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Phase I Archaeological Investigation Bronx River Park – West Farms, Bronx, Bronx County, New York

Prepared For:

The City of New York Parks and Recreation Olmstead Center Flushing Meadows Corona Park Flushing, NY 11368

Prepared By:

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ABSTRACT

In order to comply with The State Environmental Quality Review Act (SEQRA), the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA) Langan Engineering and Environmental Services, Inc. (Langan) conducted a Phase IA Archaeological Survey of the Bronx River (West Farms) Park in the Bronx, Bronx County, New York. The research was requested by the New York City Landmarks Preservation Commission (LPC) as a result of their preliminary review of the reconstruction of the Bronx River (West Farms) Park Project. Historical background research was performed to establish land use history and evaluate the possibility for the existence of prehistoric sites within the Area of Potential Effect (APE). The research methodology included a search of records at New York State Historic Preservation Office (SHPO) and LPC, as well as inspections of archival materials and records at the Bronx County Historical Society and the New York Public Library both located in New York. In addition, a series of Sanborn maps, historic aerial photographs, historic atlases and maps were reviewed for the property.

The historic background research revealed that the vicinity of the project area may have been used as hunting grounds by Native Americans for approximately 5,000 years and therefore it is possible that some groups also visited the project area in the past. The historic research also revealed over 150 years of European presence within the project area and its vicinity. It is possible that the project APE still contains some evidence of the historic land use, but due to the intensity of architectural alterations and landscape modifications introduced to the project area during the 20th century, it is unlikely that intact deposits or buried cultural horizons may have survived until our times. In light of these findings, we do not recommend further work for the Bronx River (West Farms) Park Project.

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Several individuals provided assistance in completion of this study.

Ludomir Lozny of the Department of Anthropology William Paterson University, Wayne, New Jersey served as the project's Principal Investigator. Michael Audin of Langan Engineering and Environmental Services, Inc. performed the tasks of research coordinator, assisted with the writing of the report and supervised the production and editing of the report. Sarah Hlubik produced figures and assisted with the production and editing of the report.

Special thanks to Mark Sgambettera of the Bronx County Historical Society for his assistance regarding the history of the site and the surrounding areas, Stephen Koren for his knowledge of the projects design, Daniel Pagano of the New York City Landmarks Preservation Commission for his assistance with the commission files and to the staff of the New York Public Library Map room in Manhattan, New York.

Ludomir Lozny Principal Investigator

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1.0 INTRODUCTION

This report describes the Phase IA Archaeological Survey – Historic Background Research conducted by Langan Engineering and Environmental Services, Inc. (Langan) for the Bronx River (West Farms) Park in the Bronx, Bronx County, New York. The research was requested by the New York City Landmarks Preservation Commission (LPC) as part of the State Environmental Quality Review Act (SEQRA), National Environmental Policy Act (NEPA) and Section 106 for the reconstruction of the Bronx River (West Farms) Park.

The Bronx River Park is a 2-acre urban park area located between East 180th Street and East Tremont Avenue and runs north/south along the western shore of the Bronx River. The elevated #2 and #5 subway lines bisect through the southern end of the property. The site is presently occupied by a 4-ft wide asphalt walkway, trees and shrubs and a bench area. The Bronx River Arts Center (Arts Center) borders the park and is located towards the southern end of the park. The Area of Potential Effect (APE) is approximately 2 acres or 8093.75 square meters. A site map, recent aerial photograph and vicinity map are included as Figures 1 through 3.

The Reconstruction of Bronx River (West Farms) Park –will include the construction of an 8 to 10-foot wide asphalt and concrete bike and pedestrian path along the Bronx River and an onstreet bicycle route along East 180th Street from the river to Morris Park Avenue. The eroding river bank will be stabilized and the river's edge will be cleared and reconstructed with landscaping, fencing, lighting, site furniture, planting and signage. The elevated subway columns and bases will remain in the park. No heavy earth moving activities are planned.

A variety of bank stabilization measures, including retaining walls, rip-rap, and automobile tires, have been used in the past to stabilize sections of the Bronx River shoreline within the boundaries of the park. Different measures have been implemented in different sections of the shoreline and not all of these measures have been successful. The proposed reconstruction of Bronx River Park involves the repair of most of the existing bank stabilization structures and the implementation of a more uniform approach to stabilizing the shoreline within the park. The existing retaining walls will be covered with fill with asphalt on top. In addition, geo-textile fabric and rip-rap will be placed along the length of the shoreline within the park. The top 8 inches of the existing automobile tire "retaining wall", which runs along part of the river bank in the vicinity of the Arts Center, will be removed and replaced by fill and vegetation to stabilized the embankment. The enclosed drawings (see Appendix B) show the proposed bank stabilization activities.

The historic background research revealed that the vicinity of the project area may have been used as hunting grounds by Native Americans for about 5,000 years and therefore it is possible that some groups also visited the project area in the past. The historic research also revealed the 150 years of European settlers presence within the project area and its vicinity. It is possible that the project APE still contains some evidence of the historic land use, but due to intensity of architectural alterations and landscape modifications introduced to the project area during the 20th century, it is unlikely that intact deposits or buried cultural horizons may have survived until our times. The proposed project will not significantly alter the present existing landscape; no heavy earth removing activities are planned. In light of these findings, we do not recommend further work for the Bronx River (West Farms) Park Project.

All work for this project was carried out in accordance with the instructions and the intents set forth in section 106(b)(4) of the *National Environmental Policy Act* of 1969; Section 1(3) and 2(b) of *Executive Order 11593*; Section 106 of the *National Historic Preservation Act*; 23 CFR 771, as amended October 30, 1980; the guidelines developed by the Advisory Council on Historic Preservation, published November 26, 1980; the amended Procedures for the Protection of Historic and Cultural Properties, as set forth in 36 CFR 800; and the Guidelines for Archaeological Investigations established by the New York City Landmarks Commission. The cultural resource specialists that performed the investigations meet or exceed the criteria outlined in 36 CFR 66.3(b) (2) and 36 CFR 61.

This report was prepared in accordance with the Phase I guidelines delineated in the Landmark Preservation Commission Guidelines for Archaeological Work in New York City, April 12, 2002. Langan personnel who meet the *National Park Service's Professional Qualifications Standards* conducted the survey and prepared the report. Résumés of the key personnel are presented in Appendix A.







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2.0 ENVIRONMENTAL SETTINGS

This chapter briefly describes the ecological characteristics of the project area including physiography, geology, soils, and flora and fauna of the area. The project is located in Bronx County, New York. The total land area within Bronx County is 57.4 square miles or 36,736 acres. Of this 73% of the area is land, and 27% is water. The land is used for urban industrial, residential and commercial uses.

Topography

The project area topography is characterized by nearly flat to gently sloping land. The project area occurs within the floodplain of the Bronx River and is characterized by saturated anthropogenic fill soils mixed with natural soils.

Physiography and Geology

The project area is located within the Mesozoic Rift Section at the juncture between the Coastal Plain and the Piedmont provinces. It is dominated by sedimentary rocks laid down through several alluvial and lacustrine settings which faulted laterally during the Mesozoic (Olsen, et al, 1996).

Soils

The Soil Survey of New York City identifies one soil complex on the project site, made up of two soil types and urban development (Figure 4). The complex is the Laguardia-Ebbets-Pavement and Buildings complex, characterized by nearly level slopes of 0 to 8%. The individual soil types are detailed below.

Ebbets Series

The Ebbets series is characterized by loamy fill, greater than 40 inches deep. It is comprised of construction debris and other anthropogenic fill materials. The soils are generally well-drained comprised of silty to sandy loam throughout, containing 10-34% coarse grains, and better than 10% artifactual material contained in the matrix. The soils are highly acidic to moderately alkaline. Table I details the soil profile for this series

Layer	Characteristics	Thickness
Surface layer	Very dark grayish brown loam	4 inches
Subsoil, upper part	Dark yellowish brown gravelly sandy loam	4 inches
Subsoil, lower part	Dark yellowish brown gravelly sandy loam	8 to 60 inches

Table I. A representative profile of the Ebbets soil series.¹

Laguardia Series

Laguardia soils consist of deep moderately well-drained soils on floodplains, formed primarily of anthropogenic urban fill. The soils are primarily made of silty to sandy loam with 35 to 75% coarse fragments. The soils are generally neutral to highly acidic.

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Layer	Characteristics	Thickness	
Surface layer	Brown gravelly sandy loam	8 inches	
Subsoil, upper part	Brown, very gravelly coarse sandy loam	14 inches	
Subsoil, lower part	Brown, very gravelly coarse sandy loam	26-79 inches	

Table II. A representative profile of the Laguardia soil series.²

Climate

Bronx County has a humid temperate climate and extreme changes of temperature are rare. Average temperatures range from 40 degrees Fahrenheit in the winter to 85 degrees Fahrenheit in the summer. Rain is plentiful, averaging about 41.8 inches per year (NOAA Historic Climatic Data).

Floral and Faunal

Floral and faunal conditions contribute to the soil formation and quality and impact the overall ecological conditions of the area. Ecological conditions, on the other hand, stimulate human activities. Vegetation also influences erosion by limiting the runoff rate and increasing the available water capacity.

Various animal species were present in the study area in the prehistoric and historic times and were included into subsistence patterns, providing a variety of biologically and economically significant items such as meat, furs, hide, marrow, bones, antler, etc. In this context, the types and distribution of the region's fauna are important to interpretations of the archaeological record.

¹ Source: Soil Survey of New York City, New York.

² Source: Soil Survey of New York City, New York.



Map Reference: New York City Reconnaissance Soil Survey, NYC Soil and Water Conservation and USDA, 2004



SOIL SURVEY MAP BRONX RIVER PARK

ELMWOOD PK, NJ • NEW YORK, NY • PHILADELPHIA, PA • DOYLESTOWN, PA New Haven, CT • Miami, FL • TRENTON, NJ
 BRONX
 NEW YORK

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The original vegetation of Bronx County was a mix of marshlands and forest including oak, chestnut, hickory, maple and pine. Various birds, rabbits and squirrels could be found in the area as well as water fauna including a range of fish, mammals and waterfowl (Sanderson and LaBruna, 2005).

This brief discussion of the ecological and physiographic conditions previously and presently existing in Bronx County suggests that human groups that lived there would have been able to support themselves in the past either through foraging or subsistence farming. Intense development since European colonization has dramatically changed the ecology of the project area and those conditions found in history are no longer prevalent in the modern landscape.

Land Use

Prehistoric exploitation of riverine habitats is well-documented in all regions, and the drainage systems of the New York City Area Rivers are no exception. Unfortunately, due to the intensity of development, known sites in the area are few. Further, the amount of development experienced in the nearly four centuries of settlement has severely reduced the likelihood of finding previously unknown sites.

The West Farms tract was first purchased from nine Indians by Edward Jessup and John Richardson of Westchester on 12 March 1663. It was described as a "strip along the Bronck River extending to the vicinity of what is still known as West Farms village." On 25 April 1666 they were confirmed in its proprietorship by royal letters giving a patent from Governor Nichols with each being allotted half of the land. Later Jessup's half went to Thomas Hunt and Richards's half went to his three married daughters; one the wife of Gabriel Leggett of West Farms and one wife of Joseph Hadley of Yonkers (Shonnard, 1900). This land was first used as farm land, later as summer estates for wealthy New Yorkers and finally as mixed use area (industrial, commercial and residential) in the 19th and 20th centuries.

3.0 CULTURAL BACKGROUND

This chapter presents an overview of the prehistoric and historic occupations and land uses in the project area. Regional journals, cultural resource reports, and local archives were examined for information on regional prehistory and history.

3.1 Prehistoric Times

Since the late Pleistocene, humans have occupied all areas of the continental United States adapting to its regionally diverse ecosystems. Only the past 500 years are historically documented; most of the past 13,000 years can be recorded only through the study of prehistoric archaeological sites. The prehistoric period is commonly divided into four major chronological sub periods; Paleo, Archaic, Woodland and Contact.

The earliest period, when the first people crossed the Beringian Gap between Asia and America, commenced around 13,000 years before present (B.P.) and continued until approximately 10,000 B.P. This is a period that saw dramatic changes in the environment (e.g. Pielou 1992), climate (e.g. Delcourt and Delcourt 1985), and animal species available for exploitation (e.g. Martin and Klein 1984). Considerable attention has been devoted to the Paleo-Indian life ways (e.g. Anderson 1990; Frison and Todd 1986; Haynes 1966; Tankersley and Isaac 1990).

Paleo-Indian Period (13,000 B.P. to 10,000 B.P.)

The Paleo-Indian period began around 13,000 B.P. and continued to ca. 10,000 B.P., coinciding with the end of the Pleistocene and the beginning of the Holocene. The earliest documented inhabitants of the continental U.S. crossed from Asia sometime before 13,000 B.P. and rapidly colonized all of North and South America.

Archaeological research in various parts of the U.S. has documented numbers of surface finds of the fluted points diagnostic of this period. Far fewer Paleo-Indian sites with subsurface cultural materials have been documented. Recent analysis of Paleo-Indian tool assemblages has established chronologically significant tool types to identify three temporal subdivisions of the Paleo-Indian time period (Anderson 1990; Tankersley 1990).

Despite a refinement of the chronology, the temporal range and spatial distribution of these point types is poorly understood. Some inferences may be drawn, however, from the frequent isolated finds, and paucity of large Paleo-Indian sites in the Southeast.

Paleo-Indian occupation in New York City area is no better known than in other parts of the country. Occupation of New York appears to have begun a few thousand years after the first humans appeared on the North American continent, at around 11,000 years B.P. The earliest evidence of occupation in the New York City area are the Clovis points and other tools recovered at the Port Mobil tank farm site and Charleston Beach in Staten Island in the 1950's. A total of 21 fluted points and more than 120 stone tools were found in three separate areas: the tank farm, on Charleston beach and another beach to the north. The majority of the tools found at this site are related to multiple activities and include projectile points, scrapes, knives, drills, spokeshaves for preparing wood shafts, and gravers for working on bone or antler (Ritchie and Funk, 1973, Ritchie, 1980 and Cantwell and Wall, 2001).

Although few sites have been thoroughly excavated and reported, some information on Paleo-Indian life ways is available. Anderson (1990) has suggested two models of Paleo-Indian settlement patterns, one appropriate to the Northern Tundra-Spruce Parkland zone, and one to the Southern Boreal-Deciduous forest zone.

Anderson's model of Southeastern Paleo-Indians suggests that they were generalized foragers, exploiting the diverse plant and animal resources of the Boreal-Deciduous forests. As a result of this foraging strategy, the dense accumulation of animal bone and lithic materials that characterize sites in the Western plains (e.g. Olson-Chubbuck, Colby) and some of the Northeastern sites (e.g. Delbert, Vail, Bull Brook) is absent. According to Anderson, southeastern Paleo-Indian occupations are characterized by light lithic scatters, with some functional diversity in the tool assemblage. Although Anderson's model of Paleo-Indian period settlement is reasonable, several large Paleo-Indian sites or site clusters have been documented in the Southeast (e.g., Adams site, Big Bone Lick, Pine Tree, Quad, Thunderbird, Well Creek Crater); yet, almost none have been intensively excavated (Daniel and Wisenbaker 1987; Sanders 1986, 1983). Current excavation at the Thunderbird site in Virginia may provide more detailed information on Paleo-Indian life ways in the Boreal-Deciduous Forest zone.

Paleo-Indian subsistence strategy was based on foraging. This type of subsistence includes the hunting of wild animals as well as the gathering of wild plants. The archaeological record confirms hunting activities, including hunting of big game, while gathering is not well documented for this period. The settlement distribution pattern of Paleo-Indian sites from Pennsylvania and elsewhere strongly suggests that indigenous people preferred well-drained, elevated locales in close proximity to a stable source of water. Such adaptation derives from the strategy of utilizing the ecosystem according to certain patterns. In addition to occupying lower terraces and sometimes flooded areas, other types of Paleo-Indian sites have been located near outcropping sources of chert (quarry sites), or in rock shelters (probably seasonal habitations), etc.

The Paleo-Indian settlement patterns cannot be fully recognized due to the adverse impact to these sites which was caused by the environmental change by the end of Pleistocene and the beginning of Holocene. As a consequence, the warmer climate during the Holocene period led to the retreat of glaciers and rise of sea levels, which covered many areas previously utilized by humans. This climatic transition also contributed to the change of the ecosystem, especially the distribution of faunal and floral elements. These changes subsequently encouraged new designs in the pattern of human migrations and alterations in the subsistence pattern characteristic for a new prehistoric period – the Archaic Period, ca. 10,000 to 3,700 BP. Compared to the Paleo-Indian period, a new type of culture developed, containing a greater variety of implements, especially used to process diverse foodstuffs (scrapers, knives, expedient tools, grinding stones, and the development of the earliest pottery).

Archaic Period (10,000 B.P. to 3,700 B.P.)

The Archaic period is divided into three sub periods, characterized by different cultural adaptation and typical tool-kits. These are briefly summarized below.

Early Archaic (10,000 B.P. to 8,000 B.P.)

The Early Archaic Period is distinguished from the preceding Paleo-Indian Period primarily on the basis of projectile point styles. These include the widespread Kirk and LeCroy points. Early Archaic bifaces, in contrast with Paleo-Indian projectile points, are unfluted, and usually have a well-defined haft element (see Justice 1987).

Very little is known of this early period of human settlement in the Americas, although some general inferences may be drawn. The widespread occurrence of similar point types over much of North America suggests that social groups were highly mobile, and probably maintained a fluid social organization, as many modern hunters and gatherers do. Given their mobility, these groups probably created very ephemeral sites, with little midden accumulation, and only light scatters of lithic and bone debris. Highly mobile societies are unlikely to invest time and energy in the creation of permanent storage facilities. Consequently, storage pits and houses from this period are unknown. It should be noted, however, that such archaeologically visible remains are known from the European and Eurasian Paleolithic period. Problems of identification and the rapid environmental changes associated with the European colonization of North America compound the difficulties of locating ephemeral sites in upland and alluvial settings.

Very few tool types, other than bifaces, are known for this period, although research in the Far Northeast and Southeast has identified a variety of expediently prepared tools (Petersen 1991; Starbuck and Bolian 1980; Tankersley 1990). Although the lack of ground stone tools in this period is frequently taken as an indication that Early Archaic people exploited few plant resources, it is more than likely that they did use plant foods, but did not expend much energy in the preparation of the tools to exploit them. Ground stone tools are a hallmark of the Middle and Late Archaic and probably reflect not a change in resource use per se, but a more intensive and less mobile adaptation to a region. Chapman (1977) for example documented the presence of basket fibers in an Early Archaic context, suggesting that knowledge and use of plant fibers was certainly a characteristic of the Early Archaic.

Few sites that date to this period have been excavated. Consequently information about this period must be inferred from general models of hunters and gatherers or from the small number of sites that are reported. In both cases, such models have serious biases (cf. Jefferies 1990, for discussion on the Archaic Period in the Southeastern U.S.).

The sites of Ward's Point, Richmond Hill, HF Hollowell and The Old Place are representative sites of this time period in and around New York City. The evidence from the Ward's Point site suggests either an extended period of use or more likely the reuse of a known site over several years. Several hearth-centered workshops have been identified at the site including tool making, cooking and hide-working.

