

Background History and

Appendix B.2: Review of Previously Conducted Surveys

A. CULTURAL RESOURCES BACKGROUND HISTORY

PREHISTORIC CONTEXT

INTRODUCTION

Archaeologists have divided the time between the arrival of the first humans in northeastern North America and the arrival of Europeans more than 10,000 years later into three prehistoric periods: Paleo-Indian (12,500-10,000 years before present [BP]), Archaic (10,000-2,700 BP), and Woodland (2,700 BP–AD 1500). These divisions are based on certain changes in environmental conditions, technological advancements, and cultural adaptations, which are observable in the archaeological record. With the exploration and settlement of the New Jersey region by Europeans from 1500 to 1700 AD (the Contact Period), the Native American population experienced a period of greatly accelerated change and stress.

PALEO-INDIAN PERIOD (12,500-10,000 BP)

Human populations did not inhabit the area that is now modern New Jersey until approximately 12,500 BP, after the glaciers retreated as early as 13,000 to 14,000 BP (Lenik 1999). These new occupants included Native American populations referred to as Paleo-Indians, who were present in the area long before the Munsee, a branch of the Delaware or Lenape Native Americans would inhabit the parts of present-day New York, New Jersey, Pennsylvania, Delaware, and Maryland in later years (Grumet 1981).

The Paleo-Indians most likely exploited a wide variety of resources provided by their environment. It has been suggested that they did not only actively hunt the large mammals that roamed about the region (mammoths, mastodons, etc.), but they also hunted and trapped smaller animals and supplemented their diet with fish and gathered plants (Cantwell and Wall 2001).

There was a very distinctive Paleo-Indian style of lithic technology, typified by skillfully crafted stone tools, such as fluted projectile points used for hunting. They were often made of high-quality chert, and other lithic materials. Other stone tools manufactured at this time included knives, scrapers, drills, and graters. Wood, ivory, and other materials were also used for the manufacture of composite tools, such as hunting spears.

Archaeological evidence suggests that the Paleo-Indians were likely highly mobile hunters and gatherers who lived in small groups of fewer than 50 individuals (Dincauze 2000) and did not maintain permanent campsites. In addition, most of the Paleo-Indian sites that have been investigated were located near water sources.

It is because of the close proximity of Paleo-Indian sites to the coastline that so few of them have been preserved in New Jersey and neighboring coastal states. It is thought that most sites

dating to this period are now submerged as a result of rising sea levels caused by melting glaciers (TLC 2005). Of the few Paleo-Indian sites that have been found in the region, nearly all have been found on Staten Island. Port Mobil, in southwestern Staten Island, is located on high ground overlooking the Arthur Kill waterway. Due to heavy disturbance in the area, the site has yielded only a small collection of fluted points and other stone tools characteristic of the period. Paleo-Indian sites were also found along the eroding shoreline 500 yards south of the Port Mobil site, and at the Cutting site in the Rossville section of Staten Island (AKRF 2006).

ARCHAIC PERIOD (10,000-2,700 BP)

The Archaic has been sub-divided into three chronological segments, based on trends identified in the archaeological record which reflect not only the ecological transformations that occurred during the Archaic, but the cultural changes as well. These have been termed the Early Archaic (10,000–8,000 BP), the Middle Archaic (8,000–6,000 BP) and the Late Archaic (6,000–2,700 BP) (Cantwell and Wall 2001). The Late Archaic is sometimes further divided to include the Terminal Archaic period (3,000-2,700 BP).

The aforementioned environmental transformations included the continued post-glacial warming trend, the extension of hardwood forests from the south, and a decrease in glacial runoff which resulted in the creation of lakes and other small bodies of water. There was a subsequent migration of new animal and plant species into the area, while the herds of large mammals traveled north, eventually dying out. The new surroundings attracted smaller animals, such as rabbit, turkey, waterfowl, and white-tailed deer.

As the Archaic progressed and the number of plant and animal species inhabiting the area increased, the size of the human population did as well. In general, archaeologists have shown that Archaic Native American sites were most often located near water sources. The abundance of food resources which arose during this period allowed the Archaic Native Americans to occupy individual sites on a permanent or semi-permanent basis, unlike their nomadic Paleo-Indian predecessors. These individuals migrated on a seasonal basis within specific territories and consistently returned to and reoccupied the same sites.

The arrival of new food sources allowed the human population to expand their subsistence strategies, but at the same time forced them to develop different technologies that would allow such resources to be exploited. Perhaps the most important of these developments was the advent of fishing technology, which occurred during the Middle Archaic in response to an increasing dependence on the area's marine resources. The new technology included stone hooks and net sinkers. In addition, the influx of nut- and seed-bearing foliage resulted in the development of stone mortars and pestles as well as stone axes, used to process plant material.

In order to successfully hunt the smaller game animals that had established themselves in the region, narrower spear points and knives were manufactured, along with weighted spear throwers. Domestic technology was advanced as well, with the development of a wider variety of hide scrapers and, later in the period, the origin of bowls made from steatite or soapstone. Tools continued to be crafted in part from foreign lithic materials, indicating that there was consistent trade among Archaic Native American groups from various regions in North America throughout the Archaic.

Due in part to rising sea levels and to the recent rapid development of the area (Boesch 1994), few Early Archaic sites have been identified in New Jersey and New York (TLC 2005: 40). Most of those that have been identified in the area are located on Staten Island, including Ward's

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Point, Richmond Hill, the H.F. Hollowell site, and the Old Place site. Sites such as Ward's Point- a domestic habitation location which due to rising sea levels was originally inland- tend to be deep and stratified and have yielded stone tools related to cooking, woodworking, and hide processing. The many years of constant occupation caused the artifacts to be deeply buried under more recent debris deposits (Cantwell and Wall 2001). However, at the Old Place Site, the only artifacts discovered, stone tool assemblages, were found at relatively shallow depths of around 42 inches (Ritchie 1980).

An Early Archaic site, the Black Creek Site, was identified in the 1990s in the Vernon Valley in Sussex County, northwestern New Jersey. The site is located on a 40-acre peninsular landform within a post-glacial lake bed. Over 15,000 artifacts ranging from the Early Archaic to the Contact Period were recovered including stone tools, projectile points, and pottery sherds.

Few Middle Archaic sites in the region have been found. The majority of those that have been identified consist of large shell middens, which are often found near major water courses such as the Hudson River, although stone points have also been found in such locations.

Unlike Early and Middle Archaic sites, many Late and Terminal Archaic sites have been found in the region. Late Archaic habitation sites are often found in areas of low elevation near water courses and temporary hunting sites are often located near sandy areas. Multiple Late Archaic sites have been found on Staten Island, including the Pottery Farm, Bowman's Brook, Wort Farm, and Arlington Avenue sites, among others (Boesch 1994).

