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PHASE 1A
CULTURAL RESOURCES SENSITIVITY EVALUATION

BLUE HERON, ARBUTUS CREEK, AND
LEMON CREEK/SANDY BROOK WATERSHEDS

SOUTH RICHMOND, STATEN ISLAND
NEW YORK

CEQR No. 97DER26

026



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Indicating Areas of Prehistoric Archaeological Sensitivity

MANAGEMENT SUMMARY

A Phase 1A cultural resources sensitivity survey was conducted within the Blue Heron, Arbutus Creek and Lemon Creek/Sandy Brook Watersheds located in South Richmond, Staten Island, New York. This survey was in response to the New York City Department of Environmental Protection's drainage management plan for these watersheds that includes the construction of in-road sanitary wastewater collection lines and Best Management Practice (BMP) features.

Background research indicates that prehistoric people occupied and utilized the land within each watershed project area. Ten loci within the project areas, which will be impacted by the proposed construction work, have been determined to have high or medium archaeological sensitivity, or potential for containing evidence of prehistoric occupation. Therefore, a Phase 1B investigation involving archaeological testing is recommended at these locations: BMPs 1, 2, 3 and 6 within the Blue Heron Watershed; BMPs 4 and 6 within the Arbutus Creek Watershed; BMPs 1, 4, 7b, and 7c within the Lemon Creek/Sandy Brook Watershed.

The proposed construction of in-road sanitary sewer lines and BMP features will have no adverse impact upon any historical resources.

I. INTRODUCTION

A. PROJECT DESCRIPTION

The New York City Department of Environmental Protection proposes to install sanitary wastewater collection lines and a storm water management system within the Blue Heron, Arbutus Creek, and Lemon Creek/Sandy Brook Watersheds in South Richmond, Staten Island, New York. This project will include the construction of in-road sanitary sewer lines and Best Management Practices (BMPs) features such as outlet stilling basins, extended wetland/marsh detention ponds, micropools, stream realignment/enhancement, and the replacement of culverts.

This report presents the results of a Phase 1A cultural resources sensitivity survey conducted within the three watershed project areas. The study was conducted in accordance with the New York City Landmarks Preservation Commission (LPC) environmental review comments (9-19-97), and the City Environmental Quality Review (CEQR) guidelines, Section 3F. The objective of this cultural resources investigation was to evaluate the historic and prehistoric archaeological sensitivity of the project areas for city review (CEQR No. 97DEP026).

B. STUDY AREA LOCATION

The Blue Heron Watershed is bounded by Bennett Avenue on the north, Poillon Avenue on the west, Arden Avenue on the east, and Raritan Bay on the south.

The Arbutus Creek Watershed is bounded by Lamont Avenue on the north, Luten Avenue on the west, Poillon Avenue on the east, and the Raritan Bay on the south.

The Lemon Creek/Sandy Brook Watershed is bounded by Mason Boulevard to the north, the West Shore Expressway to the west, Vernon Boulevard to the east and Raritan Bay to the south.

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Based on CEQR guidelines and the LPC Review Comments, the area of concern for archaeological resources is limited to that land which may experience direct, subsurface construction-related impacts. The LPC Environmental Review comments have determined "NO ARCHITECTURAL SIGNIFICANCE" within each watershed. Hence, standing structures were not investigated or assessed.

II. ENVIRONMENTAL OVERVIEW

A. INTRODUCTION

The Blue Heron, Arbutus Creek and Lemon Creek/Sandy Brook watersheds are located in southern Staten Island and extend over an area of 2,140 acres. In general, the three watersheds are bounded by the West Shore Expressway on the north and west, Arden Avenue on the east, and Raritan Bay and the Atlantic Ocean on the south. The topography of this region slopes from north to south and all streams flow southerly toward Raritan Bay and the Atlantic Ocean.

Prior to the eighteenth century, the ecological setting of these watersheds provided many essential resources for both Native American and European-American populations. The region's forest, streams, marshes, wetlands and soils provided raw materials for fuel, shelter and tools, rich food supplies, potable water, and other resources for human needs. Since the first European settlers arrived in the area, the impact of human activity upon the landscape has been continuous. Documentary sources indicate that much of the land was exploited for its timber resources and cleared for homesteads and agriculture. Settlements and villages were established and road networks developed. During the last half of the twentieth century land development in South Richmond has accelerated.

The following discussion is a synopsis of the principal environmental characteristics within each watershed.

B: BLUE HERON WATERSHED

Geologically speaking, this watershed is part of the Coastal Plain physiographic province (Schuberth 1968). The underlying deposits in the region were laid down during the Cretaceous period some seventy million years ago and consist of sands and clays called the Raritan-Magothy formation (Gratacap 1909:175-176). Glacial deposits, in turn, overlie those of the Cretaceous period and date to about 14,000 years ago. Glacial till and outwash sediments, consisting of sands, silts and gravels, form the region's surface features and deposits and are of post-glacial origin, that is, they began forming approximately 14,000 years ago (Kraft and Chacko 1978:41).

In general, the topography of this region can be characterized as low and undulating. The local elevations range from approximately ninety feet above mean sea level (m.s.l.) just north of Amboy Road to around ten feet above m.s.l. near the ocean on the south. The region contains Jansen, Koch, Spring, and Blue Heron Ponds. Three streams flow through the watershed and converge near Newton Street within Blue Heron Park.

A large portion of this watershed is Blue Heron Park, a 153 acre nature preserve containing ponds, wetlands and wooded areas. However, surrounding the undeveloped zones are residential and commercial structures, roads, and utility lines.

C. ARBUTUS CREEK WATERSHED

This watershed is contiguous to and west of the Blue Heron Watershed. It is also part of the Coastal Plain physiographic province and its geology and soils are identical to that of its neighbor to the east, as described above.

The Arbutus Creek Watershed covers an area of 452 acres. The local topography is gently sloping and ranges from approximately 100 feet above m.s.l. at its northern end to about ten feet above m.s.l. on the south near the ocean. Arbutus Creek is the principal stream within this watershed; it originates near the Staten Island Rapid Transit (SIRT) Railroad tracks and flows southerly across Amboy Road, parallels Arbutus Avenue and empties into Arbutus Lake south of Hylan Boulevard. Three smaller unnamed tributaries flow into Arbutus Creek. There are several ponds within this watershed: Huguenot Pond at Comley Street, Luten Pond between Androvette Avenue and Luten Avenue, Arbutus Pond, and an unnamed pond east of Capellan Street at Kingdom Avenue.

The Arbutus Creek Bluebelt¹ is surrounded by residential development and roads. Commercial establishments are also present within the area.

D. LEMON CREEK/SANDY BROOK WATERSHED

This watershed extends over 1,366 acres and is bounded by Mason Boulevard on the north, Vernon Boulevard on the east, Raritan Bay on the south

¹ Bluebelts are established Staten Island wetlands-easement zones.

and the West Shore expressway on the west. It is also part of the Coastal Plain physiographic province with underlying deposits of sands and clays called the Raritan-Magothy formation laid down during the Cretaceous period some seventy million years ago. Glacial deposits consisting of sands, silts and gravels overlie those of the Cretaceous period and date to about 14,000 years ago.

The present topography of this project area is undulating with a gentle slope from north to south. The local elevations range from 100 feet above m.s.l. near Mason Boulevard on the north to ten feet above m.s.l. near Prince's Bay. Sandy Brook originates above Woodrow Road in the northern part of the watershed and flows southerly between Bloomingdale Road on the west and Maguire Avenue on the east. A westerly branch stream begins near Ramona Avenue, flows southeast and joins Sandy Brook near Drumgoole Road West. The two streams then flow through culverts under Richmond Parkway-Drumgoole Road East and emerge as a single stream, Lemon Creek, which meanders southerly until it reaches Raritan Bay. Several small ponds are also within the watershed.

The Lemon Creek/Sandy Brook watershed contains both developed and undeveloped land. Residential dwellings, commercial establishments and developments as well as road and utility lines are present throughout this area.