In summary, the early Archaic is a poorly known period. Native Americans in the mid-continent must have had to adapt to a variety of local ecozones, which may have changed rapidly, sometimes within a generation, as a result of the Hypsithermal. During the Early Archaic Period new types of projectile points appeared which were smaller in size and in greater variety. The new styles include corner-notched points, stemmed points and bifurcate base points (Justice 1987). Such technological change probably indicates cultural transition manifested in diversified adaptation strategies that people must have followed during that time. New climatic conditions created more options in terms of exploiting diverse ecosystems and subsequently designing appropriate mobility patterns. A greater diversity in decision-making contributed to creation of diversified tool assemblages. Some researchers suggested however, that such technological change might not necessarily indicate a significant cultural change (e.g. Gardner 1974). The variety of tools, they argue, implies a technological rather than economic shift.

Middle Archaic (8,000 B.P. to 5,000 B.P.)

Although this sub period is somewhat longer than the Early Archaic, and spans an important period of climatic and environmental change, archaeological investigations indicate that cultural adaptations did not differ markedly from the preceding period. More sites dating to the Middle Archaic have been identified than in the preceding period, although many are not thoroughly documented.

One of the most significant changes occurring sometime after 8,000 B.P. is the development of regional projectile point styles. In addition, a variety of ground stone tools were made for the first time, indicating a greater investment of time and energy in the manufacture of tools for the exploitation of plants. Such investments may be associated with an overall decrease in mobility, or a change in the rate of movement, or the distance between camps. Earlier Archaic hunters probably manufactured only a small portion of their tool assemblage from stone. Middle Archaic hunters created a greater variety of tools, although most were geared to the exploitation of plants.

Although some Middle Archaic sites are as ephemeral as those of the Early Archaic, others contain deep midden deposits with large and diverse assemblages. The presence of burials at some of these sites might be an indication of long term or repeated use of these site localities. Brown and Vierra (1983) have addressed these issues for sites in Illinois.

An important innovation in the Middle archaic was the use of shellfish in the diet. The Hudson River at this time was a rich estuary and the salinity was such that it could support large numbers of shellfish. A site approximately 30 miles north of New York City, Dogan Point, is the earliest evidence for use of shellfish in the Middle Archaic dating between the Middle and Late Archaic periods (6,900 to 4,400 years B.P.). This site is one of the few identified in the New York City area dating to this time period. It is possible that many of the sites were flooded with the rise of sea levels to their modern position, or just as likely these important sites were destroyed during the development of the city itself. (Ritchie and Funk, 1973, Ritchie, 1980 and Cantwell and Wall, 2001)

Although the Middle Archaic differs in its stone tool assemblage, little information is available to determine if major differences exist in the life ways of Early and Middle Archaic Native Americans.

Late Archaic (5,000 B.P. to 3,000 B.P.)

Unlike the preceding sub-periods, the Late Archaic is a better known period of Eastern Woodlands prehistory. In part this is a reflection of the greater preservation of artifacts and features, and a larger number of sites, with more substantial deposits. The sites are diverse in their setting, artifact assemblages, and probable function. Late Archaic societies continued on the same cultural trajectories identified in the Middle Archaic: greater regionalization, an increase in overall population, and population densities in the river valleys. Other changes, however, represent innovations in technology, subsistence activities and social organization. Studies of projectile points document an increase in regional forms, perhaps representing stylistic innovations associated with stronger inter-societal boundaries.

Various authors (e.g. Jefferies 1990) have suggested that Late Archaic settlements were larger and occupied for longer periods of time than Middle Archaic settlements. The implication of such changes is that the subsistence regime may also have been significantly different.

The use of cultivars and 'encouraged' vascular plants is documented for many sites occupied during this period (e.g. Chomko and Crawford 1978; Watson 1985) although a variety of nuts formed an important component of the diet. The exploitation of such plants, which can be stored for later consumption, probably reduced the need to exploit geographically extensive resource territories, and resulted in the more intensive utilization of smaller areas. One consequence of such a change in subsistence strategy is the creation of archaeologically visible sites, many with a greater degree of alteration (pit features, hearths, house floors) and built up of thicker midden deposits. Such sites are more likely to be occupied over greater periods of time and to be revisited over many years. Localization of cultural behaviors also frequently resulted in a greater incidence of interment in a confined locality. More people died and were buried at a specific location: Late Archaic burial populations are much better known, and frequently larger, than Middle or Early Archaic burial populations for this reason. Human skeletal remains from this period form one of the most important sources of information on how Native American populations lived and died.

The excavation or surface collection of an archaeological assemblage provides information on raw material use, tool production and use, and subsistence activities. The collection of additional information on the spatial relationships among artifacts and cultural features has enormously increased our understanding of the internal organization of archaic communities, their use of space, and the identification of specific activity loci within the community (e.g. Whallon 1974). For these reasons, the investigation of surface and subsurface cultural remains, even in plowed fields, offer opportunities to collect information relevant to a number of research issues.

Two sites along the north side of Manhattan Island have been identified and excavated from this time period, Tubby Hook and Inwood. Tubby Hook is a large shell midden alongside the Hudson Railroad tracks. Within this midden, several tools and other artifacts of daily life were found. Inwood is located on the northern tip of the island, in what is currently a city park. This is a rockshelter site with a large shell midden associated with it. Several of the tools on this site are woodworking tools which indicate the manufacture of cances, fish weirs and homes. Also found on this site are the bannerstones from atl-atls, indicating that both terrestrial and aquatic resources were being used.

By about 3,700 years before present, the landscape was very similar to modern times. At this point a culture known as the Orient emerged in the area. This group is known for their complex funerary rituals and use of steatite (soapstone) bowls. The Throg's Neck Site is the best known site in Long Island for this time period. Two hilltop cemeteries face the water and several habitation sites surround these cemeteries. The burials represent in-the-flesh burials, fleshed cremations and cremations of defleshed bone. The burials included several grave goods including broken steatite containers, fire-making kits, 'cosmetic' stones (used for their pigments), red ochre, woodworking kits, spear points and knives. This period appears to mark the beginning of distinct cemeteries and could be a sign of intense social changes, likely due to the drastic environmental change which occurred during the Late Archaic. (Ritchie and Funk, 1973, Ritchie, 1980 and Cantwell and Wall, 2001)

Woodland Period (3,000 B.P. to 400 B.P.)

The Woodland period, like the preceding Archaic is divided into three sub periods, although a greater number of cultural phases and spatially discrete societies are recognized. The major distinctions between the Woodland and Archaic periods are the development of ceramic technology and the use of ceramic vessels as part of everyday life. Coinciding with this is the development of complex, hierarchical societies in many parts of the Eastern Woodlands. Such societies appear to have developed after the adoption of a small number of native plants as cultivars. A reliance on these crops and the development of storage techniques enabled Native American populations to inhabit more restricted territories than hunters and gatherers.

The evolution of Woodland society from relatively noncomplex foragers to hierarchically organized chiefdoms is one of the major research foci of North American archaeology. Only a brief overview of the major characteristics of these three sub-periods is presented here.

Early and Middle Woodland (3,000 B.P. to 1,500 B.P.)

The Woodland period is marked in the Ohio and Mississippi valleys by extensive societies who built large earthworks, sedentary cities, and extensive roadways, over which vast trade networks formed. During this period the people occupying present-day New York were no different than the people located elsewhere in the country and the trend appears to be away from the small, highly mobile camps toward more sedentary camps. Though some researchers have dismissed the tidewater communities in New York as marginal due to the absence of complex societies and hierarchical organization, many still argue that the area was nonetheless culturally rich and incredibly significant (Ritchie and Funk, 1973, Ritchie, 1980 and Cantwell and Wall, 2001).

Most notably, these early and middle Woodland periods are marked by the adoption of ceramic making technology by Native Americans and the use of cultivars as a major component of the diet (Cowan 1985; Watson 1985). They are considered here as a unit because the chronological division between them is the subject of debate, and because activities such as mound building are associated with both periods.

Though agriculture had an effect on the life ways and settlement patterns of Woodland societies in Pennsylvania, New Jersey and New York, cultural change was not very dramatic as for example in the Ohio River Valley (e.g. the Hopewell tradition). The tidewater area of New York is often seen as being the most culturally marginal environment of all. However, the presence of goods which are not native to the region indicates that these people were either traveling or trading with peoples around Trenton and Southeastern Pennsylvania (Ritchie and Funk, 1973, Ritchie, 1980 and Cantwell and Wall, 2001).

Sites of this time period tend to be relatively small and to have been occupied by a small group of people for a relatively short period of time. One of the major distinctions between Early Woodland society and Late Archaic society is a change in the social organization from a less complex to a more complex social system. Evidence for such changes can be documented by analysis of the mortuary program. Small numbers of individuals were buried in large well-built log tombs within burial mounds, while others were buried in adjacent areas or in caves. Artifacts found with these individuals are interpreted as evidence of differences in social status within society.

Although the primary habitation sites tend to be small homesteads which are removed from neighboring sites, occasionally archaeologists have documented large special purpose sites. These sites range from specialized settlements to sacred enclosures. Recent investigation of caves and rock shelters has documented intense utilization of these localities during this period.

Trends towards greater sedentism and subsistence specialization begun during the Terminal Archaic continued and were accompanied by experimentation with cultigens. The earliest ceramics are named the Mercey Creek and Ware Plain types and consist of flat-bottomed, straight-sided vessels with lugs or handles. The Vinette I type with characteristic conical bases, coarse grit tempered paste, and cord marks in the interior and exterior walls have followed these two types (Kraft 1975; Williams and Thomas 1982). Meadowood projectile points are typical of this time period.

During the Middle Woodland period (ca. 2000 to 1300 BP) decorated pottery replaced coarse tempered vessels. The usual decorative motifs include net impressions and the unusual zoned geometrical patterns from the Abbott Farm. Among projectile points Rossville, Fox Creek, and Jack's Reef Pentagonal dominate the assemblage. Other tools include pestles, hammer stones, anvil stones, net sinkers, etc. (Ritchie and Funk, 1973, Ritchie, 1980 and Cantwell and Wall, 2001)

The early woodland site of North Beach, located on the present-day site of Laguardia Airport, yielded a variety of broken and discarded artifacts which suggest that the area was used as a base camp for a small family group. This is the only site identified to this time period in the area; unfortunately it was destroyed during the grading activities associated with the construction of the airport. The artifacts from this site were hastily rescued from the bulldozers (Ritchie and Funk, 1973, Ritchie, 1980 and Cantwell and Wall, 2001).

The Middle Woodland is better represented in the area, but not by much. The best known site is the Morris-Shurz site on Throg's Neck in the Bronx. Here the archaeologist digging the site, Edward Kaeser, found an 8-foot wide circle, surrounded by water-worn stones, which Kaeser thought to be a foundation for a house. As Kaeser dug through the deposits he found a stack of over 150 plates of sheet mica, the origin of which has been traced to Southeastern Pennsylvania, as well as reddish-purple argillite which has been traced to the area around Trenton. Additionally the pottery found at this site suggests trade ties with the people living near present-day Trenton, as its design is similar to that found at the Abbot Farm site (Cantwell and Wall, 2001).

Late Woodland (1,500 B.P. to 400 B.P.)

The activities that mark the Early and Middle Woodland period such as the extensive trade and construction of large burial mounds are not apparent during the Late Woodland. Habitations tend to be larger and agglomerated into circular villages in contrast with the preceding periods. Ceramics associated with these occupations tend to lack decoration and appear to be utilitarian in function rather than associated with any particular ritual. Information on plant and animal food resources is available from numerous sites and indicates a reliance on cultivated foods, although hunted and gathered resources comprised an important component of the diet.

The largest sites are usually located on major rivers and probably represent permanently occupied base camps. Smaller sites are abundant along tributaries and near natural springs. These sites probably functioned as temporary or seasonal camps. An economic system based on horticulture was well established during this time period, although foraging and fishing persisted as the major subsistence activities. Hickory nuts, acorns, butternuts, and blueberries remained important wild foodstuffs. Gathering of freshwater foods like mussels found on sites along the Upper Delaware (Kinsey at al. 1972; Kraft and Mournier 1982b) contributed significantly to the daily diet.

Tidewater New York and Southern New England do not appear to have been caught in the agricultural revolution that swept much of the rest of the country. While no one knows exactly why this is so, there is no lack of speculation as to the reasoning. It could have been that the environment in which these people were living was so rich that large settlements and agriculture were not necessary (Ritchie and Funk, 1973, Ritchie, 1980 and Cantwell and Wall, 2001).

The Aqueduct site, between the Aqueduct Race Track and J.F. Kennedy International Airport was discovered in 1939, just prior to the construction of the roadways which now encircle the area and much of the city. In this site, researchers found a plethora of discarded tools, broken pottery and shells as well as one double burial which included one infant and one old woman between the ages of fifty and seventy-five. This grave was surrounded by fourteen post-holes. After further research, the archaeologists discovered 17th Century accounts of the burial rituals of the people, which included a palisaded structure around the grave to protect it from wild animals. This burial site was a primary burial – a burial of an individual at or very near the time of death. This however, was not the only way that the Late Woodland peoples honored their dead. If an individual of note died far from his primary homeland, his traveling companions would carry his bones back to the homeland to be buried on his own soil. Evidence of these 'bundle burials' are found all over the city. One such site, Archery Range, was found near Pelham Bay by Edward Kaeser. In total he found the remains of 21 bundle burials and 3 dogs in the mass grave. Keaser argued that this site, like the Agueduct site and others like it in the area, was evidence of a burial in or near the settlement of people buried there (Cantwell and Wall, 2001).

3.2 Historic Times

Contact Period (after 400 B.P.)

At the time of European contact, the Siwanoy, an Algonquian-speaking tribe of the Lenape, occupied the tidewater area of New York. These people shared a common language and ultimately a common fate with their relatives the in New Jersey and Eastern Pennsylvania.

The Algonquian-speaking Unami group of the Lenape tribe (Goddard 1978; Kraft 1986) occupied Southeastern Pennsylvania. These people were also known as the Delaware tribe, a name given to the native residents of New Jersey, New York and Pennsylvania by European settlers (Kraft 1987; Kraft et al. 1996). The Delaware or Lenape or Lenni Lenape, spoke a language belonging to the eastern branch of the Algonquian stock. They lived in the lower Hudson River Valley and the Delaware River Valley until the late 17th and early 18th centuries.

Pressed by white settlers, the Delaware moved to the Tuscarawas branch of the Muskingum River in Ohio. During the Revolutionary War the Delaware Indians were divided by three different political allegiances based on geographic location. Those Delaware living in Pittsburgh were pro-colonist, while the group in northwest Ohio sided with the loyalists. Other groups in Ohio tried to remain neutral. During the 1790s, most of the pro-British Delaware Munsee went to Canada, where they remain today. The Unami group of the Delaware continued west, settling in Indiana (1800-1820), Missouri (1821-29), and Kansas (1830-67) before finally accepting a reservation in Oklahoma (1867 to present). While moving from location to location, numbers of Delaware groups were victims of repeated atrocities, including the massacres at Pavonia (1643), Paxtung (1763), Gnadenhutten (1782), and Moraviantown (1813).

The history of New York dates back to the 17th century when the Dutch settled in the area. The first counties were formed in New York in 1683. The Bronx was originally a part of Westchester County and remained a part of the County until the towns of West Farms, Morrisania and Kingsbridge were annexed to New York City in 1874. By the end of the 19th century the towns of Westchester, Wakefield, and the southern parts of Eastchester and Pelham were annexed to New York City and became part of the 24th ward, which later became a part of the borough of the Bronx. A more detailed history of the project area is presented in chapter 5.

4.0 PROJECT METHODOLOGY

The Phase IA Survey – historic background research – methodology consisted of archival research, a review of the existing literature on the prehistory and history of the project area and its vicinity. The research included a search of records at the New York State Historic Preservation Office, the New York City Landmarks Preservation Commission, and inspections of archival materials and records at the Bronx County Historical Society and the New York Public Library both located in New York. A series of Sanborn maps, historic aerial photographs, historic atlases and maps were reviewed for the property. The background research established a detailed history of the land use during historic times, especially from the late 18th through the 20th century.

4.1 Research Methods

The following research approach has been employed in this Phase I survey:

- 1. Historic background research in several institutions and archives in Manhattan and the Bronx.
- 2. Field inspection survey.
- 3. Review of the existing literature on prehistory and history of the project area and its vicinity.

4.1.1 Historic Background Research

The historic background research involved inspections of archival materials and records at the New York Public Library in Manhattan and the Bronx County Historical Society Library located in Bronx, New York. A series of atlases, proprietor's maps, and Sanborn maps were reviewed for the property.

4.1.2 Field Inspection

Field methods included:

- Pedestrian survey of the Area of Potential Effect (APE) and visual inspection of the impacted area,
- Photographic documentation of all architectural structures presently existing within the proposed APE and its vicinity, and
- Analysis of the topography of the proposed APE of the project area and its vicinity in order to assess the potential for the presence of buried cultural deposits, prehistoric and historic.

As no historic architectural structures will be directly affected by the project, an architectural survey was not completed as part of this survey.

4.1.3 Review of the Existing Literature

A review of the existing literature included research in the New York Public Library and the Bronx County Historical Society Library.

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5.0 RESEARCH RESULTS

This chapter presents a brief history of the project area and its vicinity since the times of early European settler's arrival until the 20th century. The first part of the chapter contains a short review of regional history, the second part presents a detailed land use history of the project area, and the third part offers a short review of prehistoric and historic sites known from the vicinity of the project area.

5.1 Regional History

The earliest evidence of human presence in the New York area is the Clovis site recorded in Staten Island, but no such early human occupation sites are known from the vicinity of the project area. The written history of New York dates back to the beginning of the 17th century when Dutch settlers moved into the area and established the village of New Amsterdam. The Dutch began acquiring land from the Siwanoy in what is now the Bronx in 1639. The middle of the 17th century was marked by a series of clashes between the Siwanoy and the Dutch settlers and culminated in a three-year period of reciprocal raids that became known as the 'Pig Wars' (NYC Dept of Parks, 2002).

Within 50 years of first settlement, however, wealthy New Yorkers were buying land in the area for summer homes, and since that time the Bronx has been a primarily residential borough. No heavy industry took root in the area, but it became a popular place to live especially after the extension of mass transit north from Manhattan.

When the first counties were formed in New York in 1683, the area of the later borough of the Bronx was a part of Westchester County. The Bronx remained a part of Westchester County until the towns of West Farms, Morrisania and Kingsbridge were annexed to New York City in 1874 and became the 23rd and 24th wards (Utlan, 1995). Later, in 1895 the 24th ward was enlarged to incorporate the towns of Westchester, Wakefield, and the southern parts of Eastchester and Pelham. In 1898 the city of New York was turned into a federation of five boroughs with the 23rd and 24th wards becoming the borough of the Bronx. Finally, in 1914, the Bronx became the last county in the State of New York (Utlan, 1995). The area of the present-day Bronx incorporates over 300 years of European presence and combined with the history of Native Americans that inhabited the region, spans almost 10,000 years.