WOODLAND PERIOD (2,700 BP-AD 1500)

The Woodland period represents a cultural revolution of sorts for the Northeast. During this time, Native Americans began to alter their way of life, focusing on a settled, agricultural lifestyle rather than one of nomadic hunting and gathering. Social rituals begin to become visible in the archaeological record at this time. There have been many elaborate human and canine burial sites identified from this period. The first evidence of smoking has also been found—stone pipes have been uncovered at Woodland sites—and it was at this time that pottery began to be produced.

In general, there was a greater emphasis placed on composite tools during the Woodland period. While stone scrapers, knives, and hammerstones were still in use, there was an increased use of bone, shell, and wood in tool making. Furthermore, the development of bows and arrows revolutionized hunting practices. Fishing continued to be important to the local economy and wooden boats and bone hooks were often utilized (Historical Perspectives, Inc. 2005). Many tools were still made from imported materials, indicating that the trade networks established earlier were still being maintained (Cantwell and Wall 2001).

Pottery was introduced into Native American society early in the Woodland period and by the time of European contact in the 1500s, well-crafted and elaborately decorated pottery was being manufactured. Like the Archaic period, the Woodland has been divided into Early, Middle, and Late sections, which differ mostly based on the style of pottery which was produced at that time. Woodland pottery had simple beginnings; the first examples were coil pots with pointed bases, which were made with grit temper. These were replaced during the Middle Woodland period by shell-tempered vessels bearing a variety of stamped and imprinted decorations. As the period drew to a close, the decorative aspect of the pottery was further augmented with the addition of intricate ornamental rims (LBG 2004).

Woodland-era sites across North America indicate that there was an overall shift toward full-time agriculture and permanently settled villages. However, Archaic sites in New York City indicate that the Native Americans there continued to hunt and forage on a part-time basis. This was most likely due to the incredibly diverse environmental niches that could be found across the region throughout the Woodland period and it is possible that the Native Americans residing across the river in New Jersey exhibited similar behavioral patterns (Cantwell and Wall 2001, Grumet 1995). Nevertheless, Woodland societies were considerably more sedentary than were their predecessors. There was, however, some farming of maize, beans, squash, and tobacco. The development of pottery, increasingly complex burial sites, and the presence of domesticated dogs are all consistent with sedentary societies, which have a close association with a particular territory or piece of land.

Woodland sites, like those of the Paleo-Indian and Archaic periods, are usually found alongside water courses. They were often occupied for long periods of time, although there was still some seasonal migration that may have left them unoccupied for brief periods throughout the year.

Two possible Woodland-period sites were identified within two miles of the archaeological APE. These were identified by Dr. William L. Pyle in 1936, and have been recorded in the New Jersey State Museum site files as site numbers 26-Hd-7 and 26-Hd-8 respectively. The sites were located in Jersey City. Site No. 26-Hd-7 was described as being at the foot of the lake and north of the knoll in Lincoln Park, Jersey City. It was identified as a village or camp site located near a former spring. Pyle collected over 50 artifacts from the site, including projectile points, axes, pipes, and knives, with a date range estimated at 300 to 3,000 years BP. Site No. 26-Hd-8 was located at the foot of Williams, Boyd, Virginia, and Ege Avenues, south of Lincoln Park, in Jersey City, near the Hackensack River. Little information was recorded regarding this site.

CONTACT PERIOD (AD 1500-1700)

The Woodland period ended with the arrival of the first Europeans in the early 1500s. At that time, a division of the Munsee Indians known as the Hackensack Indians resided in the vicinity of the project area (Grumet 1981). The Hackensack have been described as “a numerous as well as a war-like group” whose territory extended as far inland as the Passaic River (Bolton 1975: 58). The group was friendly with their neighbors; the Raritan to the southeast and the Tappan to the north. It is possible that they shared their lands as far south as Staten Island with the latter group (Ibid).

Giovanni de Verazzano was the first European to view New York in 1524. However, Henry Hudson’s expedition to New York in 1609 marked the true beginning of European occupation in the area, and subsequently marked the beginning of violent encounters with the Native Americans. Shortly after Hudson’s men explored Staten Island and northern New Jersey (Lenik 1999), a skirmish ensued with the local Indians, resulting in the death of one of Hudson’s crewmen.

Because of this incident, the Native Americans in the region were extremely wary of Europeans. The first attempt at a permanent settlement in the area was known as “Pavonia,” located on the neck of land east of Newark Bay, in the vicinity of the modern towns of Jersey City and Bayonne; southeast of the project area. The land was granted in 1629 by the Dutch West India Company (WIC) to Michael Pauw (Paauw) (Stokes 1967). After five years of hostile encounters with the local Native Americans, he sold it back to the WIC for 26,000 guilders (Ibid). Although several Dutch farmers lived in the area in the 1630s and 1640s, as seen on the Manatus Map of

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1639, a successful permanent settlement was not established until 1660, when Bergen Village, near today's Jersey City, was founded (Lenik 1999).

Native Americans at first maintained the village sites they had established near water sources. As their trade with European settlers intensified, they became increasingly sedentary and the way of life once maintained by the Native Americans was thoroughly and rapidly altered. European guns, cloth, kettles, glass beads, and alcohol soon became incorporated into the Native American economy. While at first the Natives traded furs and pelts in exchange for European goods, maize (corn) quickly became an important commodity. Most Lenape groups grew corn at the sites of their permanent habitation sites as well as at seasonal campsites and soon Europeans began to rely on Native American agriculture (Becker 1999). Soon, maize began to "stabilize" the Native American economy and was a major factor in the increased sedentary behavior of local Indian tribes (Becker 1999: 45).

However, once the Europeans became more self-sufficient, and maize was no longer an important commodity, the Native American economy dwindled (Lenik 1999). In addition, the Native Americans suffered from the side-effects of European colonization: disease, alcoholism, and warfare. Fierce wars soon broke out between the Dutch and the Indians. This was most intense during the early 1640s when Dutch Director-General William Kieft ordered many ferocious and unprovoked attacks on the Native population. One of the more vicious attacks at this time occurred in 1643, when after a Dutch man was murdered by a Native American at the Pavonia settlement, the Dutch slaughtered a village of Native American refugees, including many Hackensack, in the middle of the night (Grumet 1981). While Kieft's war with the Indians continued in other parts of New Amsterdam, the Hackensack signed peace treaties in both 1643 and 1645 (Ibid).

The warfare was somewhat abated when Kieft was replaced by Peter Stuyvesant, who brought some stability to the area. However, the Native Americans were no match for the growing numbers of armed European settlers. With their populations quickly decreasing and the European demand for land increasing, the natives began to sell off their land in greater quantities. As land in the New York City region was sold to the Europeans, many displaced Native Americans joined the Hackensack in northern New Jersey. By 1700, the Hackensack and Tappan tribes had each been forced to retreat to the "upper reaches of the Hackensack and Passaic Rivers" until they had "virtually merged" (Grumet 1981: 13). They occupied the highland areas of northern New Jersey until the mid-18th century, at which time they were gradually forced further and further west (Grumet 1981: 13).

