Panamerican Consultants, Inc.

Buffalo Branch
2390 Clinton Street
Buffalo, NY 14227
Tel: (716) 821-1650
Fax: (716) 821-1607

Tuscaloosa Branch
924 26th Avenue East
Tuscaloosa, AL 35404
Tel: (205) 556-3096
Fax: (205) 556-1144

Memphis Branch
91 Tillman Street
Memphis, TN 38111
Tel: (901) 454-4733
Fax: (901) 454-4736

Tampa Branch
5910 Benjamin Center Drive, Suite 120
Tampa, FL 33634
Tel: (813) 884-6351
Fax: (813) 884-5968

Corporate Headquarters
2205 4th Street
Suites 21 & 22
Tuscaloosa, AL 35401
Tel: (205) 248-9867
Fax: (205) 248-8739

PHASE I CULTURAL RESOURCES INVESTIGATION FOR THE PROPOSED HAMBURG CROSSINGS RETAIL DEVELOPMENT, TOWN OF HAMBURG, ERIE COUNTY, NEW YORK

Prepared for:

BENDERSON DEVELOPMENT COMPANY, INC.
570 Delaware Avenue
Buffalo, New York 14202

Prepared by:

PANAMERICAN CONSULTANTS, INC.
2390 Clinton Street
Buffalo, New York 14227-1735
(716) 821-1650

May 2007

PHASE I CULTURAL RESOURCES INVESTIGATION

FOR THE PROPOSED

HAMBURG CROSSINGS RETAIL DEVELOPMENT,

TOWN OF HAMBURG, ERIE COUNTY, NEW YORK

Prepared for:

BENDERSON DEVELOPMENT COMPANY, INC.
570 Delaware Avenue
Buffalo, New York 14202

Prepared by:

Robert J. Hanley, M.A., RPA, Principal Investigator
Edwin W. Button, M.A., Project Archaeologist
Rebecca J. Emans, M.A., RPA, Staff Archaeologist
Mark A. Steinback, M.A., Senior Historian
Michael A. Cinquino, Ph.D., RPA, Project Director

PANAMERICAN CONSULTANTS, INC.
Buffalo Branch Office
2390 Clinton Street
Buffalo, NY 14227
(716) 821-1650

May 2007

Management Summary

SHPO Project Review Number (if available):

Involved State and Federal Agencies (NYSDEC, US Army Corps of Engineers, FHWA):

Phase of Survey: Phase I Cultural Resources Reconnaissance Survey

Location Information:
Location: Camp Road
Minor Civil Division: Town of Hamburg
County: Erie County, New York

Survey Area (Metric & English): 62-acre (25.1–hectare) portion of 80-acre (32.4-hectare) project area. An 18-acre (7.3-hectare) portion of the project area was excluded from survey as it is to remain undeveloped green space.

USGS 7.5 Minute Quadrangle Map: Hamburg Quad 1968

Archaeological Survey Overview
Number & Interval of Shovel Tests: 679 total shovel tests dug, including: 622 shovel tests at 50-ft (15-m) interval; 43 shovel tests at 100-ft (30-m) interval; 8 at approximately 25-ft (7.5-m) interval; 6 at varying intervals.

Results of Archaeological Survey
Number & name of historic sites identified: none
Number and name of sites recommended for Phase II/Avoidance: none

Results of Architectural Survey
Number of structures within project area: none
Number of buildings/structures/cemeteries adjacent to project area: none
Number of identified eligible buildings/structures/cemeteries/districts: none

Report Author(s): R. Hanley, E. Button, R. Emans, M. Steinback, and M. Cinquino

Date of Report: May 2007

Table of Contents

List of Figures and Tables

FIGURE **PAGE**

TABLE

List of Photographs

1.0 Introduction

1.1 PROJECT DESCRIPTION

Panamerican Consultants, Inc. was contracted by Benderson Development Company, Inc, Buffalo, New York, to conduct a Phase I cultural resources investigation for the proposed Hamburg Crossings retail development at 5220 Camp Road in the Town of Hamburg, Erie County, New York (Figure 1). The approximately 80-acre project area includes a 20-acre paved commercial area located in the north, with remaining areas covered in woods. Eighteen acres of the project area serve as a buffer between an adjacent housing development to the west and drainage areas to the southwest. The buffer area is to remain an undeveloped greenspace, and measures 150-ft wide along the west extent of the project area, expanding in width adjacent to the north side of the New York State Thruway. The area of potential effect (APE), therefore, consisted of 62 acres of the project area.

The purpose of the Phase I investigation was to determine if any previously recorded or yet unidentified cultural resources are present within the project area. The cultural resources investigation included archival and historic map research, a site file and literature search, an intensive walkover reconnaissance, photographic documentation of field conditions, and shovel testing throughout the APE. Photographs of the field investigation are presented in Appendix A.

The cultural resource investigation was conducted in compliance with the National Environmental Policy Act, the National Historic Preservation Act, the State Historic Preservation Act, the New York State Environmental Quality Review Act, and all relevant state and federal legislation. The investigation was also conducted according to the New York Archaeological Council's Standards for Archaeological Investigations and New York State Historic Preservation Guidelines.

Fieldwork was conducted in April 2007. Mr. Robert J. Hanley, M.A., RPA, served as principal investigator, Mr. Edwin W. Button, M.A., was project archaeologist and field director, Ms. Rebecca J. Emans, M.A., RPA, was staff archaeologist and laboratory director, and Mr. Mark A. Steinback, M.A., was project historian. Mr. Button was assisted by six field technicians.

1.2 ENVIRONMENTAL SETTING

Topography. The project area is situated between the two physiographic provinces within Erie County: the Erie-Ontario Lake Plain and the Allegheny Plateau. The project area is located on the edge of the Erie-Ontario Plain physiographic province in the Town of Hamburg. The lake plain province comprises all of the northern part of the county as well as areas from two to six miles from the lake in the southern part of the county. The province has a topography formed from glacial lake beds, with little significant relief except for narrow ravines carved by the area's streams. Elevations and slope increase rapidly within the rugged, rolling topography. The project area has a gently sloping topography formed from glacial lake beaches and glacial lake sediments (Owens et al. 1986:2). Elevations within the project area range from 730 to 755 ft (223 to 230 m) above mean sea level (see Figure 1).

Figure 1. Location of the Hamburg Crossings project area, Town of Hamburg, Erie County, New York *(USGS 1965).*

Geology. Bedrock underlying the project area is an extensive band of sandstone and shale characteristic of the West Falls Group formed during the Devonian period, one of the younger periods of bedrock formation in the Erie County. Relatively flat, the bedrock tilts to the southwest at "approximately 50 feet a mile" (Owens et al. 1986:2-4).

Soils. Soils within the project area belong to the Darien-Remson-Angola association. Located on uplands underlain by alkaline shale bedrock, soils of this association were formed in glacial till at the northernmost fringe of the upland plateau and consist of moderately deep and deep, medium textured and moderately fine textured, dominantly nearly level and gently sloping, somewhat poorly drained soils (Owens et al. 1986:8). Predominant soils within the project area are Angola silt loam, 3 to 8 percent slopes, Fluvquents and Udifluvents, frequently flooded, Orpark silty clay loam, 0 to 3 percent slopes, and Patchin silt loam (Owens et al. 1986: Sheet 50; Figure 2). These soils are summarized in Table 1.

Table 1. Soils within and adjacent to the project area.

Name	Soil Horizon Depth	Color	Texture	Slope %	Drainage	Landform
Angola silt loam	0-23 cm (0-9 in)	V DK GR BR	SI LO	3 to 8	somewhat poorly drained	step-like portions of upland plateau fringe
	23-28 cm (9-11 in)	GR BR	SI LO			
	28-71 cm (11-26 in)	DK GR	SI CL LO			
	71-76 cm (26-30 in)	DK GR BR	SI LO			
Fluvaquents and Udifluvents				gently sloping	poorly drained	stream or creeks
Fluvaquents	0-10 in (0-25cm)	BL, GR or BR	LO or SI			
	to 20 ft	GR or BR	SI, SA, or LO			
Udifluvents	0-9in (0-22 cm)	BR	SA, SI, or LO			
	to 4 ft	BR, RD or YL	SI, SA, or LO			
Orpark sily clay loam	0-23 cm (0-9 in)	DK GR BR	SI CL LO	0 to 3	somewhat poorly drained	flat ledges and ridge crests
	23-53 cm (9-22 in)	LT OLIVE BR	SI CL LO			
	53-36 cm (22-27 in)	PALE OL	SI CL LO			
Patchin silt loam	0-25 cm (0-10 in)	DK GR BR	SI LO	0-3	somewhat to very poorly drained	depressional areas of uplands
	25-36 cm (10-14 in)	LT BR GR	SI LO			
	36-58 cm (14-23 in)	DK GR BR	SI CL LO			

Key: BL = black, BR = brown, DK = dark, GR = gray, LT = light, RD = red, V = very, YL = yellow
CL = clay, LO = loam, SA = sand, SI = silt

Drainage. The project area is less than two miles southeast of Lake Erie. A small creek flows northwesterly in the southern portion of the APE. Construction of the New York State Thruway (Interstate-90), reconstruction of Camp Road and arterials to connect it with the Thruway, and development of suburban residential housing has disrupted the natural drainage patterns in the area (see Figures 1 and 2).

Figure 2. Soils within and adjacent to the project area *(aerial source: New York State GIS Clearinghouse 2002)*.

Forest Zone. The project area is within the Elm-Red Maple-Northern Hardwood Forest zone, which is distinguished by widespread poorly drained areas, the removal of the natural forest, and the utilization of better-drained areas for agriculture. The prevalence of elm and red maple is due to human impacts to the environment (de Laubenfels 1977:92, 95).

Vegetation. Central and south portions of the project area totaling approximately 60 acres is wooded, covered with beach, hemlock, and ironwood trees typically under 24-inch (61-cm) diameter that appear suited to the poorly drained soil. A dogwood brush understory is within the east part of the project area.

Manmade Features and Alterations. A 20-acre paved commercial area is located in the north portion of the project area (see Figure 2). Structures within the commercial area included a former Days Inn, a former gas station, and an operating bus garage. There are no other structures within the project area. Impacts include substantial dumping of concrete, asphalt, and gravel (up to four meters in height) at the south extent of the paved area.

Former agricultural furrows or shallow drainage ditches generally aligned north-south and approximately spaced 30 ft (9.1 m) apart were observed over the greater central portion of the project area suggesting former agricultural land use and associated impacts due to plowing.

Additional impacts include a shale access road aligned north-south in proximity to sewer main covers located within the south-central portion of the project area and two shale access roads roughly aligned east-west in the southeast portion of the project area. The latter two access roads appear associated with buried drain and sewer systems within the project area.

2.0 Historical and Archival Review

2.1 PREHISTORIC PERIOD

The three major cultural traditions manifested in western New York State during the prehistoric era were the Paleo-Indian, Archaic, and Woodland Periods. Cultural evolution of the area can be summarized as a gradual increase in social complexity, punctuated by several important cultural or technological innovations. The earliest people were nomadic big-game hunters (10,000 to 8000 BC). Changing environmental conditions required an adaptation of the economy, resulting in a shift to the efficient exploitation of temperate forest resources by Archaic hunter-gatherers. In many areas of eastern North America, the Archaic (8000 to 1500 BC) is followed by the Transitional Period (1500 to 1000 BC) that bridges the Archaic and the subsequent Woodland Periods. Although it does not represent a departure from Archaic social and economic patterns, important changes do occur in the artifact assemblage and in burial practices (Ritchie 1955).

The Woodland Period (1000 BC to AD 1600) is marked by the introduction of pottery, agriculture, and burial mounds. As a result of these innovations, many new and very different social and economic adaptations developed (Ritchie 1980). After about 1000 BC, external influences began to have an increasingly greater effect as the area was occupied by groups which evolved from antecedents in the central sub-area between the Genesee River and the Tug Plateau, and later formed the Iroquois Confederacy. Culturally, they shared much with groups in southern Ontario, Canada (Tuck 1978; Tooker 1978; White 1961)

Paleo-Indian Period (ca. 11,000-8000 BC). Hunter-gatherer bands of the Paleo-Indian culture were the first humans in New York State after the last glacial retreat approximately 13,000 years ago. As the climate gradually became more temperate, forays into the region by Paleo-Indians likely became more extended.

Adapted to the tundra, Paleo-Indians utilized a nomadic settlement system in which their movements followed that of game. The archaeological record suggests that Paleo-Indian subsistence strategies emphasized hunting big game species, many of which are extinct. These included mastodon, mammoth, great beaver, caribou and moose-elk, along with a variety of smaller game (Funk 1972:11; Ritchie 1980; Salwen 1975). Mastodon remains have been recovered in the Town of Evans, well southwest of the project area, as well as along the Niagara River in the vicinity of the City of Buffalo (Ritchie 1980:10-11).

During the seasonal resource peaks, larger populations occupied strategically located base camps; and during periods of scarce resources, the population dispersed, occupying small camp sites and rockshelters on a temporary basis. Located near the margin of extinct glacial lakes, many Paleo-Indian sites in the Northeast are located on elevated areas “where good drainage, meaning a dry living floor, was an important consideration” (Funk 1978:18). These hills or rises also served as loci for monitoring the migratory patterns of game species.

Archaic Period (ca. 8000-1500 BC). The Archaic period is differentiated from the Paleo-Indian period by a functional shift in lithic technology, an apparent increase in population, changes in the subsistence strategy, and a less nomadic settlement system (Funk 1978). These changes reflect an adaptation to an improved climate and a more diversified biome (Funk 1972:10).

People began to develop woodworking tools during this period, using coarse-grained stones and river cobbles as their raw materials (Kraft 1986). Sites from this period cluster along major rivers and marshy, swampy land as well as lowlands. Hunting, fishing, and gathering remained the principal daily activities, although greater emphasis was placed on deer and small game like birds and turtles, shellfish, nuts and possibly wild cereal grains. Associated with the shift in subsistence strategies was the increase in population densities, and as population increased, camps became larger and more numerous. Bands moved seasonally or when resources dwindled (Ritchie and Funk 1973).

Late in the Archaic Period (ca. 1500-1000 BC), there developed a burial/ceremonial complex and the introduction of ceramics. The shift to pottery appears to have been preceded by the adoption of steatite or soapstone pots which made cooking and food preparation easier (Ritchie and Funk 1973:87; Funk 1993:198).

Woodland Period (1000 BC-AD 1500). While the previous hunting and gathering economy continued as a means of subsistence during Woodland times, native groups became more dependent on domesticated plants for food. Agriculture brought with it a score of new problems that required new adaptations and every aspect of native culture was transformed. With agriculture came settled village life, a general increase in population, technological changes, warfare, and a litany of social and political changes. Early and Middle Woodland sites often contain exotic and numerous trade goods within burials which suggest the existence of widespread exchange or trade networks.

The Early Woodland period (1000-100 BC) is marked by several cultural phases in New York State, including the Orient, Meadowood, Middlesex, and Bushkill phases. Some of these phases, such as Meadowood, are better understood than others, while some arguably may not be very important in some local sequences. The Early Woodland is marked by an increase in burial ceremonialism.

The Middle Woodland period (100 BC-AD 1000) shows continued long distance exchange, although perhaps with varying strength at different times. In central and western New York, a sequence of occupation sites shows evidence of a long, Middle Woodland cultural tradition referred to as Point Peninsula (Ritchie 1980).

In New York State, the two primary Late Woodland Traditions are Owasco (beginning ca. AD 1000) and the prehistoric Iroquois (ca. AD 1300). The horticultural complex of corn, beans and squash, a common occurrence in North and Central America, are found together in some of the earliest Late Woodland sites in this region (Ritchie and Funk 1973), indicating the importance of these plants for at least some early garden systems and subsistence strategies (Fritz 1990; Smith 1992). It is generally accepted that a heavy reliance on corn horticulture was supplemented by growing beans and squash, with declining roles for hunting, fishing and gathering. Many local cultures with a lower reliance on agriculture may have included wild foods in the subsistence mix to a greater extent, particularly where animal protein could be substituted for the amino acid complement provided elsewhere by beans. Primary animal prey most likely included one or more of deer, fish, and shellfish, based on faunal evidence, site locations, and the prevalence of netsinkers and other fishing technology at some sites (Cleland 1982; Ritchie and Funk 1973).

In conclusion, important changes occurring in this period were social rather than techno-economic. The technology of the period is characterized by refinement of the developments of

earlier periods with styles and techniques becoming more regionalized. Horticulture, primarily the growing of corn, beans, and squash, was the primary source of plant food for the prehistoric Iroquois, but never totally supplanted the hunting, fishing, and collecting strategy as the most important means of subsistence procurement. The practice of horticulture had other ramifications. Most important was that it allowed or necessitated increased sedentarism. Even before this period, the regional demographic situation was in a process of reorganization. With the added premium placed on land in the Late Woodland, territorialism increased (Whallon 1968).

Three Iroquoian peoples occupied western New York before the arrival of the Europeans: the Neutral, the Wenro, and the Erie. The Erie occupied parts of Erie, Chautauqua, and Cattaraugus counties south of Buffalo Creek, to Sandusky, Ohio (White 1978a, 1978b; Parker 1922:493). As the Europeans began to explore the Niagara Frontier, and establish missions in the area, the Seneca Iroquois were expanding their skin trade into the territories of these three groups. Previously, Seneca hunting territory extended from Lake Ontario to the headwaters of the smaller Finger Lakes, and from the Genesee River to Cayuga Lake (Tuck 1978; Tooker 1978; White 1961; Engelbrecht et al. 1993:32-33).

The fur trade was central to the Seneca Iroquois economy, and they were vigorous in protecting their position as suppliers of pelts, and as the supply of animal skins diminished within their territory, they expanded the range of their trading efforts into the traditional areas of other Iroquoian groups. Ultimately, Seneca expansion displaced these groups from their lands in the Niagara Frontier. Beginning in 1638 with the Wenro tribe of western New York, and in rapid succession, the dispersals (i.e., extermination and assimilation) began. After the Seneca had secured the resources of the Niagara Frontier, large-scale concerted attacks by the League were directed against the Huron Confederacy (dispersed by 1649), the Petun (dispersed by 1650), the Neutral Confederacy (dispersed by 1651) and, finally, the Erie Confederacy (dispersed by 1655). Thus, by the mid-seventeenth century, the League Iroquois of New York emerged as a politically, militarily, and economically united confederacy with sole access to both the land and resources surrounding the lower Great Lakes (Abler and Tooker 1978:505-507; White 1978b: 414-416; Trigger 1978:354-356).

2.2 HISTORIC PERIOD

For almost all of the seventeenth and eighteenth centuries European activities in the area that would become known as the Niagara Frontier involved limited religious, commercial, and military endeavors. The French were the first Europeans to penetrate the valley of the Niagara River and explore the shores of Lake Erie. As early as the 1620s, Jesuit missionaries and French traders were establishing contacts with the local native groups. For example, Joseph de la Roche Daillon, a Recollect missionary, lived among the Neutrals for three months in 1626, and Jesuits St. Jean de Brébeuf and Pierre Joseph Marie Chaumonot visited the Neutrals in 1640. However, these visits to the region were infrequent until the 1660s. In 1678-1679, as part of general reconnoitering and trade expeditions by the French in the Niagara valley, men under the direction of René-Robert Cavelier de La Salle constructed a ship called *Le Griffon* along the Niagara River opposite Grand Island. This ship would be the first sail vessel to ply the waters of Lake Erie and prosecute the Great Lakes fur trade (Turner 1974 [1850]:116-119; Trigger 1978: 349-352; Abler and Tooker 1978:505-506).

As the fur trade became an imperial concern for the European powers during the seventeenth and eighteenth centuries, competition among them resulted in the erection of fortified trading posts along the frontier, such as the short-lived French forts Conti in 1679 and Denonville in 1687-1688 (both on the site of what is now Fort Niagara), and the British fort near the future village of Geneva in the early eighteenth century. Despite consistent failures in establishing a permanent trading post in the region, French strategists continued to accept the idea that asserting control over the Niagara River valley offered strategic advantages within their imperial goals. Finally, beginning in the 1720s, Louis-Thomas de Joncaire, Sieur de Chabert parlayed his years as a captive and adoptee of the Seneca into permission to erect a series of trading posts along the Niagara River and Lake Ontario. In 1726, with the construction of Fort Niagara, the French began to exercise military control of the Niagara valley. As a result, by the middle of the eighteenth century, the French had created a string of military and trading installations. These posts extended from Fort Niagara along Lake Ontario, south to the trading settlement at Buffalo Creek, and along the southern shore of Lake Erie to Presque Isle (present-day Erie, Pennsylvania) into the Ohio valley (Abler and Tooker 1978:506-507; Tooker 1978:431-432; Turner 1974 [1850]:143-147, 184).

The ancient rivalry between Great Britain and France intensified during the course of the eighteenth century, reaching a crescendo in the New World during the 1750s, when the two kingdoms again went to war. After a 19-day siege, British troops captured Fort Niagara in July 1759. This crippled the French presence in the region, although skirmishing between Native Americans and the English continued until the closing days of the French and Indian War. After the French defeat and their loss of North American colonies, some of the western Seneca, remaining loyal to the French, joined Pontiac's uprising (1763), harrying English-American settlers along the frontier. With the cessation of those hostilities in 1764, the Seneca were compelled to cede swaths of land along both sides of the Niagara River to the English (Turner 1974 [1850]:228-233; Abler and Tooker 1978:507; Smith 1884:I:47).

During the Revolutionary War, both the British and Americans enlisted the aid of individual Haudenosaunee nations in their battles in the frontier, as several of the nations allied with Great Britain and several with the Americans. Warfare initially remained well east of the region, but Britain's efforts to cripple the frontier economy engendered raids by their Haudenosaunee allies against isolated farming communities, notably in the Mohawk valley. In response, Major General John Sullivan led a punitive assault into the heart of Haudenosaunee country in 1779 to halt the attacks against American settlers. The Continentals, utilizing "scorched earth" tactics, destroyed more than 40 villages and hundreds of acres of crops in an area between the eastern Finger Lakes and the Genesee River. Many Haudenosaunee, burned out of their central New York villages, sought refuge at Fort Niagara where they suffered through a difficult winter of hardship and hunger. Some Haudenosaunee subsequently settled along Buffalo Creek, which would later be incorporated into the Buffalo Creek reservation (Spiegelman 2005; Abler and Tooker 1978: 507-508; Smith 1884:I:51-52; Ellis et al. 1967:116-117). While Haudenosaunee raids would continue for the remainder of the war, they were no longer a major military threat.

The British and their Loyalist allies were expelled from the new United States after the Treaty of Paris (1783) ended the Revolutionary War, although the British did not vacate forts along Lake Ontario or farther west until 1796. The Haudenosaunee, abandoned in the United States by their British allies after the Treaty of Paris, were forced to make peace as separate nations with the Americans. As a result of the Second Fort Stanwix Treaty (1784), the Haudenosaunee relinquished all their land west of the Genesee River, except for several reservations (Turner 1974 [1850]:403; Abler and Tooker 1978:509). At a time when the nearby

European-American settlements were small, few and far between, these reservations were not conceived as locations surrounded by invisible fences that compelled the Seneca to remain inside, but which allowed the Seneca the control to keep European-American interlopers out.

Native American title to the land in western New York was largely extinguished with the Treaty of Big Tree (present-day Geneseo, New York) in 1797, although several areas were reserved for the Native Americans to use and live on, including reservations at Buffalo Creek, Allegany, Cattaraugus, and Tonawanda (Figure 3). Lying on both sides of Buffalo Creek, the Buffalo reservation consisted of 130 square miles and extended east from Lake Erie. William Street in the Town of Cheektowaga was the reservation's approximate northern boundary until the 1840s. A line extended due west from what is now the boundary between the towns of Elma and Aurora marks what was the reservation's approximate southern boundary. This boundary is approximately midway between Big Tree Road (US Route 20A) and Mile Strip Road (State Route 179). The current project area is south of Route 20A and was entirely outside the reservation (Lankes 1964; Smith 1884:I:74-75, 489, 524; Abler and Tooker 1978:508-512; Goldman 1983:27-31; Silsby 1961).

European-American settlement of the Niagara Frontier dates from the end of the American Revolution in 1783, although border disputes between New York and Massachusetts, both of which claimed the new territory, frustrated the actual, legal sale of these lands. Under an agreement signed in Hartford, Connecticut, in 1786, former Haudenosaunee land came under the jurisdiction of New York State. Nonetheless, the Commonwealth of Massachusetts maintained the preemption rights to sell the land west of Seneca Lake, once the Haudenosaunee title had been extinguished. During the next decade large grants of land in western New York would be sold to private investors who would attempt to open the land to settlement, except for a one-mile wide strip of land along the eastern bank of the Niagara River, which New York State reserved for itself (see Figure 3; Ellis et al. 1967:152-156; Abler and Tooker 1978:507-509; Turner 1974 [1850]:326). After having problems with the land's initial purchasers, a syndicate of land speculators headed by Oliver Phelps and Nathaniel Gorham, the Commonwealth of Massachusetts sold the rights to the unsurveyed part to Robert Morris in 1791. Reserving a portion of the land for his own purposes, Morris sold the remainder, including the present Erie County, to a consortium of Dutch investors called the Holland Land Company in 1792-1793 (Turner 1974 [1850]:396-403; Ellis et al. 1967:154; Smith 1884:I:75; Silsby 1961).

As a precursor to settlement, Theophilus Cazenove, agent of the company, contracted Joseph Ellicott in July 1797 to survey the company's land in western New York and divide it into townships. The future city of Buffalo was laid out by Ellicott, who called the village on Buffalo Creek New Amsterdam and named the streets after his Dutch patrons. In 1802, all land west of the Genesee River was incorporated into Genesee County, and all land west of Ellicott's east transit, including the project area, was subsumed under the Town of Batavia. Two years later, Batavia was divided into the towns of Batavia, Willink, Erie, and Chautauqua. These towns stretched from Lake Ontario to the Pennsylvania border. The project area was within the Town of Erie, whose eastern border was Ellicott's west transit (present-day Transit Road) (Turner 1974 [1850]:62-63; White 1898:I:140; Beers 1880:7-8).

Once townships had been surveyed and roads in the area cut, settlement and growth followed quickly. Early settlers were predominantly New Englanders (especially Vermonters) and Pennsylvanians, who entered the territory during the early 1800s along Big Tree Road, one of the first roads in the county, or up Eighteen Mile Creek. The road, also called "Middle Road" (present-day Route 20A) opened as early as 1798 and connected Geneseo (then known as Big

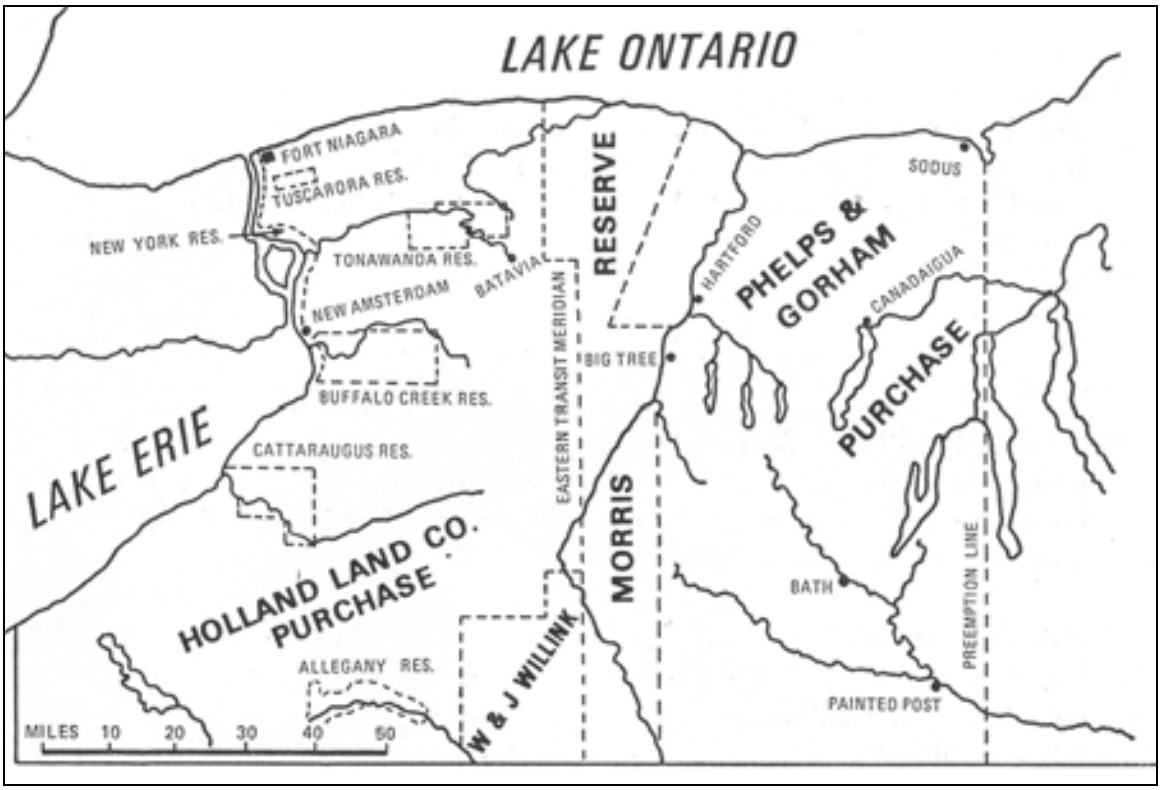

Figure 3. Landholdings in Western New York ca. 1800 *(Chazanof 1970:23).*

Tree) to Lake Erie. The western part of this road is known as Big Tree Road, and the eastern part is also called Quaker Road. Two other early roads were Camp Road (present-day Route 75), which runs from Athol Springs (formerly Campsburg) to Hamburg, and the Lake Shore Road, which parallels the lakeshore (northwest of the project area) (Beers 1880; White 1898: I:499; Sipprell 1972:2). By 1817, the shore road was the primary east-west route through the town, and was reputed to have as many taverns as private homes along it (Smith 1884:I:514). The first Anglo-American settler in what is now the Town of Hamburg was John Cummings, who purchased land from the Holland Land Company as early as 1803 and cut a farmstead out of the heavily forested wilderness. In 1806, he erected the first gristmill in Erie County south of the Buffalo Creek reservation on Eighteen Mile Creek near Water Valley. Joel Harvey constructed a log house (later converted into a hotel) on the Evans side of the mouth of Eighteen Mile Creek in 1804, and was the first settler of that town. Shortly thereafter, Ebenezer Ingersoll built a house on the Hamburg side of the mouth of Eighteen Mile Creek. Settlement clustered near the present-day villages of Hamburg and Orchard Park (Sipprell 1972:2; Smith 1884:I:511-512; Beers 1880:23).

Other early settlers included Nathaniel Titus (who operated a tavern in what was Bay View, now Athol Springs), Aaron Cash (who lived in North Evans, south of the creek), Dr. Rufus Belden, Abner Amsdell, Daniel Camp, Zenas Barker, Nelson Whittiger, Benjamin, Enos and Joseph Sheldon, David and Elisha Cook, King Root, Moses Dart, and Daniel and Richard Smith (sons of Deacon Ezekiel Smith). The Smith brothers built a gristmill and a corn mill on Eighteen Mile Creek in the present-day village of Hamburg. Known then as Smith's Mills, the village also included a tannery owned by James Husted (later, by Thomas White), a second tannery owned by Root and Bliss, a store operated by Orson Bennett, and a hotel owned by Ralph Shepard

(Smith 1884:I:511-514, 517, 558; Sipprell 1972:2-3). Establishing a farm in the vicinity of what is now Orchard Park, David Eddy erected and operated the town's first tavern, built the first sawmill on Smokes Creek, and became the Town of Hamburg's first supervisor (Printy 1972:3-4; Smith 1884:I:525-527). Other prominent early settlers included Samuel and Seth Abbott (near Abbott's Corner, now Armor), Jacob and Joshua Potter (near Potter's Corner, now Orchard Park), and Jacob Wright (near Armor). The Town of Hamburg was created in 1812 and included the present-day towns of Orchard Park and Hamburg as well as portions of Evans and West Seneca (White 1898:I:14-15; Smith 1884:I:511, 513).

This growth was stunted by the War of 1812 as western New York served as one of the primary theaters of that conflict and areas near the border with Upper Canada (the current province of Ontario) were ravaged by attacks and counter-attacks. Most of the battles in this theater were north of present project area. In December 1813, British forces captured Fort Niagara and burned Lewiston, the Tuscarora village near the Niagara River, Manchester (present-day Niagara Falls), Black Rock, and Buffalo, which had a population of approximately 500 at that time. The devastation was substantial, leaving the territory largely depopulated. Along Lake Erie, the *Queen Charlotte*, a British vessel, prowled the lakeshore, sending marauders ashore to acquire food (Smith 1884:I:63-74, 126, 399, II:63-74, 573; Ellis et al. 1967: 141; Goldman 1983:21-24; Turner 1974 [1850]:603). Settlement resumed after the cessation of active warfare in 1814. By 1820 the Town of Hamburg contained 2,034 people in 354 families (Beers 1880:23).

As pioneers flocked westward, Erie County was created from Niagara County in 1821. The region received a tremendous economic boost when one terminus of the Erie Canal was located at the village of Buffalo. Begun in 1817, the Erie Canal linked Buffalo and Lake Erie with New York City when it opened in October 1825. By that time the Town of Hamburg had four gristmills, 10 sawmills, four carding machines, two distilleries, and two asheries (for making soap) (Sipprell 1972:3). Many of the early settlers, most of whom were farmers, were Quakers, who established the town's first religious institution in 1807. Since the population of the Town of Hamburg was sparse and miles of forested land separated neighbors, the township split in 1850 to facilitate more efficient government, with the eastern portion becoming the Town of Ellicott (renamed East Hamburg two years later) and the western portion remaining the Town of Hamburg. Around the time of the division of the Town of Hamburg, construction of the Buffalo-White's Corner (present-day Hamburg) Plank Road was underway. The road is now South Park Avenue. In addition to the plank road, the Buffalo & State Line Railroad opened from Buffalo to Dunkirk along the Lake Erie shoreline in February 1852. Part of the Lake Shore & Michigan Southern and later the Erie Railroad, the line had opened previously from State Line to Dunkirk (Printy 1972:2-4; Smith 1884:I:315; Fischer 2006, 2007).

While the project area remained predominantly agricultural during the nineteenth century, properties within the Town of Hamburg were parceled out to individual landowners who established farmsteads or other rural industries, such as milling or tanning. Agricultural activities consisted mainly of dairying, and wheat and potato cultivation with little market gardening. Many farms utilized fruit trees to supplement their incomes. Ancillary agricultural businesses included the canning, fruit-drying and vinegar-making industries (Dunn 1972:9-10, 38). During the last third of the nineteenth century, the importance of agriculture for the town was symbolized in 1868 by the permanent invitation of the Hamburg Driving Park Association to use its land for the annual joint Erie County-Cattaraugus County Agricultural Fair (at the present-day Hamburg Fairgrounds/Buffalo Raceway) (Eberle and Grande 1987:48-49).

The nearby Village of Hamburg (Whites Corners) fulfilled the commercial needs of the few farmers living near the project area. The village housed numerous stores, a meat market, a tailor, several taverns and hotels, a cloth mill, a planing mill, the Hamburg Axe Company, and a canning factory among other enterprises (Smith 1884:I:517-518, 530-531; White 1898:I:539, 561; Printy 1972:7). Grain, vegetables and other farm products were shipped to Buffalo as well as points east. Outside the villages, agriculture and summer recreation remained the important industries well into the twentieth century. “All kinds of farm produce, garden truck, fruit, etc., [were] grown in abundance” (White 1898:I:557). With the establishment of agricultural experiment stations in the 1930s the quality of both dairying herds and potatoes were greatly improved (Dunn 1972:212).

By the end of the nineteenth century, the pace of commerce in the northern part of the Town of Hamburg increased as the economy dramatically shifted from agriculture to industry. Several railroad lines ran through the western portion of the Town of Hamburg, and included Lakeshore & Michigan Southern, and the Buffalo & Southwestern. Near the Town of West Seneca (later, City of Lackawanna) boundary, the Village of Blasdell was established where the Erie and Nickel Plate railroads crossed (Beers 1880; White 1898:I:563-564; Eberle and Grande 1987:154). With the railroads, the lake area also became a popular spot for recreation as visitors stayed at the Bay View House or the Athol Springs Hotel as well as Woodlawn Beach, which developed an extensive recreation and amusement park industry (White 1898:I:564).

In the twentieth century, the town experienced tremendous growth as the steel industry took root in Lackawanna. The prevalence of rail and trolley lines in the area and the break wall constructed by the U.S. government in the 1890s created an excellent environment for industry. In 1903, the first of two blast furnaces of the Lackawanna Iron and Steel Company (of Scranton, Pennsylvania) began operation in the Town of West Seneca (Lankes 1968:55; Weller 1972:2-3). The Bethlehem Steel Company acquired the plant in 1922 and other small area plants in the early 1930s (Weller 1972:3, 7; Lankes 1968:55-56; Sipprell 1972:6).

In the early twentieth century, economic growth in the Town of Hamburg was facilitated by developments in transportation that improved access to jobs and resources for the general population of the region, such as the creation of the Buffalo, Hamburg & Orchard Park Electric Railway or trolley in 1900. The line merged with other rural trolley routes to form the Buffalo Hamburg Aurora Railway in 1909. Reducing the trip to Buffalo to only one hour, the trolley facilitated the initial impulse for suburbanization of the Hamburg area. The line was abandoned in favor of automobiles and buses in January 1932 (Printy 1969: 43-44, 1972:7-8; Lankes 1968: 27-28; Eberle and Grande 1987:156, 215).

Around the turn of the nineteenth century, other public services began to improve living conditions in the town: telephone service was initiated in 1886, gas lines and water mains were laid starting in 1893, and electric street lights arrived ca. 1893 (White 1898:I:561). What is now Southwestern Boulevard (Route 20) and the improved Route 5 were extended through the area by the late 1930s. The rural part of the town, as well as areas along the lake and the shore railroads, became increasingly residential and commercial after World War II with the creation of numerous suburban developments and industrial parks (Erie County Public Works nd).

The New York State Thruway was extended along western Erie County in the late 1950s, which contributed to the suburbanization of the region. Located along the south side of the project area, the Thruway (I-90) links southwestern Erie County and southwestern New York with the City of Buffalo, and employment opportunities in northern Hamburg and West Seneca.

In the early 1970s, the northern part of the Town of Hamburg was the home of several prominent industrial facilities, including units of Bethlehem Steel, the Ford Stamping Plant, Riefler Cement, Electro-Refractories Corporation and Chemarol. In addition, suburban expansion was manifested by the creation of residential subdivisions, such as Scranton, Carnegie and Forest Glen in proximity to the project area (see Figure 1). Despite the industrial developments in the north and the recreational areas emerging along the lake, the project area remained largely farmland or vacant into the 1980s. A Days Inn motel on the west side of Camp Road currently occupies the site where a large structure was depicted in 1965 and 1986. The Town of Hamburg had a population of 56,259 in 2000 (Erie County Public Works nd; USGS 1965; Sipprell 1972:6; Owens et al. 1986: Sheet 66).

2.3 DOCUMENTARY RESEARCH

2.3.1 Historical Map Analysis. Three historical maps were reviewed for the project area (Stone and Stewart 1866; Beers 1880; USGS 1907). In addition, aerial photographs from 1926-1927 and 1951 were consulted.

On the 1866 map (Figure 4), one structure (G.M. Pierce) is shown just southeast of the APE, along the west side of what is now Camp Road (Route 75). A second structure (attributed to 'J.I.') is across the road from the APE. No other structure is depicted less than 1,000 ft (300 m) from the APE. On the 1880 map (Figure 5), other structures are shown along Camp Road, including the G.M. Pierce property. A structure is depicted within the APE, in Lot 12, near the boundary of Lot 13, within a 116-acre parcel owned by C. Harter, who occupied a residence east of the project area along Camp Road. This structure is on the inner portion of the parcel and not near the road. It is not shown on the 1907 historic USGS topographic map (Figure 6), nor is there any other structure shown within the APE on that map. The 1907 map also delineates structures along Camp Road in locations similar to those shown on the 1880 map.

A 1927 aerial photograph (Figure 7; Erie County Public Works nd) revealed the project area as farmland and woodlots with farm buildings adjacent to Camp Road. No structures are depicted within the APE. Only parts of the project area were available for viewing on aerials from 1951 (Erie County Public Works nd) and no structures were evident on those images. The area was still farmland. By 1968 (see Figure 1), the New York State Thruway (I-90) had been constructed, forming the southern boundary of the project area and a large structure was shown in the northeastern section of the APE near Camp Road. This structure also appears on a recent aerial photograph (see Figure 2).

2.3.2 Site File and Archival Review. A review of archaeological site files was conducted at the New York State Office of Parks, Recreation and Historic Preservation (OPRHP). No sites were identified within the APE. One site—the prehistoric Howard Greens Loci site (OPRHP #02915.000445)—is located within one mile of the project area. It is about three-quarters of a mile (1,200 meters) north of the APE and consisted of stray finds.

Early archaeological surveys such as Beauchamp (1900), Houghton (1909), and Parker (1922) do not indicate the presence of any prehistoric sites in the vicinity of the project area. Later archaeological work by Ritchie (1980) and Ritchie and Funk (1973) also do not denote the presence of archaeological sites within the project area. Numerous cultural resources investigations have been conducted within one mile of the APE, but none have been performed for the project area.