Colonial History

In 1609, Henry Hudson was the first known European explorer to see area of later New York when he anchored at Spuyten Duyvil while working for the Dutch. In 1639, the Dutch West India Company purchased all the land that falls within the boundaries of the present borough

from the Mohegan Indians. Two years later Jonas Bronck who had immigrated to America, from either Denmark or Sweden via Amsterdam, purchased 500 acres of land between the Harlem and Aquahung Rivers. Bronck was the first white European settler to the area. The Aquahung River eventually lost its Indian name and became known as Bronck's River (Figure 5) and finally the Bronx River. Since Bronck was the first white settler, the area was also renamed after him (LPC Bronx Survey Report).

Settlers who came after Bronck were mostly religious dissenters and other colonists from New England. One of them was Anne Hutchinson and the Hutchinson area of the east Bronx was named after her. She and her family settled on the east bank of the river in 1643, after she was exiled from Massachusetts and passed through Rhode Island. John Throgmorton and 35 families settled on the area that became known as Throgs Neck in the same year. Thomas Pell arrived in 1654 and purchased a large tract of land east of the Bronx River now known as Pelham Bay (LPC Bronx Survey Report).

In 1664, the English conquered New Netherlands, but this political change did not impact the settler's life profoundly. Farming was the primary occupation in the Bronx area during the English colonial period and most families owned at least several acres (LPC Bronx Survey Report).

In 1670 Richard and Lewis Morris acquired the Bronck estate and occupied the original Bronck house, located near the present-day juncture of Lincoln Avenue and East 132nd Street. Even though the patent for the Morris family manor did not extend much above today's 150th Street the name Morrisania applies to most of the area between Harlem and the Bronx Rivers south of 170th Street. The Morris brothers were are direct ancestors of Lewis Morris IV, a signer of the Declaration of Independence and Gouverneur Morris, a member of the 1787 Constitutional Convention (LPC Bronx Survey Report).

American State

The area of the Bronx also contains evidence of events related to the Revolutionary War. In October 1776 the British landed at Pell's Point, today's Pelham Bay Park. The 4,000 British and Hessian soldiers were met by General John Glover and 350 American Militia. The Americans fought the British to a standstill allowing George Washington and the main American army to withdraw to White Plains (see Figure 5). The area of the present-day Bronx remained in British hands until the end of the American Revolution (Ultan, 1995). During the war battles were fought throughout the British-dominated borough. Many farms were destroyed as a result. In some cases proprietors abandoned their farms and relocated to land that was opening up for



Map Reference: Phillip Lee Phillip, A list of maps of America, 1776, courtesy of the Library of Congress



REVOLUTIONARY MAP OF BERGEN AND BRONX COUNTY BRONX RIVER PARK

ELMWOOD PK, NJ • NEW YORK, NY • PHILADELPHIA, PA • DOYLESTOWN, PA NEW HAVEN, CT • MIAMI, FL • TRENTON, NJ

BRONX NEW YORK JOB NO. DATE SCALE FIGURE NO. 5649301 2/21/2007 N.T.S. 5

NJ Certificate of Authorization No: 24GA27996400 G:\Data3\5649301\Office Data\Reports\CRM\FIGS\1776 MAP OF BRONX CO.doc settlement further up the Hudson. Wealthy and not so affluent New Yorkers took over some of the abandoned farms, attracted by the picturesque landscape of the region (LPC Bronx Survey Report).

The Hudson River in New York was a key strategic point for both the American and British. If the British controlled the Hudson it would split New England, which was thought to be the main area supporting the war, from the rest of the colonies and the British would be able to better control the war. The Americans needed the Hudson River open so they could move troops and supplies and react to British troop movements. In 1783 George Washington left the Van Cortlandt House with a contingent of troops and crossed the King's Bridge to take possession of New York City from the British in the final act of the war (Ultan, 1995).

People continued moving into the Bronx area during the 19^{th} century. In the first three decades of the 19^{th} century several epidemics of Yellow Fever plagued lower Manhattan causing largescale migration to other areas of the city. Those who could afford it, moved to higher ground, such as the Bronx, were it was believed the air was purer (LPC Bronx Survey Report). Between 1800 and 1830 the population rose from 1755 to 3023 (Ultan, 1995). As a result the boroughs hilly areas of Riverdale and costal regions of Hunts Point, Clasons Point, Ferry Point, and Throgs Neck became the sites of large landed estates and modest country homes (LPC Bronx Survey Report). During this time the poet Joseph Rodman Drake (1795 – 1820) wrote a short poem, published later by his sister, while sitting on the shore of the Bronx River, part of the poem is quoted below;

> "I sat me down upon a green bank side, skirting the smooth edge of a gentle river. Whose waters seemed unwillingly to glide. Like parting friends who linger while they sever; Enforced to go, yet seeming still unready, Backward they wind their way in many a wistful eddy.... There were dark cedars with loose mossy tresses, White powdered dog-trees, and stiff hollies flaunting Gaudy as rustics in their May-day dresses..." (poetry archives online)

With the growth of industry between 1800 and 1830, Irish immigrants fleeing the famine in Ireland came to the Bronx as laborers doubling the population. Irish immigrants worked on projects such as the High Bridge over the Harlem River, the New York and Harlem Railroad (now the Harlem Division of the Metro North), and the Croton Aqueduct. As the railroad was extended population shifted to the west side of the Bronx River and the towns of West farms (1846) and Morrisania (1855) were established (Ultan, 1995). After 1846 another influx of

immigrants was recorded, this time from Germany, as people fled a failed revolution there. Like their Irish counterparts, these individuals came to take advantage of the growing industries in the area.

The 1860 Gazetter of the State of New York by J. French stated that the population of West Farms was 7,098 people. It further stated that West Farms was "a large village containing four churches, a carpet factory, molding mill and a grist mill" (Shonnard, 1900).

In 1874, the small towns in the area were annexed to New York City, becoming the 23rd and 24th Wards. Initially, these areas were placed under the jurisdiction of the Parks Department and referred to as the "Annexed District", but by 1898, the area was consolidated with the city and formally became known as the Bronx. In 1912, the Bronx was named the 62nd county of the State of New York in an attempt to reduce the burden on Bronx residents having to appear in courts in Manhattan. At around this time, the first subway was completed, connecting the Bronx and Manhattan with cheap and efficient transportation. This caused an exodus of workers from the city, fleeing their cramped tenement apartments for spacious apartments and houses in the outlying areas. The movement of the people out to the Bronx caused the economy to grow rapidly and in 1920, the elevated line to the Bronx was extended north of 3rd Avenue and in 1923 Yankees Stadium was opened. Table III shows the increase in population in West Farms area and the 24th ward.

Year	Population
1850	4,436
1860	7,098
1870	9,379
1880	13,288
1890	20,137
1900	43,009
1910	111,510

Table III. Population trends for West Farms and the 24th ward between 1850 and 1910.*

*West Farms became part of the 24th ward in the 1880 census (US Census).

Between 1900 and 1930, the number of Bronx residents increased from 201,000 to 1,265,000. Accompanying this growth, grocery stores, restaurants, vegetable and fruit markets, tailors, and hardware stores became common characteristics of neighborhood shopping districts. Borough inhabitants also shopped in department stores and boutiques located at 149th Street and 3rd Avenue, an area known as the Hub that also had movie palaces and vaudeville theaters. Alexander's opened a department store there in 1928 and a branch on Fordham Road in 1938, where it soon made more sales per square foot than any other department store in the nation. Eventually a section of Fordham Road eclipsed the Hub as the main shopping district. In 1929 Loew's theater syndicate built the Paradise Theater for \$4 million on the Grand Concourse south of Fordham Road. The theater had four thousand seats and a baroque decor that included a ceiling painted dark blue to resemble a nighttime sky, with small light bulbs added to resemble stars and a cloud machine blowing simulated clouds across the ceiling (Hermalyn and Ultan, 1995).

The rapid growth of the Bronx ended with the onset of the Great Depression, but new privately financed housing continued to be built on the northern edges of the borough. By 1936 the housing in the Bronx was the most comfortable and desirable in the city. By the time of World War II, this area of the Bronx had parks, playgrounds, convenience stores, movie theaters, a county jail and a post office.

Year	Population	Year	Population
1790	1,751	1900	200,507
1800	1,755	1910	430,980
1810	2,267	1920	732,016
1820	2,782	1930	1,265,258
1830	3,023	1940	1,394,711
1840	5,346	1950	1,451,277
1850	8,032	1960	1,424,815
1860	23,593	1970	1,471,701
1870	37,393	1980	1,168,972
1880	51,980	1990	1,203,789
1890	88,908	2000	1,332,650

Table IV. Population trends for Bronx County and area prior to the counties formation between 1790 and 2000.

After the war, more housing continued to be built, and residents began moving from the south Bronx to the more private housing at the northern edge of the Borough. During the 1950's and 60's new infrastructure was constructed in the area. The new infrastructure included a network of highways linking The Bronx with the rest of the city, among them the Major Deegan Expressway, the Cross Bronx Expressway, and the Bruckner Expressway. With these infrastructure improvements the distribution of products to the metropolitan area and the rest of the east coast became easier for industries occupying new industrial parks in The Bronx, such as those along Bathgate and Zerega avenues, and for fruit and vegetable dealers in the Hunts Point Food Market (1965) (Hermalyn and Ultan, 1995).

New housing went up along these routes, further increasing the population and contributing to the economy of the borough. African-American and Hispanic populations, displaced from Manhattan, moved into the vacated southern Bronx areas. High poverty rates abounded, however, and rent control measures were introduced. During the 1960's and 70's rampant arson hit the area, as unscrupulous landlords and tenets tried to take advantage of liberal insurance and city assistance policies. The arson stopped after the policies were changed and limits were placed on the amount of money that could be received. At this time mostly single-family homes and rowhouses were built, many apartment buildings were restored and converted to cooperatives and condominiums, making it possible for more people to own their homes.

By the mid-1990's, the population of the Bronx was again increasing. More condominiums and condos were created by new construction or conversion of older buildings. The housing market was strong and new businesses formed. The area experienced a period of renewal and in 1997 was awarded the designation of the 'All-American City' by the National Civic Council.

Education

Opened in 1897, Morris High School was the first public high school in The Bronx. Today in addition to all the public elementary, junior and senior high schools there are twelve colleges and universities in the borough: Fordham University, the Maritime College of the State University of New York, three branches of the City University of New York (Lehman College, Bronx Community College, and Hostos Community College), the Albert Einstein College of Medicine of Yeshiva University, the College of Mount St. Vincent, Manhattan College, Mercy College, the College of New Rochelle, Audrey Cohen College and Monroe College. Almost 24 percent of the land area in the Bronx is parkland, including Pelham Bay Park, which is the largest park in the city (Hermalyn and Ultan, 1995).

Industrial History

The first industry in the Bronx was when the indentured servants of Jonas Bronck fashioned some of the logs to clear farm fields into fence posts and sold them to the residents of Harlem across the river. In the early eighteenth century blacksmiths, tanners, and a cottage cloth industry flourished in the town of Westchester. Wool from sheep raised in the town's sheep pasture was spun by women in their homes. Home weavers then wove the wool into coarse cloth, which was whitened and softened in a fulling mill on Westchester Creek erected by Caleb Heathcote. The cloth was then sold at the town's weekly market or sent to New York (Bronx County Historical Society, 2006).

Up until the War of 1812 most manufactured goods were purchased from England, when the supply was cut off. Near West Farms Square a number of "manufactories" producing pottery, glass and paint flourished for a short time (Bronx County Historical Society, 2006).

The first modern factory was the J. L. Mott Iron Works in 1841. Mott Haven was a nineteenth century version of an industrial park. The Mott Haven area continues to be a manufacturing center. Other iron works were established on Spuyten Duyvil Creek and near the Hub. The first half of the 20th century saw the area south of 138th Street become a center for the manufacture of pianos, refrigerators, printing presses and other goods. To the north, the Electro-Chemical Engraving Company specialized in making precision instruments, Art Steel manufactured office files, and the Bolton Company made cloth tape (Bronx County Historical Society, 2006).

In the second half of the 20th century manufacturing declined as the economy switched to service industries. A number of small manufacturing concerns still call The Bronx their home, including industrial parks as Bathgate and Zerega. The most famous of these is the Everlast Sports Equipment Company, with its world headquarters and factory in Port Morris (Bronx County Historical Society, 2006).

5.2 Land Use

A review of historic maps and aerial photographs reveals the scale of developments at the project area since the mid-19th century. These maps are described below. Descriptions are presented chronologically beginning with the oldest maps and always begin at the northernmost lots of the project site and move southward.

The 1776 map of Bergen and Bronx Counties (Figure 5) shows the project area undeveloped, probably a wooded area, located close to a crossing place on the Bronx River, where Delancy's Mills was located. This Revolutionary War map does not show much detail about residential areas and therefore it is difficult to assume the character of the project's area towards to the end of the 18th century.

The earliest map containing information on the project area is the 1868 Beers Atlas (see Figure 6) which shows the project site partitioned into multiple lots. Some of these lots were already developed. The lots are of different sizes; the lots in the northern section of the APE are small, while the southern section contains larger lots. The most northern lot is occupied by two buildings of the J. Sloan Mat factory. The next two lots to the south are empty, but the next neighbor's lot has a building on it and with J. Michael written next to it, probably the owner or resident's name. The next lot (designated on the map as 2) has three buildings on it accompanied by a description "Mat factory", possibly indicating it might be part of the J. Sloan factory located to the north. The next lot (designated as 4) has two small buildings on it neighbored by one building on the next lot (designated as 6). Only a portion of the next lot


("Mrs. R.H. Smith") is contained within the project's APE and it has a small building on it next to the river. The next lot ("H. Rowland") is also partially included into the project site and the portion within the APE does not show any buildings or structures. The next lot contains three structures but all are outside of the project's APE (bakery, market, and store). The last lot ("J. Cornell") has two buildings on it of which one is included into the project site, while the other is outside the project site.

This brief description of the 1868 Beers Atlas suggests that by the mid-19th century the project APE was partially used as commercial, mainly in the northern section, along Bronx Street, while the southern section was occupied by small, family-run businesses, all located close to the Main Road. Two properties, "Mrs. R.H. Smith" and "H. Rowland seem to be larger residential lots.

The next map reviewed is the 1879 G.W. Bromley and Robinson Map (see Figure 7). The Bromley and Robinson Map shows a similar number of buildings as the 1868 Beers Atlas with a few buildings removed ("J. Michael" and southern "Mat factory" lot) and some new small buildings added, especially to lots designated as "Bakery" and "Store lot" on the 1868 map. A couple of buildings have been enlarged (especially lots 4 and 6). Otherwise the urbanization pattern seems similar to the one shown in the 1868 Beers Atlas.

The changes noticed on the 1879 map suggest that the family-run businesses enlarged, while small factories either closed down or were moved to different locations.

The 1893 G.W. Bromley Map (Figure 8) has more details on it than the previously described maps and it shows quite a lot of changes introduced to the project area within the last three decades of the 19th century. There are plans to change the street pattern which include the widening and extending Bronx Street all the way to Tremont Ave. There is also a new pattern of properties as more lots were created within the discussed area. Lot 48 is the northern most lot and contains the "Dyeing Works". The Dyeing Works is a group of five buildings, four made of wood and one made of brick. Three of the wood buildings are single story and the fourth is a three-story building. The brick building is thought to be one-story but the "r" of the works is blocking any number written there. Lots 46 and 44 are vacant. Lot 38 contains the "Carpet Works" comprising of three wood buildings, two of which are three stories high and the third building's height is not listed. Lots 35 and 32 are vacant. Lot 29 contains three wood sheds or stables. One is two stories high the other two are single story. Lot 25 contains a two and one-half-story building (probably a home) and a single story outbuilding. Lot 24 is vacant. Lot 19 contains a single story wood shed or stable on it. Lots 13, 12 and 10 are vacant. Lot 7 has two one-story wood sheds or stables on it, probably associated with the two-story wood building on



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lot 9. Lots 13, 12, 10 and 7 seem to be new lots being subdivided off of the larger lots on Boston Road. Lot 1 has a two and one-half-story wood building on it and lot 1A has a two-story wood building on it. Both are probably dwellings.

The 1893 Bromley map confirms that the project area turned to a more commercial nature than it was in the earlier days. The location of both factories "Dyeing Works" and "Carpet Works" could have been chosen due to the close proximity of the river which has probably been used in the production process. It seems that the map confirms that by the end of the 19th century the area was a part of a larger cultural process – the Industrial Revolution.

The 1896 Sanborn Map (Figure 9) also shows the plan to widen and extend Bronx Street. It also shows a plan to extend East 170th Street (formerly Center Street) east to the Bronx River. The Sanborn Map further indicates that water lines and hydrants have been installed in Bronx Street between East 180th Street (formerly Samuel Street) and East 179th Street. Lot 48 the "Dyeing Works" is now called the Metropolitan Dye Works and has added a new three-story building in the middle of the complex. Lots 46 and 44 remain vacant. Lot 38 still has the Mat Factory on it and has added some one and two-story additions to their buildings by the Bronx River. Lots 35 and 32 remain vacant. On lot 29 the buildings have been demolished and the lot seems to have been subdivided and a two and one-half-story frame house (sharing a common wall) has been constructed on each lot. Lot 25 seems to be the same as the 1893 Bromley map. Lot 24 remains vacant. On lot 19 the wood shed or stable has changed its configuration but it is unclear to what. Lots 13, 12, 10 and 7 are vacant. Lot 1 still has a two and one-half-story house on it and has added a small out building. Lot 1A is the same.

The 1901 Belcher Hyde Atlas (Figure 10) shows a variety of changes to the area including the plan for a new street pattern and new lots. Bronx Street seems wider but its southernmost end does not connect to the East 177th Street (former Tremont). Instead new residential lots are shown along East 177th Street. The map also shows plans to widen East 180th Street that borders the APE from the north. New lot numbers are shown on this map, along with the old ones. Lot 48 is now lot 33 and is still the Metropolitan Dye Works. The northern most one-story wood building is in the new right-of-way and will probably need to be demolished. The two-story building that fronts on Bronx Street seems to be a new building with a brick or stone foundation (formerly a three-story and one-story building). The new building that was built in the center of the complex is depicted as a one-story brick building next to a two-story wood building next to the Bronx River is the same. Lots 46 and 44 are now lots 32 and 30 respectively and seem to have been acquired by the Metropolitan Dye Works. A one-story brick building covers the eastern end and a one-story wood building has been added to the middle of



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these two lots. Lot 38 is now lot 27 and remains home of the "J. Sloan and Sons Mat and Rug Factory" and only seems to have had a slight reconfiguration of the buildings. Lot 35 is now 25 and lot 32 is now 23, both are vacant. Lot 29 is now lot 21, the dwellings have not changed but we now see that they have brick or stone foundations, a shed or stable has been added to the northeast corner of the lot. Lot 25 is now lot 18, the dwellings are the same but we can now see that they have brick or stone foundations otherwise the lot is the same. Lot 24 is now lot 17 and has a small shed or stable on the eastern end of the lot. Lot 19 is now lot 14 and the building has the same configuration. Lots 13, 12, 10, and 7 are now lots 10, 9, 8, and 6 respectively and all are vacant. Lot 1 remains lot 1 and a wood shed or stable has been added to the east of the building with a small brick structure added to the north of the shed. A new wood shed or stable has also been constructed on the northern end of the lot. The map further depicts the two and one-half-story wood building as having a brick or stone foundation and that the first floor is a store. Lot 1A is now lot 2 and the map shows that the two and one-half-story wood building has a brick or stone foundation and a store on the first floor.

