do not introduce visual changes that rise to the threshold of an adverse effect under Section 106 criteria. An adverse visual effect occurs only when a new element added to the landscape diminishes the aspects of a property's significance or integrity, such as its historic setting, that contribute to its eligibility for listing in the State or National Registers of Historic Places (S/NRHPs).

The Action Alternative, which includes elements such as vegetative plantings, grading, and berms with naturalistic contours, are compatible with the existing coastal landscape. These measures do not obstruct significant views to or from eligible or listed historic properties, nor do they introduce visual elements that are out of scale, incompatible, or in stark contrast with the surrounding character. Because the proposed nature-based components are designed to blend with the natural setting and do not diminish the visual integrity or appreciation of any known historic resource in the area, neither adverse aesthetic nor obstructive effects are anticipated. Accordingly, based on established guidance and definitions of visual impacts, further detailed visual analysis was not required for this portion of the undertaking.

10 CONCLUSION

Analysis of cultural resources and historic properties for the Oakwood Beach Study Area evaluated the potential effects of both the No Action/Future Without Project Condition and the Action Alternative in accordance with the National Environmental Policy Act (NEPA), Section 106 of the National Historic Preservation Act (NHPA), and other applicable federal and state cultural resource protection laws.

Under the No Action Alternative, no measures would be implemented to reduce current or future coastal flood risks. As a result, archaeological sites, historic properties, and other cultural resources within the study area would remain vulnerable to ongoing and intensifying impacts from sea-level rise, storm surge, tidal erosion, and extreme weather events. Over time, these conditions are anticipated to result in continued degradation and potential loss of cultural resources and historic properties, representing an adverse effect to the cultural landscape of coastal Staten Island.

The Action Alternative was assessed within a Direct Area of Potential Effects (APE) of approximately 62.2 acres and an Indirect (visual) APE extending up to one mile from proposed measures. Cultural resource investigations identified no National Register-listed or eligible historic properties within the Direct APE. Two previously recorded archaeological sites of undetermined eligibility occur within the Direct APE, along with above-ground structures that are not eligible for listing in the National Register of Historic Places.

Construction-related activities associated with the Action Alternative have the potential to result in limited subsurface disturbance in areas of moderate terrestrial and submerged archaeological sensitivity. Accordingly, the Action Alternative was assigned an adverse effect with low-to-moderate intensity for archaeological resources during construction. However, these effects would be appropriately addressed through the implementation of avoidance measures where practicable, archaeological monitoring, archaeological and remote sensing surveys, and testing in archaeologically sensitive areas, and supplemental investigations as required. These commitments, including the use of a Programmatic Agreement, ensure compliance with Section 106 and provide mechanisms to avoid, minimize, or mitigate any potential adverse effects on historic properties.

No adverse effects are anticipated to above-ground historic structures or to historic properties within the visual APE. The proposed nature-based features, including dune restoration, vegetative plantings, and naturalistic grading, are compatible with the existing coastal landscape and would not diminish the integrity, setting, or significance of any historic properties.

In the long term, the Action Alternative is expected to result in beneficial effects to cultural resources by reducing exposure to coastal flooding and storm-related damage, restoring historically characteristic shoreline conditions, and enhancing the cultural viewshed. These measures support the preservation of cultural landscapes and contribute to the long-term resilience of archaeological and historic resources in the Oakwood Beach area.

With implementation of the proposed avoidance, minimization, monitoring, and mitigation measures, the Action Alternative would not result in significant adverse impacts to cultural resources and would be consistent with applicable federal and state cultural resource protection requirements.

11 REFERENCES CITED

1783 Plan Du Camp Anglo-Hessois dans Staten Island (Baie de New York) de 1780–1783. Plan no. 31 du Camp Anglo-Hessois dans Staten Island. 1780 & 1783.