III. BACKGROUND RESEARCH: PREHISTORIC ARCHAEOLOGICAL RESOURCES

A. INTRODUCTION

Before European settlement, Native Americans occupied Staten Island for 10,000 years. Evidence of PaleoIndian occupation, the earliest occupants of the Island, has been found in Rossville and Kreisherville (Kraft 1977:6). These people were hunter-gatherers who occupied high, well-drained sites overlooking what is now the Arthur Kill.

Archaic Period (c. 8000 B.C.–1000 B.C.) hunters and gatherers consisted of small bands that occupied sites along the coast of Staten Island, its estuaries and streams, and inland areas. A large number of Archaic Period sites have been found in various environmental settings which suggests a seasonal pattern of migration in search of food and other resources. Typically, such sites are located on high ground overlooking watercourses.

During the Woodland Period (c. 1000 B.C.–1600 A.D.) of prehistory, Native American subsistence practices continued to be hunting, gathering and fishing. However, several important changes took place. Horticulture began during this period and later became well established with the cultivation of maize (corn), beans and squash. Clay pottery vessels replaced soapstone bowls, tobacco pipes and smoking were adopted, and the bow and arrow replaced the spear and javelin. The habitation sites of the Woodland Period Indians increased in size and permanence. A large number of Woodland Period archaeological sites have been found on Staten Island in a variety of environmental settings. A favored situation for occupation during this period was well-drained ground near stream drainages and coastal waterways.

The settlement of New Amsterdam (New York) by the Dutch in the early 1600s initiated the Contact-Early Historic Period between the Indians of Staten Island and the Europeans. A regular pattern of Indian-European trade developed and the Indians began to acquire European-made tools, ornaments, and other items of material culture. At the time of European contact, the Indians who inhabited Staten Island were Munsee-speaking groups known as the Lenape or Delaware (Goddard 1978a, 1978b). Journal accounts by European explorers, settlers and travelers describe Indian settlements and lifeways. However, only a

few Contact-Early Historic Period sites have been found on Staten Island: at Wards Point, Old Place, Corsons Brook, Travis, New Springfield and PS 56 R (Boesch 1994:16; HP Inc. 1996).

Within the Blue Heron, Arbutus Creek and Lemón Creek/Sandy Brook watersheds, soil drainage is a major determinant of prehistoric site potential. Poorly drained swamps, bogs, and wetlands were productive hunting and gathering areas for the Indians but their poor drainage precluded settlement within them. However, well-drained terraces, knolls, or flat ground adjacent to poorly drained settings are likely site locations because they represent suitable living areas from which the resources of the watershed could have been exploited.

B: PREHISTORIC SITES IN THE PROJECT AREA

Background research indicates that several prehistoric sites were located within the study area. A summary of these sites for each watershed is presented in the following tables.²

In summary, Tables 1, 2 and 3 clearly indicate that all three watersheds were the scene of considerable activity by Native American people in the prehistoric period (prior to 1600 A.D.). In general they are considered to be moderately to highly sensitive for the presence of Native American sites. Our review of the proposed construction areas, i.e. sewer line routes, culvert replacements, and BMPs, indicates that the documented prehistoric sites will not be impacted by the proposed construction work, with one exception. An "unnamed campsite" has been reported in the vicinity of BMP 4 in the Arubutus Creek Watershed and may be impacted by the proposed stream realignment.

² Tables 1, 2 and 3 refer to documented prehistoric sites within each watershed project area, a requirement of the CEQR Manual (section 310, Study Areas). Some of the early reported sites are vague particularly with respect to their geographic location, that is, it is difficult to place them precisely on today's landscape. Nevertheless, they are listed in order to provide a context for the area and to identify potential sites.

**TABLE 1: PREHISTORIC SITES WITHIN THE BLUE HERON WATERSHED
PROJECT AREA**

| <u>Site Name</u> | <u>Location</u> | <u>Type / Cultural Remains</u> | <u>Culture Period</u> |
|-------------------------|------------------------------------------------------------|--------------------------------|-----------------------|
| Indian Hill | No. of Amboy Rd. between Hollis St. and Barclay Ave. | No data | No data |
| Woods of Arden | East of Arden Ave., south of Amboy Rd. | No data | No data |
| Garretson House Site | No. of Spring Pond off Poillon Ave. | Triangular projectile point | Late Woodland |

SOURCES: Baugher and Lenik 1991; Boesch 1994; HP Inc. 1996

In 1990, a cultural resources investigation of Blue Heron Park was conducted by archaeologists from the New York City Landmarks Preservation Commission. Four potential prehistoric occupation zones were identified on the basis of surface reconnaissance and environmental analysis (Baugher and Lenik 1991:46, 68). These potential sites were located south of Spring Pond, south of Blue Heron Pond, and two within the southeastern section of the park to the east of the stream.

In 1994, the New York City Landmarks Preservation Commission's consulting archaeologist Eugene Boesch characterized most of this project area as moderately sensitive for the presence of Native American sites. The area south of Hylan Boulevard to Raritan Bay was characterized as highly sensitive (Boesch 1994:22; U.S.G.S. Map).

**TABLE 2: PREHISTORIC SITES WITHIN THE ARBUTUS CREEK
WATERSHED PROJECT AREA**

| <u>Site Name</u> | <u>Location</u> | <u>Type / Cultural Remains</u> | <u>Culture Period</u> |
|------------------|--------------------------------------------------------|--------------------------------|-----------------------|
| Bunker Hill | East of Kingdom Ave., north of Jansen St. | No data | No data |
| Unnamed | So. east corner of Hylan Blvd. and Huguenot Ave. | Lithic debitage | No data |
| Unnamed | West of Arbutus Ave., south of Louise St. | "Indian implements" | No data |
| Arbutus Lake | No. and So. west sides of lake | Lithic debitage | No data |
| Arbutus Lake | "Raised ground west of lake" | "Indian implements" | No data |

SOURCES: Baugher and Lenik 1991; Boesch 1994; HP Inc. 1996

Within the Arbutus Creek project area, the New York City Landmarks Preservation Commission records characterize the land to the north of Hylan Boulevard as moderately sensitive for the presence of Native American sites, and the land to the south as highly sensitive (Boesch 1994:22; U.S.G.S. Map).

**TABLE 3: PREHISTORIC SITES WITHIN THE LEMON CREEK/SANDY
BROOK WATERSHED PROJECT AREA**

| <u>Site Name</u> | <u>Location</u> | <u>Type / Cultural Remains</u> | <u>Culture Period</u> |
|-------------------------------|-------------------------------------------------------------------------------|-----------------------------------|-------------------------------|
| Wort Farm | N.E. of Intersection of Woodrow/Winant Ave. | Lg. campsite; diverse assemblage | Late Archaic to Late Woodland |
| Rossville Campsite | N.E. of Intersection of Bloomingdale Rd. and Woodrow Rd. | F.C.R., ceramics, lithic debitage | Woodland |
| P.S. 56 R | N.E. of Intersection of Woodrow/ Winant Ave. | Seasonal hunting, food proc. camp | Early Archaic to Contact |
| Clay Pit Pond Rd. sites | Both sides of road | No data | Archaic to Woodland |
| Sharrott Estates | West of Bloomingdale Rd. between Sharrott and Clay Pit Rds. | Campsite | Late Woodland |
| Seguine Point (Huguenot Site) | Shore end of Seguine Ave. | Shell midden | Woodland |
| Wolfe's Point | So. end of Wolfe's Pond at Johnson Terrace | Shell midden | Woodland |
| Wolfe's Pond Park | East of Holten Place near N.W. side of pond | Lithic debitage | No data |
| Sandy Brook | West side of Sandy Brook between Bloomingdale Rd. and Maguire Ave. | Lg. base camp | Late Archaic to Late Woodland |
| Unnamed | Between Bloomingdale Rd. and Maguire Ave. on north side of West Drumgoole Rd. | No data | No data |
| Sharrott Ave. | Shore end of Sharrott Ave. | Shell midden; ceramics | Woodland |
| Prince's Bay STD-PB | So. of Hylan Blvd. between Sharrott and Woodvale Aves. | No data | No data |

SOURCES: Baugher and Lenik 1991; Boesch 1994; HP Inc. 1996

The LPC records characterize the land around Lemon Creek, south of the SIRT corrdior, as highly sensitive for the presence of Native American sites (Boesch 1994:22; U.S.G.S. Map). The balance of the project area is characterized as moderately sensitive.