The area remains mixed, commercial and residential, but it seems that more residential lots appeared in the beginning of the 20th century, although not all were occupied.

The 1915 Sanborn Map (see Figure 11) shows that parts of the APE have been further developed and redeveloped. A water line and hydrants have been added to Bronx Street from East 179th Street to Tremont Avenue. Bronx Street has been extended from Tremont Ave. approximately 150 feet to the north. The Metropolitan Dye Works has expanded in lots 30 and 32 and rebuilt most of their complex to fit into the new property line. Lot 27 the "J. Sloan and Sons" complex seems to have remained unchanged. Lots 23 and 25 have been developed with the United Metal Door and Sash Company, Inc complex. The complex consists of two adjacent two-story wood buildings with basements on the northern part of the lot and one-story wood buildings adjacent to the two-story buildings on the southern part of the lot. On lot 21 the dwellings remain the same but the small wood shed has been demolished and a new two-story wood building has been constructed on the eastern end of the lot. On lot 18 the small dwellings have been demolished. On the northern part of the lot a new two-story wood dwelling with a basement has been built. The southern part of the lot has a new two and onehalf-story wood dwelling with a basement and there is a 1-story shed or old building between them. Lot 17 now has a two and one-half-story wood dwelling with a basement on it. Lot 14 is vacant. Lots 10, 9 and 8 have the "Interboro Rapid Transit Co. - Boston Road Rail Yard" on it, which includes a one-story inspection shed with wire glass windows on the roof for light and ventilation. Lot 6 is vacant. Lot 1 now has a two-story store on the corner of Tremont Avenue and Bronx Street and a one-story wood building to the east of the store. The large wood shed or stable to the north has been removed.



IJ Certificate of Authorization No: 24GA27996400 \\Data3\5649301\Office Data\Reports\CRM\FIG\$\1915 sanborn.doc The area is still mixed, commercial and residential, but the construction of the Boston Road Rail Yard significantly altered its character adding to its commercial character.

The 1921 G.W. Bromley Map (see Figure 12) shows a similar urbanization pattern to the 1915 Sanborn Map but offers some new information. The Metropolitan Dye Works complex combined lots 33, 32, and 30 into lot 30. The buildings on the northern part of the lot are two-story wood with a basement with exception of the one-story brick building. The new buildings on the southern part of the lot are two-story brick with a basement on the western part of the lot and 1-story brick in the middle and eastern part of the lot. Lots 25 and 23 are now lot 23. On lot 21 the dwellings on the west side of the lot have been replaced with a new one and one-half-story wood dwelling with a basement. Other new information provided by this map includes that lot 14 has a raised rail line on it, lots 10, 9, and 8 are now just lot 8 and the inspection shed is made of brick. Otherwise this map is very similar to the1915 Sanborn Map.

It seems that the first two decades of the 20th century entail a gradual change to the neighborhood from residential to almost entirely commercial. The 1921 map shows the old factories expanding and new commercial areas developing fast.

The 1938 G.W. Bromley Map (see Figure 13) shows redevelopment of the APE. The Metropolitan Dye Works has been demolished and lot 30 is now vacant. On lot 27 the J. Sloan and Sons factory has been demolished and a one-story garage with a basement has been built on almost the entire lot. On Lot 23 the United Metal company complex has been demolished and a one-story garage has been built on almost the entire lot. On lot 21 the dwelling and the two-story wood building have been removed and three one-story buildings, possibly divided into individual garages, have been built on the lot. On lot 18 two small one-story buildings have been constructed on the eastern part of the lot, possibly garages. A garage seems to have been added to lot 17 as well. Lot 14 also has a small one-story building, probably a garage, on it north of the elevated rail line. Lot 6 has a one-story building on it and lot 1 still has the store on the corner.

The changes to the commercial character of the area can be attributed to the economic hardship of the 1920s. The area remains commercial, but it no longer contains factories employing large number of people.

The 1950 Sanborn Map (see Figure 14) shows a similar urbanization pattern to the 1938 G.W. Bromley map. Lot 30 is still vacant. Lots 27 and 23 have garages on them. Lot 21 has the same number of buildings and configuration. Lot 18 is the same and on lot 17 the dwelling has been expanded west to the street right-of-way. Lot 14 is still the same. On lot 8 the "NY City Transit Systems – Boston Road Yard" has been reduced to only the northern part of the lot. Lot 6







IJ Certificate of Authorization No: 24GA27996400 \\Data3\5649301\Office Data\Reports\CRM\FIGS\1950 sanborn.doc remains the same and lot 1 has a second store built on the northern part of the lot. The character of the area has not changed much since the 1930s.

Aerial photographs do not show as much detail as the historic maps but they give a good idea of how the project site looked from the mid- to the late 20th century. Several aerial photographs of the project area have been reviewed. The 1954 aerial photograph (see Figure 15) seems to show similar urbanization conditions as depicted on the 1950 Sanborn map, regarding the number of buildings and their configuration. The 1966 aerial photograph (See Figure 16) also seems to confirm the conditions on the 1950 Sanborn map. However, the 1975 aerial photograph (see Figure 17) shows that dramatic changes have occurred within the APE. All of the buildings have been demolished except for the stores on lots 6 and 1 to make way for the redevelopment of the area. In place of some of the existing buildings and adjacent to the APE the Lambert Houses and a shopping center have been built. In the northern part of the project site only a thin strip of land on the eastern part of the site has not been built upon. The APE has not changed since then and this is confirmed by the 1977, 1984 and 1996 Sanborn maps (Figures 18 to 20) and the 1994 aerial Photographs (Figures 21).

The review of historic maps and aerial photographs suggests that the APE has been developed in at least three different stages over the past 150 years and that there has been a significant amount of ground disturbance to the APE. The first stage was in the mid- to the late 19th century, when the APE was predominantly residential with some elements of commercial activity. The second stage relates to the Industrial Revolution and changes that include the construction of small factories and the rail yard, and the third stage, which started towards the end of the 20th century, is also related to commercial activity. These construction activities have profoundly impacted the original contour of the area. The landscape changed and it is doubtful whether any evidence of earlier, pre-1860s Native American activities or early European settler's actions could still be recognizable in the landscape. Many of the buildings had basements in them and the ground disturbance needed for the rail yard and to construct a raised rail line would have been considerable. This would have most likely destroyed any intact prehistoric archeological deposits and greatly reduced the likelihood of historic archaeological deposits.



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J Certificate of Authorization No: 24GA27996400 \Data3\5649301\Office Data\Reports\CRM\FIGS\1966 aerial.doc



NJ Certificate of Authorization No: 24GA27996400 3:\Data3\5649301\Office Data\Reports\CRM\FIGS\1975 aerial.doc



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J Certificate of Authorization No: 24GA27996400 :\Data3\5649301\Office Data\Reports\CRM\FIGS\1996 sanborn.doc



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Geotechnical data

Data obtained from a geotechnical report summarizing a study conducted by Langan Engineering and Environmental Services, Inc. (Langan) within the APE provides further evidence to support the extent of previous land disturbance.

In November 2005 Langan conducted a geotechnical research within the APE. A Geotechnical report dated 15 December 2005 by Langan (Appendix C) explains the recorded subsurface conditions. The study consisted of three borings, B-1 through B-3, drilled on 21 November 2005 and to depths of 8 to 16 feet deep. Five test pits were also excavated on 21 November 2005, TP-1 through TP-5. All test pits were excavated to a depth of approximately 8 feet. The study revealed that the subsurface conditions at the project site consist of a fill layer ranging for 6 to 12 feet deep that covers the project site. The fill layer consists of silty coarse to fine sand with varying amounts of brick, cobble and boulder size rock fragments, steel and garbage along with roots and other organic material (Langan, 2005).

One boring, B3, was stopped due to an obstruction. Test pit 5 was excavated to investigate the nature of the obstruction encountered in drilling. The conclusion was that the cobbles and boulders of outcropping bedrock explain the difficulty in boring B-3. Under the fill layer is a sand layer followed by a clay layer. Ground water was found at approximately 7 feet below surface in moist test pits. The report and the boring logs are presented in Appendix C.

5.3 Prehistoric and Historic Sites in the Vicinity of the Project

A review of the New York State Historic Preservation GIS-based State and National Register Listing was conducted by Sarah Hlubik on 25 March 2007. Research shows that no prehistoric or historic archaeological sites presently exist within the APE of the project. Several sites were recorded in close proximity to the project site. Table V presents a list of archaeological sites within the vicinity of the project area.

Site	Localization	Function	Chronology	Distance &	Source
No.				Direction	1
#2830,	Bronx River	shell midden	probably	located in the West	Arthur
#2831	Avenue	and small	Late Archaic	Farms section	C Parker in
		camp site	through	immediately east of	1922
		containing pit	Woodland	the Bronx River in	
		features,		the vicinity of	
				Westchester Ave	
				and Bronx River	
				Avenue	
	Bronx River II	presence of	Late	north of the project	Boesch,
		shell heaps	Woodland	site	1996
			component		
	Morris Park			1.25 mi northeast	NYSHPO
	Station				GIS
	Pelham			1.23 mi northeast	NYSHPO
	Parkway Station				GIS
	New York			1.23 mi north	NYSHPO
	Botanical				GIS
	Gardens				
	Lorilland Snuff			1.23 mi north	NYSHPO
	Mill	_			GIS
	Grand			1.86 mi west	NYSHPO
	Concourse				GIS
	Historic District				
	St Peter's			1.5 mi east	NYSHPO
	Church, Chapel				GIS
	and Cemetery				
	Complex				

Table V.	Prehistoric and Historic	Archaeological	sites within th	ne vicinity	of the project site.
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There are two prehistoric archaeological sites and six historical sites located within the vicinity of the project area. Both prehistoric sites are represented by lithic scatters and shell middens and are identified as Late Archaic through Woodland to late Woodland.

The historic archaeological sites confirm that the area has been used by European settlers since the inception of European colonization of the Northeastern United States.

6.0 CONCLUSIONS AND RECOMMENDATIONS

In order to comply with SEQRA, NEPA, and Section 106 of the NHPA Langan conducted a Phase IA Archaeological Survey of the Bronx River (West Farms) Park in the Bronx, Bronx County, New York. The research was requested by the New York City Landmarks Preservation Commission (LPC) as a result of their preliminary review of the reconstruction of the Bronx River (West Farms) Park Project. Historical background research was performed to establish the land use history and evaluate the possibility for the existence of prehistoric sites within the APE. The research methodology included a search of records at NY SHPO and LPC as well as inspections of archival materials and records at the Bronx County Historical Society and the New York Public Library located in New York. In addition a series of Sanborn maps, historic aerial photographs, historic atlases and maps were reviewed for the property. The background research established a detailed history of the land use during historic times, especially from the late 19th and throughout the 20th century.

The background research revealed that the project area and its vicinity could have been used by Native Americans in prehistoric times but the research did not confirm the existence of any prehistoric or historic sites within the project area. The review of maps and historic records only revealed that the project area may contain historic evidence related to human activities since the mid-19th century. The historic background research confirmed that the project area was used in the past but no archaeological sites are threatened by the proposed development.

The present-day Bronx River Park area and its vicinity have a long history of Native American presence. Archaeological records collected in the vicinity of the project area suggest a long history of Native American presence in the area beginning with the Late Archaic Period. Historic background research further revealed over 150 years of European presence in the vicinity of the APE. Native Americans may have used the present-day Bronx River Park area in the past, but remains confirming such use were probably significantly altered as a result of previous land disturbance and might be difficult to recover.

In summary, as the historic background research revealed, the vicinity of the project area may have been used as hunting grounds by Native Americans for about 5,000 years and therefore it is possible that some groups also visited the project area in the past. The historic research also revealed the 150 years of European settlers presence within the project area and its vicinity. It is possible that the project APE still contains some evidence of the historic land use, but due to intensity of architectural alterations and landscape modifications introduced to the project area during the 20th century, it is unlikely that intact deposits or buried cultural horizons may have survived until our times. In light of these findings, we do not recommend further works at the area of study.

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- 1915 Sanborn Fire Insurance Company. Courtesy of Environmental Data Resources, Inc.
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- 1938 GW Bromley Map. Courtesy of the Bronx Historical Society

1950	Sanborn Fire Insurance Company. Courtesy of Environmental Data Resources, Inc.
1954	Aerial Photograph. Courtesy of Environmental Data Resources, Inc.
1966	Aerial Photograph. Courtesy of Environmental Data Resources, Inc.
1975	Aerial Photograph. Courtesy of Environmental Data Resources, Inc.
1976	Sanborn Fire Insurance Company. Courtesy of Environmental Data Resources, Inc.
1984	Sanborn Fire Insurance Company. Courtesy of Environmental Data Resources, Inc.
1994	Aerial Photograph. Courtesy of Environmental Data Resources, Inc.
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APPENDIX A

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Qualifications of Preparers

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EDUCATION

- 1995 Ph.D. Program in Anthropology, ABD, The Graduate School and University Center of the City University of New York. Dissertation: The State Formation Process in Western Slavia.
- 1980 MA in Archaeology, Warsaw University, Warsaw, Poland

RESEARCH AND TEACHING EXPERIENCE

- 2000- present, Hofstra University, Hempstead, NY, Department of Anthropology, Adjunct Assistant Professor: The Human Condition in Ethnographic Perspective, The Primitive World and Its Transformations, The Rise of Civilization, Introduction to Prehistoric Archaeology.
- 2000 present Dowling College, Oakdale, NY, Department of Sociology and Anthropology, Senior Adjunct Associate Professor: Patterns of Culture I, Patterns of Culture II.
- 2001 Lehman College, CUNY, Bronx, NY, Department of Anthropology, Adjunct Lecturer: Introduction to Anthropology
- 1995 present, Hunter College, CUNY, New York, NY, Department of Anthropology, Adjunct Lecturer: Introduction to Archaeology; Introduction to Cultural Anthropology; Archaeology of Central and Eastern Europe.
- 1995 present, Kingsborough Community College, CUNY, Brooklyn, NY, Department of Behavioral Sciences and Human Resources, Adjunct Lecturer: Introduction to Anthropology, Introduction to Sociology.
- 1993 Hofstra University, New College, Hempstead, NY, Adjunct Lecturer: Methods and Theory of Ethnographic Research.
- 1992 1993 Herbert H. Lehman College, CUNY, The Bronx, NY, Department of Anthropology, Adjunct Lecturer: Ancient People and Cultures.
- 1986 1988 Town Archaeological Service, Delft, The Netherlands, researcher, analysis of the Renaissance pottery from Delft and The Hague, field work.

- 1986 University of Groningen, The Netherlands, summer school instructor, analysis of lithics and pottery from the Neolithic period; analysis of floral and faunal remains, statistical analysis.
- 1980 1986 State Archaeological Museum in Warsaw, Poland, academic assistant, field director and principal investigator, report writings, analysis of the Early Medieval settlement patterns in Eastern Slavia, analysis of pottery, lectures to the public.

EDITORIAL DUTIES

Managing Editor Human Ecology Co-editor of the Human Ecology and Adaptation Book Series (with Daniel Bates)

RESEARCH AWARDS

- 1998 Wenner-Gren Foundation grant (with Daniel G. Bates)
- 1996-1997 Fulbright Fellowship for 1996-1997 academic year.
- 1995 Student Travel and Research Fund award.
- 1993 GS CUNY Ph.D. Program in Anthropology dissertation grant.
- 1993 Student Travel and Research Fund award.
- 1991 Student Travel and Research Fund award.

RESEARCH EXPERIENCE

I have analyzed assemblages (lithics, pottery, faunal and floral remains) from more than 50 archaeological sites.

RESEARCH EXPERIENCE

I have analyzed assemblages from the following projects (USA only):

- Pemberton, NJ. Lithic and faunal analysis.
- X Fort Monmouth, Monmouth Co. NJ. Lithic analysis for the NJDOT.
- X Hopewell, Va. Lithic, prehistoric pottery, faunal analysis. For the Virginia DOT.
- X Cambridge, VT. Faunal and lithic analysis. For the Vermont DOT.
- X Hillfiger Wetlands, Tioga Co., Pennsylvania, faunal and shell analysis. For the Pennsylvania DOT.
- X Sunderland, VT, lithic and faunal analysis. For Virginia DOT.
- X Rt. 168, Chesapeake City, VA. Lithic analysis. For the Virginia DOT.

- X **Puncheon Run, Delaware**. Lithic analysis and use-wear analysis. For the Delaware DOT.
- X I-78, Newark, NJ. Faunal analysis. For New Jersey DOT.
- X Fairfax Co. Virginia, Rt. 29, lithic and faunal analysis. For the Virginia DOT.
- X **Camp Lejeune, North Carolina**, lithic, prehistoric pottery and faunal analysis. For the U.S. Army Corps of Engineers, Wilmington District.
- X FBOP Preston Co. West Virginia, lithic analysis.
- X Ford Farm, Delaware. Lithic analysis. For the Delaware Department of Transportation.
- X Interstate 95 Intersection, New Jersey. Lithic, prehistoric pottery, and faunal remains. For the New Jersey Department of Transportation.
- X Drury Lane, NY. Faunal analysis. For New York Thruway Authority.
- X Rout 18 Bridge, NJ. Faunal analysis. For the New Jersey Department of Transportation.
- **#** Route 206, NJ. Lithics, pottery, faunal analysis. For the New Jersey Department of Transportation.
- # **Prince William County, Virginia**. Lithic and faunal material analysis. For the Virginia Department of Transportation.
- **#** Springfield, Lithics analysis. For VADOT.
- **#** McArthur Center, Virginia. Faunal analysis. For the City of Norfolk, Virginia.
- **#** Spotsylvania Co., Virginia. Lithics. For the Virginia Department of Transportation.
- # SRI Delaware, Prehistoric ceramics analysis. For the Delaware Department of Transportation.
- **# Tioga County, Pennsylvania**. Lithics, pottery, and faunal materials. For the Pennsylvania Department of Transportation.
- # **Camp Lejeune, North Carolina**. Lithic, pottery, and faunal analysis. For the U.S. Army Corps of Engineers, Wilmington District.

- # Lee County, Virginia. Lithic tools analysis. For the Virginia Department of Transportation.
- # Culpeper County, Virginia. Lithic and faunal material analysis. For the Virginia Department of Transportation.
- # Lower Eastside Manhattan, New York. Faunal analysis. For the New York City.
- # **Stafford County, Virginia.** Lithic and faunal analysis. For the Virginia Department of Transportation.
- # **Dawson House, Delaware.** Faunal analysis. For the Delaware Department of Transportation.
- # Augustine Creek, Delaware. Faunal and lithic analysis. For Delaware Department of Transportation.
- # Lyceum, Virginia. Faunal analysis. For the city of Norfolk, Virginia.
- # Kratz Road Bridge Replacement, Montgomery County, Pennsylvania. Lithic and faunal analysis. For the PennDOT.
- # Henrico County, Virginia. Lithic and faunal analysis. For the Virginia Department of Transportation.
- # New Jersey Route 21, City of Newark, Essex County, New Jersey. Lithic and faunal analysis. For the New Jersey Department of Transportation.
- # Clarksburg, West Virginia. Lithic and faunal analysis. For the West Virginia Department of Transportation.
- # Whitby Branch, Delaware. Lithic analysis. For the Delaware Department of Transportation.
- **# Russell County, Virginia.** Lithic and faunal analysis. For the Virginia Department of Transportation.
- **#** Brandt Bridge, Pennsylvania. Faunal analysis. For the Pennsylvania Department of Transportation.
- # Halifax County, Vermont. Faunal and floral analysis. For the Vermont Department of
Transportation.