Baughner-Perlin, Sherene, and Frederick A. Bluefeld. *A Background Study of Historic Land Use of the Gateway National Recreation Area, Staten Island Unit*. Prepared for the North Atlantic Regional Office, National Park Service, 1980.

Black, Frederick R. *A History of Fort Wadsworth, New York Harbor*. Boston: National Park Service, Division of Cultural Resources, North Atlantic Regional Office, 1983.

Boesch, Eugene J. *Archaeological Evaluation and Sensitivity Assessment of Staten Island, New York*. Prepared for the New York City Landmarks Preservation Commission, 1994.

Brasser, T. J. "Early Indian-European Contacts." In *Handbook of North American Indians, Volume 15: Northeast*, edited by Bruce G. Trigger. Washington, DC: Smithsonian Institution, 1978.

Burrows, Edwin G., and Mike Wallace. *Gotham: A History of New York City to 1898*. New York: Oxford University Press, 1999.

Cantwell, Anne-Marie, and Diana diZerega Wall. *Unearthing Gotham: The Archaeology of New York City*. New Haven and London: Yale University Press, 2001.

Clute, J. J. *Annals of Staten Island, From Its Discovery to the Present Time*. New York: Press of Charles Vogt, 1877. Reprint, Interlaken, NY: Heart of the Lakes Publishing, 1986.

Cramer, Marianne R., ed. *Historic Roads of Staten Island*. Staten Island: Staten Island Historical Museum Press, 2004.

Dincauze, Dena F. "An Archaic Sequence for Southern New England." *American Antiquity* 36, no. 2 (1971): 194–198.

Fiedel, Stuart J. "The Ossining Rockshelter." *The Bulletin: Journal of the New York State Archaeological Association* 92 (1986): 32–45.

. "The Peopling of the New World: Present Evidence, New Theories, and Future Directions." *Journal of Archaeological Research* 8, no. 1 (2000): 39–103.

Flick, Alexander C. *History of New York*. Vol. 1. Albany: New York State Historical Association, 1933.

Funk, Robert E. *Recent Contributions to Hudson Valley Prehistory*. New York State Museum Memoir No. 22. Albany: University of the State of New York, 1976.

Goddard, Ives. "Delaware." In *Handbook of North American Indians, Volume 15: Northeast*, edited by Bruce G. Trigger, 213–239. Washington, DC: Smithsonian Institution Press, 1978.

Greenhouse Associates, Inc. *Archaeological Sensitivity Evaluation for Eight Water Pollution Control Plant Expansions in New York City*. On file, New York City Landmarks Preservation Commission, 1990.

Grumet, Robert S. "American Indians." In *The Encyclopedia of New York City*, edited by Kenneth T. Jackson, 25–28. New Haven: Yale University Press, 1995.

Harris, Ed, et al. *Cultural Resources Overview for Hudson–Raritan Estuary Comprehensive Restoration Plan*. 3 vols. 2014.

Historical Perspectives, Inc. *Final Report: Phase III Archaeological Data Recovery of the P.S. 56 R School Site, Staten Island, New York*. Westport, CT, 1996.

Phase IA Cultural Resources Sensitivity Evaluation Addendum: Lemon Creek Drainage Area, Staten Island, New York. 2009.

Phase IB Archaeological Investigations: Lemon Creek Drainage Area, Staten Island, New York. 2009.

Phase II Archaeological Investigations: Lemon Creek Drainage Area, Staten Island, New York. 2010.

Phase III Archaeological Data Recovery: Lemon Creek Drainage Area, Staten Island, New York. 2010.

Phase IA Archaeological Documentary Study, Cedar Grove Beach Rehabilitation. 2010.

Phase IA Archaeological Documentary Study for the Oakwood Beach Watershed. On file, New York City Landmarks Preservation Commission, 2011.

Hunter Research. *Geomorphic/Archaeological Study, South Shore of Staten Island Coastal Storm Reduction Project*. Prepared for Princeton Hydro under contract to U.S. Army Corps of Engineers, New York District, 2020.