IV. BACKGROUND RESEARCH: HISTORICAL RESOURCES

Staten Island remained Indian land while Manhattan hosted the new village of New Amsterdam in the first half of the seventeenth century. Michael Pauw sought to colonize Staten Island, beginning negotiations in 1630; by 1635, he had failed and sold his interests to the Dutch West India Company. In 1638, David Pietersz DeVries brought settlers to the Fort Wadsworth area of Staten Island, but they were "desolated by savages" (Morris 1898:29). Cornelius Merlyn made a third equally unsuccessful attempt to settle the island in 1639 (Morris 1898:29). In 1664, the year England wrested New Amsterdam from the Dutch, few colonists lived on Staten Island.

Under the English, Staten Island saw an influx of settlers in the 1670s as the colony of New York sought to keep the island from being claimed by New Jersey, a separate political entity (Baugher and Lenik 1991:30). Frederick Skene's 1907 map reconstructing English land grants between 1668 and 1712 shows the following owners in the Blue Heron, Arbutus and Lemon Creek/Sandy Brook watersheds: Richard Hall, William Darvall, Thomas Codrington, Anthony Tice, James Lurgy, Sarah Scidmore, Peter Johnson, Mark Dusochoy, Obadiah Holmes, William and Philip Merrill, Abraham Cole, Francis Pew, Leonard Berryman, Richard Wood, Daniel Shotwell, and Joseph Arrowsmith.

These patentees are predominately English, but the actual settlers on Staten Island were Dutch and Huguenot. Jasper Dankers and Peter Sluyter, Labadenist missionaries, reported in 1679 "there are now about a hundred families on the island of which the English contribute the least portion and the Dutch and French divide between them about equally, the greater portion. They have neither church nor minister and live rather far from each other and inconveniently to meet together" (Dankers & Sluyter 1867:142).

In 1933, Loring McMillan published a composite map of Staten Island during the Revolution covering the years 1775 to 1783, drawing his information from maps and land documents. This map denotes the actual residents rather than land owners. Names within the three watersheds are: Perine, D. Latourette, M. Duboys, Latourette, J. Androvet, H. Dutiere, A. Menee, Marshall, Van Dyne, and C. Cole along the Raritan Bay shore; I. Wynants, V. Johnson, I. Debois, Wyndotte (?) and A. LaForge along present day Amboy Road; R. Journeay, I.

Mersereau, D. Slought, I. Bleyne, P. Wynant and A. Porille along present day Woodrow Road; J. Segen, J. Mersereau, Simeson, and Joshua Mersereau along present day Huguenot Avenue. Again, this source illustrates the intensely French Huguenot and Dutch ethnicity of the residents.

Staten Island was occupied by the British during much of the Revolutionary War. British and Hessian officers were quartered with many of these families.

Post-Revolutionary Staten Island is illustrated on the 1797 "New and Correct Map of Richmond County," which places the three watershed areas within Westfield and names several features, but no residents. The bay into which present day Lemon Creek empties is clearly marked Prince's Bay, the creek is called Stony Brook. What will be known as Amboy Road is shown running from opposite Perth Amboy, New Jersey, along the southeast spine of Staten Island, past the "Sign of the Ship" (Annadale) past a "Block House" (New Dorp) and on to a "Dock" (Stapleton). Several additional roads connect this southeastern area of Westfield to settled areas in the interior of the island and on its northwestern shore. Three ponds within or near the watersheds, Wolfe's Pond, Arbutus Pond and Blue Heron Pond appear, unnamed, pinched off at the shoreline as if they had formed natural barriers to the sea. Almost forty buildings are indicated within the project areas. [A discussion of the these building sites in relation to the proposed project impacts is presented in the following section.]

Later maps and histories provide the names of the families resident in this area. La Forge, Latourette, Garretson, Seguine, Britton, Morgan, Doty, Winant, Treadwell, Poillon, Wood, and Journeay can be read on the 1860 Grover and Baker map. Many of these family names are familiar from the McMillan map. Only one name, Wood, matches the list of patentees, but, the name is not found on the location of the older Wood patent.

These sources also chronicle how Staten Island flourished with the new republic. Industry and invention brought change and development to all parts of Staten Island. Those resources which first attracted the Native Americans and the early colonists—flat land, fresh water and access to the ocean—were turned into wealth and opportunity. Villages grew, entrepreneurs established roads and railroads. Farming, shipping, oystering, and fishing flourished and many of the early families still persisted.

Place names reflecting ownership show that several families prospered and dominated the watersheds. Lemon Creek was called Seguine's Creek and

the point west of its mouth was (and is) called Seguine's Pond (Morris 1898 I:388). Arbutus Lake was called Latourettes Lake and was located on the old Latourette Farm (Ibid).

The Latourettes were French Huguenots living in the Westfield section from 1796 forward (Morris 1898 II:99-100). This family had extensive landholdings in the Richmondtown section of Staten Island as well as within the project area.

The Seguine name first appears in 1725. Seguines intermarried with the Poillons, the Manees, the Guyons, and the Winats (Morris 1898 II:112). In 1860, Joseph and Stephen Seguine erected a factory at the shore on Seguines Point. First, they extracted oil from palm nuts, but they were not successful at this, so it was converted into a candle factory. Later they rented it to a William Tweed, who made sewers. In 1865, the factory was sold to Algernon Johnston who set up a dental manufacturing plant with his brothers. This plant was later acquired by the S.S. White Dental Company of Philadelphia (Morris 1898 II:99-472). Historian Richard Bayles wrote in 1887 that White Dental employed 200 hands and was the site of the first successful liquefaction of nitrous oxide on a commercial scale in the United States (Bayles 1887:740). Leng and Davis reported 686 employees worked there in 1930 (Leng & Davis 1930:640).

Historic Archaeological Sites and Historic Structures within the Three Watersheds

Many historic buildings stand within the project area, although few have been placed on any registers of historic places. As planned construction will not impact any standing structures, this archaeological survey was not required to catalog structures with potential for register inclusion. We did, however, look for any foundations or other evidence of historic archaeological resources within the project area. We also visited the seven structures listed as New York City Historic Landmarks within the project area to determine whether or not any archaeological resources associated with these structures would be impacted.

Three historic archaeological sites have been reported within the watersheds:

- Within Blue Heron Pond Park are two historic archaeological sites, the Garretson House site and the LaForge House site (Baugher and Lenik

1991:29-41). Neither of these site will be impacted by any phase of the currently planned construction.

- The S.S. White Dental industrial complex, founded in 1860 as a palm oil extraction factory, is within the Lemon Creek/Sandy Brook watershed. No standing structures remain at this historic industrial site. The site is undergoing hazardous waste remediation. This site will not be impacted by this project.

Seven structures or sites within the watersheds are listed in the 1992 Guide to New York City Landmarks, published by the New York City Landmarks Preservation Commission.

Within the Lemon Creek/Sandy Brook area are found two Seguire houses. The Abraham Manee House (also called the Manee Seguire House) is located at 509 Seguire Avenue at the corner of Seguire Avenue and Purdy Lane. The Guide reports "this house has a complex building history that may extend back to the construction of a one-room dwelling by Paulus Regrenier in the late seventeenth century. A major rubble-stone addition was constructed early in the eighteenth century by Abraham Manee. Further additions were made early in the next century by the Seguire family, who acquired this property in the 1780s (Dolkart 1992:225). Morris wrote in 1898 that this property, then known as the Purdy Hotel, was one of the oldest buildings on Staten Island, perhaps built in 1690. It was the military post of General Vaughan during the Revolution. A skirmish here between British and American forces resulted in the fatal wounding of a British messenger (Morris 1898 II:182). Morris also notes that "Just to the east of Purdy's Hotel at Prince's Bay was a small (Revolutionary War) redoubt" (Morris 1898 I:209).