- # Wyalusing Creek, Susquehanna County, Pennsylvania. Analyzed lithics, prehistoric pottery, and faunal remains. For the Pennsylvania Department of Transportation.
- # Locust Grove, Delaware. Phase III. Conducted the analysis of lithics, pottery, and shell. For the Delaware Department of Transportation.
- # Gloucester County, New Jersey. Conducted analysis of lithics (refitting). For the New Jersey Department of Transportation.
- # **Philadelphia Detention Center, Pennsylvania.** Conducted faunal (shell) and floral analysis. For the U.S. Department of Justice, Federal Bureau of Prisons.
- # Stewart Airport, Drury Land Project, New York. Conducted lithics and prehistoric pottery analysis. For the New York Thruway Authority.
- # Camp Lejeune Mainside Area, North Carolina. Analyzed prehistoric pottery. For the U.S. Army Corps of Engineers, Wilmington District.
- # Route 40, Virginia. Analyzed lithics and prehistoric pottery. For the Virginia Department of Transportation.
- # State Route 1 Corridor, Delaware. Conducted lithic analysis. For the Delaware Department of Transportation.
- # **Camp Lejeune Ranges 933 & 949, North Carolina.** Conducted analysis of lithics and prehistoric pottery. For the U.S. Army Corps of Engineers, Wilmington District.
- # Route 15 Sections D52, D53, and D54, Tioga County, Pennsylvania. Analyzed lithics. For the Pennsylvania Department of Transportation.
- # **Carver Falls Hydroelectric Power Project, Vermont.** Analyzed lithics and prehistoric pottery. For the Central Vermont Public Service.
- # Route 700, Fudge Roberts House, Virginia. Conducted lithics and prehistoric pottery analysis. For the Virginia Department of Transportation.
- # San Juan Federal Building, Puerto Rico. Conducted analysis of floral samples. For the U.S. Department of Justice, Federal Bureau of Prisons.
- # Walney Road, Fairfax County, Virginia. Analyzed lithics. For the Virginia

Department of Transportation.

FIELD EXPERIENCE

2003 - 2005 School Facilities Project, New Jersey. Historic research and feasibility studies.

2003 - Phase III, Krosno, Poland. Archaeological Field School. Director. The Roman Period cemetery.

2003 – Phase II – Pemberton, NJ. Late Archaic, Early Woodland habitation site. Principal Investigator

- 1999 Phase I/II, I-78, Newark, NJ. The early 20th century urban site
- 1999 Phase I/II Route 21, Newark, NJ. The 19th 20th century urban site.
- 1999 Whitehall, downtown Manhattan, monitoring ground testing for the Staten Island Ferry Terminal expansion, the 17th century modern urban site.
- 1995 Phase III, Late Woodland habitation locale, site 15Ma97, Madison Co., KY, field director.
- 1995 Phase II, Late Paleoindian/Archaic site 15Lo181 and 15Lo182, Logan Co., KY, field director.
- 1994/1995 Phase II, Archaic/Woodland site 15LO169, Logan Co., KY, field director.
- 1994 Phase III, Camp Nelson, Civil War site 15Js93, 15Js96, 15Js113, Jessamine Co., KY, field director.
- 1994 Phase II, Late Archaic/mid-Woodland site 15Hn25, Henry Co. KY, field director.
- 1994 Phase II, Historic site 15Fr96, Woodland site 15Fr97, Woodland sites 15On62, 15On65, Franklin - Owen, Co., KY, field director.
- 1994 Phase I, Fleming Co., KY, field director.
- 1994 Phase I, McLean Co., KY, field director.
- 1994 Phase I, Hardin Co., KY, field director.
- 1994 Phase II, Late Archaic/Woodland site 15Wo146 and 15Wo147, Wolfe Co., KY, field director.
- 1994 Phase I, Nicholas Co., KY, field director.

- 1994 Phase I, Logan Co. KY, field director
- 1993 Phase II, Madison Co., KY, field director, Woodland site 15Ma85, 15Ma87, 15Ma88, Late Woodland 15Ma90, 15Ma91, Late Archaic/mid-Woodland 15Ma93, Late Woodland/Fort Ancient/Newtown phase 15Ma97, Historic farm 15Ma99, Historic farm 15Ma100, mid-Archaic/Woodland 15Ma109.
- 1993 Newark, cemetery and the 18th century residential home, NJPAC project.
- 1991-1992 African-American Burial Ground, New York, Lehman College, CUNY.
- 1988 The Hague, The Netherlands Renaissance town, 17th century AD; field technician, settlement pattern, street pattern and waterfront; lab work, analysis of pottery. 1987-88 Delft, The Netherlands - Late Medieval and Early Renaissance town, 15-18 century AD, field technician, laboratory work, analysis of pottery, osteological material, and ecological samples.
- 1986 Kolhorn, The Netherlands a Neolithic village; visiting scholar, research conducted upon invitation from Professor Diderik van der Waals of the University of Groningen, The Netherlands; laboratory work, analysis of lithics, pottery, and faunal/floral samples.
- 1986 Hacki, Poland Late Neolithic and Early Medieval fortified settlement, analysis of lithics and pottery, co-principal investigator.
- 1985 Grodek, Poland Late Medieval fortified settlement, 12-15 centuries AD, director of a summer archaeology fieldschool.
- 1985 Czekanow, Poland Medieval burial ground, 12-13 century AD, co-principal investigator.
- 1984 Trondheim, Norway the Viking Period town, visiting scholar upon invitation from Dr. Kalle Sognnes, Trondheim University.
- 1984 Czekanow, Poland Medieval burial ground, 12-13 century AD, co-principal investigator.
- 1983 Czekanow, Poland Medieval burial ground, 12-13 century AD, co-principal investigator.
- 1982 Czekanow, Poland Medieval burial ground, 12-13 century AD, co-principal investigator.
- 1981 Czekanow, Poland Medieval burial ground, 12-13 century AD, co-principal investigator.

- 1980 Czekanow, Poland Medieval burial ground, 12-13 century AD, co-principal investigator.
- 1980 Warsaw, Old Town Castle Square, crew chief, excavations of a bridge (reconstructed and open to the public), and the Renaissance urbanization pattern.
- 1979 Maly Plock, Poland crew chief 11-13th century AD fortified enclosure, archaeological fieldschool for Warsaw University students.
- 1978 Plonsk, Poland crew chief, 12-14 century AD fortified enclosure, archaeological fieldschool for Warsaw University students,
- 1978 Polaniec, Poland field technician, 11-13th century AD fortified enclosure.
- 1978 Maly Plock, Poland field technician, 11-13th century AD fortified enclosure.
- 1977 Nowy Mlyn, Poland field technician, Mesolithic/Early Neolithic flint mine and settlement complex, analysis of lithics.
- 1976 Wroclaw, Poland field technician, 11-13th century AD town.
- 1975 Nowa Mecinka, Poland field technician, Late Neolithic/Early Bronze Age village.

RESEARCH & CONFERENCES

1. Research and excavations conducted upon special invitations: University of Trondheim, Norway; University of Groningen, The Netherlands; Kiev University, Ukraine, Warsaw University, Poland.

2. Conferences & presented papers:

- 2000 Hierarchy and Power in the History of Civilizations, Moscow, June 15-18, 2000. Paper: Social Complexity: Necessity or Chance?
- 1999 The Uwharries Lithics Research Conference, Asheboro, NC.
- 1999 The 4th World Archaeology Congress, Cape Town, South Africa, January 1999. Paper: Human ecology and the idea of Cultural Resource Management.
- 1998 Landscapes in Transition: Approaches to Cultural Heritage Research and Preservation. Hunter College, December 8-9, 1998. International conference sponsored by the Wenner-Gren Foundation, North Atlantic Biocultural Organization, and Dept. of Anthropology, Hunter College, CUNY, presented paper: A Sense of Place: Landscape and Social Memory (Rethinking Central European Cultural Heritage).

- 1998 The 55th Annual Southeastern Archaeological Conference, November 11-14, 1998, Greenville, SC, presented paper: The Organization of Core Technology in the Cumberland Gap Region: A View from Lee County, Virginia.
- 1998 The 63rd Annual Meeting Society for American Archaeology, Seattle March 25-29, 1998, presented paper: Epistemology of a Puzzle: The Application of Refitting Technique and Minimum Nodule Analysis to Investigate Lithic Assemblages.
- 1997 Guest lecture: Archaeology in Transition. The Socioeconomic Conditions of Archaeology in Eastern Europe. The City University of New York Archaeological Seminar 1997.
- 1997 Archaeological Cultures and the Past Reality, The Institute of Archaeology and Ethnology Polish Academy of Sciences, Warsaw, Poland, paper: Anthropology, Archaeology and Culture. (In Polish)
- 1997 The Future of the East European Past, Lodz University, Poland, paper: Surviving the Change. Polish Archaeology into the Next Century.
- 1995 The VII International Flint Symposium, paper: Patterns of Chert Exploitation in the Northeastern USA.
- 1995 The 60th SAA Annual Meeting, Minneapolis, MN, symposium organizer, Alternative Archaeology: Beyond the Anglo-American Paradigm, paper: Where Do We Search for Paradigms? Theoretical Concepts in Polish Archaeology during the Last Fifty Years.
- 1994 The 10th RATS Annual Conference, University of Binghamton, March 1994, paper: Imperative or Choice: Marxists Perspective in Polish Archeology.
- 1994 The 11th Kentucky Heritage Council Annual Conference, Northern Kentucky University, February 1994, paper: The Richmond Bypass Project Epistemology: Toward Analysis of Plowzone Lithic Assemblages.
- 1993 The 26th Chacmool Annual Conference, University of Calgary, Canada, Session: Approaches to the Development Complexity in Northern, Western and Central Europe, paper: The Case of the Pristine Central European State.
- 1991 The 12th Congress of the Union of Prehistoric and Protohistoric Sciences, Bratislava chairman of section XV, paper A New Challenge: archaeology and its social milieu in the 1990's.
- 1985 The 5th International Convention of Archaeologists, Kiev, paper: Ducal Seat at Davidgrodek on the Horyn River Against the Background of Fortified Settlements in

Western Byelorussia and Mazovian Frontier.

3. Organized conference and symposium:

- 1998 Landscapes in Transition. Approaches to Cultural Heritage Preservation in Central Europe. International conference organized at Hunter College, CUNY, December 7-8, 1998, sponsored by the Wenner-Gren Foundation and Dept. of Anthropology, Hunter College.
- 1995 the 60th SAA Annual Meeting, Minneapolis, MN. Organized symposium; Alternative Archaeology: Beyond the Anglo-American Paradigm.

PUBLICATIONS

Books

- 2005 Landscapes in Transition. Recent Approaches to Cultural Heritage Research and Preservation. Book under contract with Kluwer/Plenum Academic Press to appear in 2005.
- 1999 Archaeology and the Idea of Cultural Resource Management in the USA. Polish Ministry of Culture Press, Warsaw (In Polish).

Book chapters

- 2001 Belarus, Poland, Slovakia, The Netherlands, Luxembourg, San Marino. In *Encyclopedia* of the World=s Minorities, Carl Skutsch Editor. Fitzroy Dearborn Publishers, Chicago-London. (In press).
- 2000 Belarus. In *Countries and Their Cultures*. M. Ember and C. Ember, Editors. Macmillan Reference.
- 2000 Methodology and Practice of CRM Archaeology in the USA. In *A Handbook of Field Methods*, ed. by Zbigniew Kobylinski, Warsaw, Polish Academy of Sciences Press.
- 2000 What archaeology? Comments and translation of Kent V. Flannery's The Golden Marshalltown: A Parable for the Archaeology of the 1980s. In Archaeology in Theory and Practice, pp. 187-204. Edited by Andrzej Buko and Przemyslaw Urbanczyk. Warsaw 1999. (In Polish).
- 2000 Anthropology, Archaeology, and Culture. In Archaeological Cultures and the Past Reality, edited by St. Tabaczynski. Polish Academy of Sciences Press, Warsaw. (In Polish)

- 1997 North American Indians and Archaeology. In Studies on the History of Civilizations, edited by Andrzej Buko, pp. 23-30. Warsaw University Press. (In Polish).
- 1995 The Transition to Statehood In Central Europe. In Alternative Pathways to the Early State, edited by Nikolay N. Kradin and Valeri A. Lynsha, pp. 84-92. The Russian Academy of Sciences. Far Eastern Division. Vladivostok: Dal'nauka Press 1995. (In English and Russian)
- 1995 Public Archaeology or Archaeology for the Public. In *Theory and Practice of Archaeology*, vol. 3, pp. 432-459, ed. by St. Tabaczynski. Warsaw, Academy of Sciences Press.
- 1993 A New Challenge. Archaeology and its social milieu in the 1990s. In Actes du XII Congres International des Sciences Prehistoriques et Protohistoriques, vol. 4, pp. 427-432. Institute Archeologique de l'Academie Slovaque des Sciences.
- 1989 Archaeology of Grodzisk Mazowiecki and the vicinity. In The History of Grodzisk Mazowiecki, ed. by J. Kazimierski, pp. 91-118. Warsaw (in Polish).
- 1988 Ducal Seat at Davidgrodek on the Horyn River against the background of fortified settlements in Western Byelorussia and Mazovian frontier. In *Trudy 5 Mezdunorodnogo Kongressa Archeologow Slavistov*, vol. 5, pp. 93-98, Kiev: Naukova Dumka.

Lozny Ludomir and Marek Dulinicz

1987 A Model of the Medieval Burial Rites: The Konskie case. In *Mysl przez pryzmat rzeczy*, ed. by Z. Kobylinski *et al.* Warsaw: ODZ (In Polish).

Lozny Ludomir, Olga Lipinska and B. Zawadzka-Antosik

1985 Il Tesori Dell'Antica Polonia. Dai Veneti ai Re di Cracovia. Ed. by G. Rossi-Osmida, W. Hensel, G. Donato, pp. 133-162. Modena. (In Italian)

Articles in Professional Journals

- 2001 Far outside, looking in. Polish archaeology and looking-glass self. Archaeologia Polona, vol. 40, pp. 137-148.
- 2000 Place, landscape, ecology, and the practice of heritage preservation. Archaeologia Polona, vol. 38, pp. 38-52.
- 1996 Radiocarbon Dating and Archaeological Data. In *Swiatowit*, vol. XL, pp. 192-205. Warsaw, Warsaw University Press. (In Polish)
- 1987 A New Bizantinian Coin from the State Archaeological Museum Collection. *Wiadomosci* Archaeologiczne 52(2): 120-122 (In Polish).

1981 The Scythian arrowhead from Czekanow. *Wiadomosci Archaeologiczne* 46(1): 153-55 (In Polish)

Lozny Ludomir and Magdalena Lozny

1988 Flood Control Systems in the Medieval Netherlands. Kwartalnik Historii Kultury Materialnej, Polish Academy of Sciences, 3(1988): 411-431 (In Polish).

Book Reviews

- 2002 Omljan Pritsak, The Origins of the Old Rus' Weights and Monetary Systems. Two in Western Euroasian Metrology and Numismatics in the Seventh to Eleventh Centuries. Reviewd for the Canadian Slavic Papers, University of Alberta, Canada.
- 2001 Left Parties and Social Policy in Postcommunist Europe. Edited by Linda J. Cook, Mitchell A. Orenstein, and Marilyn Rueschemeyer. Westview Press 1999. Reviewed for the Global Social Policy Journal, Helsinki, Finland.
- 2001 Zvi Goffer, Elsevier s Dictionary of Archaeological Materials and Archaeometry. In English with translations of terms in German, Spanish, French, Italian, and Portuguese. Elsevier, Amsterdam-Lausanne-New York-Oxford-Shannon-Tokyo 1996. Reviewed for the Archaeological Sciences Bulletin.
- 2000 Timothy Snyder, Nationalism, Marxism, and Modern Central Europe. A Biography of Kazimierz Kelles-Krauz (1872-1905). Ukrainian Research Institute Harvard University. Harvard University Press, Cambridge Massachusetts, 1997. Reviewed for the Canadian Slavic Studies, University of Alberta, Canada.
- 1999 Minton F. Goldman, Revolution and Change in Central and Eastern Europe. Political, Economic, and Social Challenges. With Foreword by Karl W. Ryavec. Armonk, NY, London, England: M. E. Sharpe 1997. Reviewed for the Canadian Slavic Papers, University of Alberta, Canada.
- 1999 Michael Burawoy and Katherine Verdery, (Eds.) Uncertain Transition. Ethnographies of Change in the Postsocialist World. Rowman and Littlefield Publishers, Inc. Lanham, Boulder, New York, Oxford 1999. Reviewed for the Slavic and East European Journal. USA.
- 1999 András Bozóki (ed.) Intellectuals and Politics in Central Europe. Central European University Press, Budapest 1999. Reviewed for the Slavic and East European Journal, USA.
- 1998 Flint Implements and the Circulation of Raw Materials in the Great Hungarian Plain

During the Late Neolithic Period. Katalin T. Biro, Hungarian National Museum, Budapest. Reviewed for the Society for Archaeological Sciences Bulletin no. 20.

- 1995 Zdzisław Mach, Symbols, Conflict, and Identity. Essays in Political Anthropology. State University of New York Press, Stony Brook, 1993. In *Polish Review*, Polish Institute of Arts and Sciences Press, New York, NY.
- 1992 P. Allsworth-Jones, The Szeletian and the Transition from Middle to Upper Paleolithic in Central Europe. Oxford: Clarendon Press. In *American Antiquity* 57(2), 1992.
- 1987 Kalle Sognnes, Prehistoric Cave Paintings in Norway. Acta Archaeologica vol. 53, 1983. In Archeologia Polski 32(1): 217-223.
- 1987 Ewald Schuldt, Gross Raden. Ein Slawischer Tempelort des 9. /10. Jahrhunderts in Mecklemburg. Berlin. In Archaeologia Polski 32(2): 426-435.
- 1987 Reidar Bertelsen and Przemyslaw Urbanczyk, The Soloy Farm Mound. Excavations and methods of stratigraphic analysis. Tromura, vol. 4. Tromso. In Archaeologia Polski 32(2): 448-454.
- 1986 Andreas Andren, Den urbana scennen. Stader och samhalle i det medeltida Danmark, Acta Archaeologica Lundiensia, no. 113, Bonn 1985. In Kwartalnik Historii Kultury Materialnej 1(1986): 158-159.
- 1985 Kalle Sognnes, Arkeologiske modeller for Vestlandets Vikingtid, Gunneria no. 34. Trondheim 1979. In Kwartalnik Historii Kultury Materialnej 1-2(1985): 132-133.
- 1985 Zdenek Vana, Swiat dawnych Slowian. Warsaw 1985. In Z Otchlani Wiekow 3-4(1985): 228- 232.
- 1984 Boris Novotny, Funde mittellalterlicher handwerklicher Erzeugnisse aus Iglau (Mahren). Wien 1982. In Kwartalnik Historii Kultury Materialnej 2(1984): 307-308.