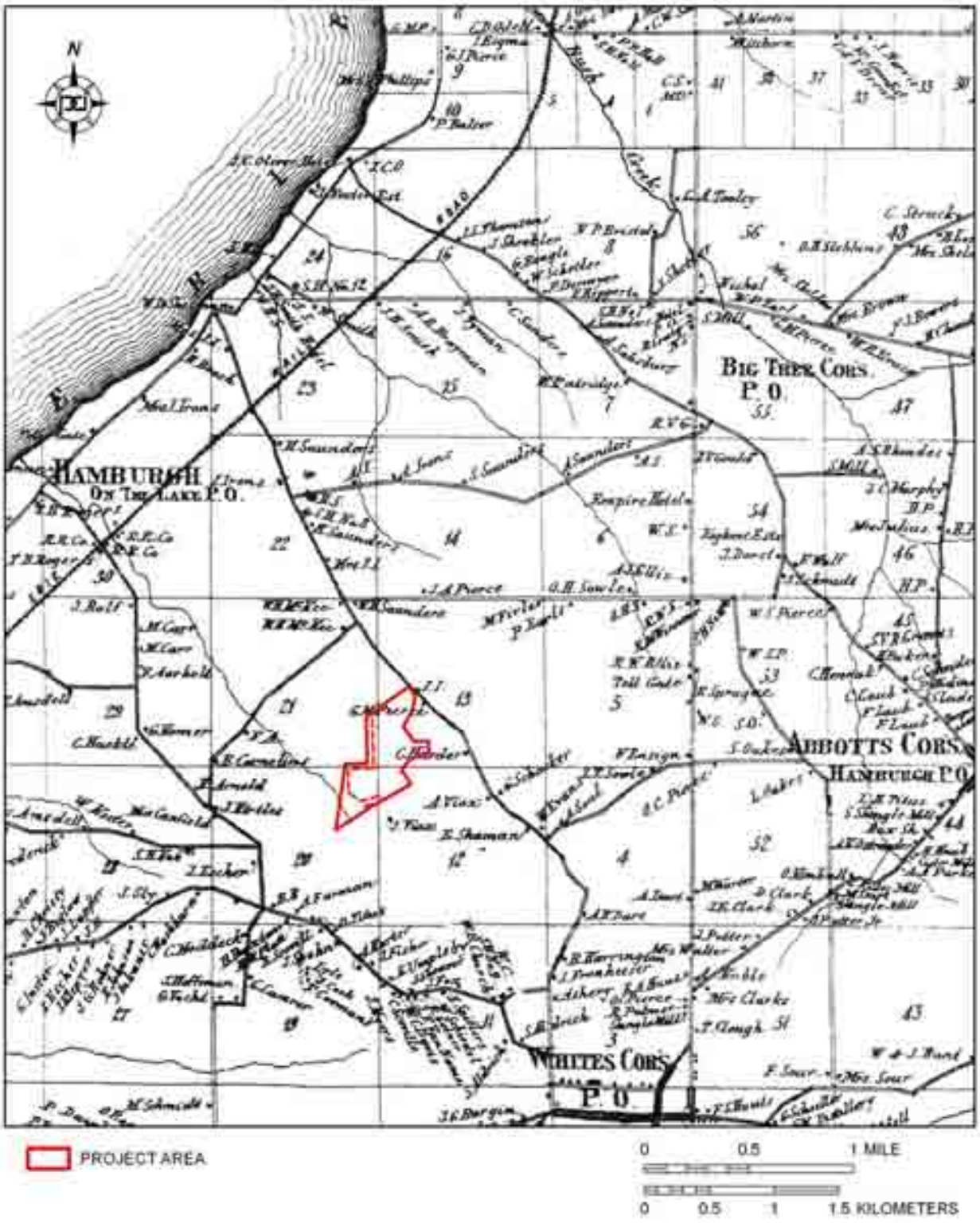

Figure 4. The project area in 1866 *(Stone and Stewart 1866).*

Figure 5. The project area in 1880 *(Beers 1880).*

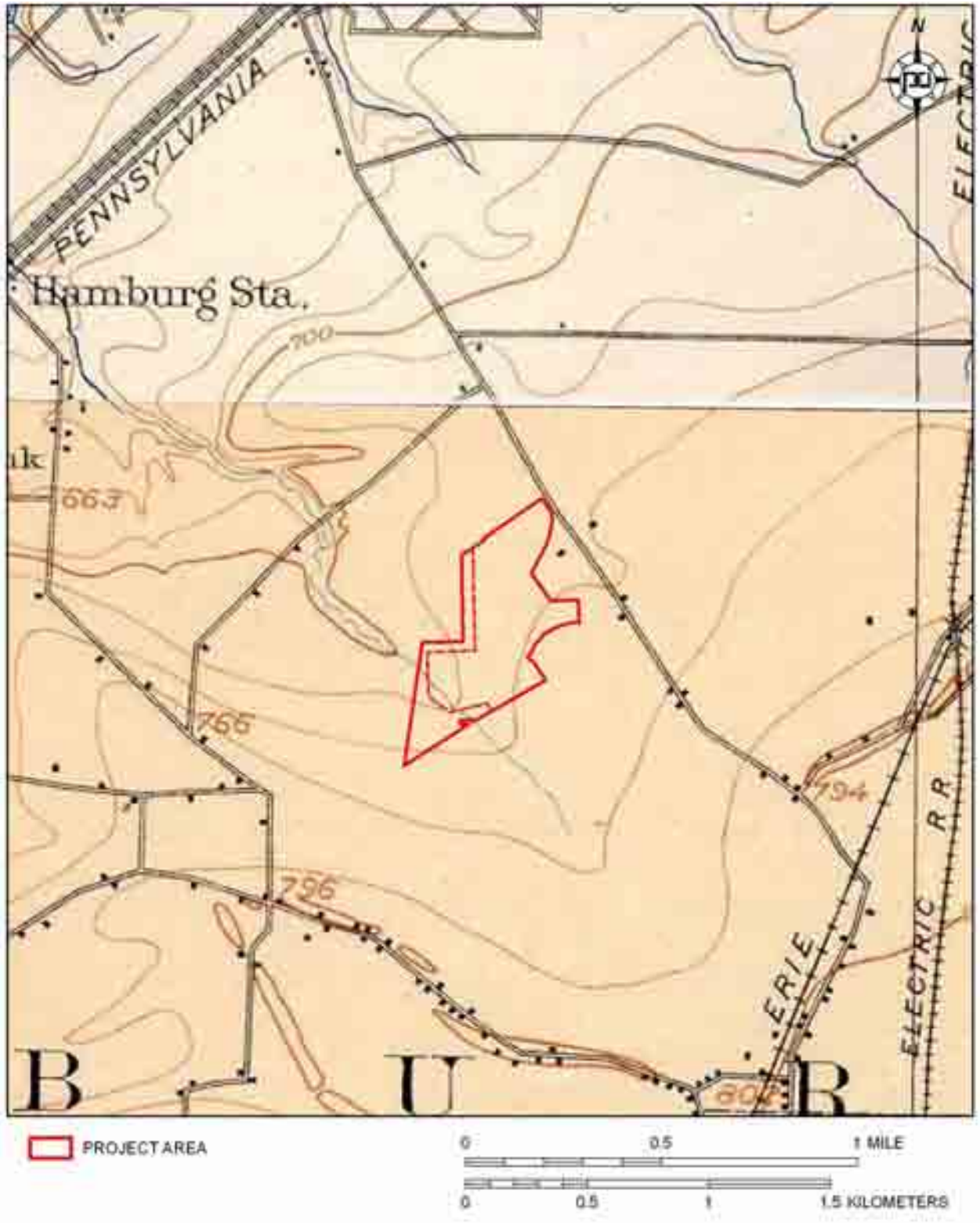

Figure 6. The project area shown in the early twentieth century *(USGS 1901 [upper], 1907 [lower]).*

Figure 7. The project area in 1927 *(Erie County Public Works nd).*

3.0 Field Investigation

3.1 METHODOLOGY

Cultural resource investigations are designed to provide a complete examination of the area of potential effect (APE) in order to identify and assess any known or unknown cultural resources. These resources include prehistoric and historic archaeological sites as well as standing structures or other aboveground features. The field investigation includes an intensive surface and subsurface examination (e.g., shovel testing) of the project area and photographic documentation of the project site and vicinity. Pedestrian or walkover reconnaissance surveys are conducted across the project area to identify testable locations, cultural features, surface visibility, soil disturbance, and wet or poorly drained areas, as well as well drained sensitive areas that would require testing. An intensive surface inspection is utilized as a primary method of survey when ground surface visibility is not obscured by vegetation (e.g., plowed agricultural fields) or standing water.

Shovel test pits (STPs) are excavated at a standard 15-m (50-ft) interval throughout the APE. Shovel tests average a minimum of 40 cm (16 in) in diameter and are excavated to at least 10 cm (4 in) below potentially artifact-bearing soils. All soils are matched to Munsell® color charts and sieved through ¼-inch hardware screens. Tests are terminated if water is encountered in the test pit, indicating poorly drained soils. Areas of severe disturbance, standing water, and slope greater than 15 percent are documented but not shovel tested. All shovel tests are backfilled to natural contour upon completion. Additional shovel tests are excavated around positive shovel tests to define preliminary site boundaries, artifact concentrations or determine that the find spot is an isolated occurrence. Close-interval shovel testing is implemented when surface features (e.g., a foundation or depression or the presence of map documented structures) are identified.

Artifacts found during the survey are collected and placed in plastic or paper bags and labeled with pertinent provenience information. Modern materials, such as plastic and container glass, are noted on field forms but not collected. Materials, such as coal, red brick fragments, and miscellaneous nail fragments also are noted but not collected unless they can be clearly identified as historic or found in association with historic period artifacts. All field information collected from shovel tests is recorded on shovel test forms, including the location, pertinent stratigraphic data, soil types, natural or man-made disturbances in the area, and the presence or absence of cultural materials. The field director maintains a daily log, and photographs pertinent manmade disturbances and environmental conditions. All shovel tests are recorded on a project map and included in the report.

3.2 LABORATORY ANALYSIS

Recovered cultural materials are stored at Panamerican's Buffalo Office for processing and analysis. Processing of recovered artifacts follows guidelines elaborated in 36 CFR Part 79 (Curation of Federally-Owned and Administered Archaeological Collections) and in the New York Archaeological Council's Standards and Curation of Archaeological Collections document (NYAC 1994). Standard archaeological procedures of cleaning and storage are also followed, with provenience information kept with artifacts at all times. Permanent curation of artifacts is arranged with landowner consent.

3.3 RESULTS OF THE FIELD INVESTIGATION

The Phase I field investigation of the 80-acre project area included a surface reconnaissance, photographic documentation of field conditions and project area vicinity, and the excavation of 679 shovel tests. Approximately 18 acres of the project area serve as a buffer between an adjacent housing development to the west and drainage areas to the southwest. The APE includes 62 acres east of the buffer area, all of which was surveyed during the Phase I investigation. For analytical purposes, the APE was divided into five study areas (A through E) (Figure 8). A total of 44 acres were shovel tested. The 20-acre paved commercial lot and associated structures were photo-documented. Photographs of the project area are in Appendix A. Shovel tests are included in Appendix B by study area, transect, and shovel test number (e.g., A1.1).

Study Area A. This study area consists of approximately 8 acres in the southwestern portion of the project area (see Figure 8). The area is wooded, covered with beach, hemlock, and ironwood trees typically under 24 inches (61 cm) in diameter (see Appendix A: Photograph 1). Isolated pockets of standing water are found in the study area, with increased frequency observed at its north extent (see Appendix A: Photograph 2). The western terminus of a buried storm drain system that dissects the south portions of Study Areas A and B is located within the adjacent buffer area, approximately 100 ft (30.5 m) south of Study Area A (see Appendix A: Photograph 3). The adjacent buffer area consists of lower elevated wooded terrain that provides area drainage (see Appendix A: Photographs 4 and 5).

A total of 148 shovel tests were excavated along 16 transects aligned from east to west in Study Area A (Figure 9). Transects were designated A1 through A16, numbered from north to south. Shovel tests within Study Area A were dug at the standard 50-ft (15-m) interval.

Stratum 1 typically consisted of dark grayish brown silty loam, reaching an average depth of 17 cm (6.7 in), and ranging between 8 and 30 cm (3.1 and 11.8 in). Stratum 2 was a yellowish brown or mottled light brownish gray and brownish yellow clay loam, reaching an average depth of 30 cm (11.8 in), and ranging between 19 and 47 cm (7.5 and 18.5 in). Seven shovel tests (A2.2, A3.9, A4.1, A4.2, A 4.6, A7.7 and A13.7) recorded a third stratum, due to an the assignment of individual stratum numbers to the organic groundcover (duff) and the underlying A-Horizon (which is typically treated as a combined Stratum 1; i.e., the A-Horizon includes the Ao stratum). When corrected, the results of these seven tests correspond to results obtained over the remainder of the study area. Water seepage occurred in 28 shovel tests (see Appendix B). No artifacts or buried features were found in the shovel tests of Study Area A.

Study Area B. This study area includes approximately 13 acres in the southeastern part of the project area (see Figure 8). The area is wooded with similar vegetation as described in Study Area A. Drainage is moderate within Study Area B, with pockets of standing water largely limited to the south extent of the area. Impacts include a shale-based access road in proximity to sewer main covers located at the west extent of the study area (see Appendix A: Photographs 6 and 7) and two shale access roads dissecting the study area from the northeast to the southwest. The northernmost of the latter two access roads has a 3-ft (1-m) elevated surface and sewer covers are interspersed along its length (see Appendix A: Photographs 8 and 9). The southernmost access road is associated with a buried storm drain system that extends into the buffer (see Appendix A: Photograph 10).

Figure 8. The Hamburg Crossings project area divided into study areas *(aerial source: NYS GIS Clearinghouse 2002).*

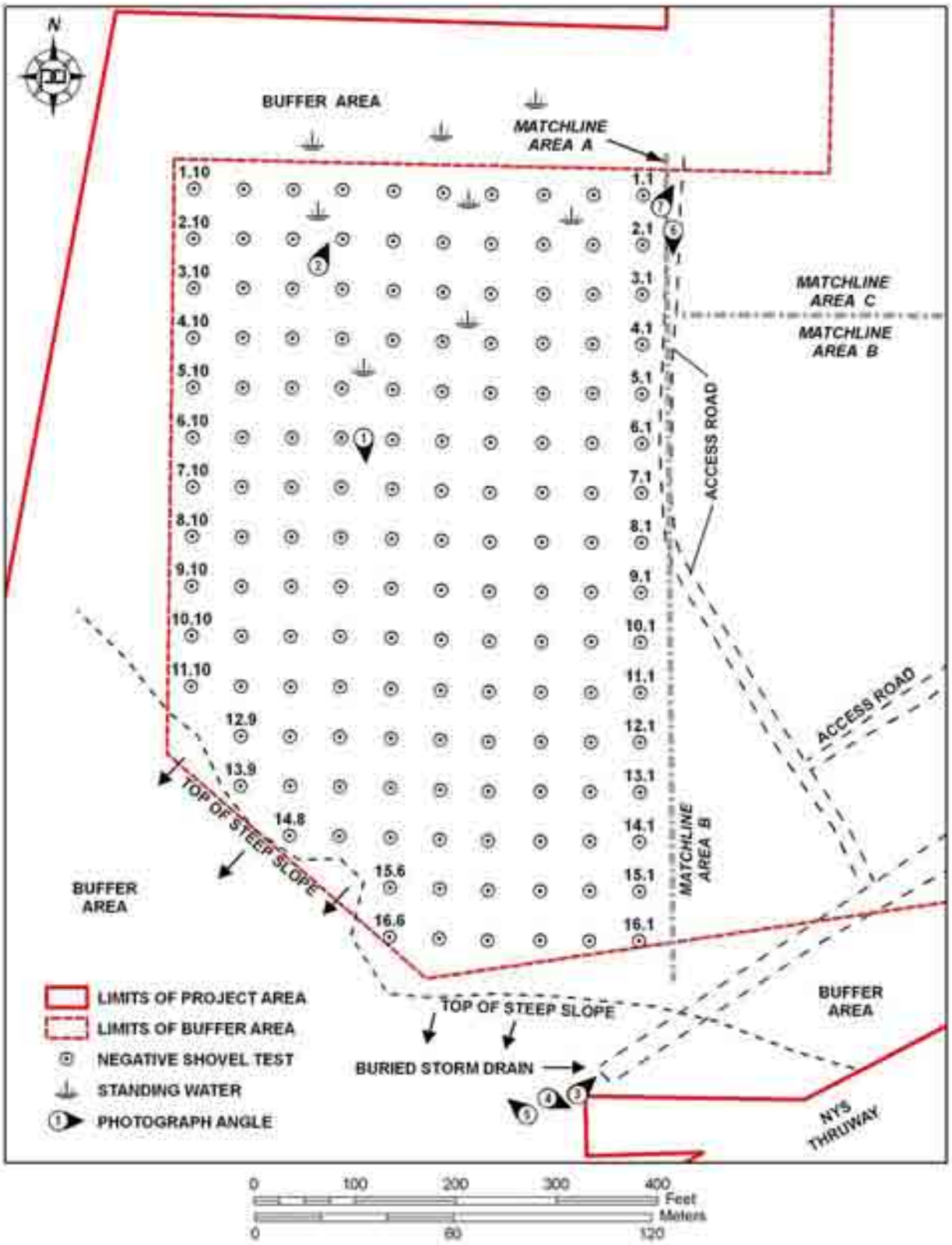

Figure 9. Study Area A: locations of shovel tests, disturbances, and photograph angles.

A total of 201 shovel tests were excavated across the study area along 21 transects aligned from west to east (Figure 10). Transects were designated B1 through B21, numbered from north to south. Shovel tests within Study Area B were dug at 50-ft (15-m) intervals.

Stratum 1 typically consisted of dark grayish brown silty loam, reaching an average depth of 16 cm (6.3 in), and ranging between 7 and 34 cm (2.8 and 13.4 in). Stratum 2 was a yellowish brown or mottled light brownish gray and brownish yellow clay loam or silt clay loam, reaching an average depth of 31 cm (12.2 in), and ranging between 19 and 44 cm (7.5 and 17.3 in). Water seepage occurred in 63 shovel tests (see Appendix B). No artifacts or buried features were found in the shovel tests of Study Area B.

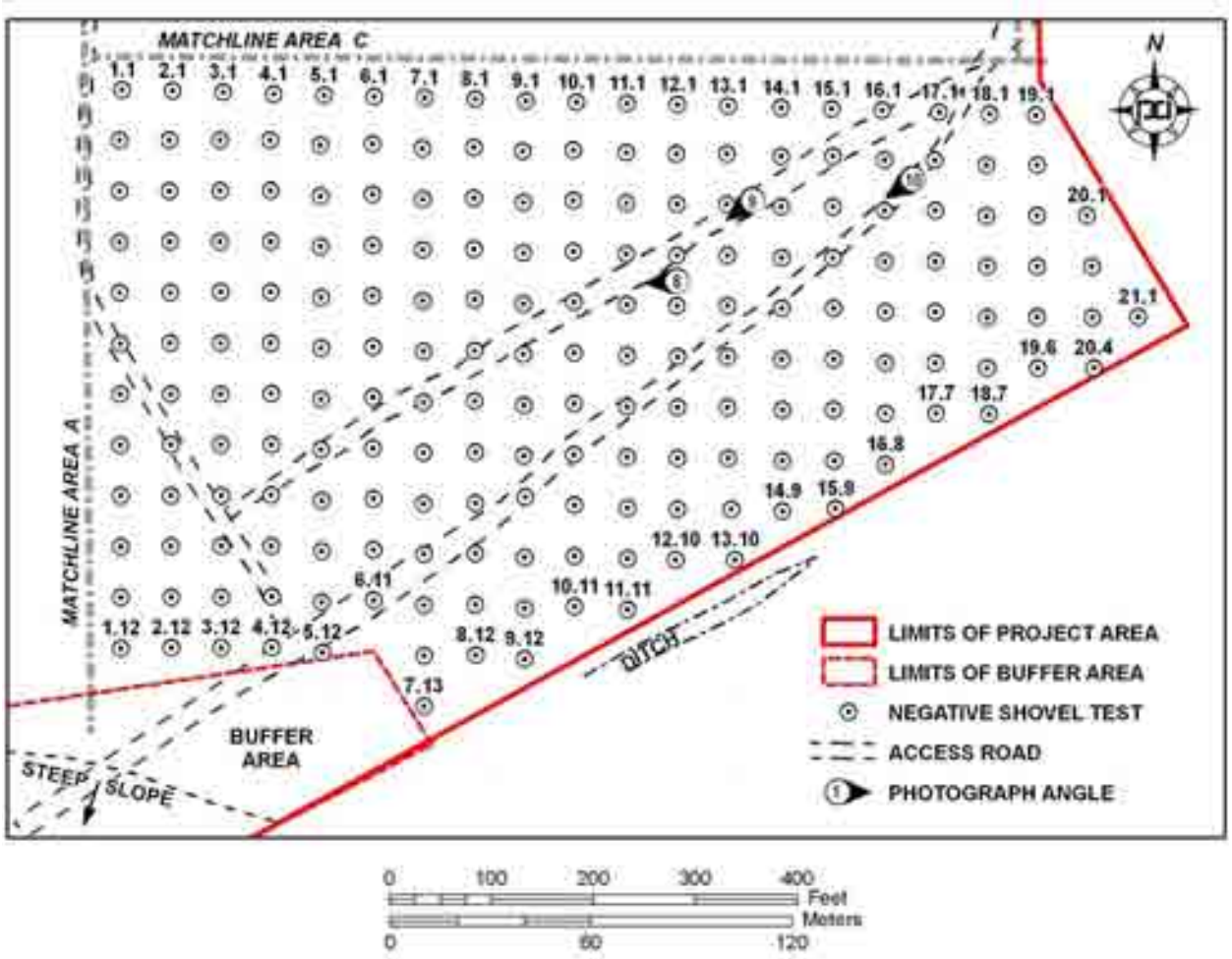

Figure 10. Study Area B: locations of shovel tests, disturbances and photograph angles.

Study Area C. This study area includes approximately 15 acres in the central portion of the project area (see Figure 8). Vegetation within Study Area C is similar to that described in Study Areas A and B (see Appendix A: Photograph 11). Drainage within Study Area C is moderate to poor (see Appendix A: Photograph 12), with isolated pockets of standing water covering 20 to 50 percent of the surface in the northwest corner and south portion of the study area. Impacts include substantial dumping of concrete, asphalt, and gravel (up to four meters in height) within an approximately one-acre area in the northeast of the study area (see Appendix A: Photographs 13 and 14). Former agricultural furrows or shallow drainage ditches generally aligned north-south and approximately spaced 30 ft (9.1 m) apart were observed covering a greater portion of the study area, suggesting former agricultural land use and associated impacts due to plowing (see Appendix A: Photograph 15).

A total of 235 shovel tests were excavated across the study area along 18 transects and numbered from south to north (Figure 11). Transects were designated C1 through C18, numbered from west to east. A total of 192 shovel tests were dug at 50-ft (15-m) intervals; a total of 48 shovel tests were dug at 100-ft (30-m) intervals in areas of standing water (near the north and south portions of Transects C4 through C6 and the south portions of Transects C7 through C18). The interval between transects was maintained at 50 ft (15 m).

Stratum 1 typically consisted of dark gray or dark grayish brown silty loam, reaching an average depth of 19 cm (7.5 in), and ranging between 7 and 36 cm (2.8 and 14.2 in). Stratum 2 was a yellowish brown or mottled light brownish gray and brownish yellow clay loam, reaching an average depth of 31 cm (12.2 in), and ranging between 15 and 46 cm (5.9 and 18.1 in). STP C1.7 encountered a third stratum, again due to an inconsistent field practice of assigning individual stratum numbers to the organic groundcover and the underlying A-Horizon in Stratum 1 soil. Water seepage occurred in 111 shovel tests (see Appendix B). No artifacts or buried features were found in the shovel tests of Study Area C.

As discussed in Section 2.3.1, an unidentified structure is shown in the southeast portion of the study area on the 1880 Beers map (see Figure 5). The structure does not appear on later referenced maps. The approximate location of the map documented structure (MDS) is near the south terminus of Transects C12 through C15 (see Figure 11). No artifacts were found in shovel tests dug within proximity to the MDS location. Eight additional shovel tests were dug (C12.2A, C12.3A, C13.2A, C13.3A, C14.2A, C14.3A, C15.2A and C15.3A) centered between the original 50-ft (15-m) interval grid in proximity to the MDS (see Appendix A: Photograph 16; see Appendix B: Shovel Test Log). No artifacts or buried features were found in the additional shovel tests.

In the north portion of Study Area C, a small mid-twentieth century dump consisting of approximately 30 bottles and bottle fragments was found during the walkover reconnaissance, located approximately 20 ft (6.1 m) northeast of STP C6.14 (see Figure 11). A representative sample totaling 13 objects was collected, including a Vitalis bottle dated 1937; a glass condiment jar and an amber glass both exhibiting a Hazel-Atlas Glass Company mark used between 1920 and 1964; one glass pickle jar; one Musterole mustard plaster jar made of white milk glass with an embossed aluminum spin-cap (date undetermined); one Murine eye solution glass jar (date undetermined); one lemon juice bottle (clear glass) marked Owens-Illinois Glass Co. and “Duraglass” dating between 1940 and 1954; three modern vitrified cup bodies, one vitrified possible plate base, one green Depression or carnival-type glass bowl fragment, and one milkglass novelty dish lid fragment in the form of a hen’s head and body (Table 2). These materials typify household refuse.

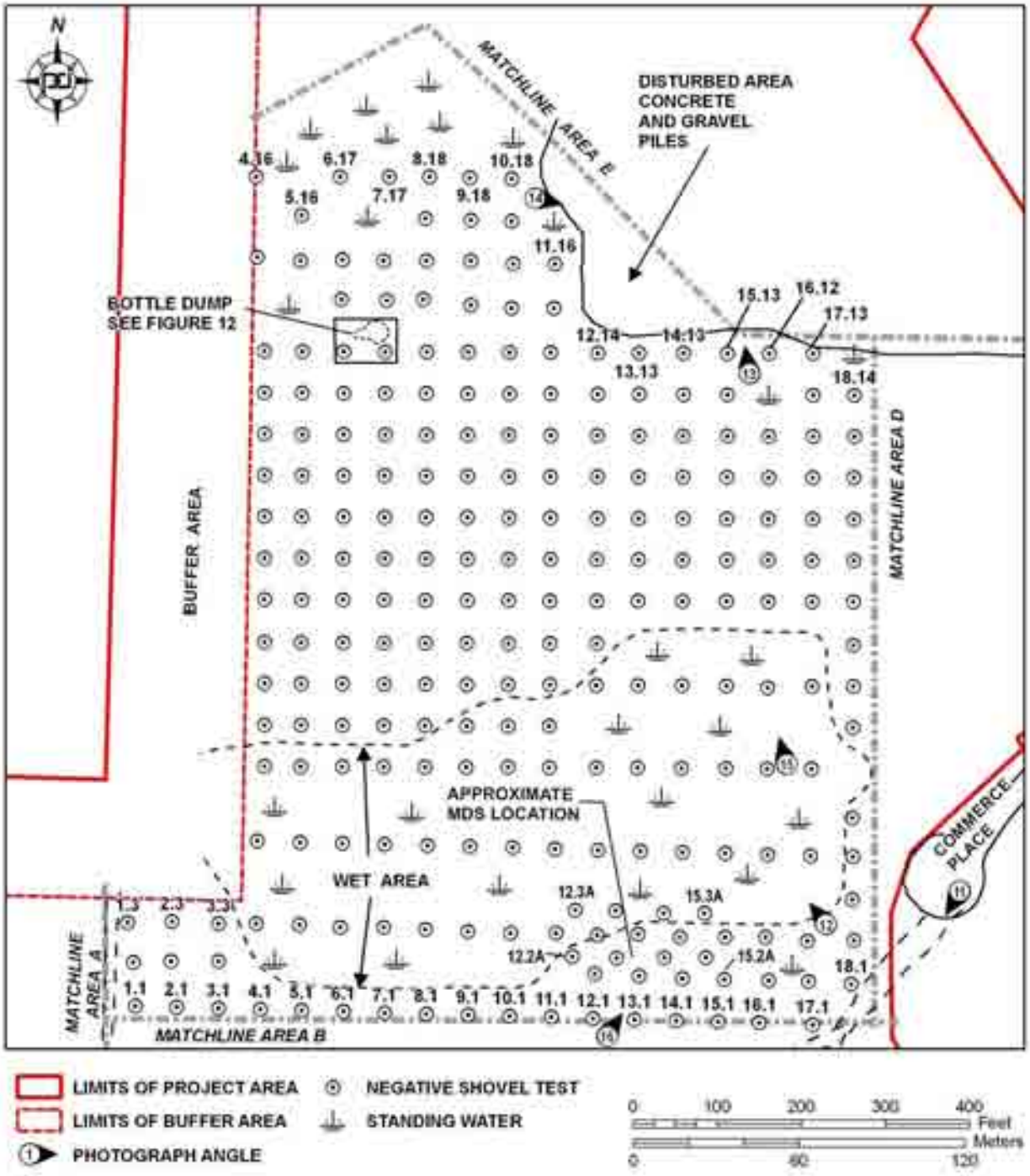

Figure 11. Study Area C: locations of shovel tests, disturbances and photograph angles.

Table 2. Catalog of artifacts found during Phase I investigation of Study Area C.

STP	Stratum/ Level	Material Class	Artifact Type	Count	Comments
	Surface	Glass	Vitalis bottle (men's hair treatment), with dated bottle manufacturers mark	1	1937
	Surface	Glass	widemouth condiment jar, clear, Hazel-Atlas Glass Co. mark	1	1923-1964
	Surface	Glass	amber glass jar, Hazel-Atlas Glass Co. mark	1	1923-1964
	Surface	Glass	pickle jar, clear, with threaded lip and metal lid	1	20th century
	Surface	Glass	milkglass, "Musterole" mustard plaster jar with aluminum threaded lid	1	20th century
	Surface	Glass	"Murine Eye" solution bottle	1	20th century
	Surface	Glass	lemon juice bottle, marked "Owens-Illinois Glass Co." and "Duraglas"	1	1940-1954
	Surface	Ceramic	undecorated vitrified cup body	3	20th century
	Surface	Ceramic	undecorated vitrified possible plate base	1	20th century
	Surface	Glass	green Depression or carnival style bowl rim fragment	1	20th century
	Surface	Glass	milk glass novelty dish lid fragment, chicken head and body form	1	20th century
C6.14B	1	Glass	Liquor bottle, half-pint, clear, “Anchor-Hocking Glass Co.” manufacturer's mark - Possible year mark - "46"	1	1946
C6.14B	1	Glass	milkglass teacup fragment with handle	1	
C6.14B	1	Glass	green Depression or carnival style bowl rim fragment	1	20th century
C6.14B	1	Glass	opaque glass vessel fragment with wavy textured decorative surface	1	

Two shovel tests were dug to determine the depth of the deposit and if it is stratified (Figure 12). STP C6.14A was placed within the east portion of the bottle dump (see Appendix A: Photograph 17). A low concentration of broken bottle glass was found to a depth of 15 cm (5.9 in) in Stratum 1. No large or diagnostic fragments were found in the shovel test, therefore no materials were collected. STP C6.14B was placed centrally in the dump where a concentration of bottles was found obscured by leaves (see Appendix A: Photograph 18). Broken bottle glass was found in moderate density within the shovel test to a depth of approximately 15 cm (5.9 in) in Stratum 1. Potentially diagnostic materials were collected, including a complete half-pint liquor bottle with a post-1938 Anchor-Hocking Glass Co. bottle mark and a potential date of manufacture mark – “46”, one milkglass teacup fragment with handle, one green Depression or carnival-type glass bowl rim fragment, and one non-diagnostic opaque glass vessel fragment with a textured wavy decorative surface (see Table 2).

Based upon field examination, the surface scatter was contemporaneous with materials found in the two shovel tests. Complete or nearly complete bottles tended to be located closer to the surface, while fragments were found below the surface in the saturated soil. There was no sign, however, of stratified deposits by age or type of bottles. Although the sample size of

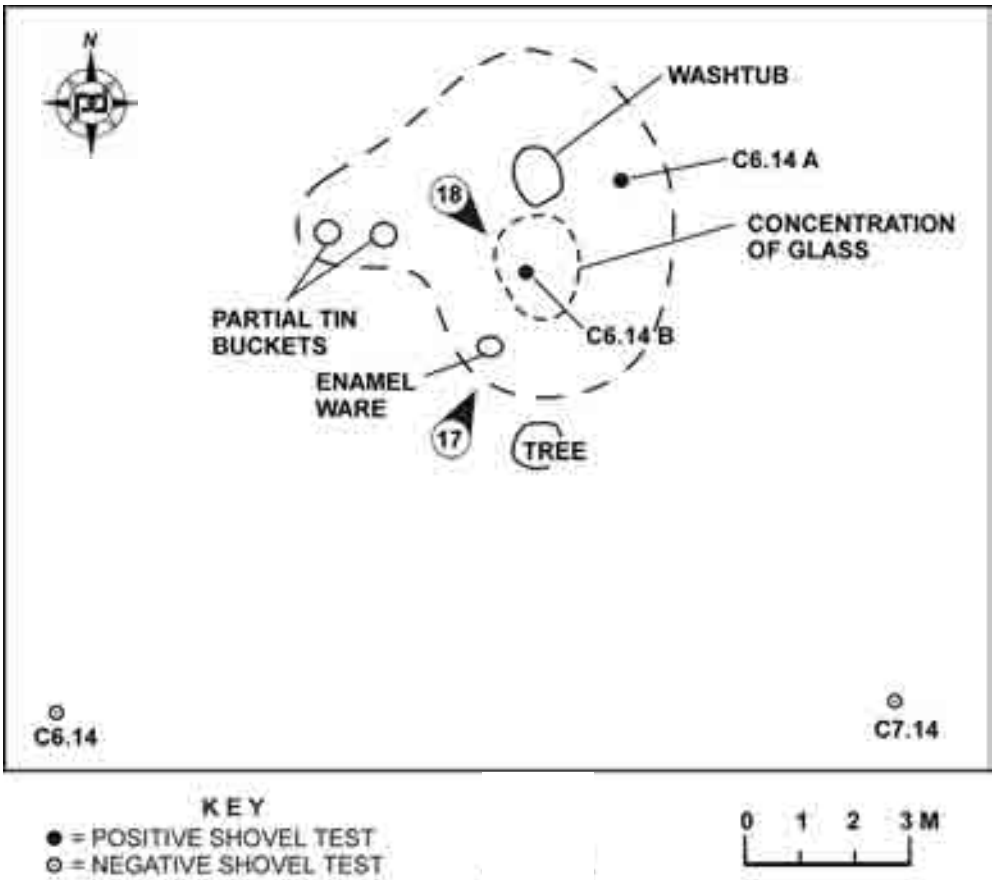

Figure 12. Bottle dump within Study Area C: locations of shovel tests and photograph angles.

diagnostic bottles is too small to provide a meaningful mean-date calculation, a likely 1940s period of deposit is obtained based upon frequency of dateable bottles. No additional artifacts or buried features were found in the shovel tests of Study Area C.

Study Area D. This study area consists of approximately five acres in the eastern part of the project area, located adjacent to the north side of Commerce Place (see Figure 8; see Appendix A: Photograph 19). Structures located adjacent to the study area include a medical care facility and a Comfort Inn, both located on the south side of Commerce Place (outside the project area) (see Appendix A: Photographs 20 and 21). Vegetation within Study Area D consisted of younger trees (beach with a few maples noted) and a significant increase in brush coverage (dogwood) compared to other areas of the project. Drainage was fair to moderate, with isolated pockets of standing water frequently observed in proximity to the west and northwest extent of the study area. Impacts include a gasline corridor bisecting the study area from north to south (see Appendix A: Photograph 22). An earthen pile approximately 75 ft (22.9 m) in diameter is located adjacent to the south extent of the gasline corridor (which is also shown in Photograph 22).

A total of 91 shovel tests were excavated across the study area along 14 transects aligned west to east (Figure 13). Transects were designated D1 through D14, numbered from south to north. Shovel tests within Study Area D were dug at 50-ft (15-m) intervals, with exception of STPs D11.6 and D12.6, dug at 100-ft (30-m) intervals to avoid standing water.

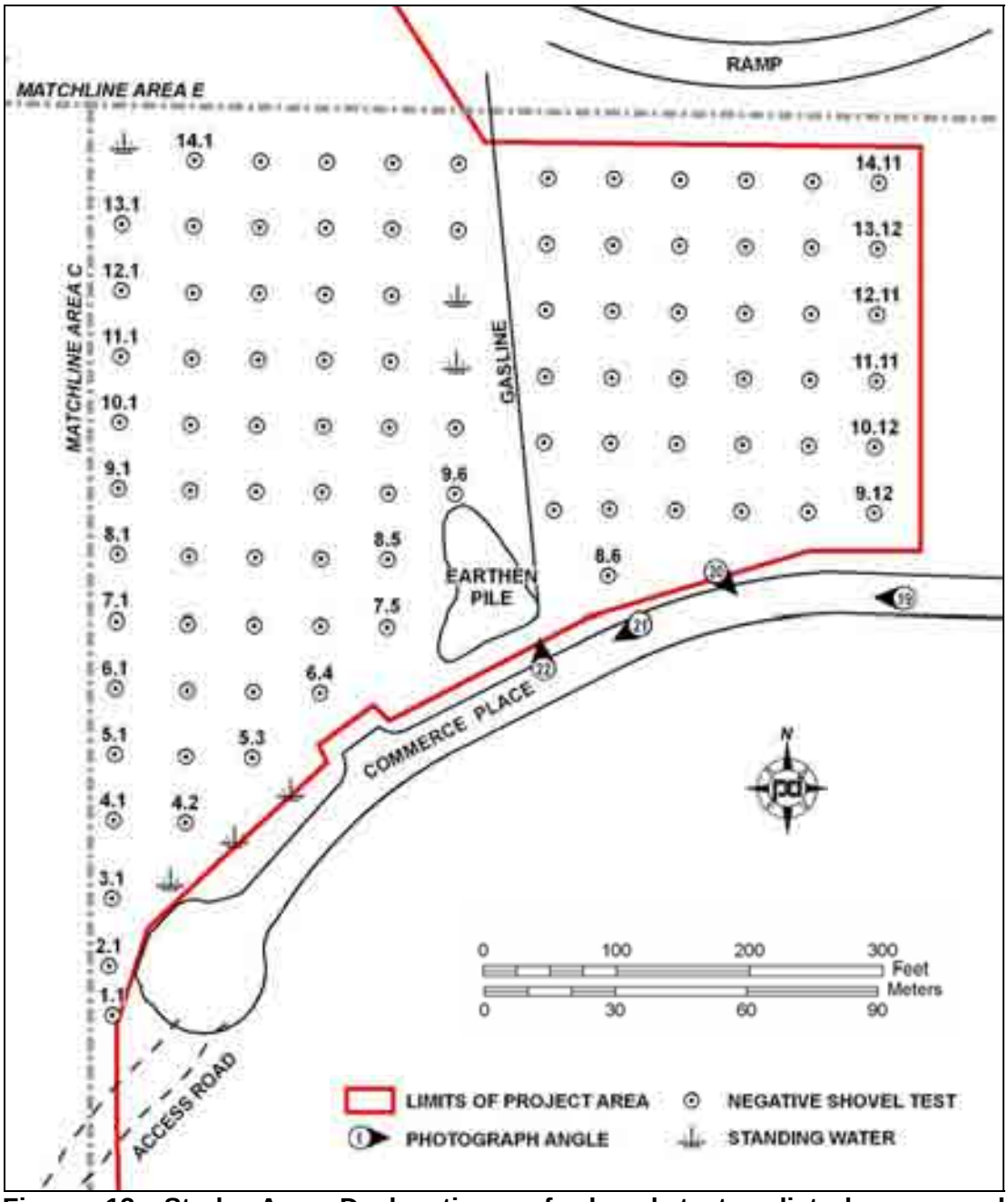

Figure 13. Study Area D: locations of shovel tests, disturbances and photograph angles.

Stratum 1 typically consisted of dark gray or dark grayish brown silty loam or clay loam, reaching an average depth of 21 cm (8.3 in), and ranging between 11 and 36 cm (4.3 and 14.2 in). Stratum 2 was a mottled light brownish gray and brownish yellow silt clay or sandy loam, reaching an average depth of 33 cm (13 in) and ranging between 22 and 46 cm (8.7 and 18.1 in). Water seepage occurred in 42 shovel tests (see Appendix B). No artifacts or buried features were found in the shovel tests of Study Area D.

Study Area E. This roughly 16-acre area in the north part of the project (see Figure 8) consists of an expansive paved commercial area which includes a former Days Inn, a former gas station, and a busing company (see Appendix A: Photographs 23 through 28). These structures are less than fifty years old. Due to the impact of heavy construction over the area, Study Area E was surface inspected and structures and impacts recorded and photo-documented (Figure 14). Approximately one acre in the unpaved, southeast corner of the study area is disturbed. Piles of concrete, asphalt, and gravel cover the west portion of the elevated (approximately 4 ft [1.2 m] high) area; stripped topsoil and earthen pushpiles cover the east portion. A total of four shovel tests (STPs E1.1, E1.2, E1.3 and E1.4) were dug within the disturbed area (see Appendix B: Shovel Test Log). STPs E1.1 and E1.2, dug in the east portion of the one-acre area, documented stripped topsoil and exposed subsoil under the grassy vegetation. STPs E1.3 and E1.4, dug in the elevated west portion of the one-acre parcel, found impassable concrete and asphalt fill at a depth of 10 cm (3.9 in).

3.4 CONCLUSIONS AND RECOMMENDATIONS

A small bottle dump was found centrally within the Hamburg Crossings project area, deposited in the 1940s (based upon dateable glass manufacturer's marks present in sample). The bottle dump, consisting of household refuse (kitchen and bathroom products) was limited in depth (15 cm [5.9 in]) and unstratified. The nearest residence shown on historic maps or aerial photos within proximity of the bottle dump is located approximately 1,500 feet (457 meters) to the northeast (outside the project area) (see Figure 7). The residence is no longer extant.

No archaeological evidence was found of an unidentified map documented structure (MDS) shown within the central portion of the project area on an 1880 map (see Section 2.3.1; see Figure 5). The MDS is not shown on maps after 1901 and was likely completely demolished or moved, leaving no archaeological evidence.

The bottle dump is considered to have low research potential and limited cultural significance based upon its lack of associated context and stratigraphy. The bottle dump does not meet the eligibility criteria for listing in the State or National Registers of Historic Places. No cultural materials were found in the remaining portions of the APE. Therefore, no further cultural resource investigations are recommended.

Figure 14. Study Area E: locations of disturbances and photograph angles *(aerial source: NYS GIS Clearinghouse 2002).*

4.0 References

Abler, Thomas S. and Elisabeth Tooker

1978 Seneca. In *Northeast*, edited by Bruce G. Trigger, pp. 505-517. Handbook of North American Indians, vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Beauchamp, William M.

1900 *Aboriginal Occupation of New York*. New York State Museum Bulletin 7(32). Albany.

Beers, Frederick W.

1880 *Illustrated Historical Atlas of Erie County, New York*. F.W. Beers Company, New York.

Chazanof, William

1970 *Joseph Ellicott and the Holland Land Company: The Opening of Western New York*. Syracuse University Press, Syracuse, NY.

Cleland, Charles E.

1982 The Inland Shore Fishery of the Northern Great Lakes: Its Development and Importance in Prehistory. *American Antiquity* 47:761-784.

de Laubenfels, David J.

1977 Vegetation. In *Geography of New York State* edited by John H. Thomson, pp. 90-103. Syracuse University Press, Syracuse, NY.

Dunn, Walter S., Jr. (ed)

1972 *History of Erie County 1870-1970.* The Buffalo and Erie County Historical Society, Buffalo.

Eberle, Scott, and Joseph A. Grande

1987 *Second Looks: A History of Buffalo and Erie County.* The Donning Company Publishers, Norfolk, VA.

Ellis, David M., James A. Frost, Harold C. Syrett, and Harry J. Carmen

1967 *A History of New York State.* Cornell University Press, Ithaca, NY.

Engelbrecht, William, Eric G. Hansen, James Hartner, Elaine B. Herold, and John D. Holland

1993 *Prehistory of Western New York*. The Archaeological Survey, Department of Anthropology, State University of New York at Buffalo and The Frederick M. Houghton Chapter, New York State Archaeological Association, Buffalo.

Erie County Public Works

nd Aerial Photographs, Division of Highways, Erie County Public Works, Buffalo Available URL: “http://www.erie.gov/depts/community/highways_aerial.phtml” [accessed March 29, 2007].

Fischer, Mark

2006 Buffalo and State Line Railroad. Western New York Railroad Archive, np. Available URL: http://wnyrails.org/railroads/nyc/buff_stateline_home.htm [accessed March 29, 2007]

2007 *Lake Shore and Michigan Southern Railway*. Western New York Railroad Archive, np Available URL: "http://wnyrails.org/railroads/nyc/lsms_home.htm" [accessed March 29, 2007]

Fritz, Gayle
1990 Multiple Pathways to Farming in Precontact Eastern North America. *Journal of World Prehistory* 4:387-435.

Funk, Robert E.
1972 Early Man in the Northeast and the Late Glacial Environment. *Man in the Northeast* 4:7-42.

1978 Post-Pleistocene Adaptations. In *Northeast*, edited by Bruce G. Trigger, pp. 16-27. Handbook of North American Indians, vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

1993 *Archaeological Investigations in the Upper Susquehanna Valley, New York State, Volume 1*. Persimmon Press, Buffalo.

Goldman, Mark
1983 *High Hopes; The Rise and Decline of Buffalo, New York*. State University of New York Press, Albany.

Houghton, Frederick
1909 *Indian Occupancy of the Niagara Frontier and Indian Village, Camp, and Burial Sites in the Niagara Frontier*. Bulletin of the Buffalo Society of Natural Sciences 9(2). Buffalo.

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

Lankes, Frank J.
1964 *The Senecas on Buffalo Creek Reservation*. West Seneca Historical Society, West Seneca, NY.

1968 *Just for Old Times Sake*. West Seneca Historical Society, West Seneca, NY.

New York Archaeological Council (NYAC)
1994 *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections*. New York Archaeological Council, Albany. On file, Panamerican Consultants, Inc., Buffalo, NY.

New York State GIS Clearinghouse
2002 New York State Interactive Mapping Gateway. NYState Statewide Digital Orthoimagery Program. Albany.
Available URL: http://www.nysgis.state.ny.us/gateway/mg/cir.htm

Owens, Donald W., Willie L. Pittman, John P. Wulforst, and Willis E. Hanna
1986 *Soil Survey of Erie County, New York.* United States Department of Agriculture, Soil Conservation Service in cooperation with the Cornell University Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.

Parker, Arthur C.
1922 *The Archaeological History of New York*. New York State Museum Bulletin Nos. 235-238. Albany.

Printy, John
1969 *Orchard Park Before We Remember*. Orchard Park Historical Society, Inc., Orchard Park, NY.

1972 A History of the Town of Orchard Park. In *Histories of the Towns in Erie County*. The Buffalo and Erie County Historical Society, Buffalo.

Ritchie, William A.
1955 The Northern Burial Cult. *Pennsylvania Archaeologist* 25:45-50.