Multiple Contact-period archaeological sites have been identified in the region. Alanson Skinner and Max Schrabisch, in their 1913 report of archaeological sites in New Jersey, recorded 11 Native American fish weirs (traps) in the Passaic River (Lutins and DeCondo, 1999). Of these 11 weirs, the Fair Lawn/Paterson Fish Weir is still extant. Lutins and DeCondo, who investigated the structure in 1999, described it as a V-shaped stone wall constructed of boulders and river cobbles, spanning the entire width of the Passaic River (roughly 260 feet) north of the Fair Lawn Avenue Bridge near the city of Paterson.

HISTORIC-PERIOD CONTEXT

MEADOWLANDS LAND USE HISTORY

'The Meadowlands' refers to the tidal and freshwater wetlands surrounding the Hackensack and Passaic Rivers in northeastern New Jersey. A state geological survey in 1896 calculated the total

area covered by the Meadowlands as roughly 43 square miles from Hackensack to Elizabeth. The southern portion of the Meadowlands on the west side of Newark Bay was historically known as the Newark Meadows; while the remaining portion was known as the Hackensack Meadows. Today, much of the Meadowlands has been converted to dry upland, and only roughly 13 square miles of wetland remain.

The changing nature of the Meadowlands was brought about in part by environmental factors: a sharp rise in salinity over the last 200 years, for example, has occurred in part due to rising sea levels. However, human activities have also played a major role in the history and the physical decline of the Meadowlands. Human activities directly affecting the Meadowlands include: the extraction of natural resources; the alteration of water flow; land reclamation, land making, and development; and pollution by sewage, trash, or industrial waste. These uses have occurred, to varying degrees, from prior to European Contact through the present.

From the pre-Contact period through the late 19th century, inhabitants used the Meadowlands as a source of shellfish, fish, fowl, and other game. Newark Bay was famous for oysters, receiving seed oysters from the south and west to replenish stocks as they dwindled in the mid-19th century (NJ/NY Baykeeper 2006). From the 1660s through the 1920s, settlers cultivated and harvested salt hay in the area. Salt hay, used for livestock feed and bedding and as a packing material, was the basis of an important industry (Teal 1969: 40). “The founders of Newark introduced the practice of dividing the Meadowlands into long, narrow lots, which were allocated to the male heads of households. Owners were required to excavate small ditches (six feet wide and two feet deep) to identify property boundaries” (Marshall 2004: 7). Typically, salt hay was cut in autumn using scythes, and was harvested using rakes, pitchforks, and horses when the ground froze in winter. During the last quarter of the 19th century, harvesting fish and game from the Meadowlands was curtailed due to pollution and diminishing water flow. Salt hay production ceased in the early 20th century as regional agricultural patterns shifted and new materials were substituted.

Early settlers also exploited the Atlantic white cedar forests that once occupied large tracts of the Meadowlands, including the Hackensack riverfront in Kearny. The wood of the trees, which reached up to sixty feet tall, was extremely rot-resistant, and was ideal for boatbuilding, road construction, and shingle manufacture. During the 18th century, most of the country’s roofing shingles were made from New Jersey Meadowlands cedar. Not only were live trees extensively harvested, but buried fallen trees, sometimes several hundred years old, were “mined” from the below water-level in the preserving swamps (Sloane 1965: 15). By the late 18th century, the cedar forests in the Meadowlands had been all but decimated by the heavy lumbering, and while minor resurgences of growth occurred in later years, Atlantic white cedars no longer grow in the area. However, the stumps of the former forests are visible at low tide in certain portions of the Meadowlands (Sullivan 1998: 41).

The Hackensack and Passaic rivers were originally fresh enough in many locations that cattle could drink from them. A shift towards salinity over the course of the 19th and 20th centuries was brought about in part by numerous engineered projects that involved altering the rivers’ course. Construction of dams to create mill ponds, occurring as early as the late 1600s, diverted fresh water and diminished its presence in the Meadowlands. In the 1860s, the Hackensack Water Company began to construct a system of wells, pumping stations, and reservoirs along the Hackensack River to supply water to the cities of Hoboken, Weehawken, and Hackensack. In the early 20th century, larger-scale dams were constructed in the Hackensack River watershed as the local population expanded and required increased water supply. Also during the second half of

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the 19th century, the Jersey City Waterworks ran a pipeline between Kearny and Jersey City (located below ground in roughly the same location as the Belleville Turnpike within the APE, crossing the Hackensack River south of the APE near the PATH river crossing [Bien & Vermule, 1891]). Many of the geographic features referenced in this chapter can be found in Figure 3-1.

In 1845, the mouth of the Hackensack River was 10 to 18 feet deep. Dredging performed in the river in the late 19th century and channelization and dredging in the early 20th century, have resulted in a current depth of 32 feet for the first three miles of the river; 25 feet for the next quarter mile; and 15 feet for an additional half mile. The channel varies in width between 200 and 800 feet.

The Meadowlands' shift from a brackish and freshwater wetland to a primarily salt water wetland has also resulted in a change of plant life in the area over the last two centuries. *Phragmites* have been replaced by *Spartina*; and cedar trees, which once forested large stretches of the Meadowlands, have all but disappeared from the area due to their intolerance to salinity.

Until the late 20th century, the Meadowlands were seen primarily in a negative light, as an unhealthy and largely unproductive wasteland, unusable for agriculture or development.

Many miles of the Meadowlands have been transformed to dry upland as a direct result of human engineering, including both land reclamation (accomplished either through construction of dikes and drains) and land making (involving the deposition of fill material on wetlands). Nineteenth century projects were mainly limited to land reclamation: drained wetlands were located below the high tide line, and were intended for development as farm land rather than residential or industrial use. The earliest known land reclamation efforts in the Meadowlands were carried out by the Swartout family from the 1820s to the 1840s. Later, in the 1860s, engineer Spencer B. Driggs and developer Samuel Pike employed cutting edge methods, involving water pumps, tidal gates, and iron-plated dikes, to reclaim land in the same area. The iron dikes installed as part of these projects are still intact in some locations, and are visible within the Kearny APE along the Hackensack River (Sullivan 1998: 51). In the late 19th century, several similar land reclamation projects were spearheaded by Newark businessmen, politicians, and developers.