EDITED AND TRANSLATED WORKS

- 1999 Landscape in Transition. Proceedings of the NABO workshop held in Hunter College in December 1998. (In preparation)
- 1997 Jan Chochorowski and Sergei Skoryi, Prince of the Great Kurgan, Archaeology, vol. 50, no.5 September/October 1997 (translated).
- 1995 Co-edited the Polish section of the *World Archaeology Congress Bulletin*, vol. 8. Southampton University (United Kingdom).

ARCHAEOLOGICAL PROJECT REPORTS

- Phase II Archaeological Investigation Site 28-BU-590. Pemberton Development Tract, Pemberton Borough, Burlington County, New Jersey. Prepared for Lenny Feinberg PenDel Associates. Ms on file at NJ SHPO.
- X Lithic assemblages from Mounmoth Co. New Jersey. A report submitted to The Artifact Research Center, Hackettstown, NJ. 2000.
- X Use-wear Analysis of the Lithic Tools From Site 7K-C-51 (Puncheon Run)
 Dover, Delaware. Report submitted to The Cultural Research Group Louis Berger and
 Associates, Washington, DC 1999-2000.
- X Use-wear Analysis of the Lithic Assemblage from site 40Wm184, Tennessee. Report submitted to Cultural Horizons, Inc., Harrodsburg, KY. 1999.
- # The Application of Refitting Technique to the Lithic Assemblage from Site 28Gl266, Gloucester Co., New Jersey. *Phase III Archaeological Data Recovery Site 28-GL-266*.
 Prepared by Chris Borstel, Rhea Rogers, John Killeen, Ludomir Lozny, and Kathryn Pusemna. Report on file. Louis Berger and Assoc., Inc. 1997.
- # Phase I Survey of the KY81 Bridge Over the Green River at Calhoun-Rumsey, McLean County, Kentucky. Report on file at Kentucky Heritage Council and OSA. (with James Fenton and Thomas Stetar). 1995.
- # Phase II Investigation of the Richmond by-pass, Madison Co., KY. Report on file at Kentucky Heritage Council and OSA. 1995 (with James Fenton).
- # Phase II Archaeological Survey of the Proposed Reconstruction of the KY 1151 over Dry Fork Creek, Russellville, Logan County, Kentucky. Report on file at Kentucky Heritage Council and OSA. 1995 (with James P. Fenton).
- # Phase II Archaeological Testing of the Site 15LO169, Russellville, Logan County, Kentucky. Report on file at Kentucky Heritage Council and OSA. 1995 (with James P. Fenton).

Contributed in more than forty other field reports.

MUSEUM EXHIBITIONS

- 1980 co-author, Prehistory of Poland, exhibition at the State Archaeological in Warsaw.
- 1982 co-author, The Early Medieval Cemetery at Czekanow, Czekanow High School.

- 1983 co-author, From the History of Pottery-making in Poland, exhibition at the State Ethnographic museum in Warsaw (awarded as the best archaeological display in Poland in 1983)
- 1984 co-author, *Prehistory of Poland*, exhibition at the State Archaeological Museum in Warsaw.
- 1985 co-author, Il Tesori Dell'Antica Polonia. Dai Veneti ai Re di Cracovia. Exhibition in Padua, Italy.
- 1987 co-author, The Archaeological Investigation of the Hospital at Koornmarkt, Exhibition in Delft, The Netherlands.

REACHOUT

Wrote popular pamphlets on archaeology and organized public displays on archaeological subjects. Awarded the first price for the best public archaeological display in 1983 by the Polish Ministry of Culture.

PROFESSIONAL AFFILIATIONS

- X Society for Archaeological Sciences
- X Register of Professional Archaeologists
- X Society for American Archaeology
- X Southeastern Archaeology Conference
- X Middle Atlantic Archaeological Conference
- X Society for Pennsylvania Archaeology
- X North Atlantic Biocultural Organization
- X Archaeological Society of Virginia
- X Ontario Archaeology Society

OTHER

Native fluency in Polish, excellent command in Russian, abilities in German, and French languages.

MICHAEL AUDIN Archaeologist Field Crew Management Phase I, II and III Excavation Human Remains/Burial Excavation Site Preparation and Survey Researcher Photographer Artifact Documentation and Analysis Field Illustration Report Writing and Editing

EDUCATION

Hunter College: M.A. Anthropology (attending) William Paterson University: B.A. Anthropology Archaeological Field School: Somerset County Parks Commission, New Jersey

SUMMARY QUALIFICATIONS

Mr. Audin has 3+ years of experience in Cultural Resource Management. As coordinator of Cultural Resources, responsibilities include coordination and implementation of cultural and historical tasks associated with all Langan projects requiring cultural and historic assessments as part of permit and regulatory review. Office tasks include communication with State Historic Preservation Offices and other regulatory offices, writing, producing and editing reports. Field tasks include field supervision positions on Phase I, II and III archaeological and historical investigations and excavation projects, as well as prehistoric and historic site assessment and monitoring.

In addition Mr. Audin has three years of experience as a land surveyor and 10 years business management experience prior to coming to cultural resources.

RELEVANT EXPERIENCE

2006 Portion of the Northeast Business Park, Phase IA, New Jersey

New Jersey Wetlands Permit. Preformed duties of researcher and research coordinator, report writing, editing and production.

2006 Creighton Farm Bridge Crossing, Phase I, Willistown, Pennsylvania

Army Corps of Engineers Permit. Preformed duties of research coordinator, field director, photographer, preparation of site and survey. Post field work included laboratory analysis of artifacts, assisting with the writing, prepared, edited and produced report.

2006 Camp Laughing Water, Phase I, New Hanover and Upper Fredrick, Pennsylvania

Army Corps of Engineers Permit. Preformed duties of research coordinator, field director, photographer, preparation of site and survey. Post field work included laboratory analysis of artifacts, assisting with the writing, prepared, edited and produced report.

2006 Camp Hidden Falls, Phase I, Delaware and Lehman Townships, Pennsylvania

Army Corps of Engineers Permit. Preformed duties of research coordinator, field director, photographer, preparation of site and survey. Post field work included laboratory analysis of artifacts, assisting with the writing, prepared, edited and produced report.

2006 Select Sires, Phase I, Eaton, Pennsylvania

Pennsylvania section 105 Permit. Preformed duties of research coordinator, field director, photographer, preparation of site and survey. Post field work included laboratory analysis of artifacts, assisting with the writing, prepared, edited and produced report.

2005 Tournament World, Phase IB, Montgomery, New York

Research coordinator, field director, photographer, site preparation and survey. Post-field work included laboratory analysis of artifacts, assisting with the writing, prepared, edited and produced report.

2005 Former Old First Presbyterian Church Cemetery, Phase III Data Recovery, Newark, New Jersey

Project Manager/Field Director Responsibilities included:

- Over sight of all field activities for 2.2 acre cemetery excavation
- Preparation and implementation of a comprehensive field plan for the locating human remains and associated artifacts
- Hiring and managing a field staff of 35
- Directing and coordinating sub contractor with field staff of 30
- Directing and coordinating 4 backhoes on site to move overburden and back fill site
- · Over sight of cataloging all burials and artifacts
- Laboratory analysis of artifacts
- Writing, coordinating and editing of final report

2005-2006 Circulations Improvement Project, Phase IA and IB, Newark, New Jersey

NJ Executive Order 215 Compliance. Project coordinator/field director responsible for preparation of a Phase I background investigation and Phase IB field testing. Work included coordinating conducting research, conducting photographic pedestrian survey site, conducting field testing and preparation of the final reports. Report preparation included writing sections of the report, preparation and production of final report for submittal.

2005 Edgewater Colony, Phase IB, Edgewater, New Jersey

For EPA storm water improvements loan. Field Supervisor responsible for the preparation of a Phase IB prehistoric/historic site investigation. Included is the direction of three field technicians digging a total of 139 standard test pits, project coordination with the principal investigator, photographer and the coordination of lab work. Other post-field responsibilities include assisting with the writing, preparation and production of the final report for submittal to New Jersey DEP Municipal Finance and Technical Services.

2005 Ford Avenue Redevelopment, Phase IA, Milltown, New Jersey

Project coordinator responsible for preparation of a Phase IA background investigation. Work included coordinating and conducting research, conducting informant interviews, conducting photographic pedestrian survey of 22-acre site and preparation of the final report. Report preparation included writing sections of the report, preparation and production of final report for submittal to regulatory agency.

2005 Former Central Railroad Terminal, Monitoring, Newark, New Jersey

Application for project authorization compliance. Crew Chief/Project Coordinator for 6 week monitoring during demolition of former railroad terminal for SHPO resolution on application for project authorization. Monitor for human remains associated with the Old First Presbyterian Church cemetery, identifying, excavating, cataloging and turn over to mortician for reburial.

MICHAEL AUDIN Archaeologist

2005 Regional Biocontainment Laboratory – Newark Center, University of Medicine and Dentistry of New Jersey, Newark, New Jersey – Prepared cultural resources section of Environmental Assessment in accordance with the requirements of NEPA for the construction of a new Regional Biocontainment Laboratory under a grant form the National Institutes of Health (NIH)

2005 USDA, Health-Based Plant Genomics Facility, Cornell University, Ithaca, New York Prepared cultural resources section of a Section 106 Assessment as part of a NEPA Screening on the Plant Genomics Laboratory Building site. It includes an archaeological assessment and architectural evaluation of the current facility and property.

2004-2006 Newark Downtown Core Redevelopment and Circulations Improvement Plan, Newark, New Jersey

Responsibilities included:

- Preparing a multi-phased strategy for investigating, testing and mitigating the project area
- Conducting preliminary research regarding various aspects of the project area, including possible intact remains within the former First Presbyterian Church cemetery
- Supervising research
- Conducting field photo reconnaissance and preliminary visual assessment of all properties
 potentially eligible for listing on the State and National Register of Historic Places that may
 be impacted by the proposed project
- Contributing to the Application for Project Authorization regarding the proposed demolition of five historic structures located within the Four Corners Historic District

2003-Present NJSCC School Development Program, New Jersey

NJ Executive Order 215 Compliance and NJSCC Guidelines. Participated in the development and redevelopment of 20 new and existing school sites located throughout New Jersey. Responsibilities included:

- Conducting and overseeing background research at the New Jersey Historic Preservation Office, the New Jersey State Museum and local archives
- Conducting field photo reconnaissance and preliminary visual assessment of all properties potentially eligible for listing on the State and National Register of Historic Places that may be impacted by the proposed project
- Preparation and assistance in writing of the Cultural and Historical Resource Assessment section of Environmental Assessment and Environmental Impact Statement Reports and Phase IA background investigations
- Overseeing report production and preparing maps and figures
- Producing for internal departments/clients memos, letters and other documentation outlining potential issues and possible recommendations.

2003 Pen Dei Development, Phase I and II, Pemberton, New Jersey

Field/Laboratory Technician of a Phase I & II prehistoric site investigation/excavation. Field responsibilities also included photographer and mapping excavation locations using GPS equipment. Laboratory Technician responsibilities included; cleaning, cataloging and photographing all artifacts. Other post-field responsibilities included assisting with the preparation and production of the final cultural resource report for submittal to New Jersey HPO.

MICHAEL AUDIN Archaeologist

2003 Lenape Meadows, Phase II, Basking Ridge, New Jersey

Field School. Field Technician and Laboratory Technician for phase II prehistoric excavation. Field work included daily preparation of site, field excavations, field crew management and the closing up the site for the winter. Laboratory work included cleaning, identifying, cataloging and photographic documentation of all artifacts.

2003 Lithics Identification Project, William Paterson University, New Jersey

Volunteer. Conducted laboratory analysis, identification and cataloging, of over 5,000 stone fragments from the Wallkill River basin in Northern New Jersey, submitted to Dr. Janet Pollak. Research included identifying and cataloging human produced stone flakes and tools vs. naturally altered stone.

PROFESSIONAL DEVELOPMENT

Historic Preservation Research Course, Drew University, March 2005 OSHA 40 Hour Certified HAZWOPER Training (December, 2005) and refresher (10/06) NJSHPO Cultural Resources Best Practices Workshop, October 2006 Introduction to ArcGIS I, November 2006 American Red Cross CPR Certified (11/30/06 – 11/29/07) Preservation Planning in the Highlands, Drew University, March 2007

PROFESSIONAL AFFILIATIONS

Archaeological Conservancy Archaeological Institute of America Archaeological Society of New Jersey Lambda Alpha National Collegiate Honors Society for Anthropology National Trust for Historic Preservation New Jersey Historical Society New York State Archaeological Association Society of American Archaeology Society for Historical Archaeology

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SARAH K. HLUBIK Cultural Resource Technician

EDUCATION B.Sc. Anthropology, Douglass College, Rutgers University, New Brunwick, 2003

SUMMARY QUALIFICATIONS

Ms. Hlubik is an archaeologist with 2 years professional and 5 years academic experience in research, field and lab work. She has worked in New Jersey, Pennsylvania and New York, as well as in Kenya. In addition she has 2 years experience with transit survey and 1 year experience in graphic design work.

Ms. Hlubik specializes in excavation, survey, mapping, and graphics.

RELEVANT EXPERIENCE

NJDEP

Former Old First Presbyterian Church Cemetery, Phase III Data Recovery, Newark, New Jersey - Responsibilities included Crew Chief and assisting in the oversight and excavation for 2.2 acre cemetery excavation with a recovery of approximately 2300 sets of human remains and associated artifacts, as well as site survey work. Lab work included the cataloging of all burials and artifacts, including paperwork and conservation of material remains. Major responsibilities in post-field work were conversion of survey data to AutoCAD data and graphic production for the report. Other post-field responsibilities included assistance with writing, preparation and production of the final report.

Edgewater Colony, Phase IB, Edgewater, New Jersey - Field technician for the Phase IB prehistoric/historic archaeological excavation, which included the digging of a total of 135 standard test pits and lab work, including artifact analysis and conservation. Other post-field responsibilities include assisting with the writing, preparation and production of the final report for submittal to New Jersey HPO.

NYSDEC

Tournament World, Phase IB, Montgomery, New York - Worked as a field tech and assisted in site survey duties. Post-field work included preparation of report

PHMC

Camp Laughing Waters, Phase IB, Montgomery County, Pennsylvania – Preliminary duties included historic background research at PHMC and state and local libraries. Field responsibilities included digging and recording 6 standard test pits for Phase IB prehistoric/historic excavation. Post field duties included lab work and writing and preparation of report.

Camp Hidden Falls, Phase IB, Pike County, Pennsylvania - Preliminary duties included historic background research at PHMC and state and local libraries. Field responsibilities included digging

SARAH K. HLUBIK

and recording 6 standard test pits for Phase IB prehistoric/historic excavation. Post field duties included lab work and writing and preparation of report.

Creighton Farm Bridge Crossing, Phase IB, Chester County, Pennsylvania - Preliminary duties included historic background research at PHMC and state and local libraries. Responsibilities included digging and recording 1 test unit for Phase IB prehistoric/historic excavation. Post field duties included lab work and writing and preparation of report.

Other Related Experience

Louis Berger Group – East Orange, New Jersey

Worked as an archaeological technician at the Hudson County Potters field in Secaucus. Chief responsibilities include excavation human remains and the cataloging and identification of age, sex and stature of human remains. Secondary responsibilities included total station survey, upkeep of total station survey and generation of maps in both AutoCAD and Surfer 7.

Rutgers University, Koobi Fora Field School - Koobi Fora, Kenya

Surveyed and excavated Early Stone-age sites located in the Koobi Fora region of Northern Kenya. Excavation included identification of faunal remains and lithics found, as well as some field illustration. Designed and conducted independent experiments for a senior thesis. Worked on analysis of the artifacts from Site FxJj 20 East Koobi Fora, Kenya for comparison to experimental collection to be used for senior research thesis.

Burlington County College Field School – Pemberton, NJ

Surveyed and excavated a PaleoIndian – Early Woodland site in Southern Burlington County. Excavation included identification of lithic materials found. Worked on analysis of the artifacts and faunal remains from the site, for use in a comprehensive report. **Graphics Experience:**

Poster Production:

- Rediscovering The Past at Newark Downtown Core Redevelopment Designed and produced poster for presentation at the Langan Environmental Workshop
- Langan Natural and Cultural Resources Group Designed and produced poster for presentation at March Managers Meeting

Map Graphic Production: Customized and produced graphic maps for Preliminary Assessments, Environmental Assessments, project proposals, Memoranda of Agreement, and various other reports and applications.

APPENDIX B

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APPENDIX B

Drawing and Plans of the Project site



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 MARK K MORRISON ASSOCIATES LTD LANDSCAPE ARCHITECTURE 242 WEST JOIN STREET SUITE405 86W YORK, NEW YORK, HOGO 312.439,975 FAR.212,424,571 WWW.MORKMORTHON, DOM ELANGAN 21 Pern Pieze 300 West 31st Street, 8th Pion New York, NY 10001-8722 P: 212-479-5400 F: 212-479-5444 www.langer.com City of New York Parks & Recreation Olmsted Center Flushing Meadows Corona Park Flushing, New York 11368 PROJECT TILE: THE RECONSTRUCTION OF BRONX RIVER (WEST FARMS) PARK, LOCATED AT EAST 179th STREET BETWEEN EAST 180th STREET AND EAST TREMONT AVENUE, BOROUGH OF BRONX (BLOCK 3141, LOTS 1, 14 & 17) D.O.T. PIN# X550.45 DRAWING TITLE: SHORELINE PROTECTION PLAN - AREA(B) DESIGNED BY: KRG DRAWN BY: KBG CHECKED BY: DUH REVIEWED-TEAN LEADER APPROVED-DIRECTOR APPROVED-CHIEF OF DESK Raymundo Gomez, RLA David Carlson, RLA Charles McKinney CONTRACT NO. X288-102M CHNTRACT NO. X288-102M HK ABOR SIGNATURES DO NOT HI ANY MAY HELASE THE CONSULTANTS FROM THER BUTH OF PRODUCING MI ACCURATE AND COMPLETE STL OF CONTRACT DOCUMENTS.

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3. CONTRACTOR SHALL NOTFY THE RESIDENT ENGINEER IN WRITING, OF ALL SOL OR DRAINAGE CONDITIONS WHICH THE CONTRACTOR CONSIDERS DETRIMENTAL TO THE GROWTH OF PLANTS.

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8 ALL TOPSOIL SHALL BE FREE OF ALL NEWATODES, SOIL-BORNE DISEASE AND FESTS, AS WELL AS WEED SEEDS AND BULBS.

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GRADING NOTES:

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2. The contractor shall verify all existing topographic information. Any discrepances between the survey and existing conditions, detween plans and specifications, or between different plans shall be drougen to the attention of the resident engineer and d.p.r. in <u>writing</u> prior to commencing work.