1980 *The Archaeology of New York State*. Revised Edition. Harbor Hill Books, Harrison, NY.

Ritchie, William, A., and Robert E. Funk
1973 *Aboriginal Settlement Patterns in the Northeast*. New York State Museum and Science Service Memoir No. 20. Albany, New York.

Salwen, Bert
1975 Post Glacial Environments and Cultural Change in the Hudson River Basin. *Man in the Northeast* 10:43-70.

Silsby, Robert W.
1961 The Holland Land Company in Western New York. *Adventures in Western New York History*, vol. VIII. Buffalo and Erie County Historical Society, Buffalo.

Sipprell, Marjory G.
1972 A History of the Town of Hamburg. In *Histories of the Towns in Erie County*. The Buffalo and Erie County Historical Society, Buffalo.

Smith, Bruce D.
1992 Prehistoric Plant Husbandry in Eastern North America. In *The Origins of Agriculture,* edited by C.W. Cowan and P.J. Watson, pp. 101-119. Smithsonian Institution Press, Washington, D.C.

Smith, H(enry) Perry
1884 *History of Buffalo and Erie County*. 2 vols. D. Mason & Co., Publishers, Syracuse, NY.

Spiegelman, Bob
2005 Sullivan/Clinton Campaign, 1779-2005. Sullivan/Clinton Campaign website, New York [online www]. Available URL: “http://sullivanclinton.com” [accessed March 28, 2007].

Stone and Stewart
1866 *New Topographical Atlas of Erie County, New York*. Stone and Stewart, Publishers, Philadelphia.

Tooker, Elisabeth
1978 The League of the Iroquois: Its History, Politics, and Ritual. In *Northeast*, edited by Bruce G. Trigger, pp. 418-441. Handbook of North American Indians, vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Trigger, Bruce G.
1978 Early Iroquois Contacts with Europeans. In *Northeast*, pp. 344-356. Handbook of North American Indians, vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Tuck, James A.
1978 Regional Cultural Development, 3000 to 300 B.C. In *Northeast*, edited by B. G. Trigger, pp. 28-43. Handbook of North American Indians, vol. 15, W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Turner, Orsamus
1974 [1850] *Pioneer History of the Holland Purchase of Western New York*. Geo. H. Derby and Co., Buffalo. Reprint ed. James Brunner, Geneseo, NY.

USGS (U.S. Geological Survey)
1901 Buffalo, 15 Minute Quadrangle Map. U.S. Geological Survey, Washington, D.C. On file, Historic USGS Maps of New England & New York. University of New Hampshire, Dimond Library, Documents Department & Data Center, Durham [online www]. Available URL: “http://docs.unh.edu/NY/buff01se.jpg” [accessed March 29, 2007].

1907 Eden, NY, 15 Minute Quadrangle Map. U.S. Geological Survey, Washington, D.C. On file, Historic USGS Maps of New England & New York. University of New Hampshire, Dimond Library, Documents Department & Data Center, Durham [online www]. Available URL: “http://docs.unh.edu/NY/eden07ne.jpg” [accessed March 29, 2007].

1965 *Hamburg New York–Erie Co.* 7.5 Minute Series (Topographic). USGS, Washington, D.C.

Weller, Ethelyn
1972 A History of the City of Lackawanna. In *Histories of the Towns in Erie County*. The Buffalo and Erie County Historical Society, Buffalo.

Whallon, Robert, Jr.
1968 Investigations of Late Prehistoric Social Organization in New York State. In *New Perspectives in Archaeology,* edited by Sally and Lewis Binford. Aldine Press, Chicago.

White, Marian E.
1961 Iroquois Culture History in the Niagara Frontier Area of New York State. *Anthropological Papers*, No. 16. Museum of Anthropology, University of Michigan.

1978a Neutral and Wenro. In *Northeast*, edited by Bruce G. Trigger, pp. 407-411. Handbook of North American Indians, vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

1978b Erie. In *Northeast*, edited by Bruce G. Trigger, pp. 412-417. Handbook of North American Indians, vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

White, Truman C. (Editor)
1898 *Our County and its People, a Descriptive Work on Erie County, New York.* 2 vols. Boston History Company, Boston.

Appendix A
PHOTOGRAPHS

Photograph 1. Typical vegetation and wet areas within Study Area A, facing south *(PCI 2007).*

Photograph 2. Standing water present within north extent of Study Area A, facing north *(PCI 2007).*

Photograph 3. Western terminus of storm drain system, located in south part of buffer zone, facing northeast. System traverses south portion of project area *(PCI 2007).*

Photograph 4. Drainage from storm drain system (left) and NYS Thruway culvert (upper center – obscured by trees) within buffer zone, facing east *(PCI 2007)*.

Photograph 5. Low elevation area along east extent of buffer zone, facing northwest *(PCI 2007)*.

Photograph 6. Access road adjacent to east side of buried sewer line, facing south *(PCI 2007).*

Photograph 7. Sewer cover (foreground) located near northeast corner of Study Area B, facing northeast. Note housing development located adjacent to project area *(PCI 2007)*.

Photograph 8. Shale-covered access road in Study Area B, facing west *(PCI 2007)*.

Photograph 9. Sewer cover located within graded portion of raised gravel access road, facing southwest *(PCI 2007)*.

Photograph 10. Shale-covered access road within Study Area B associated with buried storm drain system, facing southwest *(PCI 2007)*.

Photograph 11. Gravel and shale access road located at southeast corner of Study Area B, facing southwest. Note recently dumped materials *(PCI 2007)*.

Photograph 12. Seasonally standing water frequently observed within central portion of APE, facing northwest *(PCI 2007)*.

Photograph 13. Concrete and earthen piles adjacent to north extent of Study Area C, facing north. Note discarded tires and miscellaneous materials *(PCI 2007)*.

Photograph 14. Artificial elevation consisting of dumped concrete and gravel at northeast extent of Study Area C, facing east *(PCI 2007)*.

Photograph 15. Typical furrow or shallow drainage ditch found frequently within north portion of project area, generally aligned north-south, facing north *(PCI 2007)*.

Photograph 16. Close-interval shovel tests being dug near an MDS (1880) location shown within the southeast corner of Study Area C, facing northeast *(PCI 2007)*.

Photograph 17. STP C6.14A being dug within the limits of surface scatter consisting of mid-twentieth century dated bottles, facing northeast *(PCI 2007)*.

Photograph 18. Detail of glass bottle scatter exposed from under ground cover, facing southeast *(PCI 2007)*.

Photograph 19. South extent of Study Area D (wooded/brush area at right) adjacent to north side of Commerce Place, facing west *(PCI 2007)*.

Photograph 20. Medical care facility adjacent to project area on south side of Commerce Place, facing southeast *(PCI 2007)*.

Photograph 21. View of the Comfort Inn on Commerce Place, adjacent to the east side of the project area, facing southwest *(PCI 2007)*.

Photograph 22. Disturbance within Study Area D, including a gasline corridor and a gravel earthenpile (left), facing north *(PCI 2007)*.

Photograph 23. Study Area E, located on west side of Camp Road, consists of approximately 16 acres of paved commercial property. A former Days Inn (east elevation) is located in the central north portion, facing southwest *(PCI 2007)*.

Photograph 24. North and east elevations of former gas station located in east portion of Study Area E, facing south *(PCI 2007)*.

Photograph 25. South and east elevations of operational bus garage located within west portion of Study Area E, facing west *(PCI 2007)*.

Photograph 26. View across Study Area E from north extent facing southeast. Note concrete and earthen pushpiles along tree line *(PCI 2007)*.

Photograph 27. South and west elevations of former Days Inn, facing north *(PCI 2007)*.

Photograph 28. South elevation of bus garage located in west portion of Study Area E, facing northwest. Gravel obscures degraded pavement located in the southwest (foreground) part of the study area *(PCI 2007)*.

Photograph 29. Gravel obscures degraded pavement within southeast portion of Study Area E, facing west. Note extensive dumping near treeline *(PCI 2007)*.

Photograph 30. Stratigraphy tested where stripped A-horizon soils were observed in southeast corner of Study Area E, facing south. Note earthen pushpiles *(PCI 2007)*.

Photograph 31. Artificially elevated grassy area containing concrete, asphalt, and gravel (evident in STPs E1.3 and E1.4) at the south extent of Study Area E, facing southeast *(PCI 2007)*.

Appendix B
SHOVEL TEST LOG

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A1.1	1	0-27	10YR 3/2	V DK GR BR	SI LO	NCM, lots of shale
A1.1	2	27-37	10YR 5/4	YL BR	SI CL	NCM
A1.2	1	0-21	10YR 3/2	V DK GR BR	SI LO	NCM, almost no shale
A1.2	2	21-31	10YR 5/4	YL BR	SI CL	NCM
A1.3	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, fills w/water to 15cm
A1.3	2	17-27	10YR 5/4	YL BR	SI CL	NCM
A1.4	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM, fills w/water to 15cm
A1.4	2	16-26	10YR 5/4	YL BR	SI CL	NCM
A1.5	1	0-21	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
A1.5	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A1.6	1	0-16	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 10cm
A1.6	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A1.7	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 10cm
A1.7	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A1.8	1	0-17	10YR 4/1	DK GR	SI LO	NCM, no water
A1.8	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A1.9	1	0-21	10YR 4/1	DK GR	SI LO	NCM
A1.9	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A1.10	1	0-22	10YR 4/1	DK GR	SI LO	NCM
A1.10	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A2.1	1	0-30	10YR 3/1	V DK GR	SI LO	NCM
A2.1	2	30-40	10YR 5/6	YL BR	SI LO	NCM
A2.2	1	0-30	10YR 5/6	YL BR	CL LO	NCM, fallen tree explains subsoil on surface
A2.2	2	30-40	10YR 3/2	V DK GR BR	CL LO	NCM
A2.2	3	40-52	10YR 5/6	YL BR	CL LO	NCM
A2.3	1	0-25	10YR 3/1	V DK GR	SI LO	NCM
A2.3	2	25-35	10YR 5/8	YL BR	SI LO	NCM
A2.4	1	0-10	10YR 4/2	DK GR BR	CL LO	NCM, woods
A2.4	2	10-28	10YR 5/6	YL BR	CL LO	NCM
A2.5	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
A2.5	2	12-30	10YR 5/6	YL BR	CL LO	NCM
A2.6	1	0-11	10YR 4/2	DK GR BR	CL LO	NCM
A2.6	2	11-17	10YR 5/6	YL BR	CL LO	NCM, water filled test at 17cm
A2.7	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM, woods
A2.7	2	12-22	10YR 5/6	YL BR	CL LO	NCM, water filled test at 22cm
A2.8	1	0-20	10YR 3/1	V DK GR	SI LO	NCM
A2.8	2	20-30	10YR 5/8	YL BR	CL LO	NCM
A2.9	1	0-20	10YR 3/1	V DK GR	SI LO	NCM
A2.9	2	20-30	10YR 5/8	YL BR	CL LO	NCM
A2.10	1	0-13	10YR 3/1	V DK GR	SI LO	NCM, root impasse
A3.1	1	0-19	10YR 3/1	V DK GR	SI LO	NCM
A3.1	2	19-36	10YR 5/2 10YR 6/8	GR BR BR YL	SI SA	NCM
A3.2	1	0-15	10YR 3/2	V DK GR BR	SI LO	NCM
A3.2	2	15-26	10YR 5/6	YL BR	SA LO	NCM
A3.3	1	0-16	10YR 3/1	V DK GR	SI LO	NCM, shifted test 2m S to avoid water
A3.3	2	16-26	10YR 5/4	YL BR	SA LO	NCM, seepage at 22cm
A3.4	1	0-17	10YR 3/1	V DK GR	SI LO	NCM, water on surface near test
Key	**Soil Color:** BL = black, BR = brown, DK = dark, GR = gray, LT = light, V = very, YL = yellow					
	Soil Description: CL = clay, LO = loam, SA = sand, SI = silt					
	Comments: NCM = no cultural material					

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A3.4	2	17-30	10YR 5/4	YL BR	SA LO	NCM, seepage at 20cm
A3.5	1	0-15	10YR 3/2	V DK GR BR	SI LO	NCM
A3.5	2	15-28	10YR 5/4	YL BR	SA LO	NCM
A3.6	1	0-16	10YR 3/2	V DK GR BR	SI LO	NCM
A3.6	2	16-32	10YR 5/8	YL BR	SA LO	NCM
A3.7	1	0-19	10YR 3/2	V DK GR BR	SI LO	NCM
A3.7	2	19-35	10YR 5/2 10YR 5/8	GR BR YL BR	SA LO	NCM
A3.8	1	0-25	10YR 3/2	V DK GR BR	SI LO	NCM
A3.8	2	25-37	10YR 5/2 10YR 5/4	GR BR YL BR	SA LO	NCM
A3.9	1	0-10	10YR 2/1	BL	LO	NCM, roots, woods, STP shifted due to surface water
A3.9	2	10-19	10YR 5/2	GR BR	SI LO	NCM, roots
A3.9	3	19-30	10YR 5/4	YL BR	SA LO	NCM, roots
A3.10	1	0-25	10YR 3/2	V DK GR BR	SI LO	NCM, woods, surface water near test, soil is wet
A3.10	2	25-36	10YR 5/8	YL BR	SA LO	NCM, water filled hole at 20cm
A4.1	1	0-13	10YR 3/2	V DK GR BR	LO	NCM, dark organic/humus layer w/shale gravel
A4.1	2	13-35	10YR 4/4	DK YL BR	CL LO	NCM, brown loose soil w/shale and cobbles
A4.1	3	35-50	10YR 4/1	DK GR	SA LO	NCM, dark gray brown w/sand, pebbles (sandy clay loam)
A4.2	1	0-7	10YR 3/2	V DK GR BR	LO	NCM, humus layer organic inclusion
A4.2	2	7-27	10YR 4/1	DK GR	CL LO	NCM, moist, <20% gravel
A4.2	3	27-46	10YR 5/2 10YR 5/6	GR BR YL BR	CL	NCM, mottled clay, very wet, seepage at ~42cm
A4.3	1	0-6	10YR 3/1	V DK GR	LO	NCM, saturated organic layer, gravel, standing water
A4.3	2	6-28	10YR 5/2	GR BR	CL LO	NCM
A4.4	1	0-8	10YR 3/1	V DK GR	LO	NCM, saturated soils
A4.4	2	8-30	10YR 5/2	GR BR	CL LO	NCM, seepage at 10cm, filling test
A4.5	1	0-10	10YR 3/1	V DK GR	LO	NCM
A4.6	1	0-5	10YR 3/2	V DK GR BR	LO	NCM, dark w/root/organics
A4.6	2	5-21	10YR 5/1	GR	CL LO	NCM, wet, loose <5% gravel
A4.6	3	21-38	10YR 5/6 10YR 6/8	YL BR BR YL	CL	NCM, saturated mottled clay, sandy inclusions
A4.7	1	0-17	10YR 5/1	GR	CL LO	NCM, saturated soil, <5% gravel
A4.7	2	17-40	10YR 5/6 10YR 6/8	YL BR BR YL	SA LO	NCM; <5% gravel
A4.8	1	0-16	10YR 5/1	GR	CL LO	NCM, saturated soil, <5% gravel, standing water everywhere
A4.8	2	16-32	10YR 5/6 10YR 6/8	YL BR BR YL	SA LO	NCM, 5% gravel, seepage at 18cm
A4.9	1	0-14	10YR 5/1	GR	CL LO	NCM, drier soils test in wetland
A4.9	2	14-35	10YR 5/6 10YR 6/8	YL BR BR YL	CL LO	NCM
A4.10	1	0-21	10YR 5/1	GR	CL LO	NCM, moist clays, free of inclusions, mottled sub, W 100' from slope
A4.10	2	21-38	10YR 5/6 10YR 6/8	YL BR BR YL	CL	NCM
A5.1	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
A5.1	2	20-30	10YR 3/4	DK YL BR	SI LO	NCM
A5.2	1	0-8	10YR 4/2	DK GR BR	SI LO	NCM
A5.2	2	8-20	10YR 3/4	DK YL BR	SI LO	NCM
A5.3	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM, wet, seepage at 10cm
A5.3	2	10-20	10YR 3/4	DK YL BR	SI LO	NCM
A5.4	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A5.4	2	18-28	10YR 6/6 10YR 6/8	BR YL	CL LO	NCM
A5.5	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM, in woods, seepage at 20cm
A5.5	2	23-33	10YR 6/6 10YR 6/8	BR YL	CL LO	NCM
A5.6	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM
A5.6	2	12-30	10YR 5/3	BR	SI CL	NCM
A5.7	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
A5.7	2	20-30	10YR 6/6 10YR 6/8	BR YL	CL LO	NCM
A5.8	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM
A5.8	2	12-26	10YR 6/6 10YR 6/8	BR YL	CL LO	NCM
A5.9	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
A5.9	2	18-28	10YR 6/6 10YR 6/8	BR YL	CL LO	NCM
A5.10	1	0-21	10YR 4/2	DK GR BR	CL LO	NCM
A5.10	2	21-38	10YR 6/6 10YR 6/8	BR YL	CL	NCM
A6.1	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
A6.1	2	15-31	10YR 5/4	YL BR	CL	NCM
A6.2	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
A6.2	2	15-33	10YR 5/4	YL BR	CL	NCM
A6.3	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
A6.3	2	12-32	10YR 5/4	YL BR	CL	NCM
A6.4	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
A6.4	2	13-31	10YR 5/6	YL BR	CL	NCM, seepage at 17cm, moved 5m E due to standing water
A6.5	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
A6.5	2	12-32	10YR 5/6	YL BR	CL	NCM
A6.6	1	0-10	10YR 4/2	DK GR BR	CL LO	NCM
A6.6	2	10-30	10YR 5/6	YL BR	CL	NCM
A6.7	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM
A6.7	2	18-31	10YR 5/6	YL BR	CL	NCM
A6.8	1	0-14	10YR 4/2	DK GR BR	CL LO	NCM
A6.8	2	14-32	10YR 5/6	YL BR	CL	NCM
A6.9	1	0-16	10YR 4/2	DK GR BR	CL LO	NCM
A6.9	2	16-30	10YR 5/6	YL BR	CL	NCM
A6.10	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM, mucky
A6.10	2	18-30	10YR 5/6	YL BR	CL	NCM
A7.1	1	0-27	10YR 3/4	DK YL BR	CL LO	NCM, dry soils, loamy, few inclustions
A7.1	2	27-47	10YR 5/2	GR BR	CL LO	NCM
A7.2	1	0-23	10YR 4/4	DK YL BR	LO	NCM, <20% gravels, dry, loose soils (thick root layer)
A7.2	2	23-40	10YR 5/6	YL BR	CL LO	NCM
A7.3	1	0-17	10YR 4/1	DK GR	CL LO	NCM, saturated soils, no gravel, inclusions
A7.3	2	17-34	10YR 5/2	GR BR	CL LO	NCM
A7.4	1	0-17	10YR 4/1	DK GR	CL LO	NCM, seepage at ~10cm
A7.5	1	0-12	10YR 4/1	DK GR	CL LO	NCM, saturated soils, standing water, excavated root base by large tree, seepage at 15cm
A7.5	2	12-30	10YR 5/2	GR BR	CL LO	NCM
A7.6	1	0-14	10YR 4/1	DK GR	CL LO	NCM, still very wet, <10% shale gravel
A7.6	2	14-32	10YR 5/2	GR BR	CL LO	NCM
A7.7	1	0-7	10YR 3/2	V DK GR BR	LO	NCM
A7.7	2	7-21	10YR 4/1	DK GR	CL LO	NCM, dark humus/organic layer, <10% shale gravel, roots

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A7.7	3	21-36	10YR 5/2 10YR 5/6	GR BR YL BR	CL LO	NCM, dark humus/organic layer, mottled clay
A7.8	1	0-19	10YR 3/2	V DK GR BR	LO	NCM, seepage at ~10cm, wetland delineation within 5m
A7.8	2	19-38	10YR 4/1	DK GR	CL LO	NCM
A7.9	1	0-13	10YR 3/2	V DK GR BR	LO	NCM, seepage at ~10cm, wetland delineation within 5m
A7.10	1	0-15	10YR 3/2	V DK GR BR	LO	NCM
A7.10	2	15-26	10YR 4/1	DK GR	CL LO	NCM
A8.1	1	0-16	10YR 5/2	GR BR	SI LO	NCM, in woods, shale
A8.1	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A8.2	1	0-8	10YR 4/2	DK GR BR	SI LO	NCM, gravel, 2m north of sewer cover
A8.2	2	8-20				NCM, gravel fill
A8.3	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM, gravel, 2m north of sewer cover
A8.3	2	15-25	10YR 6/6	BR YL	CL LO	NCM
A8.4	1	0-24	10YR 4/2	DK GR BR	SI LO	NCM, in woods, shale
A8.4	2	24-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A8.5	1	0-26	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 20cm, in woods, some shale
A8.5	2	26-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A8.6	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 10cm, in woods, some shale
A8.6	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A8.7	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM
A8.7	2	22-32	10YR 6/6	BR YL	CL LO	NCM
A8.8	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
A8.8	2	20-30	10YR 6/6	BR YL	CL LO	NCM
A8.9	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
A8.9	2	18-28	10YR 6/6	BR YL	CL LO	NCM
A8.10	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
A8.10	2	18-28	10YR 6/2 10YR 6/6	LT BR GR BR YL	CL LO	NCM
A9.1	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, very little shale
A9.1	2	17-27	10YR 6/2 10YR 6/6	LT BR GR BR YL	CL LO	NCM
A9.2	1	0-20	10YR 4/1	DK GR	SI LO	NCM, fill w/water to 15cm
A9.2	2	20-30	10YR 5/2	GR BR	SI CL LO	NCM
A9.3	1	0-24	10YR 4/1	DK GR	SI LO	NCM
A9.3	2	24-34	10YR 5/2	GR BR	SI CL LO	NCM, fill w/water to 30cm
A9.4	1	0-18	10YR 4/1	DK GR	SI LO	NCM, fill w/water to 15cm
A9.4	2	18-28	10YR 6/2	LT BR GR	SI CL LO	NCM
A9.5	1	0-15	10YR 4/1	DK GR	SI LO	NCM, wet
A9.5	2	15-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A9.6	1	0-16	10YR 4/1	DK GR	SI LO	NCM
A9.6	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A9.7	1	0-19	10YR 4/1	DK GR	SI LO	NCM
A9.7	2	19-29	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A9.8	1	0-22	10YR 4/1	DK GR	SI LO	NCM
A9.8	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A9.9	1	0-14	10YR 4/1	DK GR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A9.9	2	14-24	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A9.10	1	0-19	10YR 4/1	DK GR	SI LO	NCM
A9.10	2	19-29	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A10.1	1	0-12	10YR 4/1	DK GR	SI LO	NCM
A10.1	2	12-33	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A10.2	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
A10.2	2	12-30	10YR 5/4	YL BR	CL	NCM
A10.3	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
A10.3	2	15-31	10YR 5/4	YL BR	CL	NCM
A10.4	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
A10.4	2	13-30	10YR 5/4	YL BR	CL	NCM
A10.5	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
A10.5	2	15-31	10YR 5/6	YL BR	CL	NCM
A10.6	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
A10.6	2	15-30	10YR 5/6	YL BR	CL	NCM
A10.7	1	0-16	10YR 4/2	DK GR BR	CL LO	NCM
A10.7	2	16-32	10YR 5/6	YL BR	CL	NCM
A10.8	1	0-10	10YR 4/2	DK GR BR	CL LO	modern beer cans on surface
A10.8	2	10-32	10YR 5/6	YL BR	CL LO	NCM
A10.9	1	0-12	10YR 4/2	DK GR BR	CL LO	modern bottle glass, beer cans on surface
A10.9	2	12-31	10YR 5/6	YL BR	CL LO	NCM
A10.10	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
A10.10	2	12-31	10YR 5/6	YL BR	CL LO	NCM
A11.1	1	0-17	10YR 4/1	DK GR	LO CL	NCM
A11.1	2	17-30	10YR 5/6	YL BR	LO CL	NCM
A11.2	1	0-19	10YR 4/1	DK GR	LO CL	NCM
A11.2	2	19-32	10YR 5/6	YL BR	LO CL	NCM
A11.3	1	0-17	10YR 4/1	DK GR	LO CL	NCM
A11.3	2	17-28	10YR 5/6	YL BR	LO CL	NCM
A11.4	1	0-18	10YR 4/2	DK GR BR	LO CL	NCM
A11.4	2	18-24	10YR 5/6	YL BR	LO CL	NCM, root impasse at 24cm
A11.5	1	0-15	10YR 4/2	DK GR BR	LO CL	NCM
A11.5	2	15-27	10YR 5/6	YL BR	LO CL	NCM
A11.6	1	0-15	10YR 4/2	DK GR BR	LO CL	NCM
A11.6	2	15-28	10YR 5/6	YL BR	LO CL	NCM
A11.7	1	0-14	10YR 4/2	DK GR BR	LO CL	NCM
A11.7	2	14-27	10YR 5/6	YL BR	LO CL	NCM
A11.8	1	0-17	10YR 3/1	V DK GR	LO	NCM
A11.8	2	17-30	10YR 5/6	YL BR	LO CL	NCM
A11.9	1	0-15	10YR 3/1	V DK GR	LO	NCM
A11.9	2	15-30	10YR 5/6	YL BR	LO CL	NCM
A11.10	1	0-15	10YR 3/1	V DK GR	LO	NCM
A11.10	2	15-25	10YR 5/6	YL BR	LO CL	NCM
A12.1	1	0-14	10YR 4/1	DK GR	CL LO	NCM, very wet, thick root layer, <10% gravel
A12.1	2	14-32	10YR 5/2	GR BR	CL LO	NCM; <10% gravel
A12.2	1	0-17	10YR 4/1	DK GR	CL LO	NCM
A12.2	2	17-30	10YR 5/2	GR BR	CL LO	NCM, seepage at ~30cm
A12.3	1	0-16	10YR 5/1	GR	CL LO	NCM, dryer, no inclusions, roots at <10cm, loose soils
A12.3	2	16-36	10YR 5/6	YL BR	CL LO	NCM
A12.4	1	0-18	10YR 5/1	GR	CL LO	NCM, moist soil
A12.4	2	18-39	10YR 5/6	YL BR	SA CL	NCM
A12.5	1	0-11	10YR 5/1	GR	CL LO	NCM, saturated soil, standing water all around, seepage at ~10cm, excavation stopped

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A12.6	1	0-19	10YR 4/1	DK GR	CL LO	NCM, moist soil
A12.6	2	19-38	10YR 5/4 10YR 5/6	YL BR	CL LO	NCM, seepage at ~30cm
A12.7	1	0-7	10YR 3/1	V DK GR	LO	NCM, rooted organic (humus) layer, w/25% gravels
A12.7	2	7-8	10YR 5/2	GR BR	CL LO	NCM
A12.8	1	0-11	10YR 3/2	V DK GR BR	LO	NCM, rooted organic (humus) layer over loose yellow brown clay loam w/25% gravels
A12.8	2	11-36	10YR 5/6	YL BR	CL LO	NCM
A12.9	1	0-12	10YR 3/2	V DK GR BR	LO	NCM, edge of slope <5m W from test
A12.9	2	12-31	10YR 5/6	YL BR	CL LO	NCM
A13.1	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM
A13.1	2	18-31	10YR 5/6	YL BR	CL	NCM
A13.2	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
A13.2	2	13-31	10YR 5/6	YL BR	CL	NCM
A13.3	1	0-10	10YR 4/2	DK GR BR	CL LO	NCM
A13.3	2	10-33	10YR 5/6	YL BR	CL	NCM
A13.4	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
A13.4	2	12-32	10YR 5/6	YL BR	CL	NCM
A13.5	1	0-11	10YR 4/2	DK GR BR	CL LO	NCM
A13.5	2	11-30	10YR 5/6	YL BR	CL	NCM, seepage at 22cm
A13.6	1	0-14	10YR 4/2	DK GR BR	CL LO	NCM
A13.6	2	14-30	10YR 5/6	YL BR	CL	NCM
A13.7	1	0-17	10YR 2/2	V DK BR	LO	NCM
A13.7	2	17-19	10YR 4/2	DK GR BR	CL LO	NCM
A13.7	3	29-39	10YR 5/6	YL BR	CL	NCM
A13.8	1	0-12	10YR 2/2	V DK BR	CL LO	NCM
A13.8	2	12-32	10YR 5/6	YL BR	CL	NCM
A13.9	1	0-8	10YR 2/2	V DK BR	CL LO	NCM
A13.9	2	8-34	10YR 5/6	YL BR	CL	NCM
A14.1	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
A14.1	2	15-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM, seepage at 20cm
A14.2	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 6cm
A14.2	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A14.3	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, some cobbles
A14.3	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A14.4	1	0-14	10YR 4/2	DK GR BR	SI LO	NCM, shale
A14.4	2	14-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A14.5	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
A14.5	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A14.6	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM
A14.6	2	23-33	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A14.7	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM
A14.7	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A14.8	1	0-10	10YR 3/2	V DK GR BR	SI LO	NCM, lots of shale
A14.8	2	10-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A15.1	1	0-23	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
A15.1	2	23-33	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A15.2	1	0-18	10YR 4/1	DK GR	SI LO	NCM, wet but does not fill w/water
A15.2	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A15.3	1	0-21	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
A15.3	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A15.4	1	0-22	10YR 4/1	DK GR	SI LO	NCM
A15.4	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
A15.5	1	0-24	10YR 4/1	DK GR	SI LO	NCM, moist but not water seepage
A15.5	2	24-34	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A15.6	1	0-19	10YR 4/1	DK GR	SI LO	NCM
A15.6	2	19-29	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A16.1	1	0-23	10YR 4/2	DK GR BR	LO CL	NCM
A16.1	2	23-35	10YR 5/6	YL BR	LO CLO	NCM
A16.2	1	0-15	10YR 4/2	DK GR BR	LO CL	NCM
A16.2	2	15-30	10YR 5/6	YL BR	LO CL	NCM
A16.3	1	0-24	10YR 4/2	DK GR BR	LO CL	NCM
A16.3	2	24-36	10YR 5/6 10YR 5/2	YL BR GR BR	LO CL	NCM
A16.4	1	0-22	10YR 4/2	DK GR BR	LO CL	NCM
A16.4	2	22-35	10YR 5/6 10YR 5/2	YL BR GR BR	LO CL	NCM
A16.5	1	0-27	10YR 3/1	V DK GR	LO	NCM, root impasse at 27cm
A16.6	1	0-15	10YR 3/1	V DK GR	LO	NCM
A16.6	2	15-30	7.5YR 4/4	BR	SA LO	NCM
B1.1	1	0-14	10YR 4/2	DK GR BR	LO	NCM, 30% shale gravel; transect following slightly raised (~1/2m high) ridge of shale
B1.1	2	14-31	10YR 5/6	YL BR	CL LO	NCM
B1.2	1	0-32	10YR 4/2	DK GR BR	LO	NCM
B1.2	2	32-44	10YR 5/6	YL BR	CL LO	NCM
B1.3	1	0-12	10YR 4/2	DK GR BR	LO	NCM, rock (shale) impasse at 12cm
B1.4	1	0-7	10YR 5/1	GR	LO	NCM
B1.4	2	7-14	10YR 5/4	YL BR	CL	NCM, rock impasse at 14cm
B1.5	1	0-8	10YR 5/1	GR	LO	NCM, still on shale ridge
B1.5	2	8-18	10YR 5/4	YL BR	CL	NCM, rock impasse at 18cm
B1.6	1	0-7	10YR 5/1	GR	LO	NCM
B1.6	2	7-20	10YR 5/4	YL BR	CL	NCM, rock impasse at 20cm
B1.7	1	0-7	10YR 4/2	DK GR BR	LO	NCM, moved 5m E - tree fall
B1.7	2	7-20	10YR 5/4	YL BR	CL	NCM, seepage at 20cm
B1.7	3	20-30	10YR 4/1	DK GR	CL	NCM, tangled brush
B1.8	1	0-6	10YR 4/1	DK GR	LO	NCM, manhole cover 6m W of test
B1.8	2	6-18	10YR 5/4	YL BR	CL	NCM, rock impasse at 18cm
B1.9	1	0-7	10YR 4/1	DK GR	LO	NCM
B1.9	2	7-19	10YR 5/4	YL BR	CL	NCM, rock impasse at 19cm
B1.10	2	20-31	10YR 5/6	YL BR	CL LO	NCM
B1.11	1	0-15	10YR 4/1	DK GR	LO	NCM
B1.11	2	15-30	10YR 5/6	YL BR	CL LO	NCM
B1.12	1	0-17	10YR 4/1	DK GR	LO	NCM, moved 5m N - standing water, seepage at 15cm
B1.12	2	17-32	10YR 5/6	YL BR	CL LO	NCM
B2.1	1	0-14	10YR 3/2	V DK GR BR	SI LO	NCM, humus layer w/organic inclusions, gravel
B2.1	2	14-30	10YR 4/3	BR	SI LO	NCM, seepage at ~15cm, +25% shale gravel
B2.2	1	0-23	10YR 3/2	V DK GR BR	SI LO	NCM, dryer soil, 25% gravel
B2.2	2	23-39	10YR 4/3	BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B2.3	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, saturated soil, standing water all around, <10% gravel
B2.3	2	18-35	10YR 5/4 10YR 5/6	YL BR	SI CL	NCM; <10% gravel
B2.4	1	0-18	10YR 3/2	V DK GR BR	SI LO	NCM, very wet, <10% inclusion of gravel, mottled sub
B2.4	2	18-	10YR 3/4 10YR 5/4	DK YL BR YL BR	SI CL	NCM
B2.5	1	0-10	10YR 5/6	YL BR	CL	NCM, standing water, saturated clays
B2.5	2	10-11	10YR 6/2	LT BR GR	CL	NCM, seepage at ~11cm
B2.6	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM, medium wet soils, 10cm organic layer above A, <10% gravel
B2.6	2	23-40	10YR 5/4 10YR 5/6	YL BR	LO SI	NCM, <10% gravel, mottled slightly, seepage at ~30cm
B2.7	1	0-17	10YR 4/1	DK GR	SI LO	NCM, 5cm organic layer, <10% gravel
B2.7	2	17-33	10YR 5/4	YL BR	LO SI	NCM, +40% gravel, very wet, seepage at ~25cm
B2.8	1	0-10	10YR 4/1	DK GR	SI LO	NCM, 90% shale, test rapidly filled w/water
B2.8	2	10-19	10YR 5/4	YL BR	SI LO	NCM
B2.9	1	0-11	10YR 4/3	BR	SHALE	NCM, excavation stopped due to +95% gravel (shale ridge)
B2.10	1	0-14	10YR 3/2	V DK GR BR	SI LO	NCM, organic strat humus over shale mixed w/mottled clay sub (dry)
B2.10	2	14-25	10YR 5/4 10YR 5/6	YL BR	CL	NCM
B2.11	1	0-17	10YR 4/1	DK GR	SI LO	NCM, far less gravel <15%
B2.11	2	17-34	10YR 5/4 10YR 5/6	YL BR	CL	NCM, seepage at ~20cm, mottled, saturated sub
B2.12	1	0-14	10YR 4/1	DK GR	SI LO	NCM
B2.12	2	14-26	10YR 5/4 10YR 5/6	YL BR	CL	NCM, seepage at ~20cm, excavation stopped
B3.1	1	0-30	10YR 3/2	V DK GR BR	SI LO	NCM, in woods
B3.1	2	30-40	10YR 6/8	BR YL	CL LO	NCM
B3.2	1	0-34	10YR 3/2	V DK GR BR	SI LO	NCM
B3.2	2	34-44	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM, seepage at 40cm
B3.3	1	0-26	10YR 3/2	V DK GR BR	SI LO	NCM, seepage at 20cm
B3.3	2	26-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B3.4	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 10cm, lots of shale
B3.4	2	20-30	10YR 4/4	DK YL BR	SI CL	NCM
B3.5	1	0-28	10YR 4/2	DK GR BR	SI LO	NCM
B3.5	2	28-40	10YR 4/4	DK YL BR	SI CL	NCM
B3.6	1	0-26	10YR 4/2	DK GR BR	SI LO	NCM
B3.6	2		10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B3.7	1	0-14	10YR 4/2	DK GR BR	SI LO	NCM
B3.7	2	14-30	10YR 4/4	DK YL BR	SI LO	NCM, seepage at 20cm
B3.8	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
B3.8	2	18-28	10YR 4/4	DK YL BR	SI LO	NCM
B3.9	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 10cm
B3.9	2	17-28	10YR 4/4	DK YL BR	SI LO	NCM
B3.10	1	0-5	10YR 4/2	DK GR BR	SI LO	NCM, all shale and sub
B3.10	2	5-15	10YR 4/4	DK YL BR	SI CL	NCM
B3.11	1	0-8	10YR 4/2	DK GR BR	SI LO	NCM, all shale and sub
B3.11	2	8-20	10YR 4/4	DK YL BR	SI CL	NCM
B3.12	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM, shale

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B3.12	2	15-25	10YR 4/4	DK YL BR	SI CL	NCM
B4.1	1	0-26	10YR 4/2	DK GR BR	SI LO	NCM
B4.1	2	26-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.2	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM
B4.2	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.3	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM
B4.3	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.4	1	0-27	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
B4.4	2	27-37	10YR 5/4	YL BR	SI CL LO	NCM
B4.5	1	0-22	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
B4.5	2	22-32	10YR 5/4	YL BR	SI CL LO	NCM
B4.6	1	0-12	10YR 2/2	V DK BR	SI LO	NCM, no water in test, high percentage of humus
B4.6	2	12-22	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.7	1	0-14	10YR 3/2	V DK GR BR	SI LO	NCM
B4.7	2	14-24	10YR 5/4	YL BR	SI CL	NCM
B4.8	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fill w/water to 10cm
B4.8	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.9	1	0-14	10YR 4/1	DK GR	SI LO	NCM
B4.9	2	14-24	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 20cm
B4.10	1	0-22	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
B4.10	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.11	1	0-18	10YR 4/1	DK GR	SI LO	NCM, wet but does not fill w/water
B4.11	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.12	1	0-20	10YR 4/1	DK GR	SI LO	NCM, high percentage of shale
B4.12	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, high percentage of shale
B5.1	1	0-13	10YR 4/2	DK GR BR	LO CL	NCM
B5.1	2	13-30	10YR 5/6	YL BR	LO CL	NCM
B5.2	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM, water filled test at 10cm
B5.3	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM
B5.3	2	10-30	10YR 5/4	YL BR	CL LO	NCM
B5.4	1	0-15	10YR 3/2	V DK GR BR	SI LO	NCM
B5.4	2	15-30	10YR 5/4	YL BR	CL LO	NCM
B5.5	1	0-11	10YR 3/2	V DK GR BR	SI LO	NCM
B5.5	2	11-22	10YR 5/4	YL BR	CL LO	NCM, water filled test at 22cm
B5.6	1	0-12	10YR 3/2	V DK GR BR	SI LO	NCM
B5.6	2	12-30	10YR 5/4	YL BR	CL LO	NCM
B5.7	1	0-18	10YR 3/2	V DK GR BR	SI LO	NCM
B5.7	2	18-31	10YR 5/4	YL BR	CL LO	NCM
B5.8	1	0-20	10YR 3/2	V DK GR BR	SI LO	NCM
B5.8	2	20-33	10YR 5/4	YL BR	CL LO	NCM
B5.9	1	0-20	10YR 3/2	V DK GR BR	SI LO	NCM, adjacent to raised sewer line
B5.9	2	20-30	10YR 5/4	YL BR	CL LO	NCM, w/shale
B5.10	1	0-15	10YR 4/2	DK GR BR	LO CL	NCM
B5.10	2	15-30	10YR 5/6	YL BR	LO CL	NCM
B5.11	1	0-10	10YR 3/2	V DK GR BR	LO CL	NCM, 60% gravel, located on a gravel path, moved 2m W
B5.11	2	10-20	10YR 5/4	YL BR	LO CL	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B5.12	1	0-12	10YR 3/2	V DK GR BR	LO CL	NCM, 60% gravel, 3m E of gravel path, rock impasse at 12cm
B6.1	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM, some shale
B6.1	2	23-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM, seepage at 30cm
B6.2	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM
B6.2	2	16-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM, seepage at 18cm
B6.3	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 12cm
B6.3	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B6.4	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM
B6.4	2	10-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM, seepage at 14cm
B6.5	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
B6.5	2	15-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B6.6	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
B6.6	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B6.7	1	0-16	10YR 4/4	DK YL BR	SI LO	NCM
B6.7	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B6.8	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
B6.8	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B6.9	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
B6.9	2	2	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM, seepage at 25cm
B6.10	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM, shale, seepage at 10cm
B6.10	2	10-30	10YR 4/4	DK YL BR	CL LO	NCM
B6.11	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM, shale, seepage at surface
B6.11	2	12-25	10YR 4/4	DK YL BR	CL LO	NCM
B7.1	1	0-25	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 25cm
B7.1	2	25-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.2	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
B7.2	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.3	1	0-16	10YR 4/1	DK GR	SI LO	NCM
B7.3	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.4	1	0-12	10YR 4/1	DK GR	SI LO	NCM
B7.4	2	12-22	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.5	1	0-20	10YR 4/1	DK GR	SI LO	NCM
B7.5	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.6	1	0-26	10YR 4/1	DK GR	SI LO	NCM, very little shale
B7.6	2	26-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.7	1	0-16	10YR 4/1	DK GR	SI LO	NCM, shale
B7.7	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.8	1	0-21	10YR 4/1	DK GR	SI LO	NCM, shale
B7.8	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, shale, wet but does not fill w/water

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B7.9	1	0-18	10YR 4/1	DK GR	SI LO	NCM, shale, fills w/water to 15cm
B7.9	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM; shale
B7.10	1	0-18	10YR 4/1	DK GR	SI LO	NCM, shale, wet but does not fill w/water
B7.10	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM; shale
B7.11	1	0-16	10YR 4/1	DK GR	SI LO	NCM, shale, fills w/water to 10cm
B7.11	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM; shale
B7.12	1	0-21	10YR 4/2	DK GR BR	SI LO	NCM, shale, fills w/water to 15cm
B7.12	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM; shale
B7.13	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM; shale
B7.13	2	18-29	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM; shale
B8.1	1	0-19	10YR 4/2	DK GR BR	CL LO	NCM
B8.1	2	19-31	10YR 5/4	YL BR	CL	NCM, water 20cm
B8.2	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM
B8.2	2	18-30	10YR 5/4	YL BR	CL	NCM, water 21cm
B8.3	1	0-17	10YR 4/2	DK GR BR	CL LO	NCM
B8.3	2	17-31	10YR 5/4	YL BR	CL	NCM, water 18cm
B8.4	1	0-17	10YR 4/2	DK GR BR	CL LO	NCM
B8.4	2	17-33	10YR 5/4	YL BR	CL LO	NCM, water 23cm
B8.5	1	0-14	10YR 4/2	DK GR BR	CL LO	NCM
B8.5	2	14-31	10YR 5/4	YL BR	CL LO	NCM
B8.6	1	0-8	10YR 4/2	DK GR BR	CL LO	NCM
B8.6	2	8-30	10YR 5/4	YL BR	CL LO	NCM, water filled test at 20cm
B8.7	1	0-17	10YR 4/2	DK GR BR	CL LO	NCM
B8.7	2	17-32	10YR 5/6	YL BR	CL	NCM
B8.8	1	0-21	10YR 4/2	DK GR BR	CL LO	NCM, 50% shale breakage
B8.8	2	21-31	10YR 5/6	YL BR	CL	NCM
B8.9	1	0-20	10YR 4/2	DK GR BR	CL LO	NCM
B8.9	2	20-31	10YR 5/6	YL BR	CL	NCM, seepage at 22cm
B8.10	1	0-18	10YR 3/2	V DK GR BR	CL LO	
B8.10	2	18-30	10YR 5/6	YL BR	CL	NCM
B8.11	1	0-17	10YR 3/2	V DK GR BR	CL LO	NCM, large limestone slabs near test
B8.11	2	17-32	10YR 5/6	YL BR	CL	NCM
B8.12	1	0-18	10YR 3/2	V DK GR BR	CL LO	NCM
B8.12	2	18-31	10YR 5/6	YL BR	CL	NCM, seepage at 20cm
B9.1	1	0-19	10YR 4/1	DK GR	CL LO	NCM, <20% shale inclusions
B9.1	2	19-36	10YR 5/2 10YR 5/6	GR BR YL BR	CL LO	NCM, saturated, seepage at 22cm
B9.2	1	0-16	10YR 4/1	DK GR	CL LO	NCM, saturated soils
B9.2	2	16-36	10YR 5/2 10YR 5/6	GR BR YL BR	CL LO	NCM
B9.3	1	0-22	10YR 4/1	DK GR	CL LO	NCM, loose wet soils
B9.3	2	22-39	10YR 5/2 10YR 5/6	GR BR YL BR	CL LO	NCM
B9.4	1	0-18	10YR 3/2	V DK GR BR	LO	NCM, organic/humus layer above saturated clay loam, no inclusions
B9.4	2	18-39	10YR 5/4	YL BR	CL LO	NCM, boulder impasse, seepage at ~35cm
B9.5	1	0-20	10YR 3/2	V DK GR BR	LO	NCM, saturated soils
B9.5	2	20-36	10YR 5/4	YL BR	CL LO	NCM
B9.6	1	0-15	10YR 4/1	DK GR	CL LO	NCM, 10cm humus layer above A horizon then +50% shale
B9.6	2	15-31	10YR 5/4 10YR 6/8	YL BR BR YL	CL	NCM, mottled clay, "ridge" in vicinity