In the 20th century, a more costly method of land making became popular, using fill to elevate made land above the water level, thus allowing its use for industrial, commercial, or residential purposes. "Some of the fill would be obtained by dredging navigational channels in nearby rivers and bays. Other sources of fill were municipal garbage and excavation debris from the construction of tunnels, skyscraper foundations, and subways" (Marshall 2004: 11). Among the major land-makers and developers in the Meadowlands was the New Jersey Terminal Dock and Land Improvement Company, which used New York City garbage and excavation debris from the trans-Hudson tunnels to fill over five square miles of wetland between the Hackensack and Passaic rivers.

The populations of New York City, Newark, and Hudson County, each more than doubled between 1870 and 1900. Suburbanization resulted in demand for residential development sites including newly constructed riverfront land in the Meadowlands. Large-scale commercial/industrial projects also occurred, particularly in the Newark Meadows (the southernmost portion of the Meadowlands), including Port Newark in the 1910s, Newark Airport in the 1920s, and the New Jersey Turnpike, in the early 1950s. The New Jersey Turnpike's interchange at Route 3 transformed the small town of Secaucus into a city, and

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spurred the development of large commercial facilities; as well as the 700-acre Meadowlands Sports Complex constructed across the Hackensack River from Secaucus in the late 1960s.

In addition to land making and reclamation activities, refuse dumping and industrial waste deposition have also had a major impact on the Meadowlands. Sewage from nearby towns and industrial waste began to result in pollution of the Passaic and Hackensack Rivers in the mid-19th century. Dredging and land making projects, already discussed, also released pollutants into the wetlands. Several open dumps and sanitary landfills also existed in the Meadowlands in the mid-20th century; and illegal dumping also occurred on a large scale.

In 1968, the Hackensack Meadowlands Development Act was enacted by the New Jersey Legislature, intended to prevent illegal dumping. A year later, the Hackensack Meadowlands Development Commission was founded. The initial purpose of the group was to oversee planning and development, and to regulate garbage disposal. By the 1970s, conservation of the Meadowlands had become a more popular cause, and the Hackensack Meadowlands Development Commission (which changed its name to the New Jersey Meadowlands Commission in 2001) focused its efforts on remediation and protection of the remaining wetlands.

GENERAL HISTORY OF THE KEARNY AREA

The area now occupied by the 'West Hudson' towns of Kearny and Harrison, was called Meghgecticock by the Hackensack Indians and was named New Barbadoes Neck after Chief Tantaqua deeded much of the area to Captain William Sanford of Barbados in 1668. A high ridge or 'riser' running north-south between the Hackensack and Passaic rivers was a favored location for settlement, while the marshy lands flanking the rivers were largely undeveloped.

Copper was discovered in the area in 1719, which gave impetus to settlement and construction of new roads. Schuyler Road, now part of Belleville Turnpike, which intersects the APE, was laid out during this period as a route on which to cart copper ore to boats on the Passaic River. The Newark Plank Road, which runs east-west across the lower Kearny meadowlands (south of the APE) was built around 1765 (Stinson 1920: 362).

Arent Schuyler (1662-1730), an Albany merchant and military man, the son of Dutch pioneers, built an elaborate estate on the west shore of the Passaic River near the town of Belleville ca. 1710. Schuyler's grandson of the same name established a copper mine in the 1760s, importing a steam engine from England and hiring an engineer. The copper mine, located on the ridge in northern Kearny, overlooking the Meadowlands, has been considered the first regularly operated mine in America, as well as the first steam-powered mine. The Schuyler Mansion figured prominently in the Revolutionary War, and served as headquarters for British troops under Sir Henry Clinton during an important raiding operation.

In 1825, New Barbados Neck was officially renamed Lodi in commemoration of Napoleon's victory in that northern Italian town in 1796. In 1840 the name was changed again, to Harrison, in honor of President William Henry Harrison. In 1867, the town of Kearny separated from the town of Harrison; it was named after General Philip Kearny, a commander in the Mexican and Civil wars. Kearny had established an ostentatious estate in the area, which he called Belle Grove, in 1853-6. He was killed at Chantilly while leading forces during the Civil War. The name of Arlington was given to the northern section of the town of Kearny, situated on a rocky ridge above the Passaic River; the 'borough' of Arlington was named after Arlington Heights, Virginia, famous for its high elevation.

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The vicinity of the APE in Kearny remained largely undeveloped, with the exception of the roads and railroads that traversed it, through most of the 19th century. Much of the Kearny meadowlands were part of the Samuel Pike estate until around 1900. Until that time, “the entire meadow tract was left as nature made it, the only exception being the two or three boat houses which had sprung up adjacent to the railroad bridges crossing the Hackensack River,” just south of the APE (Stinson 1915: 370).

A wealth of anecdotal accounts in newspapers and local histories suggests that the Meadowlands in both Kearny and Secaucus was the site of river pirate camps from the colonial period through the early 19th century. River pirates harassed the ships and docks of New York City and New Jersey, stealing boats and ships’ cargos and engaging in smuggling operations. The river pirates’ best known camps included the Fourth Ward of Manhattan, the Meadowlands near Bayonne, and the cedar swamps adjacent to Snake Hill in Kearny: “The pirates evidently had a well-provided camp secreted in the tract of the Kearny meadows somewhere opposite Snake Hill which they reached by means of a tidal creek or stream” (Stinson 1915: 369). This may refer either to a former inlet called Dead Horse Creek located on what is now the Diamond Shamrock property in the APE; or to Saw Mill Creek, just north of the APE. Histories relate more than one altercation between the river pirates and local volunteers, who sought to quash the threat to trade and commerce. A local history tells of one occasion in the early 19th century when over a thousand volunteers cooperated in flushing the river pirates from camps along the Hackensack River from Point-no-Point (the southernmost point of the Kearny meadows) to Hackensack. The history refers to the “slaughter of the party of volunteers opposite Snake Hill” as “probably one of the most tragic incidents in the fifty years’ period following the Revolution, if not indeed the most tragic in its history” (Stinson 1915: 368). On another occasion, the Kearny meadows near the bend in the Hackensack River were set on fire to destroy the river pirate camps.

Despite the undeveloped nature of the low-lying marshes, Kearny’s location between the burgeoning cities of Newark and Jersey City, increasingly made the township a convenient location for residence, industry, and commerce. The Hackensack and Passaic rivers provided transportation opportunities, as did the multiple turnpikes, plank roads, and railroads that traversed the area.

In 1874, the Montclair and Greenwood Lake Railroad, between Montclair and Jersey City, was completed, running through Kearny. The construction of this railroad, which became a branch of the Erie Railroad in the 1880s, has been said to mark “the real beginning of modern Kearny” (Stinson 1915: 370). The borough of Arlington grew in popularity as a place for the wealthy to establish country estates.