Documentary research indicates that archaeological resources associated with the Manee Seguire family and with activities during the Revolutionary Way may exist in the vicinity of this house. The area around the house is developed with paved roads and additional homes; very little undisturbed land exists here, leading us to conclude that the archaeological sensitivity of the area is extremely low. Planned construction in the area is confined to the roadbeds and will not impact any associated homelot resources.

The Joseph H. Seguire House at 440 Seguire Avenue was built in 1837. It is a Greek Revival House placed on the highest point of the Seguire property. Joseph H. Seguire was born in the Abraham Manee House (Dolkart 1992:234). Co-founder of the factory at Seguire Point, he also was involved in shipping and

in the establishment of railroads on Staten Island. Sewer pipes will be laid in Seguine Avenue passing this house and will not impact any associated homelot resources.

The Abraham J. Wood House (c. 1840) at 5910 Amboy Road is within the Lemon Creek/Sandy Brook drainage area. Guide author-compiler, Andrew S. Dolkart writes, "This house was erected by the farmer and oysterman Abraham Wood shortly after he purchased the property in 1840. The house, which has many features typical of vernacular Greek Revival design on Staten Island, is especially notable for its entryway" (Dolkart 1992:236-237). Planned construction in this area is confined to the Amboy Road roadbed and will not impact any resources.

The northwestern portion of the project area, part of the Lemon Creek/Sandy Brook drainage, contains several structures and sites listed in the 1992 Guide. The Rossville A.M.E. Zion Church Cemetery on Crabtree Avenue is just outside the northwestern edge of this drainage. The Rossville A.M.E. Church itself, on Bloomingdale Road, is within the drainage area, but is not listed in the 1992 Guide. Current plans call for no construction in this portion of the drainage area.

A second church, the 1842 Woodrow Methodist Church is listed in the 1992 Guide. Dolkart writes, "This simple Greek Revival country church was erected in 1842 on the site of Staten Island's first Methodist Church. The tower was added in 1876" (Dolkart 1992:237). Current plans call for no construction in this area.

At 5475 Amboy Road, at the intersection of Amboy Road and Huguenot Avenue is the Memorial Church of the Huguenots. This church was formed in 1856 by a group which split off from the Dutch Reformed Church. The original church burned in 1924. The architect for the main body of the church was Ernest Flagg. The church is built of serpentine stone, quarried on Flagg's property at Todt Hill, set in concrete. Like the Ernest Flagg Estate Cottages, this building exhibits a modular system of construction. The building was erected as the National Monument of the Huguenot-Walloon-New Netherlands 300th Anniversary of Religious Freedom. Pillars within the chapel honor various Huguenot families of Staten Island. The site also includes an assembly hall added in 1954-55 and a small wooden Greek Revival structure. This building was a public library built in 1904-1905 and was moved to this site. It was once the smallest library in the New York Public Library System (Dolkart 1992:226).

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Current plans place sewer pipes in Amboy Road but not in Huguenot Street at this location. No resources will be impacted. This site is within the Arbutus drainage area.

Forty more buildings and at least one historic district within the three drainage areas have been proposed for consideration by the New York City Landmarks Commission. As of November 1996, no decisions have been made on any of these proposals. These sites and structures were not surveyed for this report.

V. FIELD INVESTIGATIONS

A. INTRODUCTION

The Blue Heron, Arbutus Creek, and Lemon Creek/Sandy Brook Watersheds were subject to non-invasive field inspections. Fieldwork included pedestrian surveys of various environmental zones in areas of potential impact, and vehicular surveys of the roads within the project areas. In particular, the field investigation focused on the storm and sanitary sewer line routes and the locations of "Best Management Practices" sites which are being planned to control and cleanse storm water runoff. Field investigation included the examination of potential prehistoric and historic archaeological resources.

The proposed storm water and sanitary sewer network will be constructed within existing paved roadways (HydroQual Inc., 1997). The storm water BMPs will be constructed within the Staten Island Bluebelt properties, Blue Heron Park in the Blue Heron Watershed and Bloomingdale Park in the Lemon Creek/Sandy Brook Watershed. All of the proposed BMPs were examined, and are described and assessed. The archaeological sensitivity, i.e., the potential for containing evidence of prehistoric (Indian) or historic cultural resources, of each area is rated as LOW, MEDIUM, or HIGH.

B. BLUE HERON WATERSHED

BMP 1:

This BMP is located at the southern end of Booth Avenue and south of Amboy Road. An extended detention pond consisting of an upper and lower pool is planned for this area. Landscape disturbance will consist of regrading 1-2 feet deep within the upper or north pond and outside the pond top to create a forebay (NYCDEP 1997, Figure 3-5; White 1997).

There are two existing wetlands-ponds at this location (upper and lower), separated by a flat elevated area approximately 40 feet wide that extends southerly from the end of the paved roadway. A dense growth of brush and trees surround the wetlands. Several piles of earth, concrete and macadam are present near the south end of Booth Avenue but the area is mostly undisturbed.

This area has **MEDIUM** sensitivity, or potential for containing evidence of prehistoric occupation.

BMP 2:

A wetland-pond system with extended detention is planned for an area located southwest of the intersection of Lipsett Avenue and Eylandt Avenue. Landscape disturbance in this location will consist of regrading 90,000 square feet to a depth of 5-6 feet.

The landscape in this area is densely wooded and slopes gently from north to south. A small stream flows south-southwesterly through this area. Portions of a concrete sidewalk extend along the easterly side of this BMP site. This sidewalk and nearby ditch are apparently an unfinished and undeveloped extension of Lipsett Avenue. Some ground disturbance is evident near Eylandt Avenue and along the unfinished extension of Lipsett Avenue. However, most of the area is undisturbed.

This BMP site has **MEDIUM** potential for containing evidence of prehistoric occupation.

BMP 3:

Koch Pond is located northeast of the junction of Koch Boulevard and Holdridge Avenue. Holdridge Avenue presently ends at Koch Boulevard but an unfinished and undeveloped section extends northerly from the road junction. The proposed construction work in this area will include regrading to a depth of 3-4 feet approximately 60,000 square feet, a portion of which will be below the pond.

The landscape has been considerably disturbed at the north end of Holdridge Avenue. There are large piles of earth at the end of the street and a considerable amount of garden, household and construction debris has been left here. Landscape disturbance is also visible along the unfinished/undeveloped extension of Holdridge Avenue. Remnant sections of the macadam roadway, a concrete sidewalk on its east side, and concrete curbing are present on the site.

Koch Pond drains westerly, flows across the unused section of Holdridge Avenue and empties into Jansen Pond. There is an arched stone culvert along the outlet of Koch Pond on the west side of Holdridge Avenue extension. The area surrounding Koch Pond and along its outlet stream is wooded.

The landscape on the south and east sides of Koch Pond is low and wet. The ground surface has been disturbed along Koch Boulevard on the south side of the pond and piles of earth are present here. These areas have LOW sensitivity, or potential, for containing evidence of prehistoric occupation. There is a flat, elevated and undisturbed area on the north side of Koch Pond. This zone has MEDIUM potential for containing evidence of prehistoric occupation.

BMP 4:

This BMP is located east of Barclay Avenue between Sanborn and Jansen Streets. The site is composed of Jansen Pond which flows across Barclay Avenue into an unnamed pond on the west. A micropool is proposed on the Jansen Pond side with a new weir and outlet pipe to convey storm water beneath Barclay Avenue. The construction work will disturb about 4000 square feet around an existing weir and in the pond.