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B9.7	1	0-18	10YR 4/1	DK GR	CL LO	NCM, stratum defined by +50% shale
B9.7	2	18-34	10YR 5/4 10YR 6/8	YL BR BR YL	CL	NCM, mottled clay, no inclusions, seepage at ~30cm
B9.8	1	0-27	10YR 4/2	DK GR BR	CL LO	NCM
B9.8	2	27-44	10YR 5/4 10YR 6/8	YL BR BR YL	CL	NCM, ill-defined B horizon, mottled clay loam yields to dense yet saturated clay
B9.9	1	0-27	10YR 3/2	V DK GR BR	CL LO	NCM, local disturbance within <5m of test (access path, sewer), dense shale
B9.9	2	27-43	10YR 5/6 10YR 6/8	YL BR BR YL	CL	NCM; hard clay
B9.10	1	0-25	10YR 4/1	DK GR	CL LO	NCM, <10% shale
B9.10	2	25-42	10YR 5/4 10YR 6/8	YL BR BR YL	CL	NCM, dense clay, seepage at ~31cm
B9.11	1	0-10	10YR 4/1	DK GR	CL LO	NCM, ground saturated, seepage at ~10cm, excavation stopped
B9.12	1	0-15	10YR 4/1	DK GR	CL LO	NCM, ground saturated, <10% gravel, organics
B9.12	2	15-16	10YR 5/4 10YR 6/6	YL BR BR YL	CL LO	NCM, seepage at ~15cm
B10.1	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 17cm
B10.1	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B10.2	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
B10.2	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B10.3	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
B10.3	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B10.4	1	0-8	10YR 3/2	V DK GR BR	SI LO	NCM
B10.4	2	8-20	10YR 5/8	YL BR	SI LO	NCM
B10.5	1	0-6	10YR 3/2	V DK GR BR	SI LO	NCM
B10.5	2	6-20	10YR 5/8	YL BR	SI LO	NCM
B10.6	1	0-8	10YR 4/2	DK GR BR	SI LO	NCM
B10.6	2	8-25	10YR 6/8	BR YL	SI LO	NCM
B10.7	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM, shale
B10.7	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, shale
B10.8	1	0-18	10YR 4/1	DK GR	SI LO	NCM, shale
B10.8	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, shale
B10.9	1	0-14	10YR 4/1	DK GR	SI LO	NCM, some shale
B10.9	2	14-24	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM; fills w/water to 10cm
B10.10	1	0-15	10YR 4/1	DK GR	SI LO	NCM
B10.10	2	15-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 10cm
B10.11	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 10cm
B10.11	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B11.1	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
B11.1	2	12-30	10YR 5/6	YL BR	CL	NCM, seepage at 18cm
B11.2	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
B11.2	2	15-32	10YR 5/6	YL BR	CL	NCM
B11.3	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
B11.3	2	12-31	10YR 5/6	YL BR	CL	NCM
B11.4	1	0-12	10YR 4/2	DK GR BR	CL LO	modern beer bottle on surface, half shale gravel
B11.4	2	12-30	10YR 5/6	YL BR	CL	NCM
B11.5	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B11.5	2	15-31	10YR 5/6	YL BR	CL	NCM
B11.6	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
B11.6	2	12-32	10YR 5/6	YL BR	CL	NCM
B11.7	1	0-10	10YR 4/2	DK GR BR	CL LO	NCM, w/shale, 2m N of gravel access rd.
B11.7	2	10-20	10YR 4/2 10YR 5/6	DK GR BR YL BR	CL LO	NCM, rock impasse at 20cm
B11.8	1	0-12	10YR 3/2	V DK GR BR	CL LO	NCM
B11.8	2	12-30	10YR 5/8	YL BR	CL LO	NCM
B11.9	1	0-14	10YR 3/2	V DK GR BR	CL LO	NCM
B11.9	2	14-32	10YR 5/8	YL BR	CL LO	NCM
B11.10	1	0-20	10YR 3/2	V DK GR BR	CL LO	NCM
B11.10	2	20-32	10YR 5/6	YL BR	CL LO	NCM
B11.11	1	0-7	10YR 3/2	V DK GR BR	CL LO	NCM
B11.11	2	7-28	10YR 5/6	YL BR	CL LO	NCM
B12.1	1	0-16	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 10cm
B12.1	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B12.2	1	0-18	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
B12.2	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B12.3	1	0-14	10YR 4/1	DK GR	SI LO	NCM, fill w/water to 10cm
B12.3	2	14-24	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B12.4	1	0-16	10YR 4/1	DK GR	SI LO	NCM, shale
B12.4	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, shale
B12.5	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM, shale
B12.5	2	12-25	10YR 6/3 10YR 6/8	PALE BR BR YL	SI CL	NCM
B12.6	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM, shale
B12.6	2	12-25	10YR 6/3 10YR 6/8	PALE BR BR YL	SI CL	NCM, shale
B12.7	1	0-14	10YR 4/1	DK GR	SI LO	NCM, shale
B12.7	2	14-24	10YR 6/3 10YR 6/8	PALE BR BR YL	SI CL	NCM, shale
B12.8	1	0-10	10YR 4/1	DK GR	SI LO	NCM
B12.8	2	10-28	10YR 6/3 10YR 6/8	PALE BR BR YL	SI CL	NCM
B12.9	1	0-15	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
B12.9	2	15-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL LO	NCM
B12.10	1	0-16	10YR 3/1	V DK GR	SI LO	NCM, fills w/water to 10cm
B12.10	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL LO	NCM
B13.1	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
B13.1	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B13.2	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM
B13.2	2	10-20	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B13.3	1	0-2	10YR 4/2	DK GR BR	SI LO	NCM, shale impasse after 2cm, sewer trail
B13.4	1	0-8	10YR 4/2	DK GR BR	SI LO	NCM
B13.4	2	8-28	10YR 6/8	BR YL	SI LO	NCM
B13.5	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, 60% shale
B13.5	2	20-30	10YR 6/8	BR YL	SI LO	NCM
B13.6	1	0-4	10YR 4/2	DK GR BR	SI LO	NCM, gravel road, shale road after 4cm
B13.7	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B13.7	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B13.8	1	0-14	10YR 4/2	DK GR BR	SI LO	NCM, water to surface
B13.8	2	14-28	10YR 4/4	DK YL BR	SI LO	NCM
B13.9	1	0-28	10YR 4/2	DK GR BR	SI LO	NCM
B13.9	2	28-38	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B13.10	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, stake nearby indicates tree buffer lane
B13.10	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B14.1	1	0-18	10YR 4/1	DK GR	CL LO	NCM, thick roots, saturated soils, seepage at ~15cm
B14.1	2	19-35	10YR 5/2	GR BR	CL LO	NCM
B14.2	1	0-12	10YR 3/4	DK YL BR	CL LO	NCM, loose dry soil, <1m from shale "ridge"
B14.2	2	13-30	10YR 6/8	BR YL	CL	NCM; loose dry soil
B14.3	1	0-16	10YR 4/1	DK GR	CL LO	NCM, gravels in mottled clay sub
B14.3	2	17-32	10YR 5/4 10YR 6/8	YL BR BR YL	CL	NCM
B14.4	1	0-11	10YR 3/2	V DK GR BR	CL LO	NCM, dense shale +95% at surface mix w/organic/humus
B14.5	1	0-10	10YR 3/2	V DK GR BR	CL LO	NCM, test is on shale "road/path"
B14.6	1	0-14	10YR 3/2	V DK GR BR	CL LO	NCM, saturated soils, standing water
B14.6	2	15-30	10YR 5/2 10YR 6/8	GR BR BR YL	CL	NCM, seepage at 15cm
B14.7	1	0-13	10YR 3/3	DK BR	CL LO	NCM, very wet, loose soils, few inclusions
B14.7	2	14-29	10YR 6/2	LT BR GR	CL LO	NCM
B14.8	1	0-16	10YR 3/3	DK BR	CL LO	NCM, loose soils
B14.8	2	17-34	10YR 6/2	LT BR GR	CL LO	NCM, seepage at ~17cm
B14.9	1	0-19	10YR 3/2	V DK GR BR	CL LO	NCM, dark organic layer
B14.9	2	20-35	10YR 6/8	BR YL	CL LO	NCM
B15.1	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
B15.1	2	12-30	10YR 5/6	YL BR	CL	NCM
B15.2	1	0-26	10YR 4/2	DK GR BR	CL LO	NCM, 3cm thick shale plate at 15cm
B15.2	2	26-36	10YR 5/6	YL BR	CL	NCM
B15.3	1	0-7	10YR 4/2	DK GR BR	CL LO	NCM, 60% shale gravel
B15.3	2	7-15	10YR 5/6	YL BR	CL	NCM, rock (shale) impasse
B15.4	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM, moved 5m N - onroad, lots of shale
B15.4	2	12-28	10YR 5/6	YL BR	CL	NCM
B15.5	1	0-14	10YR 4/2	DK GR BR	CL LO	NCM
B15.5	2	14-30	10YR 5/6	YL BR	CL	NCM, seepage at 17cm
B15.6	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
B15.6	2	13-31	10YR 5/6	YL BR	CL	NCM, seepage at 19cm
B15.7	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM
B15.7	2	18-30	10YR 5/6	YL BR	CL LO	NCM
B15.8	1	0-16	10YR 4/2	DK GR BR	CL LO	NCM
B15.8	2	16-31	10YR 5/6	YL BR	CL LO	NCM
B15.9	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
B15.9	2	15-30	10YR 5/6	YL BR	CL LO	NCM
B16.1	1	0-12	10YR 4/2	DK GR BR	LO CL	NCM
B16.1	2	12-30	10YR 5/4 10YR 5/6	YL BR	LO CL	NCM
B16.2	1	0-10	10YR 4/2	DK GR BR	LO	NCM
B16.2	2	10-30	10YR 6/8	BR YL	SA	NCM
B16.3	1	0-6	10YR 3/2	V DK GR BR	SI LO	NCM, w/gravel, 2m north of gravel berm
B16.3	2	6-20	10YR 5/4	YL BR	CL LO	NCM
B16.4	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM
B16.4	2	10-30	10YR 6/8	BR YL	LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B16.5	1	0-13	10YR 4/2	DK GR BR	SI LO	NCM
B16.5	2	13-23	10YR 5/4	YL BR	LO CL	NCM, water filled at 23cm
B16.6	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
B16.6	2	15-30	10YR 5/4	YL BR	LO CL	NCM
B16.7	1	0-8	10YR 4/2	DK GR BR	CL LO	NCM
B16.7	2	8-30	10YR 5/6	YL BR	CL LO	NCM
B16.8	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
B16.8	2	15-30	10YR 5/6	YL BR	CL LO	NCM
B17.1	1	0-20	10YR 3/2	V DK GR BR	SI LO	NCM, rock impasse at 20cm, 60% gravel
B17.2	1	0-15	10YR 3/2	V DK GR BR	LO CL	NCM, 2m south of sewer pipe
B17.2	2	15-30	10YR 5/4	YL BR	LO CL	NCM
B17.3	1	0-13	10YR 3/2	V DK GR BR	LO CL	NCM
B17.3	2	13-28	10YR 5/4	YL BR	LO CL	NCM
B17.4	1	0-14	10YR 3/2	V DK GR BR	LO CL	NCM
B17.4	2	14-20	10YR 5/4	YL BR	LO CL	NCM, water filled at 20cm
B17.5	1	0-11	10YR 3/2	V DK GR BR	LO CL	NCM
B17.5	2	11-24	10YR 5/4	YL BR	LO CL	NCM
B17.6	1	0-10	10YR 4/2	DK GR BR	LO	NCM, likely disturbed from thruway
B17.6	2	10-30	10YR 6/8	BR YL	SA	NCM
B17.7	1	0-10	10YR 4/2	DK GR BR	LO	NCM, adjacent to thruway
B17.7	2	10-30	10YR 6/8	BR YL	SA	NCM
B18.1	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, shale
B18.1	2	17-27	10YR 6/3 10YR 6/8	PALE BR BR YL	SI CL	NCM, shale
B18.2	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM, shale
B18.2	2	16-26	10YR 6/3 10YR 6/8	PALE BR BR YL	SI CL	NCM, shale
B18.3	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, small amount of shale
B18.3	2	17-27	10YR 5/6	YL BR	SI LO	NCM
B18.4	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
B18.4	2	18-28	10YR 6/2	LT BR GR	SI CL	NCM
B18.5	1	0-16	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 16cm
B18.5	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B18.6	1	0-16	10YR 4/1	DK GR	SI LO	NCM
B18.6	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B18.7	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
B18.7	2	15-25	10YR 6/6	BR YL	SI CL	NCM
B19.1	1	0-16	10YR 4/1	DK GR	CL LO	NCM, +50% shale
B19.1	2	16-30	10YR 5/2 10YR 5/6	GR BR YL BR	CL	NCM, dense clay (mottled)
B19.2	1	0-22	10YR 4/1	DK GR	CL LO	NCM, less shale, loose soils
B19.2	2	22-39	10YR 5/2 10YR 5/6	GR BR YL BR	CL	NCM
B19.3	1	0-13	10YR 3/4	DK YL BR	CL LO	NCM
B19.3	2	13-18	10YR 6/6	BR YL	CL LO	NCM, rock impasse at ~18cm
B19.4	1	0-20	10YR 4/1	DK GR	CL LO	NCM, moist soils, mottled sub, <10% inclusions
B19.4	2	21-36	10YR 5/2 10YR 6/2	GR BR LT BR GR	CL	NCM
B19.5	1	0-18	10YR 4/1	DK GR	CL LO	NCM
B19.5	2	19-34	10YR 5/2 10YR 6/2	GR BR LT BR GR	CL	NCM
B19.6	1	0-14	10YR 3/4	DK YL BR	LO	NCM
B19.6	2	15-30	10YR 6/8	BR YL	SA LO	NCM
B20.1	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM
B20.1	2	18-31	10YR 4/4	DK YL BR	CL LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B20.2	1	0-19	10YR 4/2	DK GR BR	CL LO	NCM
B20.2	2	19-31	10YR 4/4	DK YL BR	CL LO	NCM
B20.3	1	0-16	10YR 4/2	DK GR BR	CL LO	NCM
B20.3	2	16-31	10YR 4/4	DK YL BR	CL LO	NCM
B20.4	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
B20.4	2	15-31	10YR 4/4	DK YL BR	CL	NCM
B21.1	1	0-14	10YR 4/2	DK GR BR	SI LO	NCM
B21.1	2	14-30	10YR 4/4	DK YL BR	SI LO	NCM
C1.1	1	0-13	10YR 4/2	DK GR BR	SI LO	NCM, shale in surface and sub
C1.1	2	13-23	10YR 4/4	DK YL BR	SI LO	NCM
C1.2	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, in woods, shale
C1.2	2	20-30	10YR 4/4	DK YL BR	SI LO	NCM
C1.3	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM, shale
C1.3	2	12-22	10YR 4/4	DK YL BR	SI LO	NCM
C2.1	1	0-20	10YR 4/2	DK GR BR	CL LO	NCM, shale gravel on surface
C2.1	2	20-33	10YR 5/4	YL BR	CL	NCM
C2.2	1	0-19	10YR 4/2	DK GR BR	CL LO	NCM, 5% upslope to SE
C2.2	2	19-30	10YR 5/4	YL BR	CL	NCM
C2.3	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM, seepage at 16cm
C2.3	2	18-31	10YR 5/4	YL BR	CL	NCM
C3.1	1	0-11	10YR 3/2	V DK GR BR	SI LO	NCM, saturated soils
C3.1	2	11-17	10YR 4/3	BR	SI CL	NCM, seepage after ~15cm
C3.2	1	0-19	10YR 3/2	V DK GR BR	SI LO	NCM, +90% shale
C3.2	2	19-35	10YR 4/3	BR	SI CL	NCM; 50% shale subsoil
C3.3	1	0-21	10YR 3/2	V DK GR BR	SI LO	NCM, organic inclusions (root)
C3.3	2	21-36	10YR 4/3	BR	SI CL	NCM, 40% shale gravel
C4.1	1	0-27	10YR 3/2	V DK GR BR	SI LO	NCM, seepage at ~24cm
C4.1	2	27-40	10YR 5/4	YL BR	SI CL	NCM
C4.2	1	0-17	10YR 3/2	V DK GR BR	SI LO	NCM, seepage at 10cm
C4.2	2	17-27	10YR 5/4	YL BR	SI CL	NCM
C4.3	1	0-20	10YR 3/2	V DK GR BR	SI LO	NCM, lots of shale, 100ft interval
C4.3	2	20-30	10YR 6/8	BR YL	SI CL	NCM
C4.4	1	0-10	10YR 3/2	V DK GR BR	SI LO	NCM, lots of shale
C4.4	2	10-30	10YR 4/4	DK YL BR	SI CL	NCM
C4.5	1	0-20	10YR 3/2	V DK GR BR	SI LO	NCM, lots of shale
C4.5	2	20-30	10YR 4/4	DK YL BR	SI CL	NCM
C4.6	1	0-18	10YR 4/1	DK GR	SI LO	NCM, seepage at 15cm, shale
C4.6	2	18-28	10YR 5/4	YL BR	SI CL	NCM
C4.7	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM
C4.7	2	16-26	10YR 4/4	DK YL BR	SI CL	NCM
C4.8	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 4cm
C4.8	2	16-26	10YR 4/4	DK YL BR	SI CL	NCM
C4.9	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 5cm
C4.9	2	10-25	10YR 4/4	DK YL BR	SI CL	NCM
C4.10	1	0-15	10YR 3/2	V DK GR BR	SI LO	NCM, seepage at surface
C4.10	2	15-25	10YR 4/4	DK YL BR	SI CL	NCM
C4.11	1	0-18	10YR 3/2	V DK GR BR	SI LO	NCM, seepage at 10cm
C4.11	2	18-28	10YR 4/4	DK YL BR	SI CL	NCM
C4.12	1	0-21	10YR 3/2	V DK GR BR	SI LO	NCM, seepage at 15cm
C4.12	2	21-32	10YR 4/4	DK YL BR	SI CL	NCM
C4.13	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
C4.13	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C4.14	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 15cm
C4.14	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C4.15	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C4.15	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C4.16	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, water to surface
C4.16	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C5.1	1	0-21	10YR 4/3	BR	SI LO	NCM
C5.1	2	21-32	10YR 4/4	DK YL BR	SI CL	NCM
C5.2	1	0-24	10YR 4/3	BR	SI LO	NCM
C5.2	2	24-39	10YR 4/4	DK YL BR	SI CL	NCM
C5.3	1	0-23	10YR 4/3	BR	SI LO	NCM
C5.3	2	23-35	10YR 4/4	DK YL BR	SI CL	NCM
C5.4	1	0-15	10YR 4/3	BR	SI LO	NCM, 50% broken shale
C5.4	2	15-31	10YR 4/4	DK YL BR	SI CL	NCM
C5.5	1	0-12	10YR 4/3	BR	SI LO	NCM
C5.5	2	12-32	10YR 4/4	DK YL BR	SI CL	NCM, seepage at 24cm
C5.6	1	0-18	10YR 4/3	BR	SI LO	NCM
C5.6	2	18-33	10YR 4/4	DK YL BR	SI CL	NCM, seepage at 25cm
C5.7	1	0-19	10YR 4/3	BR	SI LO	NCM
C5.7	2	19-30	10YR 4/4	DK YL BR	SI CL	NCM
C5.8	1	0-17	10YR 4/3	BR	SI LO	NCM
C5.8	2	17-29	10YR 4/4	DK YL BR	SI CL	NCM
C5.9	1	0-18	10YR 4/3	BR	SI LO	NCM
C5.9	2	18-32	10YR 4/4	DK YL BR	SI CL	NCM
C5.10	1	0-13	10YR 5/1	GR	CL LO	NCM, seepage at 10cm
C5.10	2	13-24	10YR 5/6	YL BR	CL	NCM
C5.11	1	0-12	10YR 5/1	GR	CL LO	NCM
C5.11	2	12-30	10YR 5/6	YL BR	CL	NCM
C5.12	1	0-23	10YR 5/1	GR	CL LO	NCM
C5.12	2	23-33	10YR 5/6	YL BR	CL	NCM
C5.13	1	0-20	10YR 5/1	GR	CL LO	NCM
C5.13	2	20-30	10YR 5/6	YL BR	CL	NCM, seepage at 20cm
C5.14	1	0-17	10YR 5/1	GR	CL LO	NCM
C5.14	2	17-32	10YR 5/6	YL BR	CL	NCM
C5.15	1	0-19	10YR 5/1	GR	CL LO	NCM
C5.15	2	19-31	10YR 5/6	YL BR	CL	NCM
C5.16	1	0-19	10YR 5/1	GR	CL LO	NCM, seepage at 19cm
C5.16	2	19-32	10YR 5/6	YL BR	CL	NCM
C6.1	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, in woods
C6.1	2	18-28	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	CL LO	NCM
C6.2	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, in woods
C6.2	2	20-30	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	CL LO	NCM
C6.3	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
C6.3	2	20-30	10YR 4/6	DK YL BR	SI LO	NCM, seepage at 25cm
C6.4	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM, in woods
C6.4	2	12-25	10YR 4/6	DK YL BR	SI LO	NCM
C6.5	1	0-8	10YR 4/2	DK GR BR	SI LO	NCM, shale
C6.5	2	8-30	10YR 4/6	DK YL BR	SI LO	NCM
C6.6	1	0-13	10YR 4/2	DK GR BR	SI LO	NCM
C6.6	2	13-28	10YR 6/8	BR YL	CL LO	NCM
C6.7	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
C6.7	2	20-30	10YR 6/8	BR YL	CL LO	NCM
C6.8	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
C6.8	2	15-30	10YR 6/8	BR YL	CL LO	NCM
C6.9	1	0-12	10YR 3/2	V DK GR BR	SI LO	NCM, root impasse at 12cm
C6.10	1	0-25	10YR 3/2	V DK GR BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C6.10	2	25-35	10YR 5/4	YL BR	CL LO	NCM
C6.11	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 10cm
C6.11	2	20-30	10YR 5/4	YL BR	CL LO	NCM
C6.12	1	0-15	10YR 4/1	DK GR	SI LO	NCM, roots
C6.12	2	15-25	10YR 5/4	YL BR	CL LO	NCM
C6.13	1	0-15	10YR 4/1	DK GR	SI LO	NCM
C6.13	2	15-30	10YR 5/4	YL BR	CL LO	NCM
C6.14	1	0-24	10YR 4/2	DK GR BR	SI LO	NCM
C6.14	2	24-34	10YR 6/8	BR YL	CL LO	NCM, seepage at 32cm
C6.14A	1	0-34	10YR 4/1	DK GR	CL LO	Glass bottle dump - 3 metal, 1 green glass, 2 milk glass (not collected)
C6.14A	2	34-45	10YR 5/4	YL BR	CL	NCM, seepage at 34
C6.14B	1	0-32	10YR 4/1	DK GR	CL LO	Glass bottle dump - all similar to surface - collected representative sample
C6.14B	2	32-34	10YR 5/4	YL BR	CL	NCM
C6.15	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
C6.15	2	20-30	10YR 4/4	DK YL BR	CL LO	NCM
C6.16	1	0-21	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 10cm
C6.16	2	21-31	10YR 4/4	DK YL BR	CL LO	NCM
C6.17	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
C6.17	2	18-30	10YR 4/4	DK YL BR	CL LO	NCM
C7.1	1	0-23	10YR 4/1	DK GR	SI LO	NCM, fills with water to 20cm
C7.1	2	23-33	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.2	1	0-21	10YR 4/1	DK GR	SI LO	NCM
C7.2	2	23-33	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM, fills with water to 25cm
C7.3	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM
C7.3	2	16-26	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.4	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, wet
C7.4	2	17-27	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.5	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, fills w/water to 15cm
C7.5	2	18-28	10YR 5/4	YL BR	SI CL LO	NCM
C7.6	1	0-22	10YR 4/1	DK GR	SI LO	NCM, w/shale, soil moist
C7.6	2	22-32	10YR 5/4	YL BR	SI LO	NCM, w/shale
C7.7	1	0-18	10YR 4/1	DK GR	SI LO	NCM, wet but does not fill w/water
C7.7	2	18-28	10YR 5/4	YL BR	SI LO	NCM
C7.8	1	0-19	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C7.8	2	19-29	10YR 5/4	YL BR	SI LO	NCM
C7.9	1	0-16	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C7.9	2	16-26	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.10	1	0-18	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C7.10	2	18-28	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.11	1	0-21	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
C7.11	2	21-31	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.12	1	0-22	10YR 4/1	DK GR	SI LO	NCM, fills w/ water to 20cm
C7.12	2	22-32	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.13	1	0-26	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 25cm
C7.13	2	26-36	10YR 5/4	YL BR	SI CL	NCM
C7.14	1	0-30	10YR 4/1	DK GR	SI LO	NCM, fills w/ water to 25cm
C7.14	2	30-40	10YR 5/4	YL BR	SI CL	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C7.15	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM, wet soils, gravel
C7.15	2	23-39	10YR 3/4	DK YL BR	CL LO	NCM; gravel
C7.16	1	0-21	10YR 4/2	DK GR BR	SI LO	NCM
C7.16	2	21-37	10YR 3/4	DK YL BR	CL LO	NCM, +50% shale
C7.17	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, near modern construction debris (barrels, concrete), seepage at 20cm
C7.17	2	20-25	10YR 3/4	DK YL BR	CL LO	NCM, saturated, 50% shale
C8.1	1	0-17	10YR 4/1	DK GR	SI LO	NCM
C8.1	2	17-27	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM, fills w/seepage at 20cm
C8.2	1	0-16	10YR 4/1	DK GR	SI LO	NCM
C8.2	2	16-26	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM, fills w/seepage at 20cm
C8.3	1	0-16	10YR 4/1	DK GR	SI LO	NCM, wet
C8.3	2	16-26	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.4	1	0-15	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C8.4	2	15-25	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.5	1	0-18	10YR 4/1	DK GR	SI LO	NCM, wet but does not fill w/water
C8.5	2	18-28	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.6	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 17cm
C8.6	2	17-27	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.7	1	0-20	10YR 3/1	V DK GR	SI LO	NCM, w/shale, STP is W of several mounds of shale, moist but not wet
C8.7	2	20-30	10YR 4/3	BR	SI LO	NCM, w/shale
C8.8	1	0-12	10YR 3/1	V DK GR	SI LO	NCM, small amount of shale
C8.8	2	12-22	10YR 4/3	BR	SI LO	NCM; shale
C8.9	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM
C8.9	2	16-26	10YR 5/4	YL BR	SI CL LO	NCM
C8.10	1	0-18	10YR 3/2	V DK GR BR	SI LO	NCM, w/some shale
C8.10	2	18-28	10YR 5/4	YL BR	SI CL LO	NCM, w/some shale
C8.11	1	0-20	10YR 3/2	V DK GR BR	SI LO	NCM, fills w/water to 20cm
C8.11	2	20-30	10YR 5/4	YL BR	SI CL LO	NCM
C8.12	1	0-22	10YR 4/1	DK GR	SI LO	NCM, fill w/water to 20cm
C8.12	2	22-32	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.13	1	0-18	10YR 4/1	DK GR	SI LO	NCM, fill w/water to 15cm
C8.13	2	18-28	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.14	1	0-28	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 25cm, STP is 3m W of wetland flag W3.26, 5m S of concrete trough C?, 10m S of well
C8.14	2	28-38	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.15	1	0-21	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
C8.15	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C8.16	1	0-26	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C8.16	2	26-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C8.17	1	0-30	10YR 4/1	DK GR	SI LO	NCM
C8.17	2	30-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C8.18	1	0-35	10YR 4/1	DK GR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C8.18	2	35-45	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C9.1	1	0-12	10YR 5/2	GR BR	CL SI	NCM, saturated soils, standing water within 1m, excavation stopped due to seepage
C9.2	1	0-11	10YR 4/2	DK GR BR	CL SI	NCM, excavation stopped due to seepage
C9.3	1	0-19	10YR 4/2	DK GR BR	CL SI	NCM, (root layer) saturated, <2% gravel
C9.3	2	19-45	10YR 5/2 10YR 6/8	GR BR BR YL	CL	NCM, consistently 70% mottled color/texture variant w/ 10% small cobble, pebbles
C9.4	1	0-21	10YR 4/1	DK GR	CL LO	NCM, wet soils
C9.4	2	21-25	10YR 5/2 10YR 6/8	GR BR BR YL	CL	NCM, excavation stopped due to seepage at ~25cm
C9.5	1	0-13	10YR 4/1	DK GR	CL LO	NCM
C9.5	2	13-15	10YR 5/2 10YR 6/8	GR BR BR YL	CL	NCM, seepage at 15cm
C9.6	1	0-10	10YR 3/1	V DK GR	CL LO	NCM, not excavated due to standing water
C9.7	1	0-18	10YR 3/1	V DK GR	CL LO	NCM, nice, dry humus organic inclusions
C9.7	2	18-35	10YR 3/4	DK YL BR	CL LO	NCM, slightly more clay w/<25% shale gravels
C9.8	1	0-13	10YR 3/1	V DK GR	SI LO	NCM, 10 degree rise, 70% shale w/loam
C9.8	2	13-29	10YR 3/4	DK YL BR	SI LO	NCM; 70% shale w/loam
C9.9	1	0-11	10YR 4/2	D GR BR	SI LO	NCM, 70% shale gravels, dry soils (compact roots)
C9.9	2	11-30	10YR 5/4	YL BR	SI LO	NCM
C9.10	1	0-16	10YR 3/1	V DK GR	SI LO	NCM
C9.10	2	16-32	10YR 3/4	DK YL BR	SI LO	NCM, greater (20%) shale concentration
C9.11	1	0-22	10YR 3/1	V DK GR	SI LO	NCM, dry dark gray brown humus
C9.11	2	22-38	10YR 3/4	DK YL BR	SI LO	NCM, wet, silty w/<70% shale gravel, seepage at ~30cm
C9.12	1	0-14	10YR 4/1	DK GR	SI LO	NCM
C9.12	2	14-20	10YR 5/1	GR	S LO	NCM
C9.13	1	0-10	10YR 4/1	DK GR	SI LO	NCM, (standing water) excavation stopped at ~10cm (water)
C9.14	1	0-15	10YR 4/1	DK GR	SI LO	NCM, wet soils, <10% gravel inclusions
C9.14	2	15-31	10YR 5/1	GR	SI LO	NCM
C9.15	1	0-21	10YR 4/1	DK GR	SI LO	NCM, seepage at 20cm
C9.15	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C9.16	1	0-23	10YR 4/1	DK GR	SI LO	NCM
C9.16	2	23-33	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C9.17	1	0-24	10YR 4/1	DK GR	SI LO	NCM
C9.17	2	24-34	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C9.18	1	0-24	10YR 4/1	DK GR	SI LO	NCM, mixed (gravel)
C10.1	1	0-24	10YR 4/2	DK GR BR	SI LO	NCM
C10.1	2	24-35	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	CL LO	NCM, moist soil
C10.2	1	0-24	10YR 4/2	DK GR BR	SI LO	NCM
C10.2	2	24-34	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	CL LO	NCM, moist soil
C10.3	1	0-21	10YR 4/2	DK GR BR	SI LO	NCM, shale in sub
C10.3	2	21-35	10YR 6/2; 10YR 6/8; 10YR 2/1	LT BR GR; BR YL; BL	CL LO	NCM, moist soil
C10.4	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, some shale
C10.4	2	20-30	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	CL LO	NCM
C10.5	1	0-18	10YR 3/2	V DK GR BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C10.5	2	18-30	10YR 6/8	BR YL	SI LO	NCM
C10.6	1	0-16	10YR 2/2	V DK BR	SI LO	NCM, seepage at 2cm
C10.6	2	16-30	10YR 6/8	BR YL	SI LO	NCM
C10.7	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, in woods
C10.7	2	20-30	10YR 6/2	LT BR GR	SI CL	NCM
C10.8	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, moist soil
C10.8	2	18-30	10YR 6/2	LT BR GR	SI CL	NCM
C10.9	1	0-12	10YR 2/2	V DK BR	SI LO	NCM, dry
C10.9	2	12-30	10YR 6/2	LT BR GR	SI CL	NCM
C10.10	1	0-18	10YR 2/2	V DK BR	SI LO	NCM, shale and gravel in subsoil
C10.10	2	18-30	10YR 4/6	DK YL BR	SI LO	NCM
C10.11	1	0-26	10YR 4/2	DK GR BR	SI LO	NCM, some shale, dry
C10.11	2	26-37	10YR 4/6	DK YL BR	SI LO	NCM
C10.12	1	0-28	10YR 4/2	DK GR BR	SI LO	NCM, some shale
C10.12	2	28-38	10YR 4/6	DK YL BR	SI LO	NCM
C10.13	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM, wet seepage at 20cm
C10.13	2	23-33	10YR 4/6	DK YL BR	SI LO	NCM
C10.14	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 10cm
C10.14	2	20-30	10YR 4/6	DK YL BR	SI LO	NCM
C10.15	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
C10.15	2	15-34	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C10.16	1	0-25	10YR 4/2	DK GR BR	SI LO	NCM
C10.16	2	25-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C10.17	1	0-35	10YR 4/2	DK GR BR	SI LO	NCM
C10.17	2	35-45	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C10.18	1	0-28	10YR 4/2	DK GR BR	SI LO	NCM
C10.18	2	28-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C11.1	1	0-20	10YR 4/1	DK GR	CL LO	NCM
C11.1	2	20-30	10YR 6/8	BR YL	CL	NCM, seepage at 26cm
C11.2	1	0-17	10YR 4/1	DK GR	CL LO	NCM, seepage at 24cm
C11.2	2	17-31	10YR 6/8	BR YL	CL	NCM
C11.2A	1	0-13	10YR 3/2	V DK GR BR	LO CL	NCM
C11.2A	2	13-33	10YR 5/4 10YR 5/6	YL BR	LO CL	NCM
C11.3	1	0-14	10YR 4/1	DK GR	CL LO	NCM
C11.3	2	14-29	10YR 6/8	BR YL	CL	NCM, seepage at 17cm
C11.4	1	0-12	10YR 3/2	V DK GR BR	CL LO	NCM
C11.4	2	12-28	10YR 5/4	YL BR	CL	NCM
C11.5	1	0-13	10YR 3/2	V DK GR BR	CL LO	NCM
C11.5	2	13-30	10YR 5/4	YL BR	CL	NCM, seepage at 23cm
C11.6	1	0-19	10YR 3/2	V DK GR BR	CL LO	NCM
C11.6	2	19-31	10YR 5/4	YL BR	CL	NCM, seepage at 24cm
C11.7	1	0-22	10YR 4/2	DK GR BR	CL LO	NCM
C11.7	2	22-34	10YR 5/4	YL BR	CL	NCM
C11.8	1	0-26	10YR 4/2	DK GR BR	CL LO	NCM
C11.8	2	26-36	10YR 5/4	YL BR	CL	NCM, seepage at 34cm
C11.9	1	0-27	10YR 4/2	DK GR BR	CL LO	NCM
C11.9	2	27-38	10YR 5/4	YL BR	CL	NCM, seepage at 35cm
C11.10	1	0-22	10YR 4/2	DK GR BR	CL LO	NCM, ground slopes down to a wetter area north
C11.10	2	22-34	10YR 5/6	YL BR	CL LO	NCM
C11.11	1	0-20	10YR 4/2	DK GR BR	CL LO	NCM, seepage at 13cm
C11.11	2	20-31	10YR 5/6	YL BR	CL LO	NCM
C11.12	1	0-17	10YR 4/2	DK GR BR	CL LO	NCM, seepage at 15cm

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C11.12	2	17-28	10YR 5/6	YL BR	CL LO	NCM
C11.13	1	0-17	10YR 4/2	DK GR BR	CL LO	NCM
C11.13	2	17-27	10YR 5/4	YL BR	CL	NCM
C11.14	1	0-30	10YR 4/2	DK GR BR	CL LO	NCM; disturbed
C11.14	2	30-40	10YR 5/6	YL BR	CL	NCM
C11.15	1	0-28	10YR 4/2	DK GR BR	CL LO	NCM; disturbed
C11.15	2	28-41	10YR 5/6	YL BR	CL	NCM
C11.16	1	0-28	10YR 4/2	DK GR BR	CL LO	NCM, road gravel
C11.16	2	28-42	10YR 5/6	YL BR	CL	NCM
C12.1	1	0-14	10YR 4/1	DK GR	CL LO	NCM
C12.1	2	14-30	10YR 6/1 10YR6/8	GR BR YL	CL	NCM
C12.2	1	0-12	10YR 4/1	DK GR	CL LO	NCM
C12.2	2	12-20	10YR 6/1 10YR6/8	GR BR YL	CL	NCM, seepage at 20cm
C12.2A	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM, modified close interval
C12.2A	2	15-33	10YR 5/4	YL BR	CL	NCM
C12.3	1	0-12	10YR 4/1	DK GR	CL LO	NCM
C12.3	2	12-20	10YR 6/1 10YR6/8	GR BR YL	CL	NCM, seepage at 20cm
C12.3A	1	0-21	10YR 4/2	DK GR BR	SI LO	NCM, modified close interval
C12.3A	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
C12.4	1	0-21	10YR 4/1	DK GR	CL LO	NCM, root impasse at 21cm
C12.5	1	0-20	10YR 4/1	DK GR	CL LO	NCM, 100ft interval due to wetlands
C12.5	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	LO CL	NCM, seepage at 30cm
C12.6	1	0-12	10YR 4/1	DK GR	CL LO	NCM
C12.6	2	12-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	LO CL	NCM
C12.7	1	0-18	10YR 4/1	DK GR	CL LO	NCM
C12.7	2	18-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	LO CL	NCM
C12.8	1	0-20	10YR 5/3	BR	SI LO	NCM
C12.8	2	20-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C12.9	1	0-25	10YR 5/2	GR BR	LO CL	NCM
C12.9	2	25-35	10YR 5/6	YL BR	LO CL	NCM
C12.10	1	0-20	10YR 5/2	GR BR	LO CL	NCM
C12.10	2	20-32	10YR 5/6	YL BR	LO CL	NCM
C12.11	1	0-30	10YR 5/3	BR	LO CL	NCM
C12.11	2	30-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	LO CL	NCM
C12.12	1	0-30	10YR 4/2	DK GR BR	LO CL	NCM
C12.12	2	30-42	10YR 5/6	YL BR	LO CL	NCM
C12.13	1	0-27	10YR 4/2	DK GR BR	LO CL	NCM
C12.13	2	27-39	10YR 5/6	YL BR	LO CL	NCM
C12.14	1	0-20	10YR 4/2	DK GR BR	LO CL	NCM
C12.14	2	20-30	10YR 5/6	YL BR	LO CL	NCM
C13.1	1	0-16	10YR 4/1	DK GR	CL LO	NCM, seepage at 14cm
C13.1	2	16-28	10YR 6/8	BR YL	CL	NCM
C13.2	1	0-26	10YR 4/1	DK GR	CL LO	NCM, seepage at 21cm
C13.2	2	26-36	10YR 6/8	BR YL	CL	NCM
C13.2A	1	0-23	10YR 4/2	DK GR BR	LO CL	NCM
C13.2A	2	23-40	10YR 5/4 10YR 5/6	YL BR	LO CL	NCM
C13.3	1	0-17	10YR 4/1	DK GR	CL LO	NCM, seepage at 16cm

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C13.3	2	17-31	10YR 6/8	BR YL	CL	NCM
C13.3A	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
C13.3A	2	12-31	10YR 5/4	YL BR	CL	NCM, seepage at 22cm
C13.4	1	0-12	10YR 4/1	DK GR	CL LO	NCM
C13.4	2	12-31	10YR 6/8	BR YL	CL	NCM, seepage at 26cm
C13.5	1	0-16	10YR 4/1	DK GR	CL LO	NCM
C13.5	2	16-32	10YR 6/8	BR YL	CL	NCM
C13.6	1	0-26	10YR 4/1	DK GR	CL LO	NCM
C13.6	2	26-37	10YR 6/8	BR YL	CL	NCM
C13.7	1	0-24	10YR 4/1	DK GR	CL LO	NCM, seepage at 15cm
C13.7	2	24-34	10YR 6/8	BR YL	CL	NCM
C13.8	1	0-24	10YR 4/1	DK GR	CL LO	NCM
C13.8	2	24-35	10YR 6/8	BR YL	CL	NCM
C13.9	1	0-24	10YR 4/1	DK GR	CL LO	NCM
C13.9	2	24-36	10YR 6/8	BR YL	CL	NCM
C13.10	1	0-24	10YR 4/1	DK GR	CL LO	NCM
C13.10	2	24-36	10YR 6/8	BR YL	CL	NCM
C13.11	1	0-17	10YR 4/1	DK GR	CL LO	NCM
C13.11	2	17-31	10YR 6/8	BR YL	CL	NCM, seepage at 29cm
C13.12	1	0-25	10YR 4/1	DK GR	CL LO	NCM
C13.12	2	25-36	10YR 6/8	BR YL	CL	NCM
C13.13	1	0-24	10YR 4/2	DK GR BR	CL LO	NCM
C13.13	2	24-35	10YR 5/4	YL BR	CL	NCM
C14.1	1	0-25	10YR 4/1	DK GR	SI LO	NCM
C14.1	2	25-35	10YR 6/3 10YR 6/8	PALE BR BR YL	CL LO	NCM, seepage at 35cm
C14.2	1	0-18	10YR 4/1	DK GR	SI LO	NCM
C14.2	2	18-30	10YR 6/3 10YR 6/8	PALE BR BR YL	CL LO	NCM, seepage at 25cm
C14.2A	1	0-19	10YR 4/2	DK GR BR	LO CL	NCM
C14.2A	2	19-43	10YR 5/2 10YR 5/6	GR BR YL BR	LO CL	NCM
C14.3	1	0-20	10YR 4/1	DK GR	SI LO	NCM, seepage at 20cm
C14.3	2	20-30	10YR 6/3 10YR 6/8	PALE BR BR YL	CL LO	NCM
C14.3A	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, wet
C14.3A	2	20-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C14.4	1	0-20	10YR 4/1	DK GR	SI LO	NCM
C14.4	2	20-30	10YR 6/3 10YR 6/8	PALE BR BR YL	CL LO	NCM
C14.5	1	0-36	10YR 4/1	DK GR	SI LO	NCM
C14.5	2	36-46	10YR 6/3 10YR 6/8	PALE BR BR YL	CL LO	NCM, seepage at 36cm
C14.6	1	0-19	10YR 4/2	DK GR BR	SI LO	NCM
C14.6	2	19-30	10YR 6/3 10YR 6/8	PALE BR BR YL	CL LO	NCM
C14.7	1	0-25	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 20cm
C14.7	2	25-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C14.8	1	0-30	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 30cm
C14.8	2	30-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C14.9	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 20cm
C14.9	2	23-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C14.10	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 20cm