Jackson, Kenneth T., ed. *The Encyclopedia of New York City*. New Haven: Yale University Press, 1995.

The Encyclopedia of New York City. 2nd ed. New Haven: Yale University Press, 2010.

John Milner Associates (JMA). *A Cultural Resources Inventory of the Gateway National Recreation Area, New York and New Jersey*. 1978.

Archaeological Overview and Assessment Gateway National Recreation Area. 2011

Kraft, Herbert C. "Paleoindians in New Jersey." In *Amerinds and Their Paleoenvironments in Northeastern North America*, edited by W. S. Newman and B. Salwen, 264–281. *Annals of the New York Academy of Sciences*, 1977.

"The PaleoIndian Sites at Port Mobil, Staten Island." In *Current Perspectives in Northeastern Archaeology*, edited by R. Funk and C. F. Hayes III, 1–19. *Researches and Transactions of the New York State Archaeological Association* 17, no. 1 (1977).

The Lenape: Archaeology, History, and Ethnology. Newark: New Jersey Historical Society, 1986.

Kostiw, Scott F. "A Fresh Look at the Middle Woodland Period in Northeastern North America." *The Bulletin: Journal of the New York State Archaeological Association* 110 (1995): 38–45.

Leng, Charles, and William T. Davis. *Staten Island and Its People: A History*. Vol. 1. New York: Lewis Historical Publishing Company, 1930.

Lenik, Edward J. "Cultural Contact and Trade in Prehistoric Staten Island." *Proceedings of the Staten Island Institute of Arts and Sciences* 34, no. 1 (1989): 25–32.

"Native American Archaeological Resources in Urban America: A View from New York City." *The Bulletin: Journal of the New York State Archaeological Association* 103 (1992): 20–29.

Levine, Mary Ann. "Accommodating Age: Radiocarbon Results and Fluted Point Sites in Northeastern North America." *Archaeology of Eastern North America* 18 (1990): 33–63.

Lionel Pincus and Princess Firyal Map Division, The New York Public Library. *Beers' New Map of Staten Island*. 1887.

Hammond's Complete Map of Staten Island. 1920.

Map of Staten Island, Richmond County, New York. 1859.

Map of the Borough of Richmond. 1906–1913.

(Additional NYPL map entries retained as archival digital collections.)

Louis Berger and Associates, Inc. *Stage IA Cultural Resource Investigation: Gateway Cathedral, Staten Island, New York*. East Orange, NJ, 1989.

Mangi Environmental Group. *Great Kills Unit: Draft Archaeological Overview and Assessment*. McLean, VA, 2005.

McMillen, Loring. *A Walk Around Staten Island*. Staten Island Historical Society, 1968.

Miller, Randall M. *Washington Avenue: Staten Island's Industrial Past*. New Brunswick, NJ: Rutgers University Press, 2003.

National Park Service. *Cultural Resources Report for Fort Wadsworth*. 1995.

Gateway National Recreation Area Park Map. 1998.

"Peace Conference at Staten Island." Accessed June 6, 2025.

Temporary Closure Shifts Leagues to Miller Field from Great Kills. Press release, March 2, 2009.

New York Times. "Sunday, May 23, 1993."

Ritchie, William A. *The Archaeology of New York State*. Revised ed. Harbor Hill Books, 1980.

Salwen, Bert, et al. *An Archaeological Collections Summary for Fort Wadsworth, New York*. Prepared for the U.S. Army Environmental Center, 1984.

Snow, Dean R. *The Archaeology of New England*. San Diego: Academic Press, 1980.

Stark, Philip. "Erastus Wiman and the Staten Island Rapid Transit." *Journal of the Staten Island Historical Society* 25 (2006): 12–29.

Wrenn, Tony P. *General History of the Jamaica Bay, Breezy Point, and Staten Island Units, Gateway National Recreation Area*. Boston: National Park Service, 1975