A dense woodland surrounds Jansen Pond. There is an earth berm along the east side of Barclay Avenue and earth fill is present on the south side of the pond along Jansen Street. The area of the proposed construction work is disturbed and has LOW archaeological potential.

BMP 5:

The creation and realignment of a small stream is proposed in a wooded area to the west of and between Shirley and Noel Streets. Approximately 400 linear feet, 10 feet wide, will be affected by the construction work.

Significant landscape disturbance is evident off the end of Shirley Street. There are several piles of earth within the proposed BMP area including an abandoned car, tires and chunks of concrete. This project area is low, wet and slopes south-southeast. It has LOW potential for containing evidence of prehistoric occupation.

BMP 6:

This BMP is located at the eastern end of Newton Street. A stilling basin is proposed for this location which will involve regrading of the landscape, 1-2 feet deep, in an area of approximately 2000 square feet.

This project area is generally a low wooded zone adjacent to a stream. The specific site is wooded and generally undisturbed. It has MEDIUM potential for containing evidence of prehistoric occupation.

BMP 7:

BMP 7 is located at the eastern end of Dole Street. A stilling basin is proposed for this location. The proposed construction will include regrading an area of approximately 2000 square feet to a depth of 1-2 feet.

This project area is a low, wet, and wooded gully adjacent to a stream.. This site has LOW potential for containing evidence of prehistoric occupation.

C. ARBUTUS CREEK WATERSHED

BMP 1:

An extended detention pond is proposed in an area located on the west side of Lexa Place between Collyer and Bennett Avenues. The construction work will include regrading an area of 120,000 square feet to a depth of 1-2 feet.

This BMP site is low, wet and covered with dense brush. Extensive landscape disturbance has taken place here. Earth fill is present along Lexa Place and a considerable amount of dumping has occurred in the area. This project site has LOW archaeological potential.

BMP 2:

This project site is located on Amboy Road between Colon Street and Rose Lane. A culvert replacement and parallel pipe system with an outlet stilling basin is proposed for this location. Ground disturbance will include grading approximately 2000 square feet.

A concrete culvert is presently in place at this location. The landscape on both sides of the Amboy Road culvert is low, wet and overgrown with brush and trees. This wetland area has LOW potential for containing evidence of prehistoric occupation.

BMP 3:

An outlet stilling basin is planned on Phillip Avenue, just south of Amboy Road. The stilling basin will be sited off the end of a mapped but undeveloped section of Phillip Avenue within a wooded area.

The proposed site of BMP 3 is highly disturbed. This mapped but undeveloped section of Phillip Avenue was apparently cut through and paved at one time. Bulldozed piles of earth are present along the undeveloped road and large chunks of macadam and concrete are visible on site. A drainage ditch and culvert, and a stream channel cut across the road.

This site has LOW potential for containing evidence of prehistoric occupation.

BMP 4:

A stream realignment is planned in the area between Louise Street and Arbutus Way on the west side of Arbutus Avenue. The proposed work includes excavation of a stream channel 3-4 feet deep, 20-30 feet wide for a distance of approximately 800 feet.

The landscape on the westerly side of the present stream channel is flat, wooded and elevated above the level of the water. There is a culvert over the stream at the location of the mapped but undeveloped section of Jansen Street. This BMP site is undisturbed and has HIGH potential for containing evidence of prehistoric occupation. A prehistoric site has previously been identified in this vicinity (see Table 2).

BMP 5:

A pond is located adjacent to the north side of Comely Street and another adjacent to its south side. These two bodies of water are situated between Huguenot Avenue on the west and Kingdom Avenue on the east. Construction work will include excavation for inlet and outlet pipes, a headwall and a micropool.

Comely Street appears to have been built on landfill that separated the two ponds. Fill and landscape disturbance is present on both sides of the street. These wetland areas are surrounded by woods and dense brush. The archaeological potential in the area of construction impact is LOW.

BMP 6:

A storm water wetland is planned for an area located between Luten Avenue on the west, Androvette Avenue on the east, Eylandt Street on the north and Jansen Street on the south. The proposed construction work will include excavation for inlet and outlet pipes, a headwall and a micropool. A pond-wetland is present in this area.

This area is low and wet and has LOW archaeological potential. However, there is a flat, wooded, elevated and undisturbed area just to the north of the pond-wetland. This locus has MEDIUM potential for containing evidence of prehistoric occupation.

BMP 7:

BMP 7 is also located between Luten and Androvette Avenues. It is situated between Jansen Street on the north and Hylan Boulevard on the south. A large wetland-pond is present in this location. The proposed construction work will include excavation for inlet and outlet pipes, a headwall and a micropool.

The landscape surrounding the wetland-pond is disturbed. Earth fill is present along the sides of Luten Avenue, Jansen Street and Hylan Boulevard. A mapped but undeveloped section of Androvette Avenue extends along the east side of the wetland-pond. This section of undeveloped road is highly disturbed with visible evidence of bulldozing and dumping.

This site has LOW archaeological potential.

CULVERT #1:

A culvert is presently located on Arbutus Avenue just south of Christine Street. Replacement of this structure is planned.

The landscape on the east and west sides of the culvert is low, wet, and disturbed at roadside. This site has LOW archaeological potential.

CULVERT #2:

This culvert is located on Louise Street and its replacement is planned. A dwelling is located adjacent to the south side of the culvert and stream. Dwellings are also located on opposite sides of the stream-culvert on the north side of the street.

The landscape in the immediate vicinity of the present culvert is disturbed. This area has LOW archaeological potential.

CULVERT #3:

There is a stream culvert on Arbutus Avenue just north of Hylan Boulevard. Construction work for its replacement was underway at the time of this pedestrian survey.

CULVERT #4:

A culvert is present at the south end of Arbutus Lake and its replacement is planned. The landscape in the immediate vicinity of the culvert is disturbed. A graded and unpaved roadway extends from the paved street to the culvert. A new housing development is located here. This site has LOW archaeological potential.

D. LEMON CREEK/SANDY BROOK WATERSHED

BMP 1:

The construction of an outlet stilling basin is proposed in an area east of Alverson Street and north of Castor Place. A drainage ditch, generally running east-west, is present in this location. The ditch extends along the paved north end of Alverson Street which "dead-ends" here. Regrading of the landscape is planned at this BMP site.

The location of this BMP site is wooded, flat, and undisturbed. It has MEDIUM potential for containing evidence of prehistoric occupation.

BMP 2:

A stream culvert is presently located on Rossville Avenue, a short distance south of McBaine Avenue. The replacement of the present culvert is proposed along with the construction of a micropool on the east side of the road.

This area is low-lying, wet, and wooded. Rossville Avenue is elevated above the stream and adjacent landscape. This site has LOW potential for containing evidence of prehistoric occupation.

BMP 3:

An outlet stilling basin is proposed for an area located on the south side of McBaine Avenue at its juncture with Maguire Avenue. The landscape is very disturbed along the south side of McBaine Avenue. Bulldozed piles of earth are present here. Storm water presently drains from the street southerly toward Porzio's Pond. The wooded landscape near the pond is low-lying and wet.

This site has LOW potential for containing evidence of prehistoric occupation.

BMP 4:

The construction of inlet and outlet pipes, a headwall and a micropool is proposed for an area on the west side of Porzio's Pond. Regrading of the landscape to create a roadway to the site is also proposed.

This area is southeast of the paved end of Kramer Avenue. It is wooded, undisturbed and generally flat. It has MEDIUM to HIGH potential for containing evidence of prehistoric occupation.

BMP 5:

The creation of a shallow marsh wetland is proposed for an area located to the west of Convent Street, a short "dead-end" street. Regrading of the landscape to a depth of 3-4 feet over an area of approximately 50,000 square feet is planned.

The landscape immediately adjacent to the west side of Convent Street is highly disturbed. The land has been bulldozed, graded, and piles of earth are present here. Several drainage channels extend from the street westerly toward a stream nearby. The area is wooded, and a zone between the bulldozed roadside and the stream is generally undisturbed. This site has LOW potential for containing evidence of prehistoric occupation.