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C14.10	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C14.11	1	0-24	10YR 4/2	DK GR BR	SI LO	NCM
C14.11	2	24-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C14.12	1	0-24	10YR 4/2	DK GR BR	SI LO	NCM
C14.12	2	24-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C14.13	1	0-28	10YR 4/2	DK GR BR	SI LO	NCM
C14.13	2	28-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.1	1	0-20	10YR 4/1	DK GR	SI LO	NCM
C15.1	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
C15.2	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C15.2	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.2A	1	0-13	10YR 4/1	DK GR	LO	NCM, saturated soils, dark humus, root inclusions, no gravels
C15.2A	2	13-26	10YR 5/2	GR BR	CL LO	NCM; mottled clay
C15.2A	3	26-44	10YR 5/2 10YR 6/8	GR BR BR YL	CL	NCM, mottled clay
C15.3	1	0-16	10YR 4/1	DK GR	SI LO	NCM, fills w/water to surface
C15.3	2	16-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.3	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.3A	1	0-18	10YR 5/2	GR BR	SI LO	NCM, fills w/water to 10cm
C15.3A	2	18-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.4	1	0-18	10YR 4/1	DK GR	SI LO	NCM, filled w/water to 15cm
C15.4	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.5	1	0-16	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 10cm
C15.5	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, wetland flag W4.7
C15.6	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C15.6	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, 100ft interval, 25ft NW of wetland flag
C15.7	1	0-18	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C15.7	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.8	1	0-22	10YR 4/1	DK GR	SI LO	NCM
C15.8	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
C15.9	1	0-22	10YR 4/1	DK GR	SI LO	NCM
C15.9	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
C15.10	1	0-19	10YR 5/2	GR BR	SI LO	NCM
C15.10	2	19-29	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
C15.11	1	0-21	10YR 5/2	GR BR	SI LO	NCM
C15.11	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
C15.12	1	0-22	10YR 5/2	GR BR	SI LO	NCM, soil wet but does not fill w/water
C15.12	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C15.13	1	0-22	10YR 5/2	GR BR	SA LO	NCM, wet but does not fill w/water
C16.1	1	0-16	10YR 4/1	DK GR	SI CL	NCM
C16.1	2	17-34	10YR 6/1 10YR 5/4	GR YL BR	CL	NCM
C16.2	1	0-15	10YR 4/1	DK GR	SI CL	NCM
C16.2	2	15-16	10YR 6/1 10YR 5/4	GR YL BR	CL	NCM, seepage at 16cm
C16.3	1	0-16	10YR 5/2	GR BR	SI CL	NCM, narrow organic layer
C16.3	2	17-35	10YR 6/1 10YR 5/4	GR YL BR	CL	NCM; mottled clay, few cobbles
C16.4	1	0-21	10YR 5/1	GR	SI CL	NCM
C16.4	2	22-38	10YR 5/4 10YR 6/2	YL BR LT BR GR	CL	NCM
C16.5	1	0-19	10YR 5/1	GR	SI CL	NCM
C16.5	2	19-20	10YR 5/4 10YR 6/2	YL BR LT BR GR	CL	NCM, seepage at ~20cm
C16.6	1	0-18	10YR 5/1	GR	SI CL	NCM
C16.6	2	18-19	10YR 5/4 10YR 6/2	YL BR LT BR GR	CL	NCM, seepage at ~19cm
C16.7	1	0-20	10YR 5/1	GR	SI CL	NCM, wetland delineation, w/large cobbles
C16.7	2	20-21	10YR 5/4	YL BR	SA CL	NCM, sandy inclusions (yellowish brown) in moist clay, seepage at ~20cm
C16.8	1	0-22	10YR 4/1	DK GR	SI	NCM, excavation stopped due to seepage ~22cm
C16.9	1	0-21	10YR 4/1	DK GR	SI	NCM, saturated silty soils, seepage at -21cm
C16.10	1	0-23	10YR 4/1	DK GR	CL SI	NCM
C16.10	2	24-39	10YR 4/2 10YR 6/2	DK GR BR LT BR GR	CL	NCM, clay w/yellowish and dark brown inclusions
C16.11	1	0-19	10YR 4/1	DK GR	CL SI	NCM, very wet soil
C16.11	2	19-22	10YR 6/2 10YR 5/2	LT BR GR GR BR	CL	NCM, excavation stopped due to seepage at ~22cm
C16.12	1	0-22	10YR 4/2	DK GR BR	CL SI	NCM, 100ft interval due to standing water
C16.12	2	22-36	10YR 6/2 10YR 5/2	LT BR GR GR BR	CL	NCM, excavation stopped due to seepage at ~22cm
C17.1	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
C17.1	2	15-30	10YR 5/4	YL BR	CL LO	NCM
C17.2	1	0-14	10YR 4/2	DK GR BR	SI LO	NCM, 30ft south of wetland flag, water filled test at 20cm
C17.2	2	14-20	10YR 5/4	YL BR	CL LO	NCM
C17.3	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM, water filled test at 18cm
C17.3	2	12-18	10YR 5/4	YL BR	CL LO	NCM
C17.4	1	0-14	10YR 4/2	DK GR BR	SI LO	NCM, 100ft interval due to standing water
C17.4	2	14-20	10YR 5/4 10YR 5/6	YL BR YL BR	CL LO	NCM, seepage at 20cm
C17.5	1	0-18	10YR 5/3	BR	CL LO	NCM, 100ft interval due to standing water, seepage at 18cm
C17.6	1	0-30	10YR 5/3	BR	CL LO	NCM, 100ft interval due to standing water, water filled test at 30cm, adjacent to small creek/ditch
C17.7	1	0-18	10YR 6/2	LT BR GR	CL LO	NCM, 100ft interval due to standing water, water filled test at 18cm, wetland flags end 2m south of STP
C17.8	1	0-16	10YR 6/2	LT BR GR	CL LO	NCM, seepage at 16cm
C17.9	1	0-21	10YR 6/2	LT BR GR	CL LO	NCM, seepage at 21cm
C17.10	1	0-14	10YR 6/2	LT BR GR	CL LO	NCM, seepage at 14cm
C17.11	1	0-20	10YR 6/2	LT BR GR	CL LO	NCM, seepage at 20cm
C17.12	1	0-24	10YR 6/2	LT BR GR	CL LO	NCM, seepage at 24cm
C17.13	1	0-24	10YR 6/2	LT BR GR	CL LO	NCM, 5m south, adjacent to berm

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C18.1	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
C18.1	2	15-28	10YR 5/4	YL BR	CL LO	NCM
C18.2	1	0-19	10YR 4/2	DK GR BR	CL LO	NCM
C18.2	2	19-31	10YR 5/4	YL BR	CL LO	NCM
C18.3	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
C18.3	2	13-27	10YR 5/4	YL BR	CL LO	NCM
C18.4	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
C18.4	2	13-25	10YR 5/4 10YR 5/8	YL BR	CL LO	NCM
C18.5	1	0-28	10YR 5/3 10YR 5/8	BR YL BR	CL LO	NCM, water filled test
C18.6	1	0-20	10YR 5/3 10YR 5/8	BR YL BR	CL LO	NCM, 100ft interval due to standing water, water filled test
C18.7	1	0-24	10YR 5/3	BR	CL LO	NCM
C18.7	2	24-34	10YR 5/4 10YR 5/8	YL BR	CL LO	NCM
C18.8	1	0-29	10YR 5/3 10YR 6/8	BR BR YL	CL LO	NCM
C18.9	1	0-20	10YR 5/3	BR	CL LO	NCM
C18.9	2	20-33	10YR 5/2 10YR 6/8	GR BR BR YL	CL LO	NCM
C18.10	1	0-27	10YR 5/3	BR	CL LO	NCM
C18.10	2	27-40	10YR 5/2 10YR 6/8	GR BR BR YL	CL LO	NCM
C18.11	1	0-23	10YR 5/3	BR	CL LO	NCM, water filled test
C18.12	1	0-26	10YR 5/3	BR	CL LO	NCM
C18.12	2	26-40	10YR 5/2 10YR 6/8	GR BR BR YL	CL LO	NCM
C18.13	1	0-22	10YR 5/3	BR	CL LO	NCM
C18.13	2	22-35	10YR 5/2 10YR 6/8	GR BR BR YL	CL LO	NCM
C18.14	1	0-27	10YR 5/3	BR	CL LO	NCM
C18.14	2	27-42	10YR 5/2 10YR 6/8	GR BR BR YL	CL LO	NCM
D1.1	1	0-17	10YR 4/1	DK GR	SI LO	NCM
D1.1	2	17-30	10YR 5/2 10YR 5/8	GR BR YL BR	SA LO	NCM
D2.1	1	0-26	10YR 4/1	DK GR	SI LO	NCM, seepage at 15cm
D2.1	2	26-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D3.1	1	0-26	10YR 4/2	DK GR BR	SI LO	NCM
D3.1	2	26-36	10YR 6/6 10YR 6/8	BR YL	SI LO	NCM
D4.1	1	0-11	10YR 4/2	DK GR BR	CL LO	NCM
D4.1	2	11-30	10YR 5/4	YL BR	CL	NCM
D4.2	1	0-24	10YR 4/2 10YR 5/4	DK GR BR YL BR	CL LO	NCM, grassy, disturbance near road and water line
D4.2	2	24-36	10YR 5/4	YL BR	CL	NCM
D5.1	1	0-25	10YR 4/2	DK GR BR	LO	NCM, water filled at 20cm
D5.1	2	25-35	10YR 5/8	YL BR	SA LO	NCM
D5.2	1	0-15	10YR 4/2	DK GR BR	LO	NCM, water filled at 10cm
D5.2	2	15-30	10YR 5/8	YL BR	SA LO	NCM
D5.3	1	0-15	10YR 4/2	DK GR BR	LO	NCM
D5.3	2	15-32	10YR 5/8	YL BR	SA LO	NCM, water filled at 22cm
D6.1	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM
D6.1	2	23-35	10YR 5/4 10YR 5/6	YL BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
D6.2	1	0-25	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 2cm
D6.2	2	25-35	10YR 5/4 10YR 5/6	YL BR	SI LO	NCM
D6.3	1	0-25	10YR 4/2	DK GR BR	SI LO	NCM, in woods
D6.3	2	25-35	10YR 5/4 10YR 5/6	YL BR	SI LO	NCM, seepage at 29cm
D6.4	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM, edge of road, seepage at surface to sub
D6.4	2	22-32	10YR 5/4 10YR 5/6	YL BR	SI LO	NCM
D7.1	1	0-20	10YR 5/2	GR BR	SI LO	NCM
D7.1	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D7.2	1	0-18	10YR 5/2	GR BR	SI LO	NCM
D7.2	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 20cm
D7.3	1	0-21	10YR 4/1	DK GR	SI LO	NCM, fills w/water to surface
D7.3	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D7.4	1	0-24	10YR 4/1	DK GR	SI LO	NCM, fills w/water to surface
D7.4	2	24-34	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D7.5	1	0-28	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
D7.5	2	28-38	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D8.1	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
D8.1	2	12-30	10YR 5/4	YL BR	CL	NCM, seepage at 17cm
D8.2	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
D8.2	2	15-31	10YR 5/4	YL BR	CL	NCM, seepage at 24cm
D8.3	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
D8.3	2	13-32	10YR 5/4	YL BR	CL	NCM, seepage at 22cm
D8.4	1	0-11	10YR 4/2	DK GR BR	CL LO	NCM
D8.4	2	11-33	10YR 5/4	YL BR	CL	NCM, seepage at 12cm
D8.5	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
D8.5	2	13-30	10YR 5/4	YL BR	CL	NCM, seepage at 17cm
D8.6	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM, 150ft interval due to earthenmound and gasline
D8.6	2	12-30	10YR 5/4	YL BR	CL	NCM
D9.1	1	0-17	10YR 4/2	DK GR BR	LO	NCM
D9.1	2	17-30	10YR 5/2 10YR 6/8	GR BR BR YL	SA LO	NCM
D9.2	1	0-24	10YR 4/2	DK GR BR	LO	NCM
D9.2	2	24-35	10YR 5/8	YL BR	SA LO	NCM
D9.3	1	0-25	10YR 4/2	DK GR BR	LO	NCM
D9.3	2	25-35	10YR 5/8	YL BR	SA LO	NCM
D9.4	1	0-22	10YR 4/2	DK GR BR	LO	NCM, wet
D9.4	2	22-35	10YR 6/8	BR YL	SA LO	NCM
D9.5	1	0-20	10YR 4/2	DK GR BR	LO	NCM, wet
D9.5	2	20-31	10YR 6/8	BR YL	SA LO	NCM
D9.6	1	0-23	10YR 4/2	DK GR BR	LO	NCM, wet
D9.6	2	23-33	10YR 6/8	BR YL	SA LO	NCM
D9.7	1	0-24	10YR 4/2	DK GR BR	LO	NCM, 100ft interval due to gasline and standing water
D9.7	2	24-35	10YR 5/6	YL BR	SA LO	NCM, wet
D9.8	1	0-25	10YR 4/2	DK GR BR	SI LO	NCM, gravel & shale, E of gasline
D9.8	2	25-37	10YR 6/8	BR YL	CL LO	NCM
D9.9	1	0-28	10YR 4/2	DK GR BR	SI LO	NCM
D9.9	2	28-40	10YR 5/6	YL BR	SA LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
D9.10	1	0-30	10YR 4/2	DK GR BR	SI LO	NCM
D9.10	2	30-40	10YR 5/6	YL BR	SA LO	NCM
D9.11	1	0-27	10YR 4/2	DK GR BR	SI LO	NCM
D9.11	2	27-37	10YR 5/6	YL BR	SA LO	NCM
D9.12	1	0-36	10YR 4/2	DK GR BR	SI LO	NCM
D9.12	2	36-46	10YR 5/6	YL BR	SA LO	NCM
D10.1	1	0-18	10YR 5/2	GR BR	SI LO	NCM
D10.1	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.2	1	0-22	10YR 5/2	GR BR	SI LO	NCM, fills w/water to 20cm
D10.2	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.3	1	0-16	10YR 5/2	GR BR	SI LO	NCM, fills w/water to 15cm
D10.3	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.4	1	0-18	10YR 5/2	GR BR	SI LO	NCM, fills w/water to 15cm
D10.4	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.5	1	0-12	10YR 5/2	GR BR	SI LO	NCM, fills w/water to surface
D10.5	2	12-22	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.6	1	0-12	10YR 4/1	DK GR	SI LO	NCM, fills w/water to surface
D10.6	2	12-22	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.7	1	0-21	10YR 4/1	DK GR	SI LO	NCM
D10.7	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.8	1	0-19	10YR 4/1	DK GR	SI LO	NCM
D10.8	2	19-29	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.9	1	0-24	10YR 4/1	DK GR	SI LO	NCM
D10.9	2	24-34	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.10	1	0-30	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 25cm
D10.10	2	30-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.11	1	0-30	10YR 4/1	DK GR	SI LO	NCM
D10.11	2	30-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.12	1	0-27	10YR 4/1	DK GR	SI LO	NCM
D10.12	2	27-37	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D11.1	1	0-13	10YR 5/3	BR	CL LO	NCM
D11.1	2	13-28	10YR 5/4 10YR 5/8	YL BR	CL LO	NCM
D11.2	1	0-18	10YR 5/3	BR	CL LO	NCM
D11.2	2	18-33	10YR 5/4 10YR 5/8	YL BR	CL LO	NCM
D11.3	1	0-18	10YR 5/3	BR	CL LO	NCM, water-filled test
D11.4	1	0-12	10YR 5/3	BR	CL LO	NCM, water-filled test
D11.5	1	0-12	10YR 5/3	BR	CL LO	NCM, water-filled test
D11.6	1	0-15	10YR 5/3	BR	CL LO	NCM, 100ft/30m interval due to standing water and gasline, water-filled test
D11.7	1	0-24	10YR 4/2	DK GR BR	CL LO	NCM
D11.7	2	24-39	10YR 5/8	YL BR	CL LO	NCM
D11.8	1	0-28	10YR 4/2	DK GR BR	CL LO	NCM
D11.8	2	28-40	10YR 5/8	YL BR	CL LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
D11.9	1	0-23	10YR 4/2	DK GR BR	CL LO	NCM
D11.9	2	23-34	10YR 5/8	YL BR	CL LO	NCM
D11.10	1	0-28	10YR 4/2	DK GR BR	CL LO	NCM
D11.10	2	28-41	10YR 5/8	YL BR	CL LO	NCM
D11.11	1	0-24	10YR 4/2	DK GR BR	CL LO	NCM
D11.11	2	24-40	10YR 5/8	YL BR	CL LO	NCM
D12.1	1	0-16	10YR 4/2 10YR 5/4	DK GR BR YL BR	CL LO	NCM
D12.1	2	16-32	10YR 5/4	YL BR	CL	NCM
D12.2	1	0-16	10YR 4/2 10YR 5/4	DK GR BR YL BR	CL LO	NCM
D12.2	2	16-31	10YR 5/4	YL BR	CL	NCM
D12.3	1	0-15	10YR 4/2 10YR 5/4	DK GR BR YL BR	CL LO	NCM
D12.3	2	15-30	10YR 5/4	YL BR	CL	NCM
D12.4	1	0-17	10YR 4/2 10YR 5/4	DK GR BR YL BR	CL LO	NCM
D12.4	2	17-31	10YR 5/4	YL BR	CL	NCM
D12.5	1	0-16	10YR 4/2 10YR 5/4	DK GR BR YL BR	CL LO	NCM, seepage at 8cm
D12.5	2	16-32	10YR 5/4	YL BR	CL	NCM
D12.6	1	0-17	10YR 4/1	DK GR	CL	NCM, 100ft/30m interval due to standing water and gasline, water-filled test
D12.6	2	17-28	10YR 5/6	YL BR	CL	NCM, rock impasse (shale) 28cm below surface
D12.7	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
D12.7	2	12-32	10YR 5/4	YL BR	CL	NCM, seepage at 14cm
D12.8	1	0-16	10YR 4/2	DK GR BR	CL LO	NCM
D12.8	2	16-30	10YR 5/4	YL BR	CL	NCM, seepage at 22cm
D12.9	1	0-14	10YR 4/2	DK GR BR	CL LO	NCM
D12.9	2	14-31	10YR 5/4	YL BR	CL	NCM, seepage at 19cm
D12.10	1	0-17	10YR 4/2	DK GR BR	CL LO	NCM
D12.10	2	17-33	10YR 5/4	YL BR	CL	NCM, seepage at 31cm
D12.11	1	0-11	10YR 4/2	DK GR BR	CL LO	NCM
D12.11	2	11-31	10YR 5/4	YL BR	CL	NCM, seepage at 18cm
D13.1	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 20cm
D13.1	2	22-35	10YR 5/2 10YR 6/8	GR BR BR YL	SA LO	NCM, water filled at 30cm
D13.2	1	0-27	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 20cm
D13.2	2	27-38	10YR 5/2 10YR 6/8	GR BR BR YL	SA LO	NCM, roots
D13.3	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage
D13.3	2	20-30	10YR 6/8	BR YL	SA LO	NCM, water, roots
D13.4	1	0-11	10YR 4/2	DK GR BR	SI LO	NCM
D13.4	2	11-28	10YR 6/8	BR YL	SA LO	NCM
D13.5	1	0-18	10YR 4/2	DK GR BR	LO	NCM, seepage, roots, brush, water all on surface surrounding STP
D13.5	2	18-29	10YR 6/8	BR YL	SI LO	NCM
D13.6	1	0-28	10YR 4/2	DK GR BR	LO	NCM, wet
D13.6	2	28-38	10YR 6/8	BR YL	SI LO	NCM, gravel
D13.7	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM
D13.7	2	17-30	10YR 5/6	YL BR	SA LO	NCM, gravelly
D13.8	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM, heavy brush
D13.8	2	22-32	10YR 6/8	BR YL	LO	NCM, moist
D13.9	1	0-21	10YR 4/2	DK GR BR	SI LO	NCM, rocks, roots, heavy brush - shifted STP 1m s
D13.9	2	21-33	10YR 5/6	YL BR	LO	NCM, water filled at 25cm
D13.10	1	0-24	10YR 4/2	DK GR BR	LO	NCM, water seepage at 20cm

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
D13.10	2	24-34	10YR 5/6	YL BR	SI LO	NCM, wet
D13.11	1	0-18	10YR 4/2	DK GR BR	LO	NCM, wet, water surrounding STP, in high, heavy brush, water seepage at 5cm
D13.11	2	18-29	10YR 5/6	YL BR	LO	NCM
D13.12	1	0-20	10YR 4/2	DK GR BR	LO	NCM
D13.12	2	20-31	10YR 5/6	YL BR	SI LO	NCM
D14.1	1	0-26	10YR 5/2	GR BR	SI LO	NCM
D14.1	2	26-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D14.2	1	0-23	10YR 5/2	GR BR	SI LO	NCM
D14.2	2	23-33	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D14.3	1	0-24	10YR 5/2	GR BR	SI LO	NCM, fills w/water to 20cm
D14.3	2	24-34	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D14.4	1	0-25	10YR 5/2	GR BR	SI LO	NCM
D14.4	2	25-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D14.5	1	0-33	10YR 4/1	DK GR	SI LO	NCM
D14.5	2	33-43	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D14.6	1	0-30	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
D14.6	2	30-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D14.7	1	0-20	10YR 4/2	DK GR BR	CL LO	NCM, water-filled test, 15m interval
D14.8	1	0-30	10YR 4/2	DK GR BR	CL LO	NCM, water-filled test, 15m interval
D14.9	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM, water-filled test, standing water, 15m interval
D14.10	1	0-33	10YR 4/2	DK GR BR	CL LO	NCM
D14.10	2	33-45	10YR 5/8	YL BR	CL LO	NCM
D14.11	1	0-32	10YR 4/2	DK GR BR	CL LO	NCM
D14.11	2	32-45	10YR 5/8	YL BR	CL LO	NCM
E1.1	1	0-10	10YR 4/2 10YR 5/2	DK GR BR GR BR	LO	Modern disturbance, push piles to the S, W & NW, parking lot to the N
E1.1	2	10-30	10YR 5/4 10YR 6/8	YL BR BR YL	LO	Modern disturbance, gravel
E1.2	1	0-13	10YR 4/2 10YR 5/2	DK GR BR GR BR	LO	Modern disturbance
E1.2	2	13-25	10YR 6/8	BR YL	LO	Modern disturbance, gravel
E1.3	1	0-30	10YR 4/1	DK GR	LO	Modern disturbance, shale, brick, asphalt impasse at 30cm
E1.4	1	0-30	10YR 4/2	DK GR BR	SI LO	Modern disturbance, shale

Panamerican Consultants, Inc.

Buffalo Branch
2390 Clinton Street
Buffalo, NY 14227
Tel: (716) 821-1650
Fax: (716) 821-1607

Tuscaloosa Branch
924 26th Avenue East
Tuscaloosa, AL 35404
Tel: (205) 556-3096
Fax: (205) 556-1144

Memphis Branch
91 Tillman Street
Memphis, TN 38111
Tel: (901) 454-4733
Fax: (901) 454-4736

Tampa Branch
5910 Benjamin Center Drive, Suite 120
Tampa, FL 33634
Tel: (813) 884-6351
Fax: (813) 884-5968

Corporate Headquarters
2205 4th Street
Suites 21 & 22
Tuscaloosa, AL 35401
Tel: (205) 248-9867
Fax: (205) 248-8739

PHASE I CULTURAL RESOURCES INVESTIGATION FOR THE PROPOSED HAMBURG CROSSINGS RETAIL DEVELOPMENT, TOWN OF HAMBURG, ERIE COUNTY, NEW YORK

Prepared for:

BENDERSON DEVELOPMENT COMPANY, INC.
570 Delaware Avenue
Buffalo, New York 14202

Prepared by:

PANAMERICAN CONSULTANTS, INC.
2390 Clinton Street
Buffalo, New York 14227-1735
(716) 821-1650

May 2007

PHASE I CULTURAL RESOURCES INVESTIGATION

FOR THE PROPOSED

HAMBURG CROSSINGS RETAIL DEVELOPMENT,

TOWN OF HAMBURG, ERIE COUNTY, NEW YORK

Prepared for:

BENDERSON DEVELOPMENT COMPANY, INC.
570 Delaware Avenue
Buffalo, New York 14202

Prepared by:

Robert J. Hanley, M.A., RPA, Principal Investigator
Edwin W. Button, M.A., Project Archaeologist
Rebecca J. Emans, M.A., RPA, Staff Archaeologist
Mark A. Steinback, M.A., Senior Historian
Michael A. Cinquino, Ph.D., RPA, Project Director

PANAMERICAN CONSULTANTS, INC.
Buffalo Branch Office
2390 Clinton Street
Buffalo, NY 14227
(716) 821-1650

May 2007

Management Summary

SHPO Project Review Number (if available):

Involved State and Federal Agencies (NYSDEC, US Army Corps of Engineers, FHWA):

Phase of Survey: Phase I Cultural Resources Reconnaissance Survey

Location Information:
Location: Camp Road
Minor Civil Division: Town of Hamburg
County: Erie County, New York

Survey Area (Metric & English): 62-acre (25.1–hectare) portion of 80-acre (32.4-hectare) project area. An 18-acre (7.3-hectare) portion of the project area was excluded from survey as it is to remain undeveloped green space.

USGS 7.5 Minute Quadrangle Map: Hamburg Quad 1968

Archaeological Survey Overview
Number & Interval of Shovel Tests: 679 total shovel tests dug, including: 622 shovel tests at 50-ft (15-m) interval; 43 shovel tests at 100-ft (30-m) interval; 8 at approximately 25-ft (7.5-m) interval; 6 at varying intervals.

Results of Archaeological Survey
Number & name of historic sites identified: none
Number and name of sites recommended for Phase II/Avoidance: none

Results of Architectural Survey
Number of structures within project area: none
Number of buildings/structures/cemeteries adjacent to project area: none
Number of identified eligible buildings/structures/cemeteries/districts: none

Report Author(s): R. Hanley, E. Button, R. Emans, M. Steinback, and M. Cinquino

Date of Report: May 2007

Table of Contents

List of Figures and Tables

FIGURE **PAGE**

TABLE

List of Photographs

1.0 Introduction

1.1 PROJECT DESCRIPTION

Panamerican Consultants, Inc. was contracted by Benderson Development Company, Inc, Buffalo, New York, to conduct a Phase I cultural resources investigation for the proposed Hamburg Crossings retail development at 5220 Camp Road in the Town of Hamburg, Erie County, New York (Figure 1). The approximately 80-acre project area includes a 20-acre paved commercial area located in the north, with remaining areas covered in woods. Eighteen acres of the project area serve as a buffer between an adjacent housing development to the west and drainage areas to the southwest. The buffer area is to remain an undeveloped greenspace, and measures 150-ft wide along the west extent of the project area, expanding in width adjacent to the north side of the New York State Thruway. The area of potential effect (APE), therefore, consisted of 62 acres of the project area.

The purpose of the Phase I investigation was to determine if any previously recorded or yet unidentified cultural resources are present within the project area. The cultural resources investigation included archival and historic map research, a site file and literature search, an intensive walkover reconnaissance, photographic documentation of field conditions, and shovel testing throughout the APE. Photographs of the field investigation are presented in Appendix A.

The cultural resource investigation was conducted in compliance with the National Environmental Policy Act, the National Historic Preservation Act, the State Historic Preservation Act, the New York State Environmental Quality Review Act, and all relevant state and federal legislation. The investigation was also conducted according to the New York Archaeological Council's Standards for Archaeological Investigations and New York State Historic Preservation Guidelines.

Fieldwork was conducted in April 2007. Mr. Robert J. Hanley, M.A., RPA, served as principal investigator, Mr. Edwin W. Button, M.A., was project archaeologist and field director, Ms. Rebecca J. Emans, M.A., RPA, was staff archaeologist and laboratory director, and Mr. Mark A. Steinback, M.A., was project historian. Mr. Button was assisted by six field technicians.

1.2 ENVIRONMENTAL SETTING

Topography. The project area is situated between the two physiographic provinces within Erie County: the Erie-Ontario Lake Plain and the Allegheny Plateau. The project area is located on the edge of the Erie-Ontario Plain physiographic province in the Town of Hamburg. The lake plain province comprises all of the northern part of the county as well as areas from two to six miles from the lake in the southern part of the county. The province has a topography formed from glacial lake beds, with little significant relief except for narrow ravines carved by the area's streams. Elevations and slope increase rapidly within the rugged, rolling topography. The project area has a gently sloping topography formed from glacial lake beaches and glacial lake sediments (Owens et al. 1986:2). Elevations within the project area range from 730 to 755 ft (223 to 230 m) above mean sea level (see Figure 1).

Figure 1. Location of the Hamburg Crossings project area, Town of Hamburg, Erie County, New York *(USGS 1965).*

Geology. Bedrock underlying the project area is an extensive band of sandstone and shale characteristic of the West Falls Group formed during the Devonian period, one of the younger periods of bedrock formation in the Erie County. Relatively flat, the bedrock tilts to the southwest at "approximately 50 feet a mile" (Owens et al. 1986:2-4).

Soils. Soils within the project area belong to the Darien-Remson-Angola association. Located on uplands underlain by alkaline shale bedrock, soils of this association were formed in glacial till at the northernmost fringe of the upland plateau and consist of moderately deep and deep, medium textured and moderately fine textured, dominantly nearly level and gently sloping, somewhat poorly drained soils (Owens et al. 1986:8). Predominant soils within the project area are Angola silt loam, 3 to 8 percent slopes, Fluvquents and Udifluvents, frequently flooded, Orpark silty clay loam, 0 to 3 percent slopes, and Patchin silt loam (Owens et al. 1986: Sheet 50; Figure 2). These soils are summarized in Table 1.

Table 1. Soils within and adjacent to the project area.

Name	Soil Horizon Depth	Color	Texture	Slope %	Drainage	Landform
Angola silt loam	0-23 cm (0-9 in)	V DK GR BR	SI LO	3 to 8	somewhat poorly drained	step-like portions of upland plateau fringe
	23-28 cm (9-11 in)	GR BR	SI LO			
	28-71 cm (11-26 in)	DK GR	SI CL LO			
	71-76 cm (26-30 in)	DK GR BR	SI LO			
Fluvaquents and Udifluvents				gently sloping	poorly drained	stream or creeks
Fluvaquents	0-10 in (0-25cm)	BL, GR or BR	LO or SI			
	to 20 ft	GR or BR	SI, SA, or LO			
Udifluvents	0-9in (0-22 cm)	BR	SA, SI, or LO			
	to 4 ft	BR, RD or YL	SI, SA, or LO			
Orpark sily clay loam	0-23 cm (0-9 in)	DK GR BR	SI CL LO	0 to 3	somewhat poorly drained	flat ledges and ridge crests
	23-53 cm (9-22 in)	LT OLIVE BR	SI CL LO			
	53-36 cm (22-27 in)	PALE OL	SI CL LO			
Patchin silt loam	0-25 cm (0-10 in)	DK GR BR	SI LO	0-3	somewhat to very poorly drained	depressional areas of uplands
	25-36 cm (10-14 in)	LT BR GR	SI LO			
	36-58 cm (14-23 in)	DK GR BR	SI CL LO			

Key: BL = black, BR = brown, DK = dark, GR = gray, LT = light, RD = red, V = very, YL = yellow
CL = clay, LO = loam, SA = sand, SI = silt

Drainage. The project area is less than two miles southeast of Lake Erie. A small creek flows northwesterly in the southern portion of the APE. Construction of the New York State Thruway (Interstate-90), reconstruction of Camp Road and arterials to connect it with the Thruway, and development of suburban residential housing has disrupted the natural drainage patterns in the area (see Figures 1 and 2).

Figure 2. Soils within and adjacent to the project area *(aerial source: New York State GIS Clearinghouse 2002)*.

Forest Zone. The project area is within the Elm-Red Maple-Northern Hardwood Forest zone, which is distinguished by widespread poorly drained areas, the removal of the natural forest, and the utilization of better-drained areas for agriculture. The prevalence of elm and red maple is due to human impacts to the environment (de Laubenfels 1977:92, 95).

Vegetation. Central and south portions of the project area totaling approximately 60 acres is wooded, covered with beach, hemlock, and ironwood trees typically under 24-inch (61-cm) diameter that appear suited to the poorly drained soil. A dogwood brush understory is within the east part of the project area.

Manmade Features and Alterations. A 20-acre paved commercial area is located in the north portion of the project area (see Figure 2). Structures within the commercial area included a former Days Inn, a former gas station, and an operating bus garage. There are no other structures within the project area. Impacts include substantial dumping of concrete, asphalt, and gravel (up to four meters in height) at the south extent of the paved area.

Former agricultural furrows or shallow drainage ditches generally aligned north-south and approximately spaced 30 ft (9.1 m) apart were observed over the greater central portion of the project area suggesting former agricultural land use and associated impacts due to plowing.

Additional impacts include a shale access road aligned north-south in proximity to sewer main covers located within the south-central portion of the project area and two shale access roads roughly aligned east-west in the southeast portion of the project area. The latter two access roads appear associated with buried drain and sewer systems within the project area.

2.0 Historical and Archival Review

2.1 PREHISTORIC PERIOD

The three major cultural traditions manifested in western New York State during the prehistoric era were the Paleo-Indian, Archaic, and Woodland Periods. Cultural evolution of the area can be summarized as a gradual increase in social complexity, punctuated by several important cultural or technological innovations. The earliest people were nomadic big-game hunters (10,000 to 8000 BC). Changing environmental conditions required an adaptation of the economy, resulting in a shift to the efficient exploitation of temperate forest resources by Archaic hunter-gatherers. In many areas of eastern North America, the Archaic (8000 to 1500 BC) is followed by the Transitional Period (1500 to 1000 BC) that bridges the Archaic and the subsequent Woodland Periods. Although it does not represent a departure from Archaic social and economic patterns, important changes do occur in the artifact assemblage and in burial practices (Ritchie 1955).

The Woodland Period (1000 BC to AD 1600) is marked by the introduction of pottery, agriculture, and burial mounds. As a result of these innovations, many new and very different social and economic adaptations developed (Ritchie 1980). After about 1000 BC, external influences began to have an increasingly greater effect as the area was occupied by groups which evolved from antecedents in the central sub-area between the Genesee River and the Tug Plateau, and later formed the Iroquois Confederacy. Culturally, they shared much with groups in southern Ontario, Canada (Tuck 1978; Tooker 1978; White 1961)

Paleo-Indian Period (ca. 11,000-8000 BC). Hunter-gatherer bands of the Paleo-Indian culture were the first humans in New York State after the last glacial retreat approximately 13,000 years ago. As the climate gradually became more temperate, forays into the region by Paleo-Indians likely became more extended.

Adapted to the tundra, Paleo-Indians utilized a nomadic settlement system in which their movements followed that of game. The archaeological record suggests that Paleo-Indian subsistence strategies emphasized hunting big game species, many of which are extinct. These included mastodon, mammoth, great beaver, caribou and moose-elk, along with a variety of smaller game (Funk 1972:11; Ritchie 1980; Salwen 1975). Mastodon remains have been recovered in the Town of Evans, well southwest of the project area, as well as along the Niagara River in the vicinity of the City of Buffalo (Ritchie 1980:10-11).

During the seasonal resource peaks, larger populations occupied strategically located base camps; and during periods of scarce resources, the population dispersed, occupying small camp sites and rockshelters on a temporary basis. Located near the margin of extinct glacial lakes, many Paleo-Indian sites in the Northeast are located on elevated areas “where good drainage, meaning a dry living floor, was an important consideration” (Funk 1978:18). These hills or rises also served as loci for monitoring the migratory patterns of game species.

Archaic Period (ca. 8000-1500 BC). The Archaic period is differentiated from the Paleo-Indian period by a functional shift in lithic technology, an apparent increase in population, changes in the subsistence strategy, and a less nomadic settlement system (Funk 1978). These changes reflect an adaptation to an improved climate and a more diversified biome (Funk 1972:10).

People began to develop woodworking tools during this period, using coarse-grained stones and river cobbles as their raw materials (Kraft 1986). Sites from this period cluster along major rivers and marshy, swampy land as well as lowlands. Hunting, fishing, and gathering remained the principal daily activities, although greater emphasis was placed on deer and small game like birds and turtles, shellfish, nuts and possibly wild cereal grains. Associated with the shift in subsistence strategies was the increase in population densities, and as population increased, camps became larger and more numerous. Bands moved seasonally or when resources dwindled (Ritchie and Funk 1973).

Late in the Archaic Period (ca. 1500-1000 BC), there developed a burial/ceremonial complex and the introduction of ceramics. The shift to pottery appears to have been preceded by the adoption of steatite or soapstone pots which made cooking and food preparation easier (Ritchie and Funk 1973:87; Funk 1993:198).

Woodland Period (1000 BC-AD 1500). While the previous hunting and gathering economy continued as a means of subsistence during Woodland times, native groups became more dependent on domesticated plants for food. Agriculture brought with it a score of new problems that required new adaptations and every aspect of native culture was transformed. With agriculture came settled village life, a general increase in population, technological changes, warfare, and a litany of social and political changes. Early and Middle Woodland sites often contain exotic and numerous trade goods within burials which suggest the existence of widespread exchange or trade networks.

The Early Woodland period (1000-100 BC) is marked by several cultural phases in New York State, including the Orient, Meadowood, Middlesex, and Bushkill phases. Some of these phases, such as Meadowood, are better understood than others, while some arguably may not be very important in some local sequences. The Early Woodland is marked by an increase in burial ceremonialism.

The Middle Woodland period (100 BC-AD 1000) shows continued long distance exchange, although perhaps with varying strength at different times. In central and western New York, a sequence of occupation sites shows evidence of a long, Middle Woodland cultural tradition referred to as Point Peninsula (Ritchie 1980).

In New York State, the two primary Late Woodland Traditions are Owasco (beginning ca. AD 1000) and the prehistoric Iroquois (ca. AD 1300). The horticultural complex of corn, beans and squash, a common occurrence in North and Central America, are found together in some of the earliest Late Woodland sites in this region (Ritchie and Funk 1973), indicating the importance of these plants for at least some early garden systems and subsistence strategies (Fritz 1990; Smith 1992). It is generally accepted that a heavy reliance on corn horticulture was supplemented by growing beans and squash, with declining roles for hunting, fishing and gathering. Many local cultures with a lower reliance on agriculture may have included wild foods in the subsistence mix to a greater extent, particularly where animal protein could be substituted for the amino acid complement provided elsewhere by beans. Primary animal prey most likely included one or more of deer, fish, and shellfish, based on faunal evidence, site locations, and the prevalence of netsinkers and other fishing technology at some sites (Cleland 1982; Ritchie and Funk 1973).

In conclusion, important changes occurring in this period were social rather than techno-economic. The technology of the period is characterized by refinement of the developments of

earlier periods with styles and techniques becoming more regionalized. Horticulture, primarily the growing of corn, beans, and squash, was the primary source of plant food for the prehistoric Iroquois, but never totally supplanted the hunting, fishing, and collecting strategy as the most important means of subsistence procurement. The practice of horticulture had other ramifications. Most important was that it allowed or necessitated increased sedentarism. Even before this period, the regional demographic situation was in a process of reorganization. With the added premium placed on land in the Late Woodland, territorialism increased (Whallon 1968).

Three Iroquoian peoples occupied western New York before the arrival of the Europeans: the Neutral, the Wenro, and the Erie. The Erie occupied parts of Erie, Chautauqua, and Cattaraugus counties south of Buffalo Creek, to Sandusky, Ohio (White 1978a, 1978b; Parker 1922:493). As the Europeans began to explore the Niagara Frontier, and establish missions in the area, the Seneca Iroquois were expanding their skin trade into the territories of these three groups. Previously, Seneca hunting territory extended from Lake Ontario to the headwaters of the smaller Finger Lakes, and from the Genesee River to Cayuga Lake (Tuck 1978; Tooker 1978; White 1961; Engelbrecht et al. 1993:32-33).

The fur trade was central to the Seneca Iroquois economy, and they were vigorous in protecting their position as suppliers of pelts, and as the supply of animal skins diminished within their territory, they expanded the range of their trading efforts into the traditional areas of other Iroquoian groups. Ultimately, Seneca expansion displaced these groups from their lands in the Niagara Frontier. Beginning in 1638 with the Wenro tribe of western New York, and in rapid succession, the dispersals (i.e., extermination and assimilation) began. After the Seneca had secured the resources of the Niagara Frontier, large-scale concerted attacks by the League were directed against the Huron Confederacy (dispersed by 1649), the Petun (dispersed by 1650), the Neutral Confederacy (dispersed by 1651) and, finally, the Erie Confederacy (dispersed by 1655). Thus, by the mid-seventeenth century, the League Iroquois of New York emerged as a politically, militarily, and economically united confederacy with sole access to both the land and resources surrounding the lower Great Lakes (Abler and Tooker 1978:505-507; White 1978b: 414-416; Trigger 1978:354-356).

2.2 HISTORIC PERIOD

For almost all of the seventeenth and eighteenth centuries European activities in the area that would become known as the Niagara Frontier involved limited religious, commercial, and military endeavors. The French were the first Europeans to penetrate the valley of the Niagara River and explore the shores of Lake Erie. As early as the 1620s, Jesuit missionaries and French traders were establishing contacts with the local native groups. For example, Joseph de la Roche Daillon, a Recollect missionary, lived among the Neutrals for three months in 1626, and Jesuits St. Jean de Brébeuf and Pierre Joseph Marie Chaumonot visited the Neutrals in 1640. However, these visits to the region were infrequent until the 1660s. In 1678-1679, as part of general reconnoitering and trade expeditions by the French in the Niagara valley, men under the direction of René-Robert Cavelier de La Salle constructed a ship called *Le Griffon* along the Niagara River opposite Grand Island. This ship would be the first sail vessel to ply the waters of Lake Erie and prosecute the Great Lakes fur trade (Turner 1974 [1850]:116-119; Trigger 1978: 349-352; Abler and Tooker 1978:505-506).

As the fur trade became an imperial concern for the European powers during the seventeenth and eighteenth centuries, competition among them resulted in the erection of fortified trading posts along the frontier, such as the short-lived French forts Conti in 1679 and Denonville in 1687-1688 (both on the site of what is now Fort Niagara), and the British fort near the future village of Geneva in the early eighteenth century. Despite consistent failures in establishing a permanent trading post in the region, French strategists continued to accept the idea that asserting control over the Niagara River valley offered strategic advantages within their imperial goals. Finally, beginning in the 1720s, Louis-Thomas de Joncaire, Sieur de Chabert parlayed his years as a captive and adoptee of the Seneca into permission to erect a series of trading posts along the Niagara River and Lake Ontario. In 1726, with the construction of Fort Niagara, the French began to exercise military control of the Niagara valley. As a result, by the middle of the eighteenth century, the French had created a string of military and trading installations. These posts extended from Fort Niagara along Lake Ontario, south to the trading settlement at Buffalo Creek, and along the southern shore of Lake Erie to Presque Isle (present-day Erie, Pennsylvania) into the Ohio valley (Abler and Tooker 1978:506-507; Tooker 1978:431-432; Turner 1974 [1850]:143-147, 184).

The ancient rivalry between Great Britain and France intensified during the course of the eighteenth century, reaching a crescendo in the New World during the 1750s, when the two kingdoms again went to war. After a 19-day siege, British troops captured Fort Niagara in July 1759. This crippled the French presence in the region, although skirmishing between Native Americans and the English continued until the closing days of the French and Indian War. After the French defeat and their loss of North American colonies, some of the western Seneca, remaining loyal to the French, joined Pontiac's uprising (1763), harrying English-American settlers along the frontier. With the cessation of those hostilities in 1764, the Seneca were compelled to cede swaths of land along both sides of the Niagara River to the English (Turner 1974 [1850]:228-233; Abler and Tooker 1978:507; Smith 1884:I:47).

During the Revolutionary War, both the British and Americans enlisted the aid of individual Haudenosaunee nations in their battles in the frontier, as several of the nations allied with Great Britain and several with the Americans. Warfare initially remained well east of the region, but Britain's efforts to cripple the frontier economy engendered raids by their Haudenosaunee allies against isolated farming communities, notably in the Mohawk valley. In response, Major General John Sullivan led a punitive assault into the heart of Haudenosaunee country in 1779 to halt the attacks against American settlers. The Continentals, utilizing "scorched earth" tactics, destroyed more than 40 villages and hundreds of acres of crops in an area between the eastern Finger Lakes and the Genesee River. Many Haudenosaunee, burned out of their central New York villages, sought refuge at Fort Niagara where they suffered through a difficult winter of hardship and hunger. Some Haudenosaunee subsequently settled along Buffalo Creek, which would later be incorporated into the Buffalo Creek reservation (Spiegelman 2005; Abler and Tooker 1978: 507-508; Smith 1884:I:51-52; Ellis et al. 1967:116-117). While Haudenosaunee raids would continue for the remainder of the war, they were no longer a major military threat.