3. ALL PAVEMENTS SHALL BE INSTALLED TO SWOOTH EVEN GRADE WITH NO PATCHING, IRREGULARITES, OR BIRDDATHS.

4. ALL NEW PAVEWENTS SHALL MEET EXISTING PAVEMENTS AND GRADES FLUSH AND EVENLY.

5. ALL CURBS SHALL BE INSTALLED TO SMOOTH EVEN GRADES AS INDICATED WITH NO PATCHING OR IRRECULARITIES.

6. THE CONTRACTOR SHALL USE EXTREME CARE TO PROTECT EXISTING TREES AND THEIR ROOTS. EXCEPT AS NOTED ELEVATIONS AROUND EXISTING TREES SHALL REMAIN THE SAME. WOOLFY TRENCHES OR CHANNELS TO AVOID REMAINING TREES AND THEIR ROOTS. HAND EXCAVATE ONLY WITHIN THE DRIP LINES OF TREES OR AS DIRECTED BY THE RESIDENT ENGINEER.

7. THE CONTRACTOR SHALL EXERCISE EXTREME CARE DURING EARTHWORK OPERATIONS, TO AVOID DISTURBING ADJACENT FACILITIES AND OR SUB GRADE STRUCTURES. ALL DAMAGE RESULTING FROM CONSTRUCTION SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE REPARED AT NO EXPENSE TO PARKS RECREATION OR THE CITY OF NEW YORK. ALL REPAIR WORK SHALL BE DONE TO THE SATISFACTION OF THE RESIDENT ENCINEER AND/OR AGENCY HAVING JURISDICTION.

1, INFORMATION SHOWING EXISTING UTILITY LINES MAY BE INCOMPLETE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OFTERWINE THE EXACT LOCATIONS OF ANY UTILITY LINES THEY MAY ENCOUNTER AND TO PROTECT SAID UNES.

2. LOCATIONS OF ALL UTILITIES ARE SHOWN DIAGRAMMATICALLY. THE CONTRACTOR SHALL MAKE PRELIMMARY INVESTIGATIONS, INCLUDING ANY NECESSARY EXCAVATION, TO DETERMINE IF THE WORK CAN BE DONE AS SHOWN ON THE PLANS AND AS DRECETED BY THE RESIDENT EXEMPLER.

3. THE CONTRACTOR SHALL EXERCISE EXTREME CARE DURING EXCAVATION / GRADING OPERATIONS TO PROTECT ENSTING FACILITIES TO REMAIN SAID FACILITIES SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR AND, IF DAMAGED, SHALL BE RESTORED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE RESPONT ENGINEER.

4. DRAINAGE UNES WHICH HAVE BEEN ABANDONED ARE TO BE REMOVED AS NECESSARY TO FACILITATE THE INSTALLATION OF NEW WORK, ALL ABANDONED PIPES LARGER THAN 4" SHALL BE PLUGGED WITH CONCRETE AT BOTH ENDS.

5. THE CONTRACTOR SHALL REMOVE ALL DEBRIS AND SILT FROM EXISTING DRAINAGE STRUCTURES AND PIPING AS INDICATED ON PLAN FOR POSITIVE FLOW TO STREET SEWER SYSTEM.

6. ALL CATCH BASINS SHALL BE LOCATED AT THE LOW POINT WITHIN SURROUNDING AREA.

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8. THE CONTRACTOR SHALL USE EXTREME CARE TO PROTECT EXISTING TREES AND THEIR ROOTS. MODIFY TRENCHES OR CHANNELS TO AVOID EXISTING THEES AND THEIR ROOTS. ONLY HAND AND/OR PNEUMATIC EXCAVATE WITHIN THE ORIP LINES OF EXISTING TREES.

9. FOR PROPOSED DRAINAGE STRUCTURE DETAILS, SEE DPR STANDARD DETAIL #2 & 4. FOR WATER DETAILS, SEE DPR STANDARD DETAIL #6, 8 & 10.

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2. THE CONTRACTOR SHALL VERIFY ALL EXISTING TOPOGRAPHIC INFORMATION. ANY DISCREPANCIES BETWEEN THE SURVEY AND EXISTING CONDITIONS, BETWEEN PLANS AND SPECIFICATIONS, OR BETWEEN DEFFERENT PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE RESIDENT ENGINEER AND D.P.R. IN WRITING PROR TO COMMENCING WORK.

3. ALL PAVEMENTS SHALL BE INSTALLED TO SMOOTH EVEN GRADE WITH NO PATCHING, IRREGULARITIES, OR BIRDBATHS.

4. ALL NEW PAVEMENTS SHALL MEET EXISTING PAVEMENTS AND GRADES FLUSH AND EVENLY.

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3. THE CONTRACTOR SHALL EXERCISE EXTREME CARE DURING EXCAVATION / GRADING OPERATIONS TO PROTECT EXISTING FACILITIES TO REMAIN. SAID FACILITIES SHALL BECOME THE RESPONSEBUTY OF THE CONTRACTOR AND, IF DAMAGED, SHALL BE RESTORED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE RESDENT ENGINEER.

4. DRAINAGE LINES WHICH HAVE BEEN ABANDONED ARE TO BE REMOVED AS NECESSARY TO FACILITATE THE INSTALLATION OF NEW WORK, ALL ABANDONED PIPES LARGER THAN 4° SHALL BE PLUGGED WITH CONCRETE AT BOTH FLUG.

5. THE CONTRACTOR SHALL REMOVE ALL DEBRIS AND SILT FROM EXISTING DRAINAGE STRUCTURES AND PIPING AS INDIGATED ON PLAN FOR POSITIVE FLOW TO STREET SEWER SYSTEM.

6. ALL CATCH BASING SHALL BE LOCATED AT THE LOW POINT WITHIN SURROUNDING AREA.

7 MINIMUM COVER FOR DRAINAGE PIPE SHALL BE ONE FOOT (1') FROM FINISHED GRADE TO THE TOP OF PIPE. THE CONTRACTOR SHALL ENSURE THAT POSITIVE DRAINAGE IS ACHEVED THROUGHOUT THE ENTIRE SYSTEM. SHOULD THE CONTRACTOR FALL TO ACHEVE POSITIVE DRAINAGE, CORRECTIVE MEASURES SHALL BE TAKEN AT THE CONTRACTOR'S EXPENSE AND AS DIRECTED BY THE RESIDENT ENGINEER.

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9 FOR PROPOSED DRAINAGE STRUCTURE DETAILS, SEE DPR STANDARD DETAIL #2 & 4. FOR WATER DETAILS, SEE DPR STANDARD DETAIL #6, 8 & 10.

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	MARK K MORRISON ASSOCIATES LID						
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۲	City of New York Parks & Recreation Olmsted Center Flushing Meadows Corona Park Flushing, New York 11368						
PROJECT THE RE PARK, L 180th ST BRONX	PROJECT TITLE. THE RECONSTRUCTION OF BRONX RIVER (WEST FARMS) PARK, LOCATED AT EAST 179th STREET BETWEEN EAST 180th STREET AND EAST TREMONT AVENUE, BOROUGH OF BRONX (BLOCK 3141, LOTS 1, 14 & 17)						
D.O.T.							
DECIONER	ACCORD BY UPD DRAWN BY UPD CHECKED BY DIH.						
Reviewed	-TEAM LI Gomez	RLA	APPROVED-DIRECTOR APPROVED-CHIEF OF DESIGN David Carlson, RLA Charles McKinney				
APPROVED	-CHIEF	INGINE	EER CONTRACT NO Y288-102M				
JOHIN J. N	JOHN J. NATOLI JUNIMACI NO. A200-TUZINI THE ABOVE SIGNATURES DO NOT IN MY WAY RELEASE THE CONSULTANTS FROM THEIR DUTY						
07 1	RODUCING	AN ACC	CURATE AND COMPLETE SET OF CONTRACT DOCUMENTS.				
DATE: 11/	10/06	SCALE	E I = 20 SHEET NO. 9 OF 17 SHEETS				



CUTAWAY VIEW

** MESH: WOVEN WIRE FENCE (MIN 14 1/2 GAUGE W/ MAX: 6" MESH SPACING

NOTES:

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1. WOVEN WIRE PENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE, OR HARDWOOD.

2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH THES SPACED EVERY 24" AT TOP AND MID SECTION/ FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, . 6" MAXIMUM WESH OPENING.

3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABLINKA TI 40N, OR APPROVED EQUAL

4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.

5. WAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN 'BULGES' DEVELOP IN THE SILT FENCE.

6. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE SILT FENCING.



NOTE: 6 MIL PLASTIC SHEETING SHALL BE SECURED TO THE TOP AND BOTTOM OF THE SANDBAG EMBANGMENT AND FOLD IN ALONG THE SIDE BANK OF THE STREAM WITH THE SEAMS TO FORM A WATERTIGHT SEAL.



3 SANDBAG COFFERDAM



NOTES:

1. FINE GRADE SOIL AND PLACE 2" OF STRAW MULCH ON GROUND BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP'S) INCLUDE ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DD NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.

2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE REOP'S IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF REOP'S EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE REOP'S WITH A ROW OF 8" STAPLES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACITED SOIL AND FOLD REMAINING 12" PORTION OF REOP'S BACK OVER SEED AND COMPACTED SOIL, SECURE REOP'S OVER COMPACIED SOIL WITH A ROW OF 8" STAPLES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE REOP'S OVER COMPACIED SOIL WITH A ROW OF 8" STAPLES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE

3. ROLL THE RECP'S (A) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP'S WILL LUNROLL WITH APPROPRIATE SIDE AGAINST THE SOLL SURFACE. ALL RECP'S WUST BE SECURELY FASTENED TO SOLL SURFACE BY PLACING B" STAPLES IN APPROPRIATE LOCATRONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM # B" STAPLES SHOULD BE PLACE THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE, PATTERN.

4. THE EDGES OF PARALLEL RECP'S MUST BE STAPLED WITH APPROXIMATELY $2^{\prime\prime} - 5^{\prime\prime}$ overlap depending on RECP'S width. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STARE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP'S.









APPENDIX C

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Geotechnical Report



15 December 2005

Mr. Mark Morrison Mark K. Morrison Associates Ltd. 242 West 30th Street, Suite 403 New York, NY 10001

Re: Geotechnical Investigation Contract X288-102M Reconstruction of Bronx River Park – East 180th Street to East Tremont Avenue Bronx, NY Langan Project No. 5649301 David T. Gockel, P.E., P.P. George E. Devick, P.E. George P. Kellay, P.E. Michael A. Semeraco Jr., P.E. Nicholas De Rose, P.G. Andrew J. Clancla, P.E. George E. Leventis, P.E. Rudolph P. Frozi, P.E. Ronald A. Fuerst, C.L.A.

Roger A. Archabal, P.E. Gregory L. Blesladecki, P.E. Gerard M. Coscia, P.E. Colleen Costello, P.G. Michael E. Colreau, P.E. Gregory M. Eliko, P.E. Michael M. Goldstein Cristina M. González, P.E. Sam B. Ishak, M.C.S.E. William G. Lolhian, P.E. John J. McElroy, Jr., Ph.D., P.E. John D. Planle, P.E. Alan R. Poeppel, P.E. Joseph E. Romano, P.L.S. Leonard D. Savino, P.E. Steven Ueland, P.F. Gerald J. Zambrella, C.E.M.

Jorge H. Berkowitz, Ph.D. Richard Burrow, P.E. David J. Charette, P.W.S. Steven Clambruschini, P.G., L.E.I. Daniel D. Disarlo, P.E. Edward H. Gelbert, M.S. Christopher M. Hager, P.E. Joel B. Landes, P.E. Natthew E. Meyar, PE. R. S. Muzall, M.S. Richard R. Steines, P.E.

Dear Mr. Morrison:

We are pleased to submit this letter report presenting the results of our geotechnical investigation for the above referenced project. The purpose of this investigation was to determine the of the subsurface soil condition, and provide geotechnical design recommendations for the proposed work. A summary of our findings and our preliminary recommendations are presented herein.

SITE AND PROJECT DESCRIPTION

The project site comprises an existing recreational park and walkway that runs along the west bank of the Bronx River between East 180th Street and East Tremont Avenue in the Borough of Bronx, New York. A site location map is presented in Figure 1.

The site is presently occupied by a 4 ft wide asphalt walkway, trees and shrubs, and a playground. The Bronx River Arts Center (Arts Center) borders the park and is located towards the southern end of the park. There is an existing brick retaining wall at the playground that is to be demolished. There is also an existing "retaining wall" constructed of tires that runs along part of the river bank in the vicinity of the Arts Center that will be removed and replaced by a

21 Penn Plaza, 360 West 31st Street, 8th Floor New York, NY 10001 T: 212.479.5400 F: 212.479.5444 www.langan.com New York, NY . Dovlestown, PA . Elmwood Park, NJ . Miami, FL New Haven, CT 1.00 Philadelphia, PA . Frenton, NJ

new wall/ stabilized embankment. The site also has a low level bridge that carries subway lines over the river, and is adjacent to the Arts Center. These structures are shown in Figure 1.

The general topography of the site slopes down from west to east (towards the Bronx River) and ranges in elevation from about el+17 to el+3 Borough President of Bronx Datum (BPBD)¹. The existing topographic information is based on the site survey prepared by Langan Engineering dated March 2005.

The proposed development consists of the reconstruction of the park including a new walkway and water edge treatment. The work will include the construction of a new retaining wall along the walkway from East 180th Street, south, to the existing playground area, and a new embankment/wall along the river near the Arts Center to replace the tires. Other work in the park will include the removal and replacement of the existing lighting and also the construction of a new water fountain.

FIELD INVESTIGATION

The field investigation consisted of drilling three borings, identified as B-1 through B-3, and excavating five test pits, identified as TP-1 through TP-5. The borings and test pits were located along the length of the park as shown in Figure 2.

Test Borings

The test borings B1 through B-3 were drilled on 21 November 2005 by Jersey Boring and Drilling using a Klemm KR 704 limited access rig. The borings were advanced to depths ranging between 8 ft and 16 ft using 3 inch O.D. hollow stem augers; boring B-3 was terminated at 8 ft due to an obstruction. A standard 2 inch O.D split spoon sampler was used to obtain soil sample. Soil samples were obtained continuously over the depth of the boring. The Standard Penetration Test (SPT) was performed as part of the sampling procedure and the SPT 'N' values were recorded by our field engineer. The borings were backfilled upon completion using drill cuttings. Boring logs are presented in Appendix A.

¹Elevations are referenced to Borough President of Bronx Datum which is 2.608 ft above the National Geodetic Vertical Datum (Mean Sea Level at Sandy Hook, NJ 1929). (BPMD=USGS-2.608)

Test Pits

The test pits TP-1 through TP-5 were excavated on 21 November 2005 by Mike's Exterior Contracting Corp. using a small rubber-tracked excavator. The test pits were excavated to investigate; (1) the existing tire "retaining wall", (2) the type and condition of the foundation of the Arts Center, and (3) the general soil conditions. Once the excavations were complete, the test pits were inspected by a Langan engineer who produced sketches and field-classified representative soil samples according to the NYCBC. Photographs of the test pit excavations are presented in Appendix B.

Test pits TP-1 and TP-2 were excavated between the Arts Center and the tire retaining wall along the river. The pits were approximately 3 ft wide by 8 ft long; the excavation was stopped at about 8 ft below ground surface (el -1). An illustration of the typical conditions encountered in test pits TP-1 and TP-2 is presented in Appendix B.

Test pit TP-3 was excavated in the vicinity of the playground adjacent to the walking path. The pit was approximately 3 ft wide by 6 ft; the excavation was stopped at about 8 ft below ground surface (el +1).

Test pit TP-4 was excavated just off of the walking path, about 130 ft south of the park entrance on E 180th Street. The pit was approximately 3 ft wide by 6 ft long; the excavation was stopped at about 8 ft below ground surface (el +7).

Test pit TP-5 was excavated at the location of boring B-3 to investigate the nature of the obstruction encountered during drilling. The pit was approximately 3 ft wide by 5 ft long; the excavation was stopped at about 8 ft below ground surface (el +10).

SUBSURFACE CONDITIONS

The subsurface materials encountered in the borings and test pits consisted of fill material overlying fine to coarse sands. Soft silty clay was encountered in test pits TP-1 and TP-2. The subsurface conditions are described in more detail below.

Fill Material [11-65]

Fill material was encountered in all borings and test pits. The fill generally consisted of silty coarse to fine sand with varying amounts of brick, cobble and boulder sized rock fragments, steel, and garbage. Roots and other organic material were observed in this layer. Test pit TP-5 revealed a high concentration of cobble and boulder sized rock fragments throughout the depth

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of this excavation. The presence of the cobbles and boulders explains the difficulty in drilling boring B-3.

The fill extended to depths ranging from 6 ft to 12 ft below ground surface. SPT N values in the fill layer ranged from 6 to over 100 blows/ft, with an average N value of 23 blows/ft.

Sand [7-56 & 8-65]

Underlying the fill material in borings B-1 and B-2 was a gray-brown coarse to fine sand with varying amounts of silt and gravel fragments. This layer was encountered at depths of 12 ft (el +3) and 9 ft (el +4) in B-1 and B-2 respectively. Both borings were terminated in this layer. SPT N values in the sand layer ranged from 19 to over 100 blows/ft. indicative of highly variable material. This layer was not encountered in any of the test pits.

Silty Clay [10-65]

Excavation for test pits TP-1 and TP-2 revealed a layer of soft black silty clay. This layer was encountered at depth of 6 ft (el +1) in both excavations. The silty clay is likely to be river sediment. Both excavations were terminated in this layer due to collapse of the pits under the inflow of groundwater. This layer was not encountered in any of the other test pits or borings performed north of this area.

Groundwater

Groundwater was observed in test pits TP-1 and TP-2 at about 7 ft below ground surface (about el 0). Groundwater was not observed in any of the other test pits. Groundwater was indirectly observed during soil sampling in borings B-1 and B-2 at about 12 ft and 10 ft below ground surface (el+3).

Groundwater levels can be expected to be at about the level of the Bronx River in this area.

EXISTING STRUCTURES

Arts Center

Test pits TP-1 and TP-2 were excavated across the existing path between the tire retaining wall and the Arts Center, exposing the Art Center foundation. The foundation of the Arts Center consists of stacked stone blocks that extend downward from the existing grade to a depth of about 6 ft. The stone footing steps out about 6 inches from the face of the building at this depth and extends down by another foot and stops at about 7 ft below ground surface (el 0).

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Tire "Wall"

The tires that form the retaining wall along the bank of the river were observed in test pits TP-1 and TP-2. The tires have been placed in horizontal layers and filled with soil and rubble to form the embankment. The tires were observed throughout the depth of the excavation (8 ft). The bottom of the tire "wall" could not be determined due to collapse of the excavations and inflow of groundwater.

RECOMMENDATIONS

The following provides our preliminary recommendations for the new walking path retaining wall and removal and replacement of the existing tire wall. Other geotechnical related design parameters for sub-grade preparation, backfill and compaction, and wall drainage are also presented.

Once the retaining wall type has been finalized, we can provide design drawings and construction specifications addressing retaining wall construction requirements; we would be pleased to provide a proposal if requested.