BMP 6:

A storm water detention pond presently exists between Rathbun Avenue on the north, Ramona Avenue on the south and Lenevar Street on the west. Private homes are located to the east of the pond. Reuse of this storm water retention pond is proposed.

The present pond was previously excavated and is enclosed by a chain link fence. The area around the perimeter of the fence has been landscaped with

shrubs and trees This site is highly disturbed and has NO archaeological potential.

BMP 7a:

The construction of an outlet stilling basin is proposed for a wooded area located off the western end of Edgegrove Avenue at its junction with Lenevar Avenue. This area is highly disturbed. The site has been previously bulldozed; piles of earth are present here. The site has NO archaeological potential.

BMP 7b:

An outlet stilling basin is proposed for the area located off the western end of Darlington Avenue. This proposed site is highly disturbed. It consists of a previously bulldozed area with large piles of earth that extend westerly approximately 100 feet from the end of Darlington Avenue. This disturbed zone has no archaeological potential. However, the landscape to the west of the earth piles is flat, wooded, and undisturbed, and has MEDIUM potential for containing evidence of prehistoric occupation.

BMP 7c:

Another outlet stilling basin is proposed for an area located off the south end of Maguire Avenue at its juncture with Ramona Avenue. The landscape immediately adjacent to the road is highly disturbed. The land has been bulldozed, graded, and piles of earth are present here. A deep gully extends southerly from the disturbed area.

Most of this proposed BMP site has no archaeological potential. However, the landscape on the eastern side of the gully is flat, wooded, and relatively undisturbed and, therefore, has MEDIUM potential for containing evidence of prehistoric occupation.

BMP 8:

A stream culvert is presently located on Bloomingdale Road just south of Ramona Avenue. The proposed construction work will include replacing the culvert and "enhancing" the stream.

The landscape immediately adjacent to the present culvert is disturbed; some landfilling has taken place at roadside. To the east and west of the culvert, the land is low-lying, wet, and wooded. This site has LOW potential for containing evidence of prehistoric occupation.

BMP 9:

A pocket wetland is proposed for a low-lying area located between Forster Road on the east, Parkwood Avenue on the west, Wheeling Avenue on the north, and Amboy Road on the south. Private homes and commercial structures generally surround the proposed BMP site. A culvert is located on Foster Road and a drainage ditch extends from the culvert into the proposed site. The area is wooded and wet and has LOW archaeological potential.

BMP 10:

An outlet stilling basin is proposed for an area located to the east of Sharrott Avenue near its juncture with Penton Street. The site is bounded on the north by the SIRT railroad tracks. There is a drainage ditch along the railroad property which is enclosed by a fence. The landscape along the fence, approximately 15 feet in width, has been bulldozed and graded. Piles of earth are present on site.

This BMP site has LOW potential for containing evidence of prehistoric occupation.

BMP 11:

An outlet stilling basin is planned on Manee Avenue. This BMP will be located on the west side of the road immediately adjacent to the south side of the SIRT tracks.

This locus is a low swale situated between the SIRT tracks on the north and a driveway leading to a private home on the south. Landfilling has taken place along the west side of Manee Avenue and bulldozed piles of earth are present along the railroad fence. This site is wet and highly disturbed and has LOW archaeological potential.

E. PEDESTRIAN SURVEY OF DOCUMENTED PREHISTORIC SITES

There are twenty recorded prehistoric sites located within this three watershed project area. Our field inspection of these sites revealed that several have been destroyed by residential, commercial, or educational facility development. Some examples include the Garretson House Site and Indian Hill sites within the Blue Heron Watershed; an unnamed site where the Bernstein Intermediate School now stands in the Arbutus Creek Watershed; and the Wort Farm/PS 56 R, Rossville Campsite, Clay Pit Road and Seguine Point (Huguenot) sites within the Lemon Creek/Sandy Brook Watershed. The extant previously recorded sites appear to be located in wooded, undeveloped areas and will not be impacted by the proposed construction work.

VI. CONCLUSIONS AND RECOMMENDATIONS

A. PREHISTORIC ARCHAEOLOGICAL RECOMMENDATIONS

Documentary research and field reconnaissance provided evidence of several confirmed prehistoric occupation sites within and in the vicinity of the three watershed areas which make up the project area. Only one of these sites may be impacted by work planned for this project.

The entire project area has been designated by the New York City Landmarks Preservation Commission as moderately or highly sensitive for prehistoric resources. Historic and current land use, however, has rendered some portions of the project area, such as paved streets and highly developed and intensely landscaped residential areas, extremely low in archaeological potential or sensitivity.³ Environmental features such as wetlands also have low archaeological potential.

In the course of our observation of the nature of areas to be impacted by the proposed construction work, we have located several sites with moderate or high prehistoric archaeological sensitivity. These areas are undisturbed, relatively level and near fresh water resources. We conclude that the following areas have potential for containing evidence of prehistoric occupation and should be archaeologically tested prior to the start of construction activity. A Phase 1B investigation involving archaeological testing is recommended in the following areas, which are indicated on the PROJECT BASE MAP, figure 3.

1. Blue Heron Watershed

- BMP 1 Medium sensitivity for prehistoric resources.
- BMP 2 Medium sensitivity for prehistoric resources.
- BMP 3 Flat, elevated area on north side of pond has medium sensitivity for prehistoric resources.

³In accordance with the 1989 New York City Landmarks survey of Richmondtown Restoration, the construction of new sewers in existing streets was considered highly unlikely to affect prehistoric archaeological resources because of the existing utilities in the street beds [i.e., disturbed soils up to 3 or 4 feet below grade] and the likelihood of prior disturbance. We infer a similar situation in the project's watershed areas.

BMP 6 Medium sensitivity for prehistoric resources.

2. Arbutus Creek Watershed

BMP 4 High sensitivity for prehistoric resources. A previously reported site is located in this area.

BMP 6 Flat, elevated, undisturbed area to north of pond has medium sensitivity for prehistoric resources. Construction plans are unavailable at this time. If work is planned for this elevated area, testing should be conducted prior to construction.

3. Lemon Creek/Sandy Brook Watershed

BMP 1 Medium sensitivity for prehistoric resources.

BMP 4 Medium to high sensitivity for prehistoric resources.

BMP 7b Undisturbed section of the BMP site has medium sensitivity for prehistoric resources.

BMP 7c Flat, well drained, undisturbed area on the eastern side of the gully has medium sensitivity for prehistoric resources. Construction plans are unavailable at this time. If work is planned for this area, testing should be conducted prior to construction.

B. HISTORIC ARCHAEOLOGICAL RESOURCES

Documentary research and field reconnaissance located three potential historic archaeological sites within the project area. None of these sites will be impacted by proposed construction. No Phase 1B work is recommended in these areas.

In addition, seven historic architectural resources within the project area were listed in the NYC Landmarks Preservation Commission's 1992 Guide. The setting of each of these buildings was observed for potential related archaeological resources. We conclude that no historic archaeological resources related to these seven structures will be impacted by planned construction. No Phase 1B work is recommended at these sites.

In sum, we found no historic archaeological resources which we recommend for Phase 1B testing.