The British and their Loyalist allies were expelled from the new United States after the Treaty of Paris (1783) ended the Revolutionary War, although the British did not vacate forts along Lake Ontario or farther west until 1796. The Haudenosaunee, abandoned in the United States by their British allies after the Treaty of Paris, were forced to make peace as separate nations with the Americans. As a result of the Second Fort Stanwix Treaty (1784), the Haudenosaunee relinquished all their land west of the Genesee River, except for several reservations (Turner 1974 [1850]:403; Abler and Tooker 1978:509). At a time when the nearby

European-American settlements were small, few and far between, these reservations were not conceived as locations surrounded by invisible fences that compelled the Seneca to remain inside, but which allowed the Seneca the control to keep European-American interlopers out.

Native American title to the land in western New York was largely extinguished with the Treaty of Big Tree (present-day Geneseo, New York) in 1797, although several areas were reserved for the Native Americans to use and live on, including reservations at Buffalo Creek, Allegany, Cattaraugus, and Tonawanda (Figure 3). Lying on both sides of Buffalo Creek, the Buffalo reservation consisted of 130 square miles and extended east from Lake Erie. William Street in the Town of Cheektowaga was the reservation's approximate northern boundary until the 1840s. A line extended due west from what is now the boundary between the towns of Elma and Aurora marks what was the reservation's approximate southern boundary. This boundary is approximately midway between Big Tree Road (US Route 20A) and Mile Strip Road (State Route 179). The current project area is south of Route 20A and was entirely outside the reservation (Lankes 1964; Smith 1884:I:74-75, 489, 524; Abler and Tooker 1978:508-512; Goldman 1983:27-31; Silsby 1961).

European-American settlement of the Niagara Frontier dates from the end of the American Revolution in 1783, although border disputes between New York and Massachusetts, both of which claimed the new territory, frustrated the actual, legal sale of these lands. Under an agreement signed in Hartford, Connecticut, in 1786, former Haudenosaunee land came under the jurisdiction of New York State. Nonetheless, the Commonwealth of Massachusetts maintained the preemption rights to sell the land west of Seneca Lake, once the Haudenosaunee title had been extinguished. During the next decade large grants of land in western New York would be sold to private investors who would attempt to open the land to settlement, except for a one-mile wide strip of land along the eastern bank of the Niagara River, which New York State reserved for itself (see Figure 3; Ellis et al. 1967:152-156; Abler and Tooker 1978:507-509; Turner 1974 [1850]:326). After having problems with the land's initial purchasers, a syndicate of land speculators headed by Oliver Phelps and Nathaniel Gorham, the Commonwealth of Massachusetts sold the rights to the unsurveyed part to Robert Morris in 1791. Reserving a portion of the land for his own purposes, Morris sold the remainder, including the present Erie County, to a consortium of Dutch investors called the Holland Land Company in 1792-1793 (Turner 1974 [1850]:396-403; Ellis et al. 1967:154; Smith 1884:I:75; Silsby 1961).

As a precursor to settlement, Theophilus Cazenove, agent of the company, contracted Joseph Ellicott in July 1797 to survey the company's land in western New York and divide it into townships. The future city of Buffalo was laid out by Ellicott, who called the village on Buffalo Creek New Amsterdam and named the streets after his Dutch patrons. In 1802, all land west of the Genesee River was incorporated into Genesee County, and all land west of Ellicott's east transit, including the project area, was subsumed under the Town of Batavia. Two years later, Batavia was divided into the towns of Batavia, Willink, Erie, and Chautauqua. These towns stretched from Lake Ontario to the Pennsylvania border. The project area was within the Town of Erie, whose eastern border was Ellicott's west transit (present-day Transit Road) (Turner 1974 [1850]:62-63; White 1898:I:140; Beers 1880:7-8).

Once townships had been surveyed and roads in the area cut, settlement and growth followed quickly. Early settlers were predominantly New Englanders (especially Vermonters) and Pennsylvanians, who entered the territory during the early 1800s along Big Tree Road, one of the first roads in the county, or up Eighteen Mile Creek. The road, also called "Middle Road" (present-day Route 20A) opened as early as 1798 and connected Geneseo (then known as Big

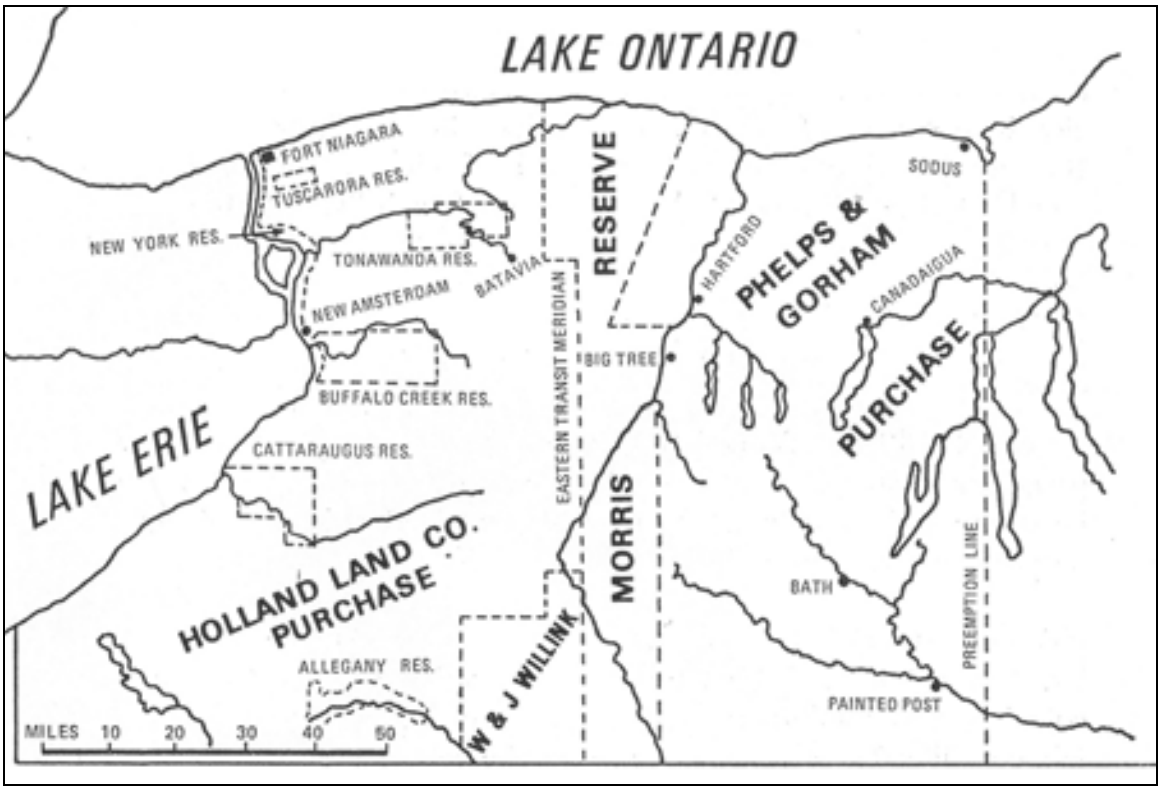

Figure 3. Landholdings in Western New York ca. 1800 *(Chazanof 1970:23).*

Tree) to Lake Erie. The western part of this road is known as Big Tree Road, and the eastern part is also called Quaker Road. Two other early roads were Camp Road (present-day Route 75), which runs from Athol Springs (formerly Campsburg) to Hamburg, and the Lake Shore Road, which parallels the lakeshore (northwest of the project area) (Beers 1880; White 1898: I:499; Sipprell 1972:2). By 1817, the shore road was the primary east-west route through the town, and was reputed to have as many taverns as private homes along it (Smith 1884:I:514). The first Anglo-American settler in what is now the Town of Hamburg was John Cummings, who purchased land from the Holland Land Company as early as 1803 and cut a farmstead out of the heavily forested wilderness. In 1806, he erected the first gristmill in Erie County south of the Buffalo Creek reservation on Eighteen Mile Creek near Water Valley. Joel Harvey constructed a log house (later converted into a hotel) on the Evans side of the mouth of Eighteen Mile Creek in 1804, and was the first settler of that town. Shortly thereafter, Ebenezer Ingersoll built a house on the Hamburg side of the mouth of Eighteen Mile Creek. Settlement clustered near the present-day villages of Hamburg and Orchard Park (Sipprell 1972:2; Smith 1884:I:511-512; Beers 1880:23).

Other early settlers included Nathaniel Titus (who operated a tavern in what was Bay View, now Athol Springs), Aaron Cash (who lived in North Evans, south of the creek), Dr. Rufus Belden, Abner Amsdell, Daniel Camp, Zenas Barker, Nelson Whittiger, Benjamin, Enos and Joseph Sheldon, David and Elisha Cook, King Root, Moses Dart, and Daniel and Richard Smith (sons of Deacon Ezekiel Smith). The Smith brothers built a gristmill and a corn mill on Eighteen Mile Creek in the present-day village of Hamburg. Known then as Smith's Mills, the village also included a tannery owned by James Husted (later, by Thomas White), a second tannery owned by Root and Bliss, a store operated by Orson Bennett, and a hotel owned by Ralph Shepard

(Smith 1884:I:511-514, 517, 558; Sipprell 1972:2-3). Establishing a farm in the vicinity of what is now Orchard Park, David Eddy erected and operated the town's first tavern, built the first sawmill on Smokes Creek, and became the Town of Hamburg's first supervisor (Printy 1972:3-4; Smith 1884:I:525-527). Other prominent early settlers included Samuel and Seth Abbott (near Abbott's Corner, now Armor), Jacob and Joshua Potter (near Potter's Corner, now Orchard Park), and Jacob Wright (near Armor). The Town of Hamburg was created in 1812 and included the present-day towns of Orchard Park and Hamburg as well as portions of Evans and West Seneca (White 1898:I:14-15; Smith 1884:I:511, 513).

This growth was stunted by the War of 1812 as western New York served as one of the primary theaters of that conflict and areas near the border with Upper Canada (the current province of Ontario) were ravaged by attacks and counter-attacks. Most of the battles in this theater were north of present project area. In December 1813, British forces captured Fort Niagara and burned Lewiston, the Tuscarora village near the Niagara River, Manchester (present-day Niagara Falls), Black Rock, and Buffalo, which had a population of approximately 500 at that time. The devastation was substantial, leaving the territory largely depopulated. Along Lake Erie, the *Queen Charlotte*, a British vessel, prowled the lakeshore, sending marauders ashore to acquire food (Smith 1884:I:63-74, 126, 399, II:63-74, 573; Ellis et al. 1967: 141; Goldman 1983:21-24; Turner 1974 [1850]:603). Settlement resumed after the cessation of active warfare in 1814. By 1820 the Town of Hamburg contained 2,034 people in 354 families (Beers 1880:23).

As pioneers flocked westward, Erie County was created from Niagara County in 1821. The region received a tremendous economic boost when one terminus of the Erie Canal was located at the village of Buffalo. Begun in 1817, the Erie Canal linked Buffalo and Lake Erie with New York City when it opened in October 1825. By that time the Town of Hamburg had four gristmills, 10 sawmills, four carding machines, two distilleries, and two asheries (for making soap) (Sipprell 1972:3). Many of the early settlers, most of whom were farmers, were Quakers, who established the town's first religious institution in 1807. Since the population of the Town of Hamburg was sparse and miles of forested land separated neighbors, the township split in 1850 to facilitate more efficient government, with the eastern portion becoming the Town of Ellicott (renamed East Hamburg two years later) and the western portion remaining the Town of Hamburg. Around the time of the division of the Town of Hamburg, construction of the Buffalo-White's Corner (present-day Hamburg) Plank Road was underway. The road is now South Park Avenue. In addition to the plank road, the Buffalo & State Line Railroad opened from Buffalo to Dunkirk along the Lake Erie shoreline in February 1852. Part of the Lake Shore & Michigan Southern and later the Erie Railroad, the line had opened previously from State Line to Dunkirk (Printy 1972:2-4; Smith 1884:I:315; Fischer 2006, 2007).

While the project area remained predominantly agricultural during the nineteenth century, properties within the Town of Hamburg were parceled out to individual landowners who established farmsteads or other rural industries, such as milling or tanning. Agricultural activities consisted mainly of dairying, and wheat and potato cultivation with little market gardening. Many farms utilized fruit trees to supplement their incomes. Ancillary agricultural businesses included the canning, fruit-drying and vinegar-making industries (Dunn 1972:9-10, 38). During the last third of the nineteenth century, the importance of agriculture for the town was symbolized in 1868 by the permanent invitation of the Hamburg Driving Park Association to use its land for the annual joint Erie County-Cattaraugus County Agricultural Fair (at the present-day Hamburg Fairgrounds/Buffalo Raceway) (Eberle and Grande 1987:48-49).

The nearby Village of Hamburg (Whites Corners) fulfilled the commercial needs of the few farmers living near the project area. The village housed numerous stores, a meat market, a tailor, several taverns and hotels, a cloth mill, a planing mill, the Hamburg Axe Company, and a canning factory among other enterprises (Smith 1884:I:517-518, 530-531; White 1898:I:539, 561; Printy 1972:7). Grain, vegetables and other farm products were shipped to Buffalo as well as points east. Outside the villages, agriculture and summer recreation remained the important industries well into the twentieth century. “All kinds of farm produce, garden truck, fruit, etc., [were] grown in abundance” (White 1898:I:557). With the establishment of agricultural experiment stations in the 1930s the quality of both dairying herds and potatoes were greatly improved (Dunn 1972:212).

By the end of the nineteenth century, the pace of commerce in the northern part of the Town of Hamburg increased as the economy dramatically shifted from agriculture to industry. Several railroad lines ran through the western portion of the Town of Hamburg, and included Lakeshore & Michigan Southern, and the Buffalo & Southwestern. Near the Town of West Seneca (later, City of Lackawanna) boundary, the Village of Blasdell was established where the Erie and Nickel Plate railroads crossed (Beers 1880; White 1898:I:563-564; Eberle and Grande 1987:154). With the railroads, the lake area also became a popular spot for recreation as visitors stayed at the Bay View House or the Athol Springs Hotel as well as Woodlawn Beach, which developed an extensive recreation and amusement park industry (White 1898:I:564).

In the twentieth century, the town experienced tremendous growth as the steel industry took root in Lackawanna. The prevalence of rail and trolley lines in the area and the break wall constructed by the U.S. government in the 1890s created an excellent environment for industry. In 1903, the first of two blast furnaces of the Lackawanna Iron and Steel Company (of Scranton, Pennsylvania) began operation in the Town of West Seneca (Lankes 1968:55; Weller 1972:2-3). The Bethlehem Steel Company acquired the plant in 1922 and other small area plants in the early 1930s (Weller 1972:3, 7; Lankes 1968:55-56; Sipprell 1972:6).

In the early twentieth century, economic growth in the Town of Hamburg was facilitated by developments in transportation that improved access to jobs and resources for the general population of the region, such as the creation of the Buffalo, Hamburg & Orchard Park Electric Railway or trolley in 1900. The line merged with other rural trolley routes to form the Buffalo Hamburg Aurora Railway in 1909. Reducing the trip to Buffalo to only one hour, the trolley facilitated the initial impulse for suburbanization of the Hamburg area. The line was abandoned in favor of automobiles and buses in January 1932 (Printy 1969: 43-44, 1972:7-8; Lankes 1968: 27-28; Eberle and Grande 1987:156, 215).

Around the turn of the nineteenth century, other public services began to improve living conditions in the town: telephone service was initiated in 1886, gas lines and water mains were laid starting in 1893, and electric street lights arrived ca. 1893 (White 1898:I:561). What is now Southwestern Boulevard (Route 20) and the improved Route 5 were extended through the area by the late 1930s. The rural part of the town, as well as areas along the lake and the shore railroads, became increasingly residential and commercial after World War II with the creation of numerous suburban developments and industrial parks (Erie County Public Works nd).

The New York State Thruway was extended along western Erie County in the late 1950s, which contributed to the suburbanization of the region. Located along the south side of the project area, the Thruway (I-90) links southwestern Erie County and southwestern New York with the City of Buffalo, and employment opportunities in northern Hamburg and West Seneca.

In the early 1970s, the northern part of the Town of Hamburg was the home of several prominent industrial facilities, including units of Bethlehem Steel, the Ford Stamping Plant, Riefler Cement, Electro-Refractories Corporation and Chemarol. In addition, suburban expansion was manifested by the creation of residential subdivisions, such as Scranton, Carnegie and Forest Glen in proximity to the project area (see Figure 1). Despite the industrial developments in the north and the recreational areas emerging along the lake, the project area remained largely farmland or vacant into the 1980s. A Days Inn motel on the west side of Camp Road currently occupies the site where a large structure was depicted in 1965 and 1986. The Town of Hamburg had a population of 56,259 in 2000 (Erie County Public Works nd; USGS 1965; Sipprell 1972:6; Owens et al. 1986: Sheet 66).

2.3 DOCUMENTARY RESEARCH

2.3.1 Historical Map Analysis. Three historical maps were reviewed for the project area (Stone and Stewart 1866; Beers 1880; USGS 1907). In addition, aerial photographs from 1926-1927 and 1951 were consulted.

On the 1866 map (Figure 4), one structure (G.M. Pierce) is shown just southeast of the APE, along the west side of what is now Camp Road (Route 75). A second structure (attributed to 'J.I.') is across the road from the APE. No other structure is depicted less than 1,000 ft (300 m) from the APE. On the 1880 map (Figure 5), other structures are shown along Camp Road, including the G.M. Pierce property. A structure is depicted within the APE, in Lot 12, near the boundary of Lot 13, within a 116-acre parcel owned by C. Harter, who occupied a residence east of the project area along Camp Road. This structure is on the inner portion of the parcel and not near the road. It is not shown on the 1907 historic USGS topographic map (Figure 6), nor is there any other structure shown within the APE on that map. The 1907 map also delineates structures along Camp Road in locations similar to those shown on the 1880 map.

A 1927 aerial photograph (Figure 7; Erie County Public Works nd) revealed the project area as farmland and woodlots with farm buildings adjacent to Camp Road. No structures are depicted within the APE. Only parts of the project area were available for viewing on aerials from 1951 (Erie County Public Works nd) and no structures were evident on those images. The area was still farmland. By 1968 (see Figure 1), the New York State Thruway (I-90) had been constructed, forming the southern boundary of the project area and a large structure was shown in the northeastern section of the APE near Camp Road. This structure also appears on a recent aerial photograph (see Figure 2).

2.3.2 Site File and Archival Review. A review of archaeological site files was conducted at the New York State Office of Parks, Recreation and Historic Preservation (OPRHP). No sites were identified within the APE. One site—the prehistoric Howard Greens Loci site (OPRHP #02915.000445)—is located within one mile of the project area. It is about three-quarters of a mile (1,200 meters) north of the APE and consisted of stray finds.

Early archaeological surveys such as Beauchamp (1900), Houghton (1909), and Parker (1922) do not indicate the presence of any prehistoric sites in the vicinity of the project area. Later archaeological work by Ritchie (1980) and Ritchie and Funk (1973) also do not denote the presence of archaeological sites within the project area. Numerous cultural resources investigations have been conducted within one mile of the APE, but none have been performed for the project area.

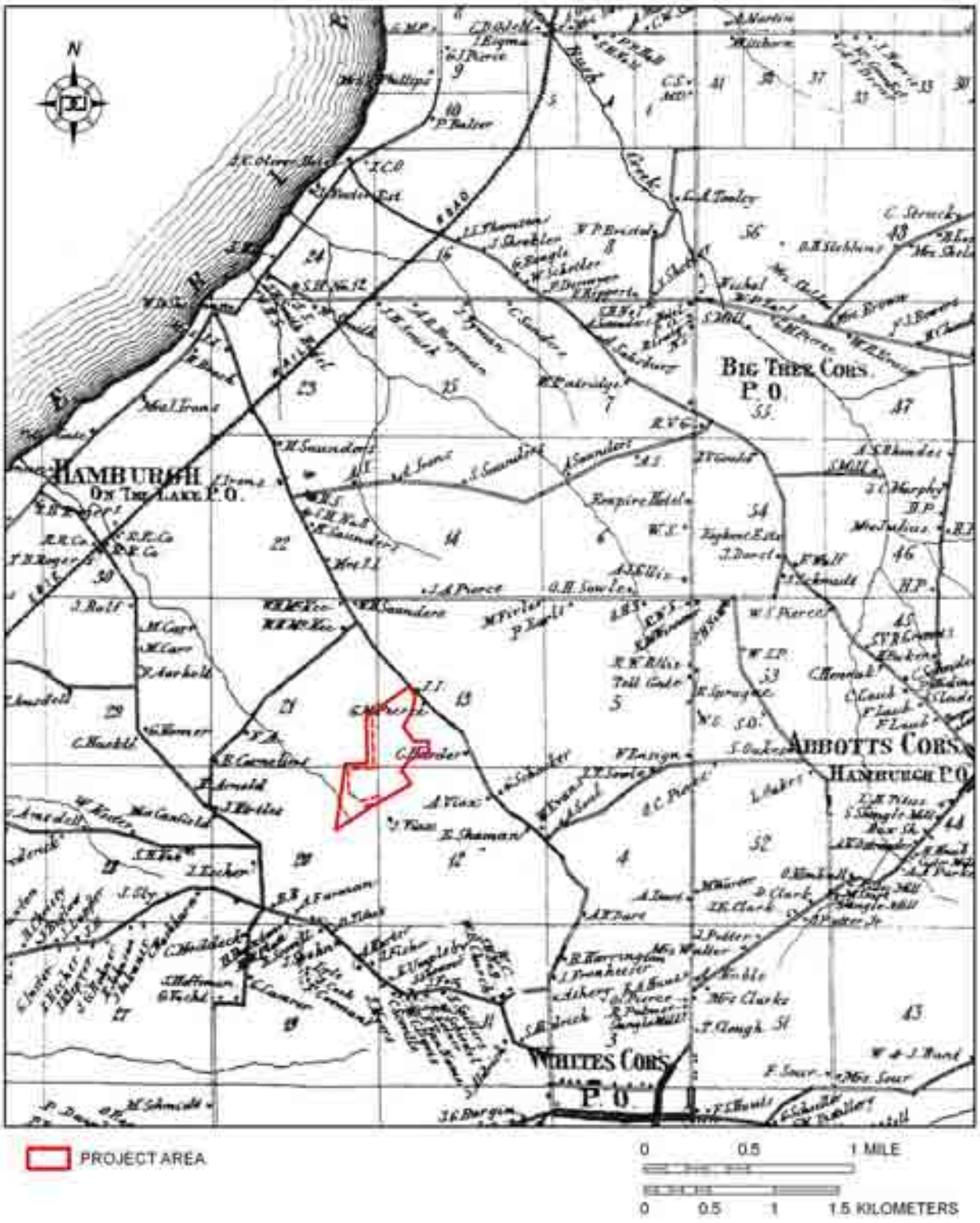

Figure 4. The project area in 1866 *(Stone and Stewart 1866).*

Figure 5. The project area in 1880 *(Beers 1880).*

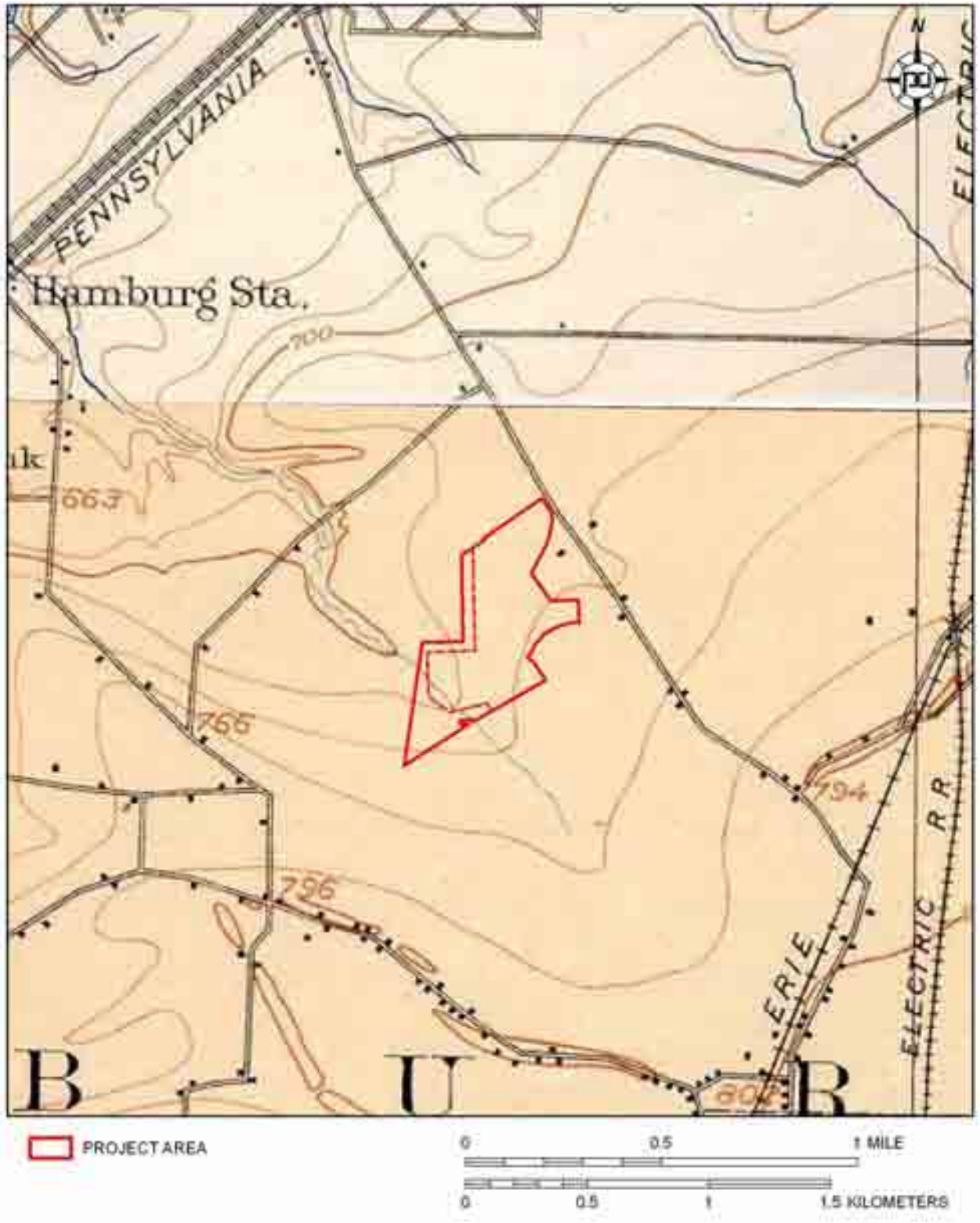

Figure 6. The project area shown in the early twentieth century *(USGS 1901 [upper], 1907 [lower]).*

Figure 7. The project area in 1927 *(Erie County Public Works nd).*

3.0 Field Investigation

3.1 METHODOLOGY

Cultural resource investigations are designed to provide a complete examination of the area of potential effect (APE) in order to identify and assess any known or unknown cultural resources. These resources include prehistoric and historic archaeological sites as well as standing structures or other aboveground features. The field investigation includes an intensive surface and subsurface examination (e.g., shovel testing) of the project area and photographic documentation of the project site and vicinity. Pedestrian or walkover reconnaissance surveys are conducted across the project area to identify testable locations, cultural features, surface visibility, soil disturbance, and wet or poorly drained areas, as well as well drained sensitive areas that would require testing. An intensive surface inspection is utilized as a primary method of survey when ground surface visibility is not obscured by vegetation (e.g., plowed agricultural fields) or standing water.

Shovel test pits (STPs) are excavated at a standard 15-m (50-ft) interval throughout the APE. Shovel tests average a minimum of 40 cm (16 in) in diameter and are excavated to at least 10 cm (4 in) below potentially artifact-bearing soils. All soils are matched to Munsell® color charts and sieved through ¼-inch hardware screens. Tests are terminated if water is encountered in the test pit, indicating poorly drained soils. Areas of severe disturbance, standing water, and slope greater than 15 percent are documented but not shovel tested. All shovel tests are backfilled to natural contour upon completion. Additional shovel tests are excavated around positive shovel tests to define preliminary site boundaries, artifact concentrations or determine that the find spot is an isolated occurrence. Close-interval shovel testing is implemented when surface features (e.g., a foundation or depression or the presence of map documented structures) are identified.

Artifacts found during the survey are collected and placed in plastic or paper bags and labeled with pertinent provenience information. Modern materials, such as plastic and container glass, are noted on field forms but not collected. Materials, such as coal, red brick fragments, and miscellaneous nail fragments also are noted but not collected unless they can be clearly identified as historic or found in association with historic period artifacts. All field information collected from shovel tests is recorded on shovel test forms, including the location, pertinent stratigraphic data, soil types, natural or man-made disturbances in the area, and the presence or absence of cultural materials. The field director maintains a daily log, and photographs pertinent manmade disturbances and environmental conditions. All shovel tests are recorded on a project map and included in the report.

3.2 LABORATORY ANALYSIS

Recovered cultural materials are stored at Panamerican's Buffalo Office for processing and analysis. Processing of recovered artifacts follows guidelines elaborated in 36 CFR Part 79 (Curation of Federally-Owned and Administered Archaeological Collections) and in the New York Archaeological Council's Standards and Curation of Archaeological Collections document (NYAC 1994). Standard archaeological procedures of cleaning and storage are also followed, with provenience information kept with artifacts at all times. Permanent curation of artifacts is arranged with landowner consent.

3.3 RESULTS OF THE FIELD INVESTIGATION

The Phase I field investigation of the 80-acre project area included a surface reconnaissance, photographic documentation of field conditions and project area vicinity, and the excavation of 679 shovel tests. Approximately 18 acres of the project area serve as a buffer between an adjacent housing development to the west and drainage areas to the southwest. The APE includes 62 acres east of the buffer area, all of which was surveyed during the Phase I investigation. For analytical purposes, the APE was divided into five study areas (A through E) (Figure 8). A total of 44 acres were shovel tested. The 20-acre paved commercial lot and associated structures were photo-documented. Photographs of the project area are in Appendix A. Shovel tests are included in Appendix B by study area, transect, and shovel test number (e.g., A1.1).

Study Area A. This study area consists of approximately 8 acres in the southwestern portion of the project area (see Figure 8). The area is wooded, covered with beach, hemlock, and ironwood trees typically under 24 inches (61 cm) in diameter (see Appendix A: Photograph 1). Isolated pockets of standing water are found in the study area, with increased frequency observed at its north extent (see Appendix A: Photograph 2). The western terminus of a buried storm drain system that dissects the south portions of Study Areas A and B is located within the adjacent buffer area, approximately 100 ft (30.5 m) south of Study Area A (see Appendix A: Photograph 3). The adjacent buffer area consists of lower elevated wooded terrain that provides area drainage (see Appendix A: Photographs 4 and 5).

A total of 148 shovel tests were excavated along 16 transects aligned from east to west in Study Area A (Figure 9). Transects were designated A1 through A16, numbered from north to south. Shovel tests within Study Area A were dug at the standard 50-ft (15-m) interval.

Stratum 1 typically consisted of dark grayish brown silty loam, reaching an average depth of 17 cm (6.7 in), and ranging between 8 and 30 cm (3.1 and 11.8 in). Stratum 2 was a yellowish brown or mottled light brownish gray and brownish yellow clay loam, reaching an average depth of 30 cm (11.8 in), and ranging between 19 and 47 cm (7.5 and 18.5 in). Seven shovel tests (A2.2, A3.9, A4.1, A4.2, A 4.6, A7.7 and A13.7) recorded a third stratum, due to an the assignment of individual stratum numbers to the organic groundcover (duff) and the underlying A-Horizon (which is typically treated as a combined Stratum 1; i.e., the A-Horizon includes the Ao stratum). When corrected, the results of these seven tests correspond to results obtained over the remainder of the study area. Water seepage occurred in 28 shovel tests (see Appendix B). No artifacts or buried features were found in the shovel tests of Study Area A.

Study Area B. This study area includes approximately 13 acres in the southeastern part of the project area (see Figure 8). The area is wooded with similar vegetation as described in Study Area A. Drainage is moderate within Study Area B, with pockets of standing water largely limited to the south extent of the area. Impacts include a shale-based access road in proximity to sewer main covers located at the west extent of the study area (see Appendix A: Photographs 6 and 7) and two shale access roads dissecting the study area from the northeast to the southwest. The northernmost of the latter two access roads has a 3-ft (1-m) elevated surface and sewer covers are interspersed along its length (see Appendix A: Photographs 8 and 9). The southernmost access road is associated with a buried storm drain system that extends into the buffer (see Appendix A: Photograph 10).

Figure 8. The Hamburg Crossings project area divided into study areas *(aerial source: NYS GIS Clearinghouse 2002).*

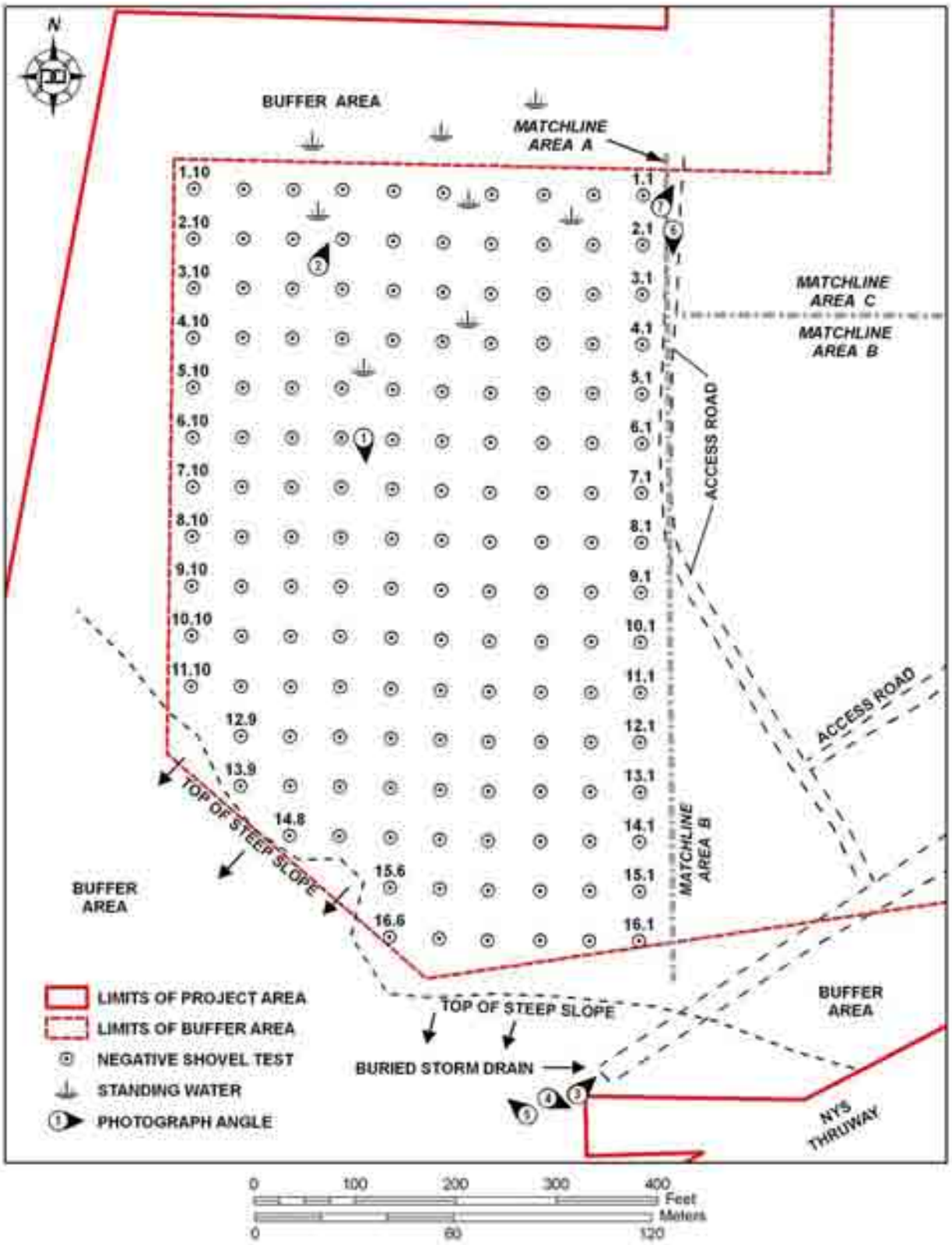

Figure 9. Study Area A: locations of shovel tests, disturbances, and photograph angles.

A total of 201 shovel tests were excavated across the study area along 21 transects aligned from west to east (Figure 10). Transects were designated B1 through B21, numbered from north to south. Shovel tests within Study Area B were dug at 50-ft (15-m) intervals.

Stratum 1 typically consisted of dark grayish brown silty loam, reaching an average depth of 16 cm (6.3 in), and ranging between 7 and 34 cm (2.8 and 13.4 in). Stratum 2 was a yellowish brown or mottled light brownish gray and brownish yellow clay loam or silt clay loam, reaching an average depth of 31 cm (12.2 in), and ranging between 19 and 44 cm (7.5 and 17.3 in). Water seepage occurred in 63 shovel tests (see Appendix B). No artifacts or buried features were found in the shovel tests of Study Area B.

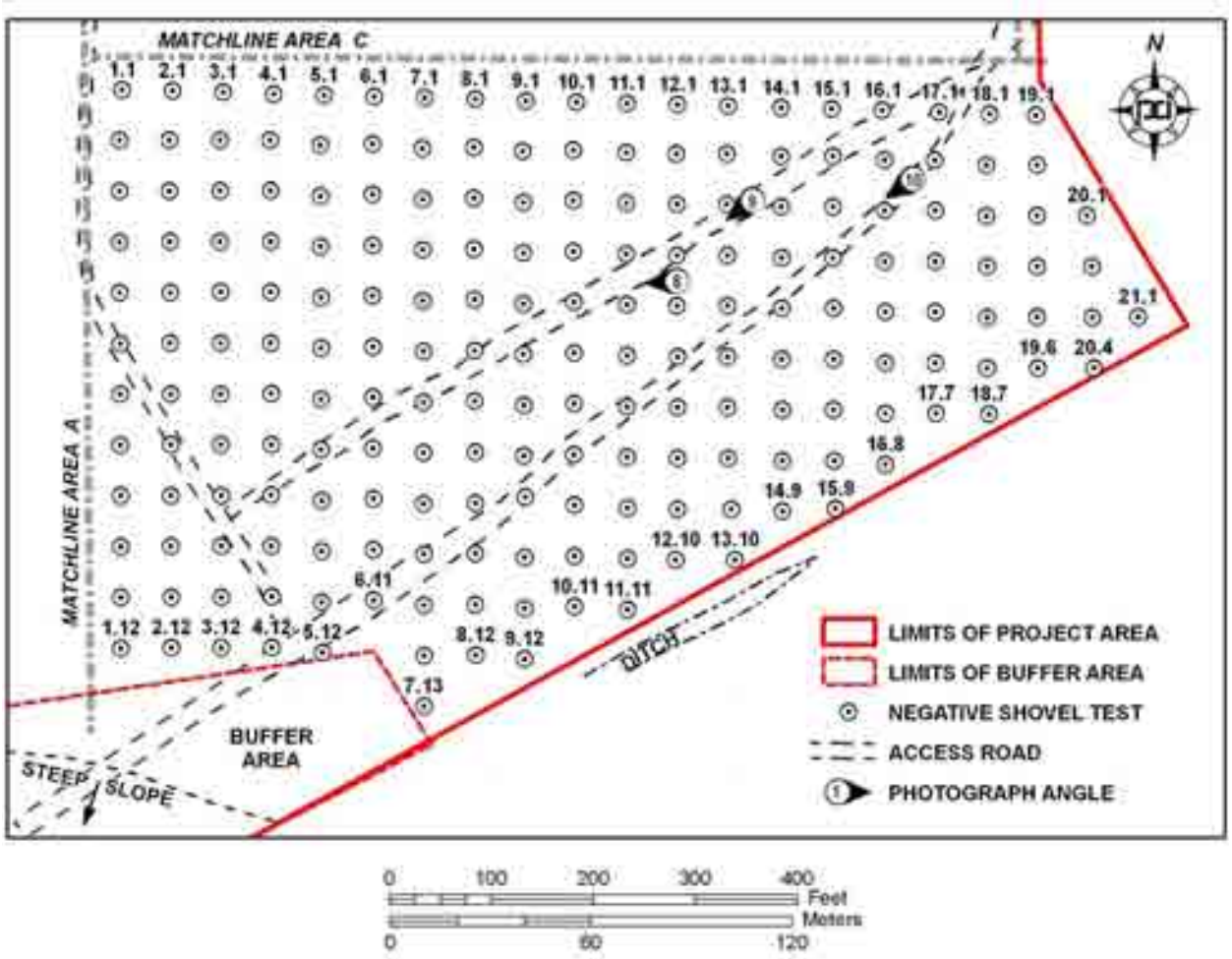

Figure 10. Study Area B: locations of shovel tests, disturbances and photograph angles.

Study Area C. This study area includes approximately 15 acres in the central portion of the project area (see Figure 8). Vegetation within Study Area C is similar to that described in Study Areas A and B (see Appendix A: Photograph 11). Drainage within Study Area C is moderate to poor (see Appendix A: Photograph 12), with isolated pockets of standing water covering 20 to 50 percent of the surface in the northwest corner and south portion of the study area. Impacts include substantial dumping of concrete, asphalt, and gravel (up to four meters in height) within an approximately one-acre area in the northeast of the study area (see Appendix A: Photographs 13 and 14). Former agricultural furrows or shallow drainage ditches generally aligned north-south and approximately spaced 30 ft (9.1 m) apart were observed covering a greater portion of the study area, suggesting former agricultural land use and associated impacts due to plowing (see Appendix A: Photograph 15).

A total of 235 shovel tests were excavated across the study area along 18 transects and numbered from south to north (Figure 11). Transects were designated C1 through C18, numbered from west to east. A total of 192 shovel tests were dug at 50-ft (15-m) intervals; a total of 48 shovel tests were dug at 100-ft (30-m) intervals in areas of standing water (near the north and south portions of Transects C4 through C6 and the south portions of Transects C7 through C18). The interval between transects was maintained at 50 ft (15 m).

Stratum 1 typically consisted of dark gray or dark grayish brown silty loam, reaching an average depth of 19 cm (7.5 in), and ranging between 7 and 36 cm (2.8 and 14.2 in). Stratum 2 was a yellowish brown or mottled light brownish gray and brownish yellow clay loam, reaching an average depth of 31 cm (12.2 in), and ranging between 15 and 46 cm (5.9 and 18.1 in). STP C1.7 encountered a third stratum, again due to an inconsistent field practice of assigning individual stratum numbers to the organic groundcover and the underlying A-Horizon in Stratum 1 soil. Water seepage occurred in 111 shovel tests (see Appendix B). No artifacts or buried features were found in the shovel tests of Study Area C.

As discussed in Section 2.3.1, an unidentified structure is shown in the southeast portion of the study area on the 1880 Beers map (see Figure 5). The structure does not appear on later referenced maps. The approximate location of the map documented structure (MDS) is near the south terminus of Transects C12 through C15 (see Figure 11). No artifacts were found in shovel tests dug within proximity to the MDS location. Eight additional shovel tests were dug (C12.2A, C12.3A, C13.2A, C13.3A, C14.2A, C14.3A, C15.2A and C15.3A) centered between the original 50-ft (15-m) interval grid in proximity to the MDS (see Appendix A: Photograph 16; see Appendix B: Shovel Test Log). No artifacts or buried features were found in the additional shovel tests.

In the north portion of Study Area C, a small mid-twentieth century dump consisting of approximately 30 bottles and bottle fragments was found during the walkover reconnaissance, located approximately 20 ft (6.1 m) northeast of STP C6.14 (see Figure 11). A representative sample totaling 13 objects was collected, including a Vitalis bottle dated 1937; a glass condiment jar and an amber glass both exhibiting a Hazel-Atlas Glass Company mark used between 1920 and 1964; one glass pickle jar; one Musterole mustard plaster jar made of white milk glass with an embossed aluminum spin-cap (date undetermined); one Murine eye solution glass jar (date undetermined); one lemon juice bottle (clear glass) marked Owens-Illinois Glass Co. and “Duraglass” dating between 1940 and 1954; three modern vitrified cup bodies, one vitrified possible plate base, one green Depression or carnival-type glass bowl fragment, and one milkglass novelty dish lid fragment in the form of a hen’s head and body (Table 2). These materials typify household refuse.