During the last quarter of the 19th century, the Kearny meadowlands experienced rapid industrial development due in part to new transportation routes and advances in land-making technology. Multiple textile and floor-covering mills were established in Kearny during the 1880s and 1890s, and the town’s population exploded during this period, largely with immigrants from England and Scotland. The population continued to increase in the early twentieth century, rising from 18,659 to 26,724 between 1910 and 1920 (Stinson 1915: 361). Kearny’s downtown area was located east of Midland Avenue (west of the APE).

GENERAL HISTORY OF THE SECAUCUS AREA

Secaucus is located on the east bank of the Hackensack River, west of the cities of Jersey City, Hoboken, and Union City. These cities trace their origins to the 17th century; however, Secaucus itself remained sparsely settled throughout the 18th century. Several large estates or plantations

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were located in the area in the 18th century, however, including those of Pinhorne and Eickbe, near Snake Hill.

Snake Hill (also known as Laurel Hill), located in the southwest corner of Secaucus (within the APE) is a large igneous rock intrusion, over 150 feet tall. Snake Hill was reportedly held sacred by the Hackensack Indians that inhabited the area in the Colonial period. Its name is a translation of the Indian name for the feature, and was given due to the large number of large black water snakes that occupied the hill and the surrounding marshes (Stinson 1915: 369).

In the late 1700s, Bergen County (of which Secaucus was then a part) located its Poor Farm in the vicinity of Snake Hill, on a 200-acre parcel that had been part of the Pinhorne estate. In the 1840s, Bergen County was divided into Passaic, Bergen, and Hudson counties. Secaucus became part of Hudson County, and the latter purchased the Poor Farm as the location of multiple Hudson County facilities, including an ‘insane asylum,’ penitentiary, almshouse, orphanage, several hospitals (including smallpox hospital, isolation hospital, children’s eye infirmary, and tuberculosis hospital), county agricultural farm and piggery, and three cemeteries. The institutional complex began to decline in the 1930s. The asylum moved in 1927; the almshouse was converted into an old age home. The other institutions were put into other uses, including a boys camp, a unit for the Hudson Valley Fire Department, and for storage. Over the course of the late 20th century, the buildings once associated with the institutional complex were demolished. Currently, a smoke stack and remains of foundations and landscape features are the last standing vestiges of the complex (LBG 2005: 4-11).

The history of the cemeteries that were located on the Hudson County property has been detailed in two recent studies (LBG 2005; and TLC 2005). To summarize the results of these reports, the Historic Cemeteries of Hudson County at Snake Hill, also collectively known as the Snake Hill Cemetery or Laurel Hill Cemetery, were established in 1880. The burial grounds were used for the interment of the deceased from the institutional complex, unknown or unclaimed residents of Hudson County, and others. When the New Jersey Turnpike was constructed through the area in the early 1950s, the Turnpike Authority adjusted its construction methods in an attempt to minimize impacts to the burials, using a 190-foot bridge rather than an embankment to traverse the Snake Hill area. Burials to be impacted by the construction of the bridge abutments and three bridge piers were to be removed “and reburied in a 20x50-foot plot roughly 140 feet north-northeast of the then limits of the active burial ground” (LBG 2005: 2-1). Interment ceased in these cemeteries in 1962. The historic record does not provide the exact boundaries of the Historic Cemeteries of Hudson County, however, previous studies have created composite maps based on extensive archival research, which delineate those areas that may have been part of the cemeteries.

Snake Hill is said to be the inspiration for the Prudential ‘Rock of Gibraltar’ logo, created by an advertising executive who passed the rock formation on a train in the 1890s. Portions of Snake Hill were blasted to make way for the New Jersey Turnpike (NYT 1950). The feature was further compromised by quarrying in the 1960s, which reduced Snake Hill’s height by one quarter, and its base area by four-fifths (NYT 2002). The mineral Petersite was first identified at Snake Hill, when Nicholas Facciolla took a sample of the unknown substance to the Paterson Museum in 1981. Portions of Snake Hill and the former Hudson County institutional complex are now part of Laurel Hill County Park.

In 1900, Secaucus was formed as a borough by an act of the New Jersey State Legislature, and seventeen years later, the borough became a town. In the mid-20th century, the economy of Secaucus shifted from one based on pig farming, industry, and institutions, to one based on

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transportation and suburban development. Secaucus is also the home of several corporate headquarters.

INDUSTRIAL HISTORY

Following the development of the first railroads through the area in the 1860s and 1870s, Kearny was transformed from undeveloped meadowlands, to a center of industry. The Mile End Thread Mills, Marshall Linen Thread Mills, and the Nairn Manufacturing Company, a linoleum factory, were among the large industries established in Kearny between the mid-1870s and the mid-1880s. Several of the largest Kearny mills had British proprietors, who recruited workers from England and Scotland. In contrast, workers for the industries of Arlington were primarily Swedes and Belgians, and the majority of those in the town of Harrison (west of Kearny) were Irish (Stinson 1915: 371).

The first industrial development (also the first non- road/railroad development to appear on historic maps) within the APE occurred along the Hackensack River, directly south of the Pennsylvania Railroad ROW. The Greenwood Lake Division and the Newark & Hudson Branch of the Erie Railroad ran through the industrial properties clustered in the area between the Pennsylvania Railroad/Northeast Corridor, the Morris & Essex Line (Delaware, Lackawanna, and Western Railroad), the Belleville Turnpike, and the Hackensack River.

The parcel located immediately south of the Northeast Corridor, now known as the Diamond Shamrock property, was first developed in 1916 by the Martin Dennis Company, which produced sodium bichromate and potassium dichromate, chemicals used in the preparation of 'Tanolin,' a leather tanning agent. A tidal inlet called Dead Horse Creek ran through the site in a northeast-southwest direction. A 1936 Sanborn map shows over a dozen buildings on the Martin Dennis property, limited to the south side of Dead Horse Creek, and clustered around the Greenwood Lake railroad tracks. The map also shows a dock on the Hackensack River south of the mouth of Dead Horse Creek (Sanborn 1936).

Also in 1916, the White Tar Company purchased a long narrow parcel directly south of the Diamond Shamrock property with a frontage on the Hackensack River. The company constructed several buildings on the site for the refinement of crude naphthalene for the production of moth repellents, disinfectants, and deodorizers. The Koppers Gas & Coke Company purchased the site in 1942, and continued production of naphthalene products (ATSDR 2005: 3). Immediately south of the parcel, the Thomas A. Edison Company purchased land in 1917 (NYT 1917). Buildings were not constructed on this site until the mid 1920s, when the company (Thomas A. Edison Company's subsidiaries, Edison Storage Battery Co. and Emark Battery Corp.) began production of batteries there. The Koppers Company purchased the Edison site and merged it with the parcel to the north to create the Tar Products Division-Meadows Plant. From 1959 to 1962, Tantanex Chemical Corp., producers of dye carriers, operated on the site. In 1962, the property was owned by Standard Chlorine and Standard Naphthalene companies.