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12/02/97

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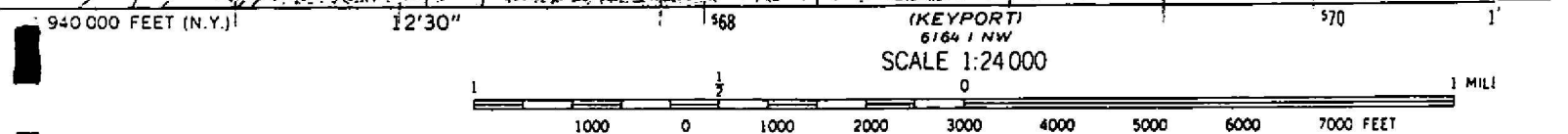
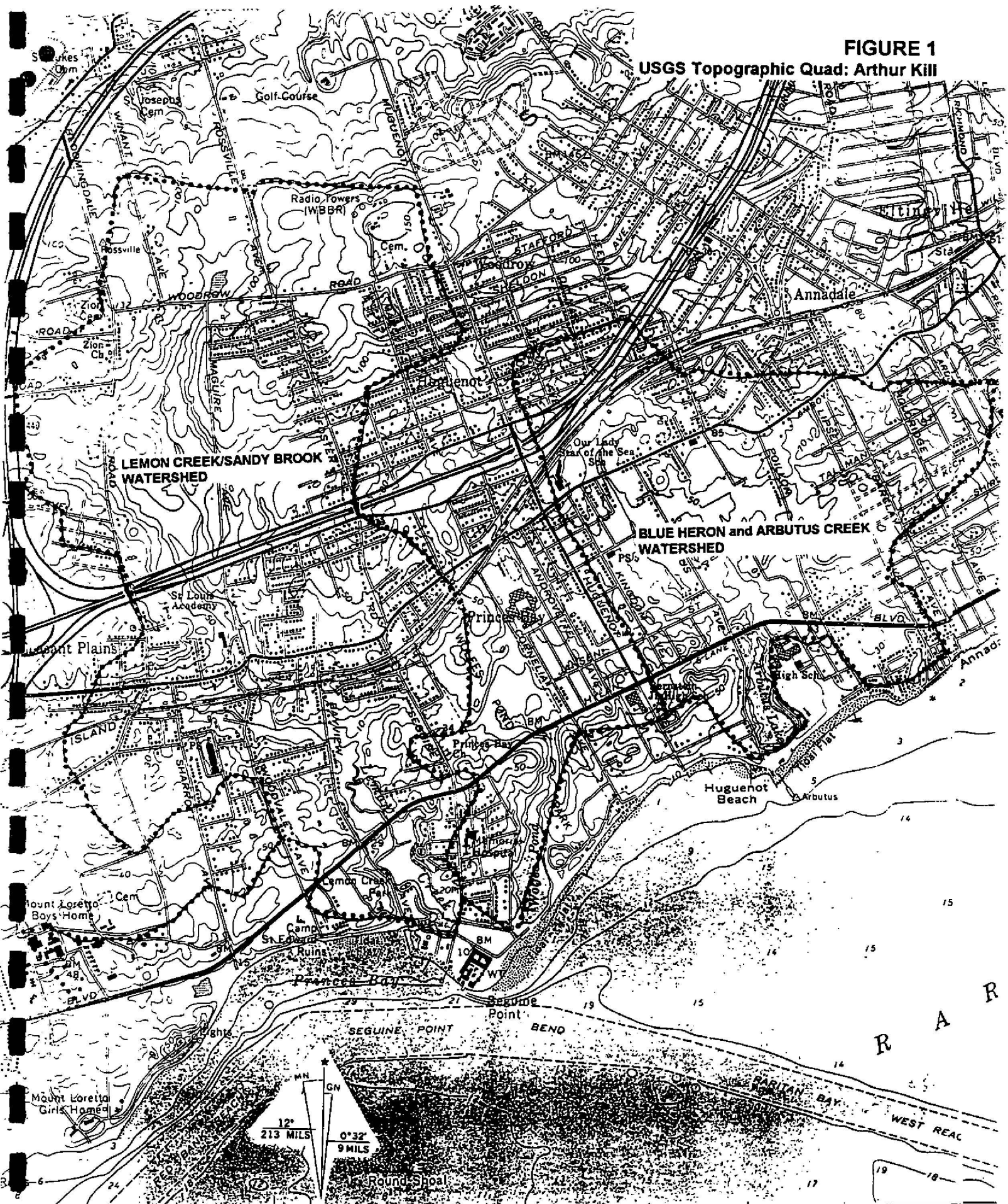
White, Robert

1997 Memorandum of October 10th from Allee King Rosen & Fleming, Inc. to Edward J. Lenik, archaeologist. The memorandum lists the BMP sites in each watershed, describes their size, function and anticipated subsurface disturbance.

Willensky, Elliot and Norval White

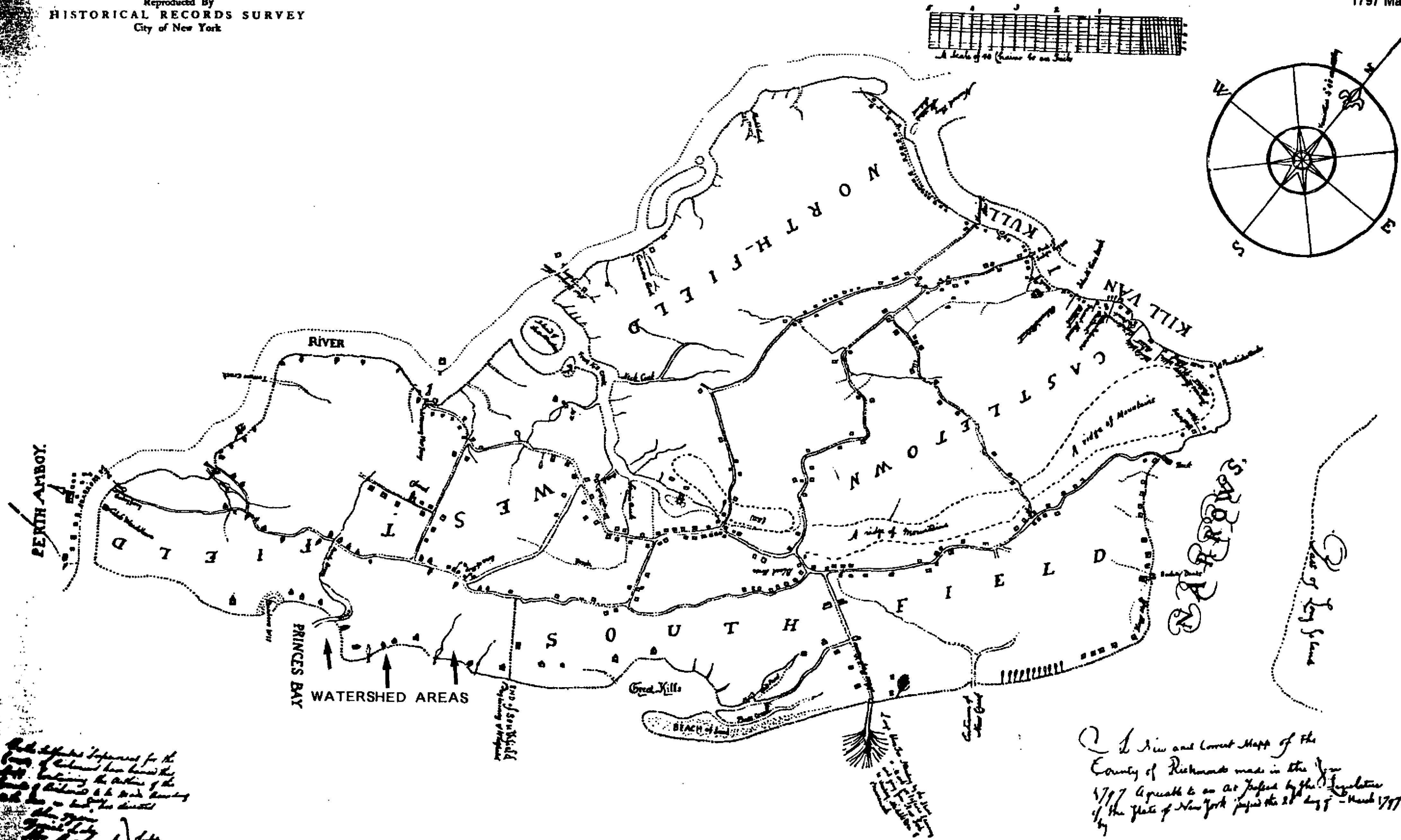
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FIGURE 1
USGS Topographic Quad: Arthur Kill