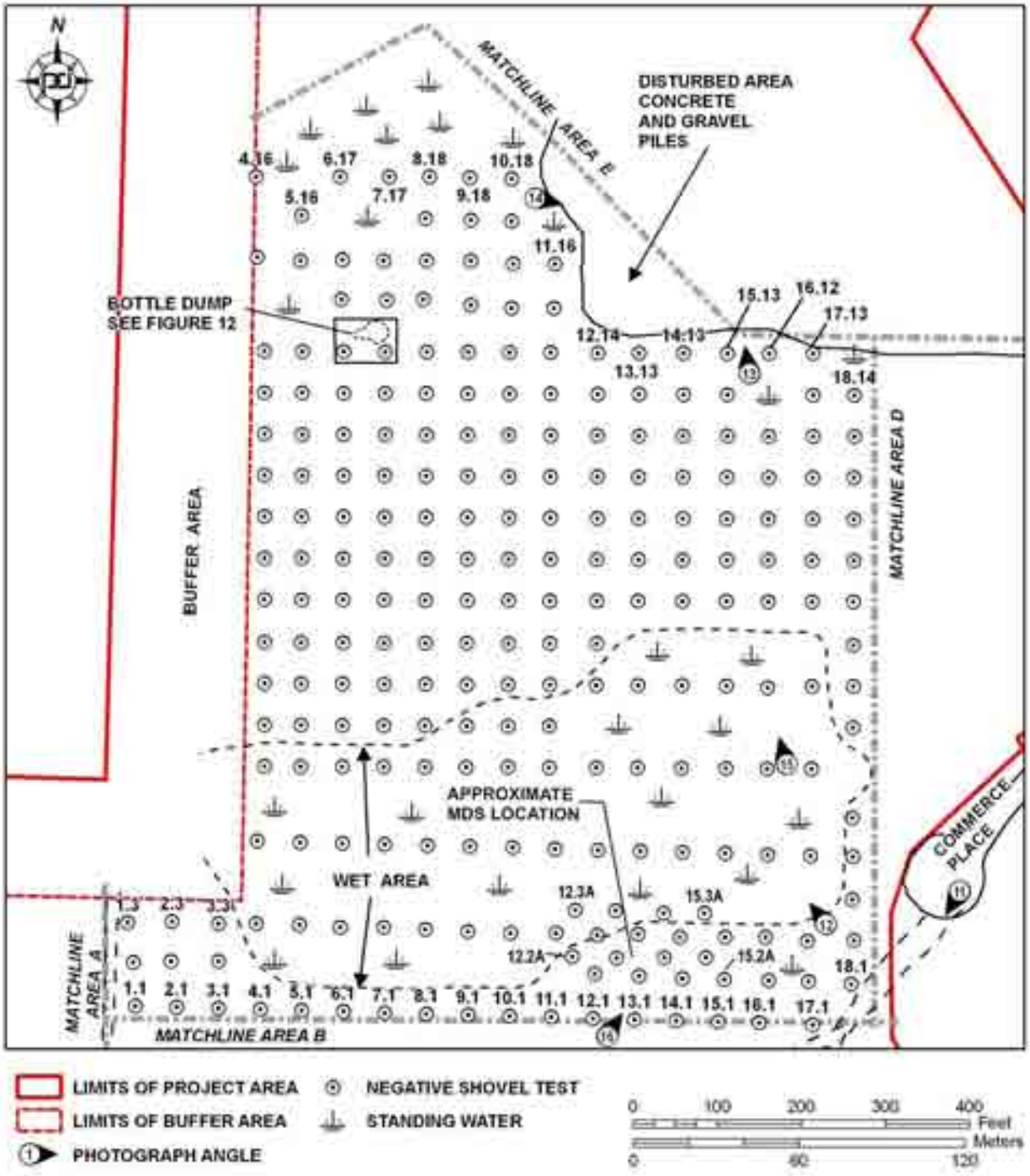

Figure 11. Study Area C: locations of shovel tests, disturbances and photograph angles.

Table 2. Catalog of artifacts found during Phase I investigation of Study Area C.

STP	Stratum/ Level	Material Class	Artifact Type	Count	Comments
	Surface	Glass	Vitalis bottle (men's hair treatment), with dated bottle manufacturers mark	1	1937
	Surface	Glass	widemouth condiment jar, clear, Hazel-Atlas Glass Co. mark	1	1923-1964
	Surface	Glass	amber glass jar, Hazel-Atlas Glass Co. mark	1	1923-1964
	Surface	Glass	pickle jar, clear, with threaded lip and metal lid	1	20th century
	Surface	Glass	milkglass, "Musterole" mustard plaster jar with aluminum threaded lid	1	20th century
	Surface	Glass	"Murine Eye" solution bottle	1	20th century
	Surface	Glass	lemon juice bottle, marked "Owens-Illinois Glass Co." and "Duraglas"	1	1940-1954
	Surface	Ceramic	undecorated vitrified cup body	3	20th century
	Surface	Ceramic	undecorated vitrified possible plate base	1	20th century
	Surface	Glass	green Depression or carnival style bowl rim fragment	1	20th century
	Surface	Glass	milk glass novelty dish lid fragment, chicken head and body form	1	20th century
C6.14B	1	Glass	Liquor bottle, half-pint, clear, “Anchor-Hocking Glass Co.” manufacturer's mark - Possible year mark - "46"	1	1946
C6.14B	1	Glass	milkglass teacup fragment with handle	1	
C6.14B	1	Glass	green Depression or carnival style bowl rim fragment	1	20th century
C6.14B	1	Glass	opaque glass vessel fragment with wavy textured decorative surface	1	

Two shovel tests were dug to determine the depth of the deposit and if it is stratified (Figure 12). STP C6.14A was placed within the east portion of the bottle dump (see Appendix A: Photograph 17). A low concentration of broken bottle glass was found to a depth of 15 cm (5.9 in) in Stratum 1. No large or diagnostic fragments were found in the shovel test, therefore no materials were collected. STP C6.14B was placed centrally in the dump where a concentration of bottles was found obscured by leaves (see Appendix A: Photograph 18). Broken bottle glass was found in moderate density within the shovel test to a depth of approximately 15 cm (5.9 in) in Stratum 1. Potentially diagnostic materials were collected, including a complete half-pint liquor bottle with a post-1938 Anchor-Hocking Glass Co. bottle mark and a potential date of manufacture mark – “46”, one milkglass teacup fragment with handle, one green Depression or carnival-type glass bowl rim fragment, and one non-diagnostic opaque glass vessel fragment with a textured wavy decorative surface (see Table 2).

Based upon field examination, the surface scatter was contemporaneous with materials found in the two shovel tests. Complete or nearly complete bottles tended to be located closer to the surface, while fragments were found below the surface in the saturated soil. There was no sign, however, of stratified deposits by age or type of bottles. Although the sample size of

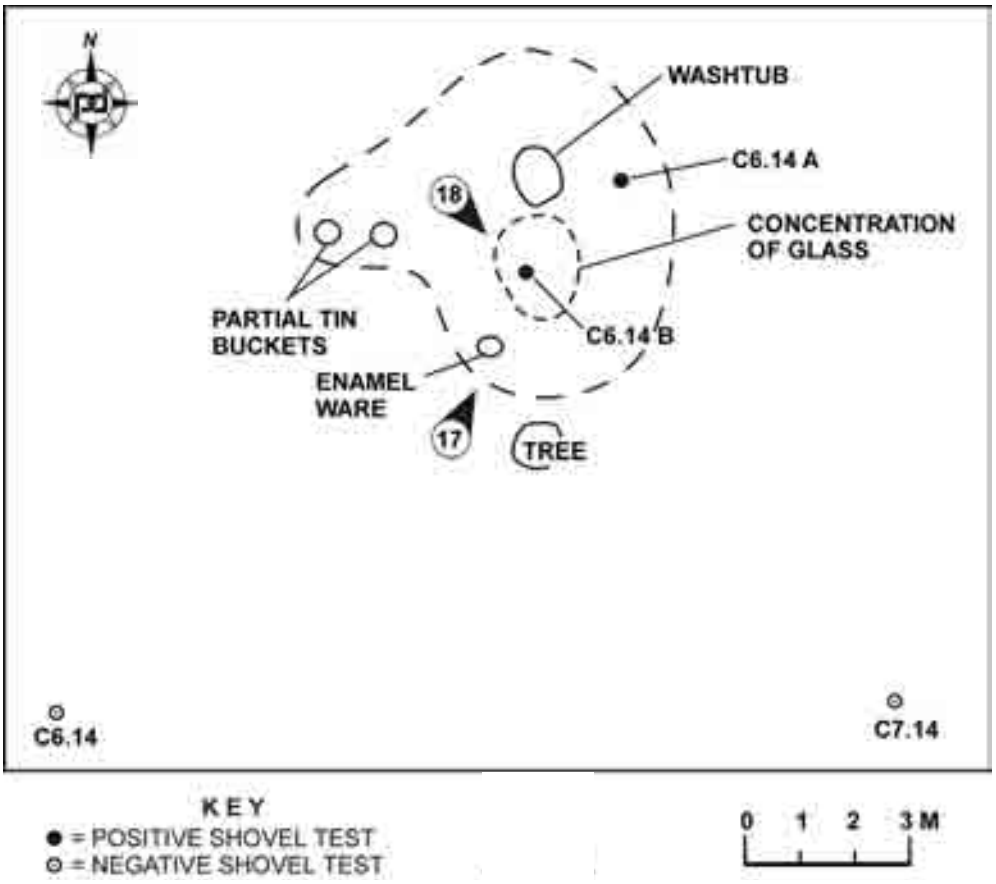

Figure 12. Bottle dump within Study Area C: locations of shovel tests and photograph angles.

diagnostic bottles is too small to provide a meaningful mean-date calculation, a likely 1940s period of deposit is obtained based upon frequency of dateable bottles. No additional artifacts or buried features were found in the shovel tests of Study Area C.

Study Area D. This study area consists of approximately five acres in the eastern part of the project area, located adjacent to the north side of Commerce Place (see Figure 8; see Appendix A: Photograph 19). Structures located adjacent to the study area include a medical care facility and a Comfort Inn, both located on the south side of Commerce Place (outside the project area) (see Appendix A: Photographs 20 and 21). Vegetation within Study Area D consisted of younger trees (beach with a few maples noted) and a significant increase in brush coverage (dogwood) compared to other areas of the project. Drainage was fair to moderate, with isolated pockets of standing water frequently observed in proximity to the west and northwest extent of the study area. Impacts include a gasline corridor bisecting the study area from north to south (see Appendix A: Photograph 22). An earthen pile approximately 75 ft (22.9 m) in diameter is located adjacent to the south extent of the gasline corridor (which is also shown in Photograph 22).

A total of 91 shovel tests were excavated across the study area along 14 transects aligned west to east (Figure 13). Transects were designated D1 through D14, numbered from south to north. Shovel tests within Study Area D were dug at 50-ft (15-m) intervals, with exception of STPs D11.6 and D12.6, dug at 100-ft (30-m) intervals to avoid standing water.

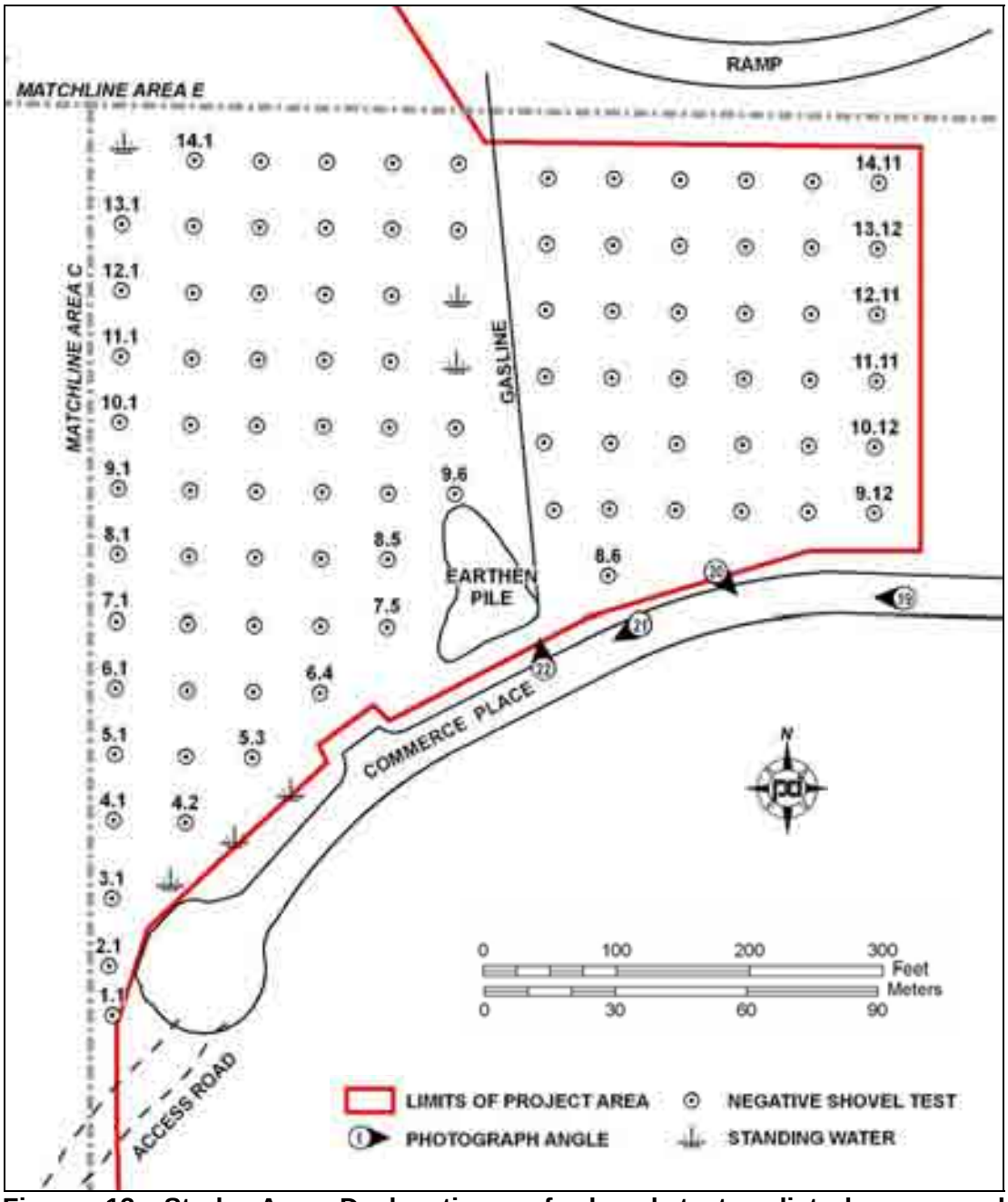

Figure 13. Study Area D: locations of shovel tests, disturbances and photograph angles.

Stratum 1 typically consisted of dark gray or dark grayish brown silty loam or clay loam, reaching an average depth of 21 cm (8.3 in), and ranging between 11 and 36 cm (4.3 and 14.2 in). Stratum 2 was a mottled light brownish gray and brownish yellow silt clay or sandy loam, reaching an average depth of 33 cm (13 in) and ranging between 22 and 46 cm (8.7 and 18.1 in). Water seepage occurred in 42 shovel tests (see Appendix B). No artifacts or buried features were found in the shovel tests of Study Area D.

Study Area E. This roughly 16-acre area in the north part of the project (see Figure 8) consists of an expansive paved commercial area which includes a former Days Inn, a former gas station, and a busing company (see Appendix A: Photographs 23 through 28). These structures are less than fifty years old. Due to the impact of heavy construction over the area, Study Area E was surface inspected and structures and impacts recorded and photo-documented (Figure 14). Approximately one acre in the unpaved, southeast corner of the study area is disturbed. Piles of concrete, asphalt, and gravel cover the west portion of the elevated (approximately 4 ft [1.2 m] high) area; stripped topsoil and earthen pushpiles cover the east portion. A total of four shovel tests (STPs E1.1, E1.2, E1.3 and E1.4) were dug within the disturbed area (see Appendix B: Shovel Test Log). STPs E1.1 and E1.2, dug in the east portion of the one-acre area, documented stripped topsoil and exposed subsoil under the grassy vegetation. STPs E1.3 and E1.4, dug in the elevated west portion of the one-acre parcel, found impassable concrete and asphalt fill at a depth of 10 cm (3.9 in).

3.4 CONCLUSIONS AND RECOMMENDATIONS

A small bottle dump was found centrally within the Hamburg Crossings project area, deposited in the 1940s (based upon dateable glass manufacturer's marks present in sample). The bottle dump, consisting of household refuse (kitchen and bathroom products) was limited in depth (15 cm [5.9 in]) and unstratified. The nearest residence shown on historic maps or aerial photos within proximity of the bottle dump is located approximately 1,500 feet (457 meters) to the northeast (outside the project area) (see Figure 7). The residence is no longer extant.

No archaeological evidence was found of an unidentified map documented structure (MDS) shown within the central portion of the project area on an 1880 map (see Section 2.3.1; see Figure 5). The MDS is not shown on maps after 1901 and was likely completely demolished or moved, leaving no archaeological evidence.

The bottle dump is considered to have low research potential and limited cultural significance based upon its lack of associated context and stratigraphy. The bottle dump does not meet the eligibility criteria for listing in the State or National Registers of Historic Places. No cultural materials were found in the remaining portions of the APE. Therefore, no further cultural resource investigations are recommended.

Figure 14. Study Area E: locations of disturbances and photograph angles *(aerial source: NYS GIS Clearinghouse 2002).*

4.0 References

Abler, Thomas S. and Elisabeth Tooker

1978 Seneca. In *Northeast*, edited by Bruce G. Trigger, pp. 505-517. Handbook of North American Indians, vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Beauchamp, William M.

1900 *Aboriginal Occupation of New York*. New York State Museum Bulletin 7(32). Albany.

Beers, Frederick W.

1880 *Illustrated Historical Atlas of Erie County, New York*. F.W. Beers Company, New York.

Chazanof, William

1970 *Joseph Ellicott and the Holland Land Company: The Opening of Western New York*. Syracuse University Press, Syracuse, NY.

Cleland, Charles E.

1982 The Inland Shore Fishery of the Northern Great Lakes: Its Development and Importance in Prehistory. *American Antiquity* 47:761-784.

de Laubenfels, David J.

1977 Vegetation. In *Geography of New York State* edited by John H. Thomson, pp. 90-103. Syracuse University Press, Syracuse, NY.

Dunn, Walter S., Jr. (ed)

1972 *History of Erie County 1870-1970.* The Buffalo and Erie County Historical Society, Buffalo.

Eberle, Scott, and Joseph A. Grande

1987 *Second Looks: A History of Buffalo and Erie County.* The Donning Company Publishers, Norfolk, VA.

Ellis, David M., James A. Frost, Harold C. Syrett, and Harry J. Carmen

1967 *A History of New York State.* Cornell University Press, Ithaca, NY.

Engelbrecht, William, Eric G. Hansen, James Hartner, Elaine B. Herold, and John D. Holland

1993 *Prehistory of Western New York*. The Archaeological Survey, Department of Anthropology, State University of New York at Buffalo and The Frederick M. Houghton Chapter, New York State Archaeological Association, Buffalo.

Erie County Public Works

nd Aerial Photographs, Division of Highways, Erie County Public Works, Buffalo Available URL: “http://www.erie.gov/depts/community/highways_aerial.phtml” [accessed March 29, 2007].

Fischer, Mark

2006 Buffalo and State Line Railroad. Western New York Railroad Archive, np. Available URL: http://wnyrails.org/railroads/nyc/buff_stateline_home.htm [accessed March 29, 2007]

2007 *Lake Shore and Michigan Southern Railway*. Western New York Railroad Archive, np Available URL: "http://wnyrails.org/railroads/nyc/lsms_home.htm" [accessed March 29, 2007]

Fritz, Gayle
1990 Multiple Pathways to Farming in Precontact Eastern North America. *Journal of World Prehistory* 4:387-435.

Funk, Robert E.
1972 Early Man in the Northeast and the Late Glacial Environment. *Man in the Northeast* 4:7-42.

1978 Post-Pleistocene Adaptations. In *Northeast*, edited by Bruce G. Trigger, pp. 16-27. Handbook of North American Indians, vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

1993 *Archaeological Investigations in the Upper Susquehanna Valley, New York State, Volume 1*. Persimmon Press, Buffalo.

Goldman, Mark
1983 *High Hopes; The Rise and Decline of Buffalo, New York*. State University of New York Press, Albany.

Houghton, Frederick
1909 *Indian Occupancy of the Niagara Frontier and Indian Village, Camp, and Burial Sites in the Niagara Frontier*. Bulletin of the Buffalo Society of Natural Sciences 9(2). Buffalo.

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

Lankes, Frank J.
1964 *The Senecas on Buffalo Creek Reservation*. West Seneca Historical Society, West Seneca, NY.

1968 *Just for Old Times Sake*. West Seneca Historical Society, West Seneca, NY.

New York Archaeological Council (NYAC)
1994 *Standards for Cultural Resource Investigations and the Curation of Archaeological Collections*. New York Archaeological Council, Albany. On file, Panamerican Consultants, Inc., Buffalo, NY.

New York State GIS Clearinghouse
2002 New York State Interactive Mapping Gateway. NYState Statewide Digital Orthoimagery Program. Albany.
Available URL: http://www.nysgis.state.ny.us/gateway/mg/cir.htm

Owens, Donald W., Willie L. Pittman, John P. Wulforst, and Willis E. Hanna
1986 *Soil Survey of Erie County, New York.* United States Department of Agriculture, Soil Conservation Service in cooperation with the Cornell University Agricultural Experiment Station. U.S. Government Printing Office, Washington, D.C.

Parker, Arthur C.
1922 *The Archaeological History of New York*. New York State Museum Bulletin Nos. 235-238. Albany.

Printy, John
1969 *Orchard Park Before We Remember*. Orchard Park Historical Society, Inc., Orchard Park, NY.

1972 A History of the Town of Orchard Park. In *Histories of the Towns in Erie County*. The Buffalo and Erie County Historical Society, Buffalo.

Ritchie, William A.
1955 The Northern Burial Cult. *Pennsylvania Archaeologist* 25:45-50.

1980 *The Archaeology of New York State*. Revised Edition. Harbor Hill Books, Harrison, NY.

Ritchie, William, A., and Robert E. Funk
1973 *Aboriginal Settlement Patterns in the Northeast*. New York State Museum and Science Service Memoir No. 20. Albany, New York.

Salwen, Bert
1975 Post Glacial Environments and Cultural Change in the Hudson River Basin. *Man in the Northeast* 10:43-70.

Silsby, Robert W.
1961 The Holland Land Company in Western New York. *Adventures in Western New York History*, vol. VIII. Buffalo and Erie County Historical Society, Buffalo.

Sipprell, Marjory G.
1972 A History of the Town of Hamburg. In *Histories of the Towns in Erie County*. The Buffalo and Erie County Historical Society, Buffalo.

Smith, Bruce D.
1992 Prehistoric Plant Husbandry in Eastern North America. In *The Origins of Agriculture,* edited by C.W. Cowan and P.J. Watson, pp. 101-119. Smithsonian Institution Press, Washington, D.C.

Smith, H(enry) Perry
1884 *History of Buffalo and Erie County*. 2 vols. D. Mason & Co., Publishers, Syracuse, NY.

Spiegelman, Bob
2005 Sullivan/Clinton Campaign, 1779-2005. Sullivan/Clinton Campaign website, New York [online www]. Available URL: “http://sullivanclinton.com” [accessed March 28, 2007].

Stone and Stewart
1866 *New Topographical Atlas of Erie County, New York*. Stone and Stewart, Publishers, Philadelphia.

Tooker, Elisabeth
1978 The League of the Iroquois: Its History, Politics, and Ritual. In *Northeast*, edited by Bruce G. Trigger, pp. 418-441. Handbook of North American Indians, vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Trigger, Bruce G.
1978 Early Iroquois Contacts with Europeans. In *Northeast*, pp. 344-356. Handbook of North American Indians, vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Tuck, James A.
1978 Regional Cultural Development, 3000 to 300 B.C. In *Northeast*, edited by B. G. Trigger, pp. 28-43. Handbook of North American Indians, vol. 15, W.C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

Turner, Orsamus
1974 [1850] *Pioneer History of the Holland Purchase of Western New York*. Geo. H. Derby and Co., Buffalo. Reprint ed. James Brunner, Geneseo, NY.

USGS (U.S. Geological Survey)
1901 Buffalo, 15 Minute Quadrangle Map. U.S. Geological Survey, Washington, D.C. On file, Historic USGS Maps of New England & New York. University of New Hampshire, Dimond Library, Documents Department & Data Center, Durham [online www]. Available URL: “http://docs.unh.edu/NY/buff01se.jpg” [accessed March 29, 2007].

1907 Eden, NY, 15 Minute Quadrangle Map. U.S. Geological Survey, Washington, D.C. On file, Historic USGS Maps of New England & New York. University of New Hampshire, Dimond Library, Documents Department & Data Center, Durham [online www]. Available URL: “http://docs.unh.edu/NY/eden07ne.jpg” [accessed March 29, 2007].

1965 *Hamburg New York–Erie Co.* 7.5 Minute Series (Topographic). USGS, Washington, D.C.

Weller, Ethelyn
1972 A History of the City of Lackawanna. In *Histories of the Towns in Erie County*. The Buffalo and Erie County Historical Society, Buffalo.

Whallon, Robert, Jr.
1968 Investigations of Late Prehistoric Social Organization in New York State. In *New Perspectives in Archaeology,* edited by Sally and Lewis Binford. Aldine Press, Chicago.

White, Marian E.
1961 Iroquois Culture History in the Niagara Frontier Area of New York State. *Anthropological Papers*, No. 16. Museum of Anthropology, University of Michigan.

1978a Neutral and Wenro. In *Northeast*, edited by Bruce G. Trigger, pp. 407-411. Handbook of North American Indians, vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

1978b Erie. In *Northeast*, edited by Bruce G. Trigger, pp. 412-417. Handbook of North American Indians, vol. 15, William C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.

White, Truman C. (Editor)
1898 *Our County and its People, a Descriptive Work on Erie County, New York.* 2 vols. Boston History Company, Boston.

Appendix A
PHOTOGRAPHS

Photograph 1. Typical vegetation and wet areas within Study Area A, facing south *(PCI 2007).*

Photograph 2. Standing water present within north extent of Study Area A, facing north *(PCI 2007).*

Photograph 3. Western terminus of storm drain system, located in south part of buffer zone, facing northeast. System traverses south portion of project area *(PCI 2007).*

Photograph 4. Drainage from storm drain system (left) and NYS Thruway culvert (upper center – obscured by trees) within buffer zone, facing east *(PCI 2007)*.

Photograph 5. Low elevation area along east extent of buffer zone, facing northwest *(PCI 2007)*.

Photograph 6. Access road adjacent to east side of buried sewer line, facing south *(PCI 2007).*

Photograph 7. Sewer cover (foreground) located near northeast corner of Study Area B, facing northeast. Note housing development located adjacent to project area *(PCI 2007)*.

Photograph 8. Shale-covered access road in Study Area B, facing west *(PCI 2007)*.

Photograph 9. Sewer cover located within graded portion of raised gravel access road, facing southwest *(PCI 2007)*.

Photograph 10. Shale-covered access road within Study Area B associated with buried storm drain system, facing southwest *(PCI 2007)*.

Photograph 11. Gravel and shale access road located at southeast corner of Study Area B, facing southwest. Note recently dumped materials *(PCI 2007)*.

Photograph 12. Seasonally standing water frequently observed within central portion of APE, facing northwest *(PCI 2007)*.

Photograph 13. Concrete and earthen piles adjacent to north extent of Study Area C, facing north. Note discarded tires and miscellaneous materials *(PCI 2007)*.

Photograph 14. Artificial elevation consisting of dumped concrete and gravel at northeast extent of Study Area C, facing east *(PCI 2007)*.

Photograph 15. Typical furrow or shallow drainage ditch found frequently within north portion of project area, generally aligned north-south, facing north *(PCI 2007)*.

Photograph 16. Close-interval shovel tests being dug near an MDS (1880) location shown within the southeast corner of Study Area C, facing northeast *(PCI 2007)*.

Photograph 17. STP C6.14A being dug within the limits of surface scatter consisting of mid-twentieth century dated bottles, facing northeast *(PCI 2007)*.

Photograph 18. Detail of glass bottle scatter exposed from under ground cover, facing southeast *(PCI 2007)*.

Photograph 19. South extent of Study Area D (wooded/brush area at right) adjacent to north side of Commerce Place, facing west *(PCI 2007)*.

Photograph 20. Medical care facility adjacent to project area on south side of Commerce Place, facing southeast *(PCI 2007)*.

Photograph 21. View of the Comfort Inn on Commerce Place, adjacent to the east side of the project area, facing southwest *(PCI 2007)*.

Photograph 22. Disturbance within Study Area D, including a gasline corridor and a gravel earthenpile (left), facing north *(PCI 2007)*.

Photograph 23. Study Area E, located on west side of Camp Road, consists of approximately 16 acres of paved commercial property. A former Days Inn (east elevation) is located in the central north portion, facing southwest *(PCI 2007)*.

Photograph 24. North and east elevations of former gas station located in east portion of Study Area E, facing south *(PCI 2007)*.

Photograph 25. South and east elevations of operational bus garage located within west portion of Study Area E, facing west *(PCI 2007)*.

Photograph 26. View across Study Area E from north extent facing southeast. Note concrete and earthen pushpiles along tree line *(PCI 2007)*.

Photograph 27. South and west elevations of former Days Inn, facing north *(PCI 2007)*.

Photograph 28. South elevation of bus garage located in west portion of Study Area E, facing northwest. Gravel obscures degraded pavement located in the southwest (foreground) part of the study area *(PCI 2007)*.

Photograph 29. Gravel obscures degraded pavement within southeast portion of Study Area E, facing west. Note extensive dumping near treeline *(PCI 2007)*.

Photograph 30. Stratigraphy tested where stripped A-horizon soils were observed in southeast corner of Study Area E, facing south. Note earthen pushpiles *(PCI 2007)*.

Photograph 31. Artificially elevated grassy area containing concrete, asphalt, and gravel (evident in STPs E1.3 and E1.4) at the south extent of Study Area E, facing southeast *(PCI 2007)*.

Appendix B
SHOVEL TEST LOG

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A1.1	1	0-27	10YR 3/2	V DK GR BR	SI LO	NCM, lots of shale
A1.1	2	27-37	10YR 5/4	YL BR	SI CL	NCM
A1.2	1	0-21	10YR 3/2	V DK GR BR	SI LO	NCM, almost no shale
A1.2	2	21-31	10YR 5/4	YL BR	SI CL	NCM
A1.3	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, fills w/water to 15cm
A1.3	2	17-27	10YR 5/4	YL BR	SI CL	NCM
A1.4	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM, fills w/water to 15cm
A1.4	2	16-26	10YR 5/4	YL BR	SI CL	NCM
A1.5	1	0-21	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
A1.5	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A1.6	1	0-16	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 10cm
A1.6	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A1.7	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 10cm
A1.7	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A1.8	1	0-17	10YR 4/1	DK GR	SI LO	NCM, no water
A1.8	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A1.9	1	0-21	10YR 4/1	DK GR	SI LO	NCM
A1.9	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A1.10	1	0-22	10YR 4/1	DK GR	SI LO	NCM
A1.10	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A2.1	1	0-30	10YR 3/1	V DK GR	SI LO	NCM
A2.1	2	30-40	10YR 5/6	YL BR	SI LO	NCM
A2.2	1	0-30	10YR 5/6	YL BR	CL LO	NCM, fallen tree explains subsoil on surface
A2.2	2	30-40	10YR 3/2	V DK GR BR	CL LO	NCM
A2.2	3	40-52	10YR 5/6	YL BR	CL LO	NCM
A2.3	1	0-25	10YR 3/1	V DK GR	SI LO	NCM
A2.3	2	25-35	10YR 5/8	YL BR	SI LO	NCM
A2.4	1	0-10	10YR 4/2	DK GR BR	CL LO	NCM, woods
A2.4	2	10-28	10YR 5/6	YL BR	CL LO	NCM
A2.5	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
A2.5	2	12-30	10YR 5/6	YL BR	CL LO	NCM
A2.6	1	0-11	10YR 4/2	DK GR BR	CL LO	NCM
A2.6	2	11-17	10YR 5/6	YL BR	CL LO	NCM, water filled test at 17cm
A2.7	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM, woods
A2.7	2	12-22	10YR 5/6	YL BR	CL LO	NCM, water filled test at 22cm
A2.8	1	0-20	10YR 3/1	V DK GR	SI LO	NCM
A2.8	2	20-30	10YR 5/8	YL BR	CL LO	NCM
A2.9	1	0-20	10YR 3/1	V DK GR	SI LO	NCM
A2.9	2	20-30	10YR 5/8	YL BR	CL LO	NCM
A2.10	1	0-13	10YR 3/1	V DK GR	SI LO	NCM, root impasse
A3.1	1	0-19	10YR 3/1	V DK GR	SI LO	NCM
A3.1	2	19-36	10YR 5/2 10YR 6/8	GR BR BR YL	SI SA	NCM
A3.2	1	0-15	10YR 3/2	V DK GR BR	SI LO	NCM
A3.2	2	15-26	10YR 5/6	YL BR	SA LO	NCM
A3.3	1	0-16	10YR 3/1	V DK GR	SI LO	NCM, shifted test 2m S to avoid water
A3.3	2	16-26	10YR 5/4	YL BR	SA LO	NCM, seepage at 22cm
A3.4	1	0-17	10YR 3/1	V DK GR	SI LO	NCM, water on surface near test
Key	**Soil Color:** BL = black, BR = brown, DK = dark, GR = gray, LT = light, V = very, YL = yellow					
	Soil Description: CL = clay, LO = loam, SA = sand, SI = silt					
	Comments: NCM = no cultural material					

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A3.4	2	17-30	10YR 5/4	YL BR	SA LO	NCM, seepage at 20cm
A3.5	1	0-15	10YR 3/2	V DK GR BR	SI LO	NCM
A3.5	2	15-28	10YR 5/4	YL BR	SA LO	NCM
A3.6	1	0-16	10YR 3/2	V DK GR BR	SI LO	NCM
A3.6	2	16-32	10YR 5/8	YL BR	SA LO	NCM
A3.7	1	0-19	10YR 3/2	V DK GR BR	SI LO	NCM
A3.7	2	19-35	10YR 5/2 10YR 5/8	GR BR YL BR	SA LO	NCM
A3.8	1	0-25	10YR 3/2	V DK GR BR	SI LO	NCM
A3.8	2	25-37	10YR 5/2 10YR 5/4	GR BR YL BR	SA LO	NCM
A3.9	1	0-10	10YR 2/1	BL	LO	NCM, roots, woods, STP shifted due to surface water
A3.9	2	10-19	10YR 5/2	GR BR	SI LO	NCM, roots
A3.9	3	19-30	10YR 5/4	YL BR	SA LO	NCM, roots
A3.10	1	0-25	10YR 3/2	V DK GR BR	SI LO	NCM, woods, surface water near test, soil is wet
A3.10	2	25-36	10YR 5/8	YL BR	SA LO	NCM, water filled hole at 20cm
A4.1	1	0-13	10YR 3/2	V DK GR BR	LO	NCM, dark organic/humus layer w/shale gravel
A4.1	2	13-35	10YR 4/4	DK YL BR	CL LO	NCM, brown loose soil w/shale and cobbles
A4.1	3	35-50	10YR 4/1	DK GR	SA LO	NCM, dark gray brown w/sand, pebbles (sandy clay loam)
A4.2	1	0-7	10YR 3/2	V DK GR BR	LO	NCM, humus layer organic inclusion
A4.2	2	7-27	10YR 4/1	DK GR	CL LO	NCM, moist, <20% gravel
A4.2	3	27-46	10YR 5/2 10YR 5/6	GR BR YL BR	CL	NCM, mottled clay, very wet, seepage at ~42cm
A4.3	1	0-6	10YR 3/1	V DK GR	LO	NCM, saturated organic layer, gravel, standing water
A4.3	2	6-28	10YR 5/2	GR BR	CL LO	NCM
A4.4	1	0-8	10YR 3/1	V DK GR	LO	NCM, saturated soils
A4.4	2	8-30	10YR 5/2	GR BR	CL LO	NCM, seepage at 10cm, filling test
A4.5	1	0-10	10YR 3/1	V DK GR	LO	NCM
A4.6	1	0-5	10YR 3/2	V DK GR BR	LO	NCM, dark w/root/organics
A4.6	2	5-21	10YR 5/1	GR	CL LO	NCM, wet, loose <5% gravel
A4.6	3	21-38	10YR 5/6 10YR 6/8	YL BR BR YL	CL	NCM, saturated mottled clay, sandy inclusions
A4.7	1	0-17	10YR 5/1	GR	CL LO	NCM, saturated soil, <5% gravel
A4.7	2	17-40	10YR 5/6 10YR 6/8	YL BR BR YL	SA LO	NCM; <5% gravel
A4.8	1	0-16	10YR 5/1	GR	CL LO	NCM, saturated soil, <5% gravel, standing water everywhere
A4.8	2	16-32	10YR 5/6 10YR 6/8	YL BR BR YL	SA LO	NCM, 5% gravel, seepage at 18cm
A4.9	1	0-14	10YR 5/1	GR	CL LO	NCM, drier soils test in wetland
A4.9	2	14-35	10YR 5/6 10YR 6/8	YL BR BR YL	CL LO	NCM
A4.10	1	0-21	10YR 5/1	GR	CL LO	NCM, moist clays, free of inclusions, mottled sub, W 100' from slope
A4.10	2	21-38	10YR 5/6 10YR 6/8	YL BR BR YL	CL	NCM
A5.1	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
A5.1	2	20-30	10YR 3/4	DK YL BR	SI LO	NCM
A5.2	1	0-8	10YR 4/2	DK GR BR	SI LO	NCM
A5.2	2	8-20	10YR 3/4	DK YL BR	SI LO	NCM
A5.3	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM, wet, seepage at 10cm
A5.3	2	10-20	10YR 3/4	DK YL BR	SI LO	NCM
A5.4	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A5.4	2	18-28	10YR 6/6 10YR 6/8	BR YL	CL LO	NCM
A5.5	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM, in woods, seepage at 20cm
A5.5	2	23-33	10YR 6/6 10YR 6/8	BR YL	CL LO	NCM
A5.6	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM
A5.6	2	12-30	10YR 5/3	BR	SI CL	NCM
A5.7	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
A5.7	2	20-30	10YR 6/6 10YR 6/8	BR YL	CL LO	NCM
A5.8	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM
A5.8	2	12-26	10YR 6/6 10YR 6/8	BR YL	CL LO	NCM
A5.9	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
A5.9	2	18-28	10YR 6/6 10YR 6/8	BR YL	CL LO	NCM
A5.10	1	0-21	10YR 4/2	DK GR BR	CL LO	NCM
A5.10	2	21-38	10YR 6/6 10YR 6/8	BR YL	CL	NCM
A6.1	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
A6.1	2	15-31	10YR 5/4	YL BR	CL	NCM
A6.2	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
A6.2	2	15-33	10YR 5/4	YL BR	CL	NCM
A6.3	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
A6.3	2	12-32	10YR 5/4	YL BR	CL	NCM
A6.4	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
A6.4	2	13-31	10YR 5/6	YL BR	CL	NCM, seepage at 17cm, moved 5m E due to standing water
A6.5	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
A6.5	2	12-32	10YR 5/6	YL BR	CL	NCM
A6.6	1	0-10	10YR 4/2	DK GR BR	CL LO	NCM
A6.6	2	10-30	10YR 5/6	YL BR	CL	NCM
A6.7	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM
A6.7	2	18-31	10YR 5/6	YL BR	CL	NCM
A6.8	1	0-14	10YR 4/2	DK GR BR	CL LO	NCM
A6.8	2	14-32	10YR 5/6	YL BR	CL	NCM
A6.9	1	0-16	10YR 4/2	DK GR BR	CL LO	NCM
A6.9	2	16-30	10YR 5/6	YL BR	CL	NCM
A6.10	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM, mucky
A6.10	2	18-30	10YR 5/6	YL BR	CL	NCM
A7.1	1	0-27	10YR 3/4	DK YL BR	CL LO	NCM, dry soils, loamy, few inclustions
A7.1	2	27-47	10YR 5/2	GR BR	CL LO	NCM
A7.2	1	0-23	10YR 4/4	DK YL BR	LO	NCM, <20% gravels, dry, loose soils (thick root layer)
A7.2	2	23-40	10YR 5/6	YL BR	CL LO	NCM
A7.3	1	0-17	10YR 4/1	DK GR	CL LO	NCM, saturated soils, no gravel, inclusions
A7.3	2	17-34	10YR 5/2	GR BR	CL LO	NCM
A7.4	1	0-17	10YR 4/1	DK GR	CL LO	NCM, seepage at ~10cm
A7.5	1	0-12	10YR 4/1	DK GR	CL LO	NCM, saturated soils, standing water, excavated root base by large tree, seepage at 15cm
A7.5	2	12-30	10YR 5/2	GR BR	CL LO	NCM
A7.6	1	0-14	10YR 4/1	DK GR	CL LO	NCM, still very wet, <10% shale gravel
A7.6	2	14-32	10YR 5/2	GR BR	CL LO	NCM
A7.7	1	0-7	10YR 3/2	V DK GR BR	LO	NCM
A7.7	2	7-21	10YR 4/1	DK GR	CL LO	NCM, dark humus/organic layer, <10% shale gravel, roots