Walking Path Retaining Wall

We have reviewed the proposed line of the retaining wall along the walking path. The maximum retained height is expected to be about 5 ft. We have considered two solutions that could be utilized in the design and construction of the walking path retaining wall.

1. Mechanically Stabilized Earth (MSE) Wall

A mechanically stabilized earth wall uses geo-grid products to reinforce the soil and modular block facing units. These walls are attractive and can be easily constructed in the curved alignment currently envisioned. However, this option is likely the more expensive of the two choices. A diagram of a typical MSE wall is presented in Figure 3.

Construction will involve the excavation of the existing fill to a depth of about 8 ft behind the wall to facilitate the installation of the geo-grids. Backfilling behind the wall with granular soil and geo-grids proceeds as the wall is built higher. The existing fill should be sorted to remove roots, large rock fragments and other unsuitable materials prior to reuse as backfill. The existing fill may not be suitable (organics, clay/silt, debris) and additional granular fill may be required. Unsuitable material must be properly disposed off site.



2. Gabion Wall

A gabion wall is constructed from wire mesh baskets that are filled with angular cobble sized rock. Such walls are simple and quick to construct and can be readily built to the curved alignment proposed. The walls are flexible and free draining and require minimal maintenance. A gabion is not as "attractive" as a MSE wall, however the wall could likely be landscaped if desired to hide the wall. A diagram of a typical gabion wall is presented in Figure 4.

We feel that a gabion wall would provide a simple and cost effective solution with a relatively natural looking finish. However, if a more "finished" hardscape look is desired, the MSE wall can be used for a cost premium. Either wall option should require minimal maintenance.

Presuming that the on-site soils are approved and utilized for backfill behind the gabion wall, we recommend the following design parameters to be used in design. This assumes the retaining wall backfill meets the minimum requirements for approved compacted fill discussed below.

Unit Weight of Soil	Friction Angle	Active Earth Pressure	Passive Earth Pressure			
$\gamma(\mathbf{pcf})$	ф	Coefficient (K _a)	Coefficient (K _p)			
120	32*	0.31	3.25			

A gabion wall is free draining and hydrostatic pressures are unlikely to develop behind the wall provided the spaces between the rocks is maintained and prevented from becoming blocked with soil. A geo-fabric should be placed behind the wall between the soil backfill and the wall to prevent the migration of soil into the void spaces. An MSE wall should be designed with a drainage "chimney" at the back of the reinforced zone with a drain pipe and weep holes in the face of the wall. The designer should allow for a minimum surcharge load of 250 psf, and should consider higher surcharges if heavy vehicle access (fire trucks or construction equipment) is anticipated.

Tire Retaining Wall

We understand that the existing tire retaining wall will be removed or aesthetically improved as part of the project. A diagram showing the typical existing conditions is presented in Figure 5. The following discusses several issues and preliminary options for the work.

Complete removal of the tire wall would require temporary diversion of the Bronx River and dewatering to provide a relatively dry working area. Further, the silty clay material at the base of

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the tires is sensitive to exposure to water. If the clay is exposed to water it will further soften and result in difficulties constructing a replacement wall. The stability of the cut slope excavation could also affect the stability of the existing Arts Center building foundations. Therefore, we advise against complete removal of the tires.

We recommend that the new water edge treatment consist of a "flexible" slope or wall. A "flexible" design will allow settlement without structural damage or loss of stability. This could be accomplished by a rip-rap slope or gabion wall. In general, a slope would be the least expensive.

We recommend leaving a portion of the tire wall in-situ and improving the aesthetics by covering it with a rip-rap slope or gabion wall. Both options provide a more natural appearance and can be planted to hide the material further. A sketch illustrating partial replacement by a rip-rap slope is presented in Figure 6; a sketch illustrating partial replacement by a gabion wall is presented in Figure 7. Design should be completed using the parameters provided previously.

Waterfront Permitting

Please note, the proposed tire removal and embankment/gabion construction will cause disturbance of the waterway. Langan is presently reviewing the required permits from U.S. Army Corps of Engineers (USACE) and the New York State Department of Environmental Conservation (NYSDEC). When the design of the proposed work along the river bank has been finalized, Langan will file a Joint Permit Application to USACE and NYSDEC to obtain the required permits.

Backfilling and Structural Fill

site that meets the Existing fill and natural soil excavated from the requirements/recommendations given below can be reused for structural fill and general backfill. The existing fill can be re-used after screening to remove wood, organics and other deleterious materials, and removal or crushing of cobble to boulder size materials. All fill deemed unsuitable by the onsite Geotechnical Engineer should be segregated and used in landscaped areas or disposed of off site.

Structural fill for embankments and retaining wall backfill should be placed in lose lifts not exceeding 12 inches in thickness and compacted using a minimum 5-ton static-drum- weight. Smaller compaction equipment and thinner lifts can be used in areas of limited access and maneuverability and adjacent to retaining walls. Each lift of structural fill should be compacted

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to a minimum of 95% of its maximum dry density, determined in accordance with ASTM D1557, Modified Proctor Test. In landscaping areas, the compaction criteria can be reduced to 90% of the materials maximum dry density (ASTM D1557). No fill material should be placed on areas where free water is standing, on frozen subsoil areas, or on surfaces which have not been approved by the Geotechnical Engineer.

All sub-grade areas should be level and proof-rolled with at least 6 coverage's of a double drum walk behind roller, such as a Bornag BW75 or equivalent. Should any soft or unstable areas be detected by the proof-rolling, we expect the most efficient method of stabilization would be to remove the affected area and replace the excavated materials with approved soils.

In accordance with the NYCBC, the Geotechnical Engineer must perform controlled inspection of fill placement and compaction. Compaction of all fill should be verified by the Geotechnical Engineer as meeting the above criteria through visual inspection and the performance of inplace density tests (nuclear moisture-density testing). Langan would be pleased to provide this service during construction.

Groundwater Control

Groundwater may be encountered during excavation. The water should be pumped from the excavation and filtered through a silt bag before being discharged. We recommend that a turbidity curtain be placed around areas where work is being performed next to the river.

LIMITATIONS

The conclusions and recommendations given in this report are based on subsurface conditions inferred from borings and test pits at specific site locations. Recommendations given are contingent upon one another and no recommendation should be followed independent of the others. This report has been prepared to assist the Architect and Structural Engineer in the design. It is intended for use based on the provided information. Any changes in structures or locations should be brought to our attention so that we may determine how such changes may affect our recommendations.

This report was produced for the proposed reconstruction of Bronx River Park (Contract X288-102M) between East 180th Street and East Tremont Avenue at Borough of Bronx, New York. Langan Engineering and Environmental Services, P.C cannot assume responsibility for the use of this report to generate geotechnical design other than those at the specific site addressed in this report.

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CLOSURE

We appreciate the opportunity to work with you on this project. If you have any questions, please do not hesitate to contact our office.

Very truly yours,

Langan Engineering and Environmental Services, PC

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Jamie Rodger. Senior Staff Engineer

Marc J. Gallagher, P.E.

Associate

MJG:jr

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NEW JERSEY

	SITE LOCATION MAP								
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The Reconstruction of Bronx River Park	
EXISTING TIRE WALL	





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<u>B-7</u> SHEET 1 OF <u>2</u> LOG OF BORING PROJECT BRONX PROJECT NO. RIVER PARK 5649301 ELEVATION AND DATUM + 15 100ATION 960-1001 E. 179th ST. BRONX, NY BPBD DATE FINISHED 11 /21 /05 DATE STARTED DRILLING AGENCY JERSEY BORING COMPLETION DEPTH ROCK DEPTH DRILLING EQUIPMENT KLEMM KRJOH SIZEAND TYPE OF BIT 3TH HOLLOW STEM AUGER NO. SAMPLES DIST. 8 UNDIST. CORE WATERLEVEL COMPL 24 HR. FIAST CASING FOREMAN CASING HAMMER WEIGHT DROP CANDIDO CRUZ 2 TN 0.0. STOON SAMPLER SPLET INSPECTOR AL BONURA 30 EN WEIGHT 140\$ OROP SAMPLER HAMMER S. F.L. SAMPLES MAT. SYMBOL NYCRC CLASS REMARKS DEPTH RECOV. FT. PENETR. RESIST BLO IN. DOLOC TYPE SAMPLE DESCRIPTION (DRILLING FLUID, DEPTH OF CASING, CASING BLOWS, FLUID LOSS, ETC.) SCALE TFOR SUE KHEAD 3 ሳላ 1 2 2 2 4 TRAIN No Recovery 4 6047 Borehole located on 3 Guerheng Strabus welkway) Asphalt Valkwey Asphalt, Brick so sand 2 2 2 4 and gravel [FILC] 3 -6 -Started breaking through asphalt with split spoon @ 3:20pm (anger head terth Asphalt, Brick, so sand and gravel DEILL] 5.5 are worn out) 17 BE. dry cof SAND, 27-Took S-1 OFT-2FT 4-Took 5-2 2FT-4FT so. Asphalt, rock fragments, y 2-5 9-3 4FT-6Ft tr, Brick [FILL] -Took 10 - Took 5-4 6 ++-8++ 12 -Took 5-5 PF+- 10F+ br. dry c-f SAND, 2.5 so. Asphalt, so. Brick, so. 12 Rock fragments [FILL] 4 10 Br. dry c-f SAND. -Took 5-6 10++-12FT so, Brick, rock fragments 3334 3 -11-] [FILL] 2 ·12 · -Took S7 12# - 14 FT 10 Gray- Br. moist c-f silty SAND SS 9 and Gravel, rock fragments . 13 - 12 10

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	LOG OF BORING		B-2	SH	EET 1	OF	
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DRULLING EQUIPMENT RLEMM KR 70	<u>-</u> Ч	-	OMPLETION DEP	о у Гн 77	ROCK DEPTH		
SIZE AND TYPE OF BIT 3 EN Hollow : 5-	·m Anger		NO. SAMPLES	DIST. 6	UNDIST.	CORE	
CASING		1	WATER LEVEL	FIRST	COMPL	24 HR.	
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DAILLING EQUIPMENT KLEM KR704	-	-	COMPLETIO	NDEPTH	ROCK DEPTH	
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CASING WEIGHT	DROP	×	FOREMAN	VEL FIRST		24 MM.
SAMPLER 2TH O. D. SPLIT	SPOON		INSPECTOR	CANDIDO	CRUZ	•
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APPENDIX D

APPENDIX D





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Date Description No.		Project BRONX RIVER (WEST FARMS) PARK GTY	Drowing Title	Project No. 5649301 Date 29 NOV 2005 Scole NTS Drn. Ey X Lost Revised	ng No. 1.00



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Plate 2: South end of project site, taken facing south. Bronx River Arts Center Building on right.



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Plate 3: Shoreline stabilized with tires, taken facing southeast



Plate 4: Looking upstream from southern end of site. Taken facing northeast

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Plate 5: Looking at bank facing southern end of site. Taken facing southeast



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Plate 6: Southern end of project site, Bronx River Arts building on right. Taken facing south



Plate 7: Tremont Avenue building; southern extent of site. Taken facing south.



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Plate 8: Southern end of project site, Bronx River Arts building on right. Taken facing south



Plate 9: Western extent of site, taken facing north



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Plate 10: Western extent of site, taken facing north



Plate 11: Eastern extent of site, taken facing east



Plate 13: Existing terrace structure; Lambert Houses in background. Taken facing northwest.



Plate 14: Existing pathway, Lambert Houses in the background. Taken facing northwest



Plate 15: Existing pathway; taken facing southwest.



Plate 16: Taken facing northwest, looking towards western entrance of park



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Plate 17: Taken facing east on eastern extent of site looking down towards Bronx River



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Plate 18: Taken facing east on eastern extent of site looking down towards Bronx River



APPENDIX E

APPENDIX E

Relevant communications with the New York State Historic Preservation Office and the New York City Landmarks Preservation Commission

NYC LPC

THE CITY OF NEW YORK LANDMARKS PRESERVATION COMMISSION 1 Centre St., 9N, New York, NY 10007 (212) 669-7700

ENVIRONMENTAL REVIEW

NYC PARKS/106-X

12/05/06

PROJECT NUMBER

DATE RECEIVED

PROJECT

BRONX RIVER/WEST FARMS PK: 3140/17; 3141/1,14

[X] 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
- [X] May be archaeologically significant; requesting additional materials

COMMENTS

LPC review of archaeological sensitivity models and historic maps indicates that there is potential for the recovery of remains from 18th Century, 19th Century and Native American occupation on the project site as indicated in NYC DPR Bronx River Park, West Farms, Contract #X288-102M, November 17, 2006. Accordingly, the Commission recommends that an archaeological documentary study be performed for this site to clarify these initial findings and provide the threshold for the next level of review, if such review is necessary (see CEQR Technical Manual 2001). Review of precise project design ground construction is also needed to determine potential impacts / effects on potential archeological resources. Cc: SHPO re:05PR05909.

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SIGNATURE

DATE

12/08/06

CC.SOPO 05 PR.05909



Bernadette Castro Commissioner New York State Office of Parks, Recreation and Historic Preservation Historic Preservation Field Services Bureau Peebles Island, PO Box 189, Waterford, New York 12188-0189

518-237-8643

December 12, 2005

Michael Audin Langan Engineering & Environmental Services River Drive Center 1 Elmwood Park, New Jersey 07407

Re:

CORPS, DEC

Bronx River Park/West Farms Proposed Stabilization of Embankments/Bike & Pedestrian Paths/Landscaping Bronx, Bronx County 05PR05909

· . ÷

Dear Mr. Audin:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966.

Based upon this review, it is the SHPO's opinion that your project will have No Effect upon cultural resources in or eligible for inclusion in the National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

المان المراجعة في الان المانية أكراف المراجع المانية المراجع في المحكوم المحكومية بالمحكون الحقي المانية. وما يراجع المان المانية المانية المانية المانية المحكمة بالمراجعة المحكومية المحكومية المحكومية المحكومية المحك

Ruth H. Rupont

Ruth L. Pierpont Director

RLP:bsa

An Equal Opportunity/Affirmative Action Agency



29 November 2005

Ms. Kathy Howe Historic Preservation Specialist New York State Historic Preservation Office Peebles Island State Park PO Box 189 Waterford, NY 12188-0189

Re: Regulatory Review-Bronx River Park Bronx River between Tremont Avenue and East 180th Street Langan Project No. 5649301

Dear Ms. Howe:

Langan Engineering and Environmental Services Inc., has been retained by the New York City Parks Department to reconstruct part of the park and stabilize the embankments along the Bronx River. Langan is asking for a review from your office as the work is being conducted under a United States Army Corps of Engineers Nationwide Permit #13 and a New York Department of Environmental Conservation Protection of Waters permit. In both instances Langan is asking for comments from your office as to the likelihood of any adverse effects to potential archaeological and historic resources.

SITE LOCATION AND DESCRIPTION

Bronx River Park – West Farms is located along the west bank of the Bronx River between Tremont Avenue and East 180th Street (Figure 1). The New York City Department of City Planning identifies the park property as Block 3141, Lots 1, 14, and 17. An elevated subway line bisects the park and the Lambert Houses border the west side of the northern half of the park. Bronx Park and Bronx Zoo lie on the north side of East 180th Street across from the north entrance to the park. Photographs of the project site are provided.

Portions of the existing pathway are experiencing erosion, sections of the retaining wall are failing, and there are numerous dead trees along the shoreline of the river. In addition, illegal dumping often takes place along the river.

 River Drive Center 1
 Elmwood Park, NJ 07407
 T: 201.794.6900
 F: 201.794.0366
 www.langan.com

 Elmwood Park, NJ
 •
 Doylestown, PA
 •
 Miami, FL
 •
 New Haven, CT
 •
 New York, NY
 •
 Philadelphia, PA
 •
 Trenton, NJ

David T. Gockel, P.E., P.P. George E. Derrick, P.E. George P. Kelley, P.E. Michael A. Semeraro, Jr., P.E. Nicholas De Rose, P.G. Andrew J. Clancia, P.E. George E. Leventis, P.E. Rudolph P. Frizzi, P.E. Ronald A. Fuerst, C.L.A.

Roger A. Archabal, P.E. Gregory L. Biesladecki, P.E. Gerard M. Coscla, P.E. Colleen Costello, P.G. Michael E. Cotreau, P.E. Gregory M. Elko, P.E. Michael M. Goldstein Cristina M. González, P.E. Sam B. Ishak, M.C.S.E. William G. Lothian, P.E. John J. McElroy, Jr., Ph.D., P.E. John D. Plante, P.F. Alan R. Poeppel, P.E. Joseph E. Romano, P.L.S. Leonard D. Savino, P.E. Steven Lieland, P.F. Gerald J. Zambrella, C.E.M.

Jorge H. Berkowitz, Ph.D. Richard Burrow, P.E. David J. Charette, P.W.S. Steven Ciambruschini, P.G., L.E.P. Daniel D. Disario, P.E. Edward H. Geibert, M.S. Christopher M. Hager, P.E. Joel B. Landes, P.E. Matthew E. Meyer, P.E. R. S. Munaii, M.S. Richard R. Steiner, P.E. Regulatory Review-Bronx River Park Bronx River between Tremont Avenue and East 180th Street Langan Project No. 5649301 Page 2 November 29, 2005

PROJECT DESCRIPTION

The Reconstruction of Bronx River Park – West Farms will include the construction of an 8 to 10-foot wide asphalt and concrete bike and pedestrian path along the Bronx River and an onstreet bicycle route along East 180th Street from the river to Morris Park Avenue. The eroding bank will be stabilized and the river's edge will be cleared and reconstructed with landscaping, fencing, lighting, site furniture, planting and signage. The elevated subway columns and bases will be removed from the park.

A variety of bank stabilization measures, including retaining walls, rip-rap, and automobile tires, have been used in the past to stabilize sections of the Bronx River shoreline within the boundaries of the park. Different measures have been implemented in different sections of the shoreline and not all of these measures have been successful. The proposed Reconstruction of Bronx River Park involves the replacement of most of the existing bank stabilization structures and the implementation of a more uniform approach to stabilizing the shoreline within the park. The existing deteriorated retaining walls will be removed and a new, longer retaining wall, which will extend from East 180th Street to Tremont, will be constructed. In addition, geotextile fabric and rip-rap will be placed along the length of the shoreline within the park. The enclosed drawings show the proposed bank stabilization activities.

Langan has reviewed the NYSHPO GIS map and did not find any historic resources on the subject property. However, the closest National Register property, the New York, Western and Boston Railroad Administration Building is located approximately .20 miles from the project site. Given that the scope of work involves stabilizing the shoreline along the Bronx River, this project will have no effect on this National Register property. In addition the project area is not located within an archaeological sensitive area.

Langan anticipates that there will be No Adverse Effect on historic and cultural resources on the subject property.

Sincerely,

Langan Engineering and Environmental Services, Inc.

hel.

Michael Audin Archaeologist

MA:

cc: Dave Charette

Enclosure(s): NYSHPO Project Review Form Site Location Maps NYSHPO GIS Map Photographs

NJ Certificate of Authorization No: 24GA27996400 C:Documents and Settings/grodinguez/Local Settings/Temporary Internet Files/OLK62/SHPO Determination1.doc