Immediately south of the Standard Chlorine/Edison property, is the 175-acre property now known as the Koppers Seaboard property (Koppers Coke). Koppers Gas & Coke Company operated a coke plant and coal tar processing facility on this site from 1917 to 1971. During its peak, the plant produced 1.5 million tons of coke per year. Coal and coke storage facilities were concentrated on the southeast portion of the site (outside of the APE).

The buildings on the Koppers Seaboard parcel were demolished in 1976; today only one small building remains, located at the southern end of the site (outside of the APE). Diamond Shamrock also remained active until 1976. During the Viet Nam era, Agent Orange and other chemicals were produced on the site. In 1974, Dead Horse Creek was filled, and its mouth was blocked with a concrete barrier. Most of the buildings on the Diamond Shamrock site were demolished in 1978. Standard Chlorine remained in operation until 1993; buildings still remain standing on the property (ATSDR 2005: 1).

Across the Hackensack River in Secaucus, pig farms and horse rendering plants dominated the economy and the landscape. These ‘nuisance industries,’ gave Secaucus a reputation as one of the most malodorous locations in the region. By the mid-20th century, development was on the rise in the region, and pig farming quickly declined. When the New Jersey Turnpike and other roadways were built through the area, the government purchased many of the farms within the vicinity, and new transportation-related economies emerged. Additional farms were purchased for development as facilities such as the Meadowlands Sports Complex, and pig farming was much reduced in Secaucus by 1950.

TRANSPORTATION HISTORY

Transportation has been a major component of New Jersey’s history since the colonial period due to its location between New York and Philadelphia and between New England and the southern states. New Jersey also supplied products and material to the nearby cities, and transportation infrastructure was important for the export of the grain, lumber, meat, and other regional exports. New Jersey’s Atlantic coast, many navigable rivers, and low-lying land corridors made it possible for myriad transportation networks to develop, most of which were oriented in a northeast-southwest direction.

One of the earliest public roads in New Jersey, authorized by the State Legislature in 1765, ran from Newark across the Meadowlands (just south of the APE) to Paulus Hook (now a section of Jersey City) where a ferry connected with Manhattan. This road connected with the Brunswick-Trenton and Old York roads, collectively constituting a continuous overland route between the Hudson River and Philadelphia. In 1790, the Legislature appointed five commissioners to oversee the construction and maintenance of toll bridges across the Hackensack and Passaic rivers. Shareholders or ‘proprietors’ quickly formed a joint-stock company, and claimed a monopoly on building bridges near the mouths of the two rivers. The roadway was a success, multiple stage coach lines were established, and Newark’s population grew swiftly, due to the ease of travel to New York (Lane 1939: 125).

The early 19th century was the turnpike era in New Jersey. These toll roads were generally established by municipalities in order to serve local or regional transportation and trade needs. The first charter for such a roadway was granted in 1801 for the Morris Turnpike, which connected the upper Delaware to Newark Bay, running through Elizabeth and Morristown. The Bergen Turnpike was chartered in 1802, making a shorter connection between Hackensack and the Hoboken ferry to New York. Another, the Newark Turnpike (which runs through the study area in Kearny) connected Newark and the Jersey City ferry at Paulus Hook. The Newark Turnpike was acquired by the bridge proprietors, and used the Hackensack River toll bridge.

Most turnpikes in New Jersey successfully provided returns to investors, particularly where monopolies existed; however, the success of the turnpikes waned with the competition of canals. The Morris Canal, which connected the upper Delaware with Newark and Jersey City in 1831 and the Delaware and Raritan Canal between Bordentown and Trenton, completed in 1834,

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quickly superseded roadways as routes for the transport of goods, particularly anthracite coal from Pennsylvania (Lane 1939: 162).

Even more than canals, railroads came to dominate transportation in the region by the mid-19th century. New Jersey was at the forefront of railroad construction in the United States. A Hoboken resident and railroad advocate, John Stevens, procured the first charter for an American railroad from the New Jersey Legislature in 1815. In 1825, he constructed an experimental railroad in Hoboken; and five years later, he and his two sons built the Camden and Amboy Railroad and Transportation Company, between Camden and South Amboy (a connection to Trenton was completed in 1839). Soon after its establishment, the Camden and Amboy united with the Delaware and Raritan Canal, creating the Joint Companies, with a monopoly on New York-Philadelphia traffic.

In 1832, the New Jersey Railroad Company was incorporated, establishing an initial route between New Brunswick and Jersey City. The line ran through Newark and had ferry connections between Jersey City and Manhattan. The New Jersey Railroad Company leased the right to bridge the Hackensack and Passaic rivers from the bridge proprietors; the railroad used the existing bridge until a new bridge was constructed adjacent to the old in 1846. The railroad constructed a cut through Bergen Hill in Jersey City and crossed the Meadowlands to Newark (passing through the APE in Kearny). The New Jersey Railroad was primarily a passenger line, and earned a reputation for comfort and convenience (Lane 1939: 363). The Morris & Essex Railroad was chartered in 1835 connecting Morristown and Newark. In 1836, the New Jersey Railroad agreed to carry Morris & Essex traffic between Newark and Jersey City. In 1868, the Delaware, Lackawanna, and Western Railroad leased the Morris & Essex Railroad, including all of its branches. With the establishment of the rail lines, stage coach companies between New York and Philadelphia ceased to operate (Lane 1939: 381).

The New York and Erie Railroad was constructed during the 1830s; it skirted the northern edge of New Jersey from Piermont on the Hudson River in New York. The Erie was expanded and unified with the existing Paterson and Hudson River Railroad, so that in 1851, the railroad connected Jersey City and Lake Erie. (Lane 1939: 317).

The New Jersey Railroad Company and the Camden and Amboy Railroad (Joint Companies) were consolidated as the United Canal and Railroad Companies of New Jersey in 1867. In 1871, the Pennsylvania Railroad leased the consolidated company for 999 years, and thus acquired a continuous route from New York to Philadelphia (with a ferry connection across the Hudson) (Stinson 1915: 370).

The popularity of toll roads was revived in New Jersey beginning in the 1850s, due to the advancement of technology for sawing lumber, which enabled plank roads to be constructed at a reasonable cost. These roads, consisting of sawn wood planks created a smoother surface than macadam, and were more economical. By 1857, New Jersey had authorized 23 plank road corporations. Rather than competing with canals and railroads, plank roads tended to improve local transportation in areas not accessible by other modes. The Newark Plank Road and Ferry Company, established in 1849, was first and the most successful of northern New Jersey routes. The New Jersey Railroad Company, which maintained the monopoly over bridges, acquired over fifty percent interest in the Newark Plank Road and permitted a new bridge to be constructed over the Hackensack River (just south of the APE).