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 City of New York

FIGURE 2
 1797 Map of Staten Island



*And the same reference for the
 County of Richmond has been the
 basis for the drawing of the
 map of Staten Island to be made according
 to the order of the Council
 of the City of New York
 the 21st day of
 May 1797
 J. J. J.*

*A New and Correct Map of the
 County of Richmond made in the Year
 1797 Agreeable to an Act passed by the Legislature
 of the State of New York passed the 21st day of March 1797.
 by*

FIGURE 3a



Lemon Creek/Sandy Brook Watershed

LEGEND

- Watershed Boundary Line
- BMP Areas of Prehistoric Archaeological Sensitivity:
- ▲ Medium
- High

DEP New York City Department of Environmental Protection

Storm Water and Sanitary Drainage Management Plan for Blue Heron, Arbutus Creek and Lemon Creek/Sandy Brook

NY-10-1000000-0-07

12/02/97

DEPT. OF PLANNING & ASSESSMENT
CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
DEP: OFFICE OF PLANNING & ASSESSMENT, New York, NY 10005 (212) 487-6800

97 OCT -3 ENVIRONMENTAL REVIEW

DEP/97DEP026R
PROJECT NUMBER

09/19/97
DATE RECEIVED

PROJECT

ARBUTUS CREEK

- No architectural significance
- No archaeological significance
- Designated New York City Landmark or Within Designated Historic District
- Listed on National Register of Historic Places
- Appears to be eligible for National Register Listing and/or New York City Landmark Designation
- May be archaeologically significant; requesting additional materials

COMMENTS

The draft scoping document is accepted provided the following change is made. PP. 11-12 should read as follows: Documentary research shall be conducted...in accordance with the "City Environmental Quality Review Technical Manual, 1993."

Daniel Pagano
SIGNATURE

09/26/97
DATE

12/02/97

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
100 Old Slip, New York, NY 10005 (212) 487-6800

EL 1000

ENVIRONMENTAL REVIEW

DEP/97DEP026R

09/19/97

PROJECT NUMBER

DATE RECEIVED

PROJECT

LEMON CREEK/SANDY BROOK

- No architectural significance
- No archaeological significance
- Designated New York City Landmark or Within Designated Historic District
- Listed on National Register of Historic Places
- Appears to be eligible for National Register Listing and/or New York City Landmark Designation
- May be archaeologically significant; requesting additional materials

COMMENTS

The draft scoping document is accepted provided the following change is made. PP. 11-12 shall read as follows: Documentary research shall be conducted...in accordance with the "City Environmental Quality Review Technical Manual, 1993."

Daniel Pagano
SIGNATURE

09/26/97

DATE

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION
100 Old Slip, New York, NY 10005 (212) 487-6800

ENVIRONMENTAL REVIEW

DEP/97DEP026R
PROJECT NUMBER

09/19/97
DATE RECEIVED

PROJECT

BLUE HERON

- No architectural significance
- No archaeological significance
- Designated New York City Landmark or Within Designated Historic District
- Listed on National Register of Historic Places
- Appears to be eligible for National Register Listing and/or New York City Landmark Designation
- May be archaeologically significant; requesting additional materials

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Daniel Pagano
SIGNATURE

09/26/97
DATE

12/02/97

Allee
King
Rosen &
Fleming, Inc.

Environmental and Planning Consultants
117 East 29th Street • New York, New York 10016-8022

212/696-0670
FAX 212/213-3191

MEMORANDUM

TO: Ed Lenik

FROM: Robert White

RE: South Richmond DEIS

DATE: October 10, 1997

Provided below is a list of the BMPs with an assessment of the level of subsurface disturbance at each site. Please review and then I'll FAX to the archaeologists. He may begin work this weekend so please call ASAP.

BMPs-Blue Heron Watershed

| BMP | Function | Size of BMP | Description of disturbance |
|-----|-----------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------|
| BH1 | Extended Detention Pond | 1.0 | Regrading, 1-2 feet deep, within the north pond and outside the pond top create the forebay, about 43,560 square feet |
| BH2 | Wetland/Pond system with Extended Detention | 2.2 | Regrading, 5-6 feet deep, about 90,000 square feet |
| BH3 | Shallow marsh wetland with extended detention | 1.5 | Regrading, 3-4 feet deep, about 60,000 square feet a portion of which is below an existing pond |
| BH4 | Micropool | 0.1 | Minimal disturbance, about 4,000 square feet, around existing weir and in pond |
| BH5 | Stream Creation/restoration | 400lf 10 feet wide | Excavation, 3-4 feet deep, about 4,000 square feet |
| BH6 | Stilling Basin | .05 | Regrading, 1-2 feet deep, minimal area disturbance, about 2,000 square feet |
| BH7 | Stilling Basin | .05 | Regrading, 1-2 feet deep, minimal area disturbance, about 2,000 square feet |

Rec. 10/14/97

BMPs -Arbutus Creek Watershed

| BMP | Function | Size of BMP | Description of disturbance |
|-----|------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| AC1 | Extended Detention basin | 2.75 | Regrading, 1-2 feet deep, area of disturbance, about 120,000 square feet |
| AC2 | Culvert Replacement and a parallel pipe system with an outlet stilling basin | .05 | Regrading, 1-2 feet deep, minimal area disturbance, about 2,000 square feet |
| AC3 | Outlet Stilling Basin | .05 | Regrading, 1-2 feet deep, minimal area disturbance, about 2,000 square feet |
| AC4 | Stream realignment | 800if 20-30 feet wide feet | Excavating to create a stream channel, 3-4 feet deep, area of disturbance, about 24,000 square feet |
| AC5 | Outlet Structure/Weir Replacement | 3.44 | Minimal disturbance, excavation for inlet and outlet pipes, a headwall and a micropool, about 5,000 square feet total |
| AC6 | Two cell extended detention ponds | 3.23 | Minimal disturbance, excavation for inlet and outlet pipes, a headwall and a micropool, about 5,000 square feet total |
| AC7 | Storm water wetland | 3.93 | Minimal disturbance, excavation for inlet and outlet pipes, a headwall and a micropool, about 5,000 square feet total |

BMPs -Lemon Creek\Sandy Brook Watershed

| BMP | Function | Size of BMP | Description of disturbance |
|------|------------------------------------------------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| LC1 | Outlet Stilling Basin | .05 | Regrading, 1-2 feet deep, minimal area disturbance, about 2,000 square feet |
| LC2 | Micropool with wetland enhancement and culvert replacement | .12 | Minimal disturbance, about 2-3 feet deep, about 6,000 square feet |
| LC3 | Outlet Stilling Basin | .05 | Regrading, 1-2 feet deep, minimal area disturbance, about 2,000 square feet |
| LC4 | Extended detention wet pond | 4.0 | Minimal disturbance, excavation for inlet and outlet pipes, a headwall and a micropool, about 5,000 square feet total Regrading to create roadway |
| LC5 | Shallow marsh wetland system | 1.3 | Regrading, 3-4 feet deep, about 50,000 square feet |
| LC6 | Extended detention wet pond | 1.4 | Reuse of existing storm water detention pond already previously excavated, there should not be any archaeological issues |
| LC7A | Outlet stilling basin | .05 | Regrading, 1-2 feet deep, minimal area disturbance, about 2,000 square feet at each site |
| LC7B | Outlet stilling basin | .05 | |
| LC7C | Outlet stilling basin | .05 | |
| LC8 | Culvert replacement with stream enhancement | TBD | To be determined |
| LC9 | Pocket wetland system | TBD | To be determined |
| LC10 | Outlet stilling basin | .05 | Regrading, 1-2 feet deep, minimal area disturbance, about 2,000 square feet |
| LC11 | Outlet Stilling Basin | .05 | Regrading, 1-2 feet deep, minimal area disturbance, about 2,000 square feet |