Until the turn of the century, railroads transporting goods and passengers between New Jersey and Manhattan relied on ferries to make the connection across the Hudson River. The first tunnel across

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the Hudson River was accomplished as part of the Hudson & Manhattan Railroad. Planning for this railroad began in the 1860s when DeWitt Haskins formed the Hudson Tunnel Railroad Company, but work was interrupted in the 1870s due to financial and political difficulties. The project was resumed in 1889 under the leadership of William McAdoo, who established the Hudson & Manhattan Railroad Company. The tunnel beneath the Hudson River was built between 1902 and 1908. The railroad ran across the Meadowlands (within the APE) between Newark and Jersey City. The Hudson & Manhattan Railroad was a passenger line, and gained a reputation for comfort and convenience, and inspired suburban development in the New Jersey towns surrounding it.

Over the 1890s and early 1900s, the Pennsylvania Railroad elevated its tracks, creating a grade-separated right-of-way. Between 1902 and 1910, the Pennsylvania Railroad constructed a new branch through the Hackensack Meadows, passing through Bergen Hill, and tunneling beneath the Hudson River and across Manhattan, with tubes beneath the East River connecting to the Long Island Railroad. The Pennsylvania Railroad was electric from the Hudson River tubes to the Manhattan Transfer Station in Harrison, using a third rail DC system; the remainder of the line was electrified in 1933, replacing the DC system with 12,000 volt, 25 Hz AC system. The third rail was removed from the west portal of the Bergen tunnels to the Manhattan Transfer Station (ARC DEIS 2005:60). Passengers could also transfer between the Pennsylvania Railroad and the Hudson & Manhattan Railroad at the Manhattan Transfer.

The Hackensack Meadows branch of the Pennsylvania is now part of Amtrak's Northeast Corridor and runs through the APE in Secaucus and Kearny. The original Hudson & Manhattan system is now operated by the Port Authority of New York and New Jersey as the "PATH," which continues to be a vital commuter rail line.

Between 1922 and 1932, Route 1 Extension was constructed south of the APE to provide express service between the Holland Tunnel and Newark Airport. This freeway included the Pulaski Skyway, a series of cantilever truss bridges crossing the Hackensack and Passaic rivers.

Also in the 1930s, discussions began in support of constructing a major highway from Boston to Washington. Momentum dissipated with the advent of the Great Depression; however, New Jersey Governor Alfred E. Driscoll reintroduced the idea in the mid-1940s. In 1948, the State Legislature enacted the New Jersey Turnpike Authority Act, which created the New Jersey Turnpike Authority to oversee the planning, construction, and maintenance of the highway. The planning and construction of the roadway were put on an accelerated timeline. Multiple engineering firms were hired to design a roadway that combined speed and efficiency with progressive safety features. Construction of the Turnpike began in 1950 and was completed by 1952. A 5,623-foot-long bridge was constructed over the Hackensack River between Secaucus and Kearny. The approach to the bridge passed below the Pulaski Skyway in Kearny, and charted its course through the marshes using a combination of crushed stone embankments and caissons filled with sand.

B. PREVIOUSLY CONDUCTED CULTURAL RESOURCE SURVEYS

Information concerning known and potential archaeological resources in the archaeological APE was developed through a review of previously conducted cultural resource investigations performed in the project area vicinity, listings of previously identified archaeological sites on file at the NJHPO, and a review of relevant sensitivity assessments.

A search of archaeological reports and research materials on file at the NJHPO indicate that several cultural resources investigations have been conducted within one half-mile of the project

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area. The results of these investigations are summarized in **Table 5.2-1** below and a more detailed description of studies related to the Historic Cemeteries of Hudson County and the Northeast Corridor study follows.

**Table 5.2-1
Previously Conducted Cultural Resource Investigations
Within One Mile of the Project Area**

Project Name	Location	Findings	Reference
NJ Turnpike Exit 11 to US Route 46	Within/ adjacent to APE in Secaucus	Sensitivity assessment; no archaeological resources identified, mentions reports of sites at Snake Hill, but no confirmation of their existence	LBA, 1989
NJ Turnpike Exit 11 to US Route 46	South of APE	Passaic River Bridge and Pulaski Skyway evaluated	LBA, 1986
Secaucus Transfer Station	Within/ adjacent to APE in Secaucus	Sensitivity assessment; no archaeological resources identified, mentions reports of sites at Snake Hill, but no confirmation of their existence	HCI, 1990
NJ Turnpike- Secaucus and Jersey City	Within/ adjacent to APE in Secaucus	Phase 1B; no further work recommended	Greenhouse, 1995
NJ Turnpike- Secaucus and Jersey City	Overlapping with APE in Secaucus	Phase 1B investigation; located elements of Historic Cemeteries of Hudson County ; Phase II recommended	Greenhouse, 1996a
Secaucus Interchange Project (NJ Turnpike Interchange 15X)	South of APE	Phase II investigation of St. Peter's Cemetery, outside of APE	Greenhouse, 1996b
Sensitivity Assessment	Meadowlands	Phase 1A Assessment of archaeological sensitivity for the Meadowlands region	J. Grossman, 1992
Seaview Drive Extension	Adjacent to APE, Secaucus	Archaeological testing at intersection of Seaview Drive and County Road; no significant archaeological resources present	RBA, 2003
Sewer-Secaucus	Secaucus Loop area	Sensitivity assessment; no further work recommended	Sloshberg, n.d.
Northeast Corridor Survey- New Jersey	Within/ adjacent to APE in Secaucus	Sensitivity assessment; identified Snake Hill and Penhorn Creek as potentially sensitive for prehistoric cultural resources	DeLeuw Cather Parsons, 1979
NJ Turnpike Secaucus Interchange	Within/ adjacent to APE in Secaucus	Sensitivity assessment, identified presence of Historic Cemeteries of Hudson County in Secaucus Interchange area	Geismar, 1992
Allied Junction Site- Secaucus	ARC in Secaucus Transfer Station area	Sensitivity Assessment; no further work recommended	HCI, 1989
Meadowlands- Bergen/Hudson Counties		Unknown	Research Arch. Mgmt. n.d.
Hudson County Sewage	Within/ adjacent to APE in Secaucus	Reports prehistoric archaeological sensitivity of Snake Hill; no other documented archaeological resources	HCI, 1978
Routes 1 & 9- Jersey City and North Bergen	South of Route 3, Northeast Corridor tracks	No proposed plans for archaeological testing	Hunter Research, 1987

Table 5.2-1 (cont'd)
Previously Conducted Cultural Resource Investigations
Within One Mile of the Project Area

Project Name	Location	Findings	Reference
Hudson County Sewerage	South APE in Secaucus, on Penhorn Creek	Phase 1B archaeological testing along Penhorn Creek, no significant archaeological resources encountered	HCI, 1978
Routes 1 & 9- Jersey City	Tonnelle Avenue; south of APE	Phase I/II archaeological survey and palynological analysis; no cultural resources present	RBA Group, 2000
Hackensack River Tidal Barrier	South of the APE in Secaucus	Phase I archaeological survey and palynological analysis; no cultural resources present	Kardas & Larabee, 1982
Access to the Region's Core	Within/ adjacent to APE in Secaucus and Kearny	Phase 1A archaeological survey identified the Secaucus Potter's Field (Historic Cemeteries of Hudson County) area as being sensitive for historic-period archaeological remains. No other areas in or near the Portal Bridge APE were identified.	Transit Link Consultants, 2005
Potter's Field Disinterment/ Reinterment: Secaucus Interchange Project (NJ Turnpike Interchange 15X)	Within/ adjacent to APE in Secaucus	Data recovery technical report for excavation in Potter's Field area. Remains of 4,571 individuals exhumed from a 4.1-acre area.	Louis Berger Group, Inc., 2005
Sources: NJHPO Files; TLC 2005			

Northeast Corridor Survey

An archaeological sensitivity assessment for the Northeast Corridor (DeLeuw Cather Parsons, 1979), which runs through the present APE, identified two 'Prehistoric Archaeological Zones' in or near the present APE. The first is recorded in the files of the NJHPO as *Hudson County, Secaucus Town: Site No. 2*, and is located within and adjacent to the archaeological APE in Secaucus, encompassing Snake Hill and the area east of Snake Hill; the second is recorded as *Hudson County, Secaucus Town: Site No. 4*, was identified along Penhorn Creek, near the intersection of Secaucus Road in Secaucus, northeast of the APE. The first of these areas was clearly identified as sensitive based on its high elevation, which would have been attractive as a settlement location during prehistory, affording easy access to the faunal and floral resources of the Meadowlands. More recent surveys of this area conducted as part of the Secaucus Interchange Project and the ARC DEIS have resulted in a lowering of the prehistoric sensitivity of Snake Hill to low based on the effect of historic and modern disturbance to the area. The basis for the identification of the second zone as sensitive is not known.

Previous Surveys of the Historic Cemeteries of Hudson County

As noted previously, the Hudson County Burial Grounds at Snake Hill were active by 1880, and ceased operation in 1962. The burial grounds were impacted by the construction of the New Jersey Turnpike in the early 1950s, while the burial grounds were still active, when several bridge piers and abutments forced the Turnpike Authority to relocate multiple graves to a nearby location. In the 1980s, Hudson County constructed a temporary detention center over a portion of the burial

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grounds. At this time, Hudson County was not aware of the location and extent of the burial grounds.

In 1992, the Turnpike Authority began planning on the Secaucus Interchange Project, and hired Joan Geismar, PhD to conduct a Phase 1A archaeological survey of the burial grounds area. Geismar was unable to find accurate maps and burial records detailing the number of burials or the boundaries of the burial grounds, however, she recommended that a Phase 1B archaeological investigation be conducted to ascertain whether human remains were still interred at the site.

Greenhouse Consultants conducted a Phase 1B study in 1996. The study used ground penetrating radar (GPR) and a limited number of backhoe trenches and shovel test pits to determine that human remains and coffin fragments were present on the site between 1.4 and 4.85 feet below ground surface. Despite these findings, the NJHPO determined that the site did not meet the eligibility criteria for listing in the S/NR because it lacked depositional integrity, and the Secaucus Interchange Project received a finding of no adverse effect.

In April 2002, a Register of Burials, including maps and records relating to portions of the Historic Cemeteries of Hudson County, was uncovered by Hudson County. These documents indicated that roughly 1,200 burials occurred within the 'Potter's Field' (one of the three cemeteries comprising the burial grounds) between 1920 and 1962. The Turnpike Authority reopened discussions with the NJHPO, however despite the additional information regarding the location and extent of burials, the NJHPO maintained their determination that the burial grounds were not eligible for the S/NR.

In October 2002, the Turnpike Authority hired the Louis Berger Group to undertake the disinterment and reinterment of burials that could be impacted by actions related to the Secaucus Interchange Project. The Secaucus Interchange Project was expected to impact a roughly 4-acre area bounded roughly by New County Road on the north, the Main/Bergen County and Pascack Valley Lines on the east, and the New Jersey Turnpike on the south (the APE extended south of the Turnpike in one location) (see Figure 5.2-2). Berger's field excavations occurred between February and October 2003 and involved a team of over 100 archaeologists and field technicians. The team exhumed the remains of 4,571 individuals from a roughly 2.3-acre area identified as the 'Potter's Field.' A total of 113,579 non-skeletal artifacts were recovered, including coffin nails and grave goods of various sorts. Osteological analyses revealed information on causes of death, and the identities of 825 individuals were determined based on archival and physical evidence. Direct descendants of two individuals were identified, and these were returned to their families for private reburial. In the fall of 2004, the remaining 4,569 individuals were reinterred with their personal effects in Maple Grove Park Cemetery in Hackensack, Bergen County, New Jersey, and a plaque was erected listing over 7,000 names listed in the burial ledgers (LBG 2005). Following the 2005 publication of Berger's *Potter's Field: Disinterment/Reinterment* report, the NJHPO rescinded their earlier determination and considered the burial grounds eligible for listing in the S/NR (TLC 2005: 109).

In 2005, Transit Link Consultants completed a Phase 1A archaeological study on behalf of New Jersey Transit in association with the ARC project, which proposed improvements to the Northeast Corridor Line in New York and New Jersey. The ARC APE included portions of the Historic Cemeteries of Hudson County area of sensitivity, and overlapped with portions of the Secaucus Interchange Project APE. The Phase 1A recommended that GPR and hand excavation be conducted to determine whether human remains were present within the ARC APE.

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A Geophysical Investigation Report was completed in February 2007. Two search areas ('Rocky Hill,' comprising 720 linear feet from the south side of Snake Hill to the west end of a water-filled retention basin; and 'Retention Basin,' comprising 840 linear feet of the retention basin) were tested using non-intrusive GPR. These areas, located from just north of the New Jersey Turnpike to just north of the Northeast Corridor, are largely inundated by stormwater run-off, and GPR was conducted in winter while the area was covered with ice. The study detected four anomalies (one within the 'Rocky Hill' search area, and three within the 'Retention Basin' search area) that could potentially represent burial shafts (GGI 2007: 2).

Due to refined alignments developed subsequent to the completion of the Geophysical Investigation Report, the ARC project is no longer expected to impact the areas identified by the ARC DEIS as sensitive for remains relating to the Historic Cemeteries of Hudson County . Although, no further archaeological testing in those areas is planned in association with the ARC project, testing will be conducted south of the Northeast Corridor in the area of the Malanka Landfill (Mary Ann Mason, pers. comm., June 7, 2007).

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