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A7.7	3	21-36	10YR 5/2 10YR 5/6	GR BR YL BR	CL LO	NCM, dark humus/organic layer, mottled clay
A7.8	1	0-19	10YR 3/2	V DK GR BR	LO	NCM, seepage at ~10cm, wetland delineation within 5m
A7.8	2	19-38	10YR 4/1	DK GR	CL LO	NCM
A7.9	1	0-13	10YR 3/2	V DK GR BR	LO	NCM, seepage at ~10cm, wetland delineation within 5m
A7.10	1	0-15	10YR 3/2	V DK GR BR	LO	NCM
A7.10	2	15-26	10YR 4/1	DK GR	CL LO	NCM
A8.1	1	0-16	10YR 5/2	GR BR	SI LO	NCM, in woods, shale
A8.1	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A8.2	1	0-8	10YR 4/2	DK GR BR	SI LO	NCM, gravel, 2m north of sewer cover
A8.2	2	8-20				NCM, gravel fill
A8.3	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM, gravel, 2m north of sewer cover
A8.3	2	15-25	10YR 6/6	BR YL	CL LO	NCM
A8.4	1	0-24	10YR 4/2	DK GR BR	SI LO	NCM, in woods, shale
A8.4	2	24-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A8.5	1	0-26	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 20cm, in woods, some shale
A8.5	2	26-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A8.6	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 10cm, in woods, some shale
A8.6	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A8.7	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM
A8.7	2	22-32	10YR 6/6	BR YL	CL LO	NCM
A8.8	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
A8.8	2	20-30	10YR 6/6	BR YL	CL LO	NCM
A8.9	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
A8.9	2	18-28	10YR 6/6	BR YL	CL LO	NCM
A8.10	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
A8.10	2	18-28	10YR 6/2 10YR 6/6	LT BR GR BR YL	CL LO	NCM
A9.1	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, very little shale
A9.1	2	17-27	10YR 6/2 10YR 6/6	LT BR GR BR YL	CL LO	NCM
A9.2	1	0-20	10YR 4/1	DK GR	SI LO	NCM, fill w/water to 15cm
A9.2	2	20-30	10YR 5/2	GR BR	SI CL LO	NCM
A9.3	1	0-24	10YR 4/1	DK GR	SI LO	NCM
A9.3	2	24-34	10YR 5/2	GR BR	SI CL LO	NCM, fill w/water to 30cm
A9.4	1	0-18	10YR 4/1	DK GR	SI LO	NCM, fill w/water to 15cm
A9.4	2	18-28	10YR 6/2	LT BR GR	SI CL LO	NCM
A9.5	1	0-15	10YR 4/1	DK GR	SI LO	NCM, wet
A9.5	2	15-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A9.6	1	0-16	10YR 4/1	DK GR	SI LO	NCM
A9.6	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A9.7	1	0-19	10YR 4/1	DK GR	SI LO	NCM
A9.7	2	19-29	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A9.8	1	0-22	10YR 4/1	DK GR	SI LO	NCM
A9.8	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A9.9	1	0-14	10YR 4/1	DK GR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A9.9	2	14-24	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A9.10	1	0-19	10YR 4/1	DK GR	SI LO	NCM
A9.10	2	19-29	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A10.1	1	0-12	10YR 4/1	DK GR	SI LO	NCM
A10.1	2	12-33	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A10.2	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
A10.2	2	12-30	10YR 5/4	YL BR	CL	NCM
A10.3	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
A10.3	2	15-31	10YR 5/4	YL BR	CL	NCM
A10.4	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
A10.4	2	13-30	10YR 5/4	YL BR	CL	NCM
A10.5	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
A10.5	2	15-31	10YR 5/6	YL BR	CL	NCM
A10.6	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
A10.6	2	15-30	10YR 5/6	YL BR	CL	NCM
A10.7	1	0-16	10YR 4/2	DK GR BR	CL LO	NCM
A10.7	2	16-32	10YR 5/6	YL BR	CL	NCM
A10.8	1	0-10	10YR 4/2	DK GR BR	CL LO	modern beer cans on surface
A10.8	2	10-32	10YR 5/6	YL BR	CL LO	NCM
A10.9	1	0-12	10YR 4/2	DK GR BR	CL LO	modern bottle glass, beer cans on surface
A10.9	2	12-31	10YR 5/6	YL BR	CL LO	NCM
A10.10	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
A10.10	2	12-31	10YR 5/6	YL BR	CL LO	NCM
A11.1	1	0-17	10YR 4/1	DK GR	LO CL	NCM
A11.1	2	17-30	10YR 5/6	YL BR	LO CL	NCM
A11.2	1	0-19	10YR 4/1	DK GR	LO CL	NCM
A11.2	2	19-32	10YR 5/6	YL BR	LO CL	NCM
A11.3	1	0-17	10YR 4/1	DK GR	LO CL	NCM
A11.3	2	17-28	10YR 5/6	YL BR	LO CL	NCM
A11.4	1	0-18	10YR 4/2	DK GR BR	LO CL	NCM
A11.4	2	18-24	10YR 5/6	YL BR	LO CL	NCM, root impasse at 24cm
A11.5	1	0-15	10YR 4/2	DK GR BR	LO CL	NCM
A11.5	2	15-27	10YR 5/6	YL BR	LO CL	NCM
A11.6	1	0-15	10YR 4/2	DK GR BR	LO CL	NCM
A11.6	2	15-28	10YR 5/6	YL BR	LO CL	NCM
A11.7	1	0-14	10YR 4/2	DK GR BR	LO CL	NCM
A11.7	2	14-27	10YR 5/6	YL BR	LO CL	NCM
A11.8	1	0-17	10YR 3/1	V DK GR	LO	NCM
A11.8	2	17-30	10YR 5/6	YL BR	LO CL	NCM
A11.9	1	0-15	10YR 3/1	V DK GR	LO	NCM
A11.9	2	15-30	10YR 5/6	YL BR	LO CL	NCM
A11.10	1	0-15	10YR 3/1	V DK GR	LO	NCM
A11.10	2	15-25	10YR 5/6	YL BR	LO CL	NCM
A12.1	1	0-14	10YR 4/1	DK GR	CL LO	NCM, very wet, thick root layer, <10% gravel
A12.1	2	14-32	10YR 5/2	GR BR	CL LO	NCM; <10% gravel
A12.2	1	0-17	10YR 4/1	DK GR	CL LO	NCM
A12.2	2	17-30	10YR 5/2	GR BR	CL LO	NCM, seepage at ~30cm
A12.3	1	0-16	10YR 5/1	GR	CL LO	NCM, dryer, no inclusions, roots at <10cm, loose soils
A12.3	2	16-36	10YR 5/6	YL BR	CL LO	NCM
A12.4	1	0-18	10YR 5/1	GR	CL LO	NCM, moist soil
A12.4	2	18-39	10YR 5/6	YL BR	SA CL	NCM
A12.5	1	0-11	10YR 5/1	GR	CL LO	NCM, saturated soil, standing water all around, seepage at ~10cm, excavation stopped

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A12.6	1	0-19	10YR 4/1	DK GR	CL LO	NCM, moist soil
A12.6	2	19-38	10YR 5/4 10YR 5/6	YL BR	CL LO	NCM, seepage at ~30cm
A12.7	1	0-7	10YR 3/1	V DK GR	LO	NCM, rooted organic (humus) layer, w/25% gravels
A12.7	2	7-8	10YR 5/2	GR BR	CL LO	NCM
A12.8	1	0-11	10YR 3/2	V DK GR BR	LO	NCM, rooted organic (humus) layer over loose yellow brown clay loam w/25% gravels
A12.8	2	11-36	10YR 5/6	YL BR	CL LO	NCM
A12.9	1	0-12	10YR 3/2	V DK GR BR	LO	NCM, edge of slope <5m W from test
A12.9	2	12-31	10YR 5/6	YL BR	CL LO	NCM
A13.1	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM
A13.1	2	18-31	10YR 5/6	YL BR	CL	NCM
A13.2	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
A13.2	2	13-31	10YR 5/6	YL BR	CL	NCM
A13.3	1	0-10	10YR 4/2	DK GR BR	CL LO	NCM
A13.3	2	10-33	10YR 5/6	YL BR	CL	NCM
A13.4	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
A13.4	2	12-32	10YR 5/6	YL BR	CL	NCM
A13.5	1	0-11	10YR 4/2	DK GR BR	CL LO	NCM
A13.5	2	11-30	10YR 5/6	YL BR	CL	NCM, seepage at 22cm
A13.6	1	0-14	10YR 4/2	DK GR BR	CL LO	NCM
A13.6	2	14-30	10YR 5/6	YL BR	CL	NCM
A13.7	1	0-17	10YR 2/2	V DK BR	LO	NCM
A13.7	2	17-19	10YR 4/2	DK GR BR	CL LO	NCM
A13.7	3	29-39	10YR 5/6	YL BR	CL	NCM
A13.8	1	0-12	10YR 2/2	V DK BR	CL LO	NCM
A13.8	2	12-32	10YR 5/6	YL BR	CL	NCM
A13.9	1	0-8	10YR 2/2	V DK BR	CL LO	NCM
A13.9	2	8-34	10YR 5/6	YL BR	CL	NCM
A14.1	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
A14.1	2	15-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM, seepage at 20cm
A14.2	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 6cm
A14.2	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A14.3	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, some cobbles
A14.3	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A14.4	1	0-14	10YR 4/2	DK GR BR	SI LO	NCM, shale
A14.4	2	14-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A14.5	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
A14.5	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A14.6	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM
A14.6	2	23-33	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A14.7	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM
A14.7	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A14.8	1	0-10	10YR 3/2	V DK GR BR	SI LO	NCM, lots of shale
A14.8	2	10-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
A15.1	1	0-23	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
A15.1	2	23-33	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
A15.2	1	0-18	10YR 4/1	DK GR	SI LO	NCM, wet but does not fill w/water
A15.2	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A15.3	1	0-21	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
A15.3	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A15.4	1	0-22	10YR 4/1	DK GR	SI LO	NCM
A15.4	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
A15.5	1	0-24	10YR 4/1	DK GR	SI LO	NCM, moist but not water seepage
A15.5	2	24-34	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A15.6	1	0-19	10YR 4/1	DK GR	SI LO	NCM
A15.6	2	19-29	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
A16.1	1	0-23	10YR 4/2	DK GR BR	LO CL	NCM
A16.1	2	23-35	10YR 5/6	YL BR	LO CLO	NCM
A16.2	1	0-15	10YR 4/2	DK GR BR	LO CL	NCM
A16.2	2	15-30	10YR 5/6	YL BR	LO CL	NCM
A16.3	1	0-24	10YR 4/2	DK GR BR	LO CL	NCM
A16.3	2	24-36	10YR 5/6 10YR 5/2	YL BR GR BR	LO CL	NCM
A16.4	1	0-22	10YR 4/2	DK GR BR	LO CL	NCM
A16.4	2	22-35	10YR 5/6 10YR 5/2	YL BR GR BR	LO CL	NCM
A16.5	1	0-27	10YR 3/1	V DK GR	LO	NCM, root impasse at 27cm
A16.6	1	0-15	10YR 3/1	V DK GR	LO	NCM
A16.6	2	15-30	7.5YR 4/4	BR	SA LO	NCM
B1.1	1	0-14	10YR 4/2	DK GR BR	LO	NCM, 30% shale gravel; transect following slightly raised (~1/2m high) ridge of shale
B1.1	2	14-31	10YR 5/6	YL BR	CL LO	NCM
B1.2	1	0-32	10YR 4/2	DK GR BR	LO	NCM
B1.2	2	32-44	10YR 5/6	YL BR	CL LO	NCM
B1.3	1	0-12	10YR 4/2	DK GR BR	LO	NCM, rock (shale) impasse at 12cm
B1.4	1	0-7	10YR 5/1	GR	LO	NCM
B1.4	2	7-14	10YR 5/4	YL BR	CL	NCM, rock impasse at 14cm
B1.5	1	0-8	10YR 5/1	GR	LO	NCM, still on shale ridge
B1.5	2	8-18	10YR 5/4	YL BR	CL	NCM, rock impasse at 18cm
B1.6	1	0-7	10YR 5/1	GR	LO	NCM
B1.6	2	7-20	10YR 5/4	YL BR	CL	NCM, rock impasse at 20cm
B1.7	1	0-7	10YR 4/2	DK GR BR	LO	NCM, moved 5m E - tree fall
B1.7	2	7-20	10YR 5/4	YL BR	CL	NCM, seepage at 20cm
B1.7	3	20-30	10YR 4/1	DK GR	CL	NCM, tangled brush
B1.8	1	0-6	10YR 4/1	DK GR	LO	NCM, manhole cover 6m W of test
B1.8	2	6-18	10YR 5/4	YL BR	CL	NCM, rock impasse at 18cm
B1.9	1	0-7	10YR 4/1	DK GR	LO	NCM
B1.9	2	7-19	10YR 5/4	YL BR	CL	NCM, rock impasse at 19cm
B1.10	2	20-31	10YR 5/6	YL BR	CL LO	NCM
B1.11	1	0-15	10YR 4/1	DK GR	LO	NCM
B1.11	2	15-30	10YR 5/6	YL BR	CL LO	NCM
B1.12	1	0-17	10YR 4/1	DK GR	LO	NCM, moved 5m N - standing water, seepage at 15cm
B1.12	2	17-32	10YR 5/6	YL BR	CL LO	NCM
B2.1	1	0-14	10YR 3/2	V DK GR BR	SI LO	NCM, humus layer w/organic inclusions, gravel
B2.1	2	14-30	10YR 4/3	BR	SI LO	NCM, seepage at ~15cm, +25% shale gravel
B2.2	1	0-23	10YR 3/2	V DK GR BR	SI LO	NCM, dryer soil, 25% gravel
B2.2	2	23-39	10YR 4/3	BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B2.3	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, saturated soil, standing water all around, <10% gravel
B2.3	2	18-35	10YR 5/4 10YR 5/6	YL BR	SI CL	NCM; <10% gravel
B2.4	1	0-18	10YR 3/2	V DK GR BR	SI LO	NCM, very wet, <10% inclusion of gravel, mottled sub
B2.4	2	18-	10YR 3/4 10YR 5/4	DK YL BR YL BR	SI CL	NCM
B2.5	1	0-10	10YR 5/6	YL BR	CL	NCM, standing water, saturated clays
B2.5	2	10-11	10YR 6/2	LT BR GR	CL	NCM, seepage at ~11cm
B2.6	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM, medium wet soils, 10cm organic layer above A, <10% gravel
B2.6	2	23-40	10YR 5/4 10YR 5/6	YL BR	LO SI	NCM, <10% gravel, mottled slightly, seepage at ~30cm
B2.7	1	0-17	10YR 4/1	DK GR	SI LO	NCM, 5cm organic layer, <10% gravel
B2.7	2	17-33	10YR 5/4	YL BR	LO SI	NCM, +40% gravel, very wet, seepage at ~25cm
B2.8	1	0-10	10YR 4/1	DK GR	SI LO	NCM, 90% shale, test rapidly filled w/water
B2.8	2	10-19	10YR 5/4	YL BR	SI LO	NCM
B2.9	1	0-11	10YR 4/3	BR	SHALE	NCM, excavation stopped due to +95% gravel (shale ridge)
B2.10	1	0-14	10YR 3/2	V DK GR BR	SI LO	NCM, organic strat humus over shale mixed w/mottled clay sub (dry)
B2.10	2	14-25	10YR 5/4 10YR 5/6	YL BR	CL	NCM
B2.11	1	0-17	10YR 4/1	DK GR	SI LO	NCM, far less gravel <15%
B2.11	2	17-34	10YR 5/4 10YR 5/6	YL BR	CL	NCM, seepage at ~20cm, mottled, saturated sub
B2.12	1	0-14	10YR 4/1	DK GR	SI LO	NCM
B2.12	2	14-26	10YR 5/4 10YR 5/6	YL BR	CL	NCM, seepage at ~20cm, excavation stopped
B3.1	1	0-30	10YR 3/2	V DK GR BR	SI LO	NCM, in woods
B3.1	2	30-40	10YR 6/8	BR YL	CL LO	NCM
B3.2	1	0-34	10YR 3/2	V DK GR BR	SI LO	NCM
B3.2	2	34-44	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM, seepage at 40cm
B3.3	1	0-26	10YR 3/2	V DK GR BR	SI LO	NCM, seepage at 20cm
B3.3	2	26-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B3.4	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 10cm, lots of shale
B3.4	2	20-30	10YR 4/4	DK YL BR	SI CL	NCM
B3.5	1	0-28	10YR 4/2	DK GR BR	SI LO	NCM
B3.5	2	28-40	10YR 4/4	DK YL BR	SI CL	NCM
B3.6	1	0-26	10YR 4/2	DK GR BR	SI LO	NCM
B3.6	2		10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B3.7	1	0-14	10YR 4/2	DK GR BR	SI LO	NCM
B3.7	2	14-30	10YR 4/4	DK YL BR	SI LO	NCM, seepage at 20cm
B3.8	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
B3.8	2	18-28	10YR 4/4	DK YL BR	SI LO	NCM
B3.9	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 10cm
B3.9	2	17-28	10YR 4/4	DK YL BR	SI LO	NCM
B3.10	1	0-5	10YR 4/2	DK GR BR	SI LO	NCM, all shale and sub
B3.10	2	5-15	10YR 4/4	DK YL BR	SI CL	NCM
B3.11	1	0-8	10YR 4/2	DK GR BR	SI LO	NCM, all shale and sub
B3.11	2	8-20	10YR 4/4	DK YL BR	SI CL	NCM
B3.12	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM, shale

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B3.12	2	15-25	10YR 4/4	DK YL BR	SI CL	NCM
B4.1	1	0-26	10YR 4/2	DK GR BR	SI LO	NCM
B4.1	2	26-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.2	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM
B4.2	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.3	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM
B4.3	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.4	1	0-27	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
B4.4	2	27-37	10YR 5/4	YL BR	SI CL LO	NCM
B4.5	1	0-22	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
B4.5	2	22-32	10YR 5/4	YL BR	SI CL LO	NCM
B4.6	1	0-12	10YR 2/2	V DK BR	SI LO	NCM, no water in test, high percentage of humus
B4.6	2	12-22	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.7	1	0-14	10YR 3/2	V DK GR BR	SI LO	NCM
B4.7	2	14-24	10YR 5/4	YL BR	SI CL	NCM
B4.8	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fill w/water to 10cm
B4.8	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.9	1	0-14	10YR 4/1	DK GR	SI LO	NCM
B4.9	2	14-24	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 20cm
B4.10	1	0-22	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
B4.10	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.11	1	0-18	10YR 4/1	DK GR	SI LO	NCM, wet but does not fill w/water
B4.11	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B4.12	1	0-20	10YR 4/1	DK GR	SI LO	NCM, high percentage of shale
B4.12	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, high percentage of shale
B5.1	1	0-13	10YR 4/2	DK GR BR	LO CL	NCM
B5.1	2	13-30	10YR 5/6	YL BR	LO CL	NCM
B5.2	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM, water filled test at 10cm
B5.3	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM
B5.3	2	10-30	10YR 5/4	YL BR	CL LO	NCM
B5.4	1	0-15	10YR 3/2	V DK GR BR	SI LO	NCM
B5.4	2	15-30	10YR 5/4	YL BR	CL LO	NCM
B5.5	1	0-11	10YR 3/2	V DK GR BR	SI LO	NCM
B5.5	2	11-22	10YR 5/4	YL BR	CL LO	NCM, water filled test at 22cm
B5.6	1	0-12	10YR 3/2	V DK GR BR	SI LO	NCM
B5.6	2	12-30	10YR 5/4	YL BR	CL LO	NCM
B5.7	1	0-18	10YR 3/2	V DK GR BR	SI LO	NCM
B5.7	2	18-31	10YR 5/4	YL BR	CL LO	NCM
B5.8	1	0-20	10YR 3/2	V DK GR BR	SI LO	NCM
B5.8	2	20-33	10YR 5/4	YL BR	CL LO	NCM
B5.9	1	0-20	10YR 3/2	V DK GR BR	SI LO	NCM, adjacent to raised sewer line
B5.9	2	20-30	10YR 5/4	YL BR	CL LO	NCM, w/shale
B5.10	1	0-15	10YR 4/2	DK GR BR	LO CL	NCM
B5.10	2	15-30	10YR 5/6	YL BR	LO CL	NCM
B5.11	1	0-10	10YR 3/2	V DK GR BR	LO CL	NCM, 60% gravel, located on a gravel path, moved 2m W
B5.11	2	10-20	10YR 5/4	YL BR	LO CL	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B5.12	1	0-12	10YR 3/2	V DK GR BR	LO CL	NCM, 60% gravel, 3m E of gravel path, rock impasse at 12cm
B6.1	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM, some shale
B6.1	2	23-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM, seepage at 30cm
B6.2	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM
B6.2	2	16-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM, seepage at 18cm
B6.3	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 12cm
B6.3	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B6.4	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM
B6.4	2	10-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM, seepage at 14cm
B6.5	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
B6.5	2	15-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B6.6	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
B6.6	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B6.7	1	0-16	10YR 4/4	DK YL BR	SI LO	NCM
B6.7	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B6.8	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
B6.8	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B6.9	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
B6.9	2	2	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM, seepage at 25cm
B6.10	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM, shale, seepage at 10cm
B6.10	2	10-30	10YR 4/4	DK YL BR	CL LO	NCM
B6.11	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM, shale, seepage at surface
B6.11	2	12-25	10YR 4/4	DK YL BR	CL LO	NCM
B7.1	1	0-25	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 25cm
B7.1	2	25-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.2	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
B7.2	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.3	1	0-16	10YR 4/1	DK GR	SI LO	NCM
B7.3	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.4	1	0-12	10YR 4/1	DK GR	SI LO	NCM
B7.4	2	12-22	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.5	1	0-20	10YR 4/1	DK GR	SI LO	NCM
B7.5	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.6	1	0-26	10YR 4/1	DK GR	SI LO	NCM, very little shale
B7.6	2	26-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.7	1	0-16	10YR 4/1	DK GR	SI LO	NCM, shale
B7.7	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B7.8	1	0-21	10YR 4/1	DK GR	SI LO	NCM, shale
B7.8	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, shale, wet but does not fill w/water

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B7.9	1	0-18	10YR 4/1	DK GR	SI LO	NCM, shale, fills w/water to 15cm
B7.9	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM; shale
B7.10	1	0-18	10YR 4/1	DK GR	SI LO	NCM, shale, wet but does not fill w/water
B7.10	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM; shale
B7.11	1	0-16	10YR 4/1	DK GR	SI LO	NCM, shale, fills w/water to 10cm
B7.11	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM; shale
B7.12	1	0-21	10YR 4/2	DK GR BR	SI LO	NCM, shale, fills w/water to 15cm
B7.12	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM; shale
B7.13	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM; shale
B7.13	2	18-29	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM; shale
B8.1	1	0-19	10YR 4/2	DK GR BR	CL LO	NCM
B8.1	2	19-31	10YR 5/4	YL BR	CL	NCM, water 20cm
B8.2	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM
B8.2	2	18-30	10YR 5/4	YL BR	CL	NCM, water 21cm
B8.3	1	0-17	10YR 4/2	DK GR BR	CL LO	NCM
B8.3	2	17-31	10YR 5/4	YL BR	CL	NCM, water 18cm
B8.4	1	0-17	10YR 4/2	DK GR BR	CL LO	NCM
B8.4	2	17-33	10YR 5/4	YL BR	CL LO	NCM, water 23cm
B8.5	1	0-14	10YR 4/2	DK GR BR	CL LO	NCM
B8.5	2	14-31	10YR 5/4	YL BR	CL LO	NCM
B8.6	1	0-8	10YR 4/2	DK GR BR	CL LO	NCM
B8.6	2	8-30	10YR 5/4	YL BR	CL LO	NCM, water filled test at 20cm
B8.7	1	0-17	10YR 4/2	DK GR BR	CL LO	NCM
B8.7	2	17-32	10YR 5/6	YL BR	CL	NCM
B8.8	1	0-21	10YR 4/2	DK GR BR	CL LO	NCM, 50% shale breakage
B8.8	2	21-31	10YR 5/6	YL BR	CL	NCM
B8.9	1	0-20	10YR 4/2	DK GR BR	CL LO	NCM
B8.9	2	20-31	10YR 5/6	YL BR	CL	NCM, seepage at 22cm
B8.10	1	0-18	10YR 3/2	V DK GR BR	CL LO	
B8.10	2	18-30	10YR 5/6	YL BR	CL	NCM
B8.11	1	0-17	10YR 3/2	V DK GR BR	CL LO	NCM, large limestone slabs near test
B8.11	2	17-32	10YR 5/6	YL BR	CL	NCM
B8.12	1	0-18	10YR 3/2	V DK GR BR	CL LO	NCM
B8.12	2	18-31	10YR 5/6	YL BR	CL	NCM, seepage at 20cm
B9.1	1	0-19	10YR 4/1	DK GR	CL LO	NCM, <20% shale inclusions
B9.1	2	19-36	10YR 5/2 10YR 5/6	GR BR YL BR	CL LO	NCM, saturated, seepage at 22cm
B9.2	1	0-16	10YR 4/1	DK GR	CL LO	NCM, saturated soils
B9.2	2	16-36	10YR 5/2 10YR 5/6	GR BR YL BR	CL LO	NCM
B9.3	1	0-22	10YR 4/1	DK GR	CL LO	NCM, loose wet soils
B9.3	2	22-39	10YR 5/2 10YR 5/6	GR BR YL BR	CL LO	NCM
B9.4	1	0-18	10YR 3/2	V DK GR BR	LO	NCM, organic/humus layer above saturated clay loam, no inclusions
B9.4	2	18-39	10YR 5/4	YL BR	CL LO	NCM, boulder impasse, seepage at ~35cm
B9.5	1	0-20	10YR 3/2	V DK GR BR	LO	NCM, saturated soils
B9.5	2	20-36	10YR 5/4	YL BR	CL LO	NCM
B9.6	1	0-15	10YR 4/1	DK GR	CL LO	NCM, 10cm humus layer above A horizon then +50% shale
B9.6	2	15-31	10YR 5/4 10YR 6/8	YL BR BR YL	CL	NCM, mottled clay, "ridge" in vicinity

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B9.7	1	0-18	10YR 4/1	DK GR	CL LO	NCM, stratum defined by +50% shale
B9.7	2	18-34	10YR 5/4 10YR 6/8	YL BR BR YL	CL	NCM, mottled clay, no inclusions, seepage at ~30cm
B9.8	1	0-27	10YR 4/2	DK GR BR	CL LO	NCM
B9.8	2	27-44	10YR 5/4 10YR 6/8	YL BR BR YL	CL	NCM, ill-defined B horizon, mottled clay loam yields to dense yet saturated clay
B9.9	1	0-27	10YR 3/2	V DK GR BR	CL LO	NCM, local disturbance within <5m of test (access path, sewer), dense shale
B9.9	2	27-43	10YR 5/6 10YR 6/8	YL BR BR YL	CL	NCM; hard clay
B9.10	1	0-25	10YR 4/1	DK GR	CL LO	NCM, <10% shale
B9.10	2	25-42	10YR 5/4 10YR 6/8	YL BR BR YL	CL	NCM, dense clay, seepage at ~31cm
B9.11	1	0-10	10YR 4/1	DK GR	CL LO	NCM, ground saturated, seepage at ~10cm, excavation stopped
B9.12	1	0-15	10YR 4/1	DK GR	CL LO	NCM, ground saturated, <10% gravel, organics
B9.12	2	15-16	10YR 5/4 10YR 6/6	YL BR BR YL	CL LO	NCM, seepage at ~15cm
B10.1	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 17cm
B10.1	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B10.2	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
B10.2	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B10.3	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
B10.3	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B10.4	1	0-8	10YR 3/2	V DK GR BR	SI LO	NCM
B10.4	2	8-20	10YR 5/8	YL BR	SI LO	NCM
B10.5	1	0-6	10YR 3/2	V DK GR BR	SI LO	NCM
B10.5	2	6-20	10YR 5/8	YL BR	SI LO	NCM
B10.6	1	0-8	10YR 4/2	DK GR BR	SI LO	NCM
B10.6	2	8-25	10YR 6/8	BR YL	SI LO	NCM
B10.7	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM, shale
B10.7	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, shale
B10.8	1	0-18	10YR 4/1	DK GR	SI LO	NCM, shale
B10.8	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, shale
B10.9	1	0-14	10YR 4/1	DK GR	SI LO	NCM, some shale
B10.9	2	14-24	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM; fills w/water to 10cm
B10.10	1	0-15	10YR 4/1	DK GR	SI LO	NCM
B10.10	2	15-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 10cm
B10.11	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 10cm
B10.11	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B11.1	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
B11.1	2	12-30	10YR 5/6	YL BR	CL	NCM, seepage at 18cm
B11.2	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
B11.2	2	15-32	10YR 5/6	YL BR	CL	NCM
B11.3	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
B11.3	2	12-31	10YR 5/6	YL BR	CL	NCM
B11.4	1	0-12	10YR 4/2	DK GR BR	CL LO	modern beer bottle on surface, half shale gravel
B11.4	2	12-30	10YR 5/6	YL BR	CL	NCM
B11.5	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B11.5	2	15-31	10YR 5/6	YL BR	CL	NCM
B11.6	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
B11.6	2	12-32	10YR 5/6	YL BR	CL	NCM
B11.7	1	0-10	10YR 4/2	DK GR BR	CL LO	NCM, w/shale, 2m N of gravel access rd.
B11.7	2	10-20	10YR 4/2 10YR 5/6	DK GR BR YL BR	CL LO	NCM, rock impasse at 20cm
B11.8	1	0-12	10YR 3/2	V DK GR BR	CL LO	NCM
B11.8	2	12-30	10YR 5/8	YL BR	CL LO	NCM
B11.9	1	0-14	10YR 3/2	V DK GR BR	CL LO	NCM
B11.9	2	14-32	10YR 5/8	YL BR	CL LO	NCM
B11.10	1	0-20	10YR 3/2	V DK GR BR	CL LO	NCM
B11.10	2	20-32	10YR 5/6	YL BR	CL LO	NCM
B11.11	1	0-7	10YR 3/2	V DK GR BR	CL LO	NCM
B11.11	2	7-28	10YR 5/6	YL BR	CL LO	NCM
B12.1	1	0-16	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 10cm
B12.1	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B12.2	1	0-18	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
B12.2	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B12.3	1	0-14	10YR 4/1	DK GR	SI LO	NCM, fill w/water to 10cm
B12.3	2	14-24	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B12.4	1	0-16	10YR 4/1	DK GR	SI LO	NCM, shale
B12.4	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, shale
B12.5	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM, shale
B12.5	2	12-25	10YR 6/3 10YR 6/8	PALE BR BR YL	SI CL	NCM
B12.6	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM, shale
B12.6	2	12-25	10YR 6/3 10YR 6/8	PALE BR BR YL	SI CL	NCM, shale
B12.7	1	0-14	10YR 4/1	DK GR	SI LO	NCM, shale
B12.7	2	14-24	10YR 6/3 10YR 6/8	PALE BR BR YL	SI CL	NCM, shale
B12.8	1	0-10	10YR 4/1	DK GR	SI LO	NCM
B12.8	2	10-28	10YR 6/3 10YR 6/8	PALE BR BR YL	SI CL	NCM
B12.9	1	0-15	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
B12.9	2	15-25	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL LO	NCM
B12.10	1	0-16	10YR 3/1	V DK GR	SI LO	NCM, fills w/water to 10cm
B12.10	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL LO	NCM
B13.1	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
B13.1	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B13.2	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM
B13.2	2	10-20	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B13.3	1	0-2	10YR 4/2	DK GR BR	SI LO	NCM, shale impasse after 2cm, sewer trail
B13.4	1	0-8	10YR 4/2	DK GR BR	SI LO	NCM
B13.4	2	8-28	10YR 6/8	BR YL	SI LO	NCM
B13.5	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, 60% shale
B13.5	2	20-30	10YR 6/8	BR YL	SI LO	NCM
B13.6	1	0-4	10YR 4/2	DK GR BR	SI LO	NCM, gravel road, shale road after 4cm
B13.7	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B13.7	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B13.8	1	0-14	10YR 4/2	DK GR BR	SI LO	NCM, water to surface
B13.8	2	14-28	10YR 4/4	DK YL BR	SI LO	NCM
B13.9	1	0-28	10YR 4/2	DK GR BR	SI LO	NCM
B13.9	2	28-38	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B13.10	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, stake nearby indicates tree buffer lane
B13.10	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
B14.1	1	0-18	10YR 4/1	DK GR	CL LO	NCM, thick roots, saturated soils, seepage at ~15cm
B14.1	2	19-35	10YR 5/2	GR BR	CL LO	NCM
B14.2	1	0-12	10YR 3/4	DK YL BR	CL LO	NCM, loose dry soil, <1m from shale "ridge"
B14.2	2	13-30	10YR 6/8	BR YL	CL	NCM; loose dry soil
B14.3	1	0-16	10YR 4/1	DK GR	CL LO	NCM, gravels in mottled clay sub
B14.3	2	17-32	10YR 5/4 10YR 6/8	YL BR BR YL	CL	NCM
B14.4	1	0-11	10YR 3/2	V DK GR BR	CL LO	NCM, dense shale +95% at surface mix w/organic/humus
B14.5	1	0-10	10YR 3/2	V DK GR BR	CL LO	NCM, test is on shale "road/path"
B14.6	1	0-14	10YR 3/2	V DK GR BR	CL LO	NCM, saturated soils, standing water
B14.6	2	15-30	10YR 5/2 10YR 6/8	GR BR BR YL	CL	NCM, seepage at 15cm
B14.7	1	0-13	10YR 3/3	DK BR	CL LO	NCM, very wet, loose soils, few inclusions
B14.7	2	14-29	10YR 6/2	LT BR GR	CL LO	NCM
B14.8	1	0-16	10YR 3/3	DK BR	CL LO	NCM, loose soils
B14.8	2	17-34	10YR 6/2	LT BR GR	CL LO	NCM, seepage at ~17cm
B14.9	1	0-19	10YR 3/2	V DK GR BR	CL LO	NCM, dark organic layer
B14.9	2	20-35	10YR 6/8	BR YL	CL LO	NCM
B15.1	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
B15.1	2	12-30	10YR 5/6	YL BR	CL	NCM
B15.2	1	0-26	10YR 4/2	DK GR BR	CL LO	NCM, 3cm thick shale plate at 15cm
B15.2	2	26-36	10YR 5/6	YL BR	CL	NCM
B15.3	1	0-7	10YR 4/2	DK GR BR	CL LO	NCM, 60% shale gravel
B15.3	2	7-15	10YR 5/6	YL BR	CL	NCM, rock (shale) impasse
B15.4	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM, moved 5m N - onroad, lots of shale
B15.4	2	12-28	10YR 5/6	YL BR	CL	NCM
B15.5	1	0-14	10YR 4/2	DK GR BR	CL LO	NCM
B15.5	2	14-30	10YR 5/6	YL BR	CL	NCM, seepage at 17cm
B15.6	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
B15.6	2	13-31	10YR 5/6	YL BR	CL	NCM, seepage at 19cm
B15.7	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM
B15.7	2	18-30	10YR 5/6	YL BR	CL LO	NCM
B15.8	1	0-16	10YR 4/2	DK GR BR	CL LO	NCM
B15.8	2	16-31	10YR 5/6	YL BR	CL LO	NCM
B15.9	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
B15.9	2	15-30	10YR 5/6	YL BR	CL LO	NCM
B16.1	1	0-12	10YR 4/2	DK GR BR	LO CL	NCM
B16.1	2	12-30	10YR 5/4 10YR 5/6	YL BR	LO CL	NCM
B16.2	1	0-10	10YR 4/2	DK GR BR	LO	NCM
B16.2	2	10-30	10YR 6/8	BR YL	SA	NCM
B16.3	1	0-6	10YR 3/2	V DK GR BR	SI LO	NCM, w/gravel, 2m north of gravel berm
B16.3	2	6-20	10YR 5/4	YL BR	CL LO	NCM
B16.4	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM
B16.4	2	10-30	10YR 6/8	BR YL	LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B16.5	1	0-13	10YR 4/2	DK GR BR	SI LO	NCM
B16.5	2	13-23	10YR 5/4	YL BR	LO CL	NCM, water filled at 23cm
B16.6	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
B16.6	2	15-30	10YR 5/4	YL BR	LO CL	NCM
B16.7	1	0-8	10YR 4/2	DK GR BR	CL LO	NCM
B16.7	2	8-30	10YR 5/6	YL BR	CL LO	NCM
B16.8	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
B16.8	2	15-30	10YR 5/6	YL BR	CL LO	NCM
B17.1	1	0-20	10YR 3/2	V DK GR BR	SI LO	NCM, rock impasse at 20cm, 60% gravel
B17.2	1	0-15	10YR 3/2	V DK GR BR	LO CL	NCM, 2m south of sewer pipe
B17.2	2	15-30	10YR 5/4	YL BR	LO CL	NCM
B17.3	1	0-13	10YR 3/2	V DK GR BR	LO CL	NCM
B17.3	2	13-28	10YR 5/4	YL BR	LO CL	NCM
B17.4	1	0-14	10YR 3/2	V DK GR BR	LO CL	NCM
B17.4	2	14-20	10YR 5/4	YL BR	LO CL	NCM, water filled at 20cm
B17.5	1	0-11	10YR 3/2	V DK GR BR	LO CL	NCM
B17.5	2	11-24	10YR 5/4	YL BR	LO CL	NCM
B17.6	1	0-10	10YR 4/2	DK GR BR	LO	NCM, likely disturbed from thruway
B17.6	2	10-30	10YR 6/8	BR YL	SA	NCM
B17.7	1	0-10	10YR 4/2	DK GR BR	LO	NCM, adjacent to thruway
B17.7	2	10-30	10YR 6/8	BR YL	SA	NCM
B18.1	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, shale
B18.1	2	17-27	10YR 6/3 10YR 6/8	PALE BR BR YL	SI CL	NCM, shale
B18.2	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM, shale
B18.2	2	16-26	10YR 6/3 10YR 6/8	PALE BR BR YL	SI CL	NCM, shale
B18.3	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, small amount of shale
B18.3	2	17-27	10YR 5/6	YL BR	SI LO	NCM
B18.4	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
B18.4	2	18-28	10YR 6/2	LT BR GR	SI CL	NCM
B18.5	1	0-16	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 16cm
B18.5	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B18.6	1	0-16	10YR 4/1	DK GR	SI LO	NCM
B18.6	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
B18.7	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
B18.7	2	15-25	10YR 6/6	BR YL	SI CL	NCM
B19.1	1	0-16	10YR 4/1	DK GR	CL LO	NCM, +50% shale
B19.1	2	16-30	10YR 5/2 10YR 5/6	GR BR YL BR	CL	NCM, dense clay (mottled)
B19.2	1	0-22	10YR 4/1	DK GR	CL LO	NCM, less shale, loose soils
B19.2	2	22-39	10YR 5/2 10YR 5/6	GR BR YL BR	CL	NCM
B19.3	1	0-13	10YR 3/4	DK YL BR	CL LO	NCM
B19.3	2	13-18	10YR 6/6	BR YL	CL LO	NCM, rock impasse at ~18cm
B19.4	1	0-20	10YR 4/1	DK GR	CL LO	NCM, moist soils, mottled sub, <10% inclusions
B19.4	2	21-36	10YR 5/2 10YR 6/2	GR BR LT BR GR	CL	NCM
B19.5	1	0-18	10YR 4/1	DK GR	CL LO	NCM
B19.5	2	19-34	10YR 5/2 10YR 6/2	GR BR LT BR GR	CL	NCM
B19.6	1	0-14	10YR 3/4	DK YL BR	LO	NCM
B19.6	2	15-30	10YR 6/8	BR YL	SA LO	NCM
B20.1	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM
B20.1	2	18-31	10YR 4/4	DK YL BR	CL LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
B20.2	1	0-19	10YR 4/2	DK GR BR	CL LO	NCM
B20.2	2	19-31	10YR 4/4	DK YL BR	CL LO	NCM
B20.3	1	0-16	10YR 4/2	DK GR BR	CL LO	NCM
B20.3	2	16-31	10YR 4/4	DK YL BR	CL LO	NCM
B20.4	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
B20.4	2	15-31	10YR 4/4	DK YL BR	CL	NCM
B21.1	1	0-14	10YR 4/2	DK GR BR	SI LO	NCM
B21.1	2	14-30	10YR 4/4	DK YL BR	SI LO	NCM
C1.1	1	0-13	10YR 4/2	DK GR BR	SI LO	NCM, shale in surface and sub
C1.1	2	13-23	10YR 4/4	DK YL BR	SI LO	NCM
C1.2	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, in woods, shale
C1.2	2	20-30	10YR 4/4	DK YL BR	SI LO	NCM
C1.3	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM, shale
C1.3	2	12-22	10YR 4/4	DK YL BR	SI LO	NCM
C2.1	1	0-20	10YR 4/2	DK GR BR	CL LO	NCM, shale gravel on surface
C2.1	2	20-33	10YR 5/4	YL BR	CL	NCM
C2.2	1	0-19	10YR 4/2	DK GR BR	CL LO	NCM, 5% upslope to SE
C2.2	2	19-30	10YR 5/4	YL BR	CL	NCM
C2.3	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM, seepage at 16cm
C2.3	2	18-31	10YR 5/4	YL BR	CL	NCM
C3.1	1	0-11	10YR 3/2	V DK GR BR	SI LO	NCM, saturated soils
C3.1	2	11-17	10YR 4/3	BR	SI CL	NCM, seepage after ~15cm
C3.2	1	0-19	10YR 3/2	V DK GR BR	SI LO	NCM, +90% shale
C3.2	2	19-35	10YR 4/3	BR	SI CL	NCM; 50% shale subsoil
C3.3	1	0-21	10YR 3/2	V DK GR BR	SI LO	NCM, organic inclusions (root)
C3.3	2	21-36	10YR 4/3	BR	SI CL	NCM, 40% shale gravel
C4.1	1	0-27	10YR 3/2	V DK GR BR	SI LO	NCM, seepage at ~24cm
C4.1	2	27-40	10YR 5/4	YL BR	SI CL	NCM
C4.2	1	0-17	10YR 3/2	V DK GR BR	SI LO	NCM, seepage at 10cm
C4.2	2	17-27	10YR 5/4	YL BR	SI CL	NCM
C4.3	1	0-20	10YR 3/2	V DK GR BR	SI LO	NCM, lots of shale, 100ft interval
C4.3	2	20-30	10YR 6/8	BR YL	SI CL	NCM
C4.4	1	0-10	10YR 3/2	V DK GR BR	SI LO	NCM, lots of shale
C4.4	2	10-30	10YR 4/4	DK YL BR	SI CL	NCM
C4.5	1	0-20	10YR 3/2	V DK GR BR	SI LO	NCM, lots of shale
C4.5	2	20-30	10YR 4/4	DK YL BR	SI CL	NCM
C4.6	1	0-18	10YR 4/1	DK GR	SI LO	NCM, seepage at 15cm, shale
C4.6	2	18-28	10YR 5/4	YL BR	SI CL	NCM
C4.7	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM
C4.7	2	16-26	10YR 4/4	DK YL BR	SI CL	NCM
C4.8	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 4cm
C4.8	2	16-26	10YR 4/4	DK YL BR	SI CL	NCM
C4.9	1	0-10	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 5cm
C4.9	2	10-25	10YR 4/4	DK YL BR	SI CL	NCM
C4.10	1	0-15	10YR 3/2	V DK GR BR	SI LO	NCM, seepage at surface
C4.10	2	15-25	10YR 4/4	DK YL BR	SI CL	NCM
C4.11	1	0-18	10YR 3/2	V DK GR BR	SI LO	NCM, seepage at 10cm
C4.11	2	18-28	10YR 4/4	DK YL BR	SI CL	NCM
C4.12	1	0-21	10YR 3/2	V DK GR BR	SI LO	NCM, seepage at 15cm
C4.12	2	21-32	10YR 4/4	DK YL BR	SI CL	NCM
C4.13	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
C4.13	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C4.14	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 15cm
C4.14	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C4.15	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C4.15	2	18-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C4.16	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, water to surface
C4.16	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C5.1	1	0-21	10YR 4/3	BR	SI LO	NCM
C5.1	2	21-32	10YR 4/4	DK YL BR	SI CL	NCM
C5.2	1	0-24	10YR 4/3	BR	SI LO	NCM
C5.2	2	24-39	10YR 4/4	DK YL BR	SI CL	NCM
C5.3	1	0-23	10YR 4/3	BR	SI LO	NCM
C5.3	2	23-35	10YR 4/4	DK YL BR	SI CL	NCM
C5.4	1	0-15	10YR 4/3	BR	SI LO	NCM, 50% broken shale
C5.4	2	15-31	10YR 4/4	DK YL BR	SI CL	NCM
C5.5	1	0-12	10YR 4/3	BR	SI LO	NCM
C5.5	2	12-32	10YR 4/4	DK YL BR	SI CL	NCM, seepage at 24cm
C5.6	1	0-18	10YR 4/3	BR	SI LO	NCM
C5.6	2	18-33	10YR 4/4	DK YL BR	SI CL	NCM, seepage at 25cm
C5.7	1	0-19	10YR 4/3	BR	SI LO	NCM
C5.7	2	19-30	10YR 4/4	DK YL BR	SI CL	NCM
C5.8	1	0-17	10YR 4/3	BR	SI LO	NCM
C5.8	2	17-29	10YR 4/4	DK YL BR	SI CL	NCM
C5.9	1	0-18	10YR 4/3	BR	SI LO	NCM
C5.9	2	18-32	10YR 4/4	DK YL BR	SI CL	NCM
C5.10	1	0-13	10YR 5/1	GR	CL LO	NCM, seepage at 10cm
C5.10	2	13-24	10YR 5/6	YL BR	CL	NCM
C5.11	1	0-12	10YR 5/1	GR	CL LO	NCM
C5.11	2	12-30	10YR 5/6	YL BR	CL	NCM
C5.12	1	0-23	10YR 5/1	GR	CL LO	NCM
C5.12	2	23-33	10YR 5/6	YL BR	CL	NCM
C5.13	1	0-20	10YR 5/1	GR	CL LO	NCM
C5.13	2	20-30	10YR 5/6	YL BR	CL	NCM, seepage at 20cm
C5.14	1	0-17	10YR 5/1	GR	CL LO	NCM
C5.14	2	17-32	10YR 5/6	YL BR	CL	NCM
C5.15	1	0-19	10YR 5/1	GR	CL LO	NCM
C5.15	2	19-31	10YR 5/6	YL BR	CL	NCM
C5.16	1	0-19	10YR 5/1	GR	CL LO	NCM, seepage at 19cm
C5.16	2	19-32	10YR 5/6	YL BR	CL	NCM
C6.1	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, in woods
C6.1	2	18-28	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	CL LO	NCM
C6.2	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, in woods
C6.2	2	20-30	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	CL LO	NCM
C6.3	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
C6.3	2	20-30	10YR 4/6	DK YL BR	SI LO	NCM, seepage at 25cm
C6.4	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM, in woods
C6.4	2	12-25	10YR 4/6	DK YL BR	SI LO	NCM
C6.5	1	0-8	10YR 4/2	DK GR BR	SI LO	NCM, shale
C6.5	2	8-30	10YR 4/6	DK YL BR	SI LO	NCM
C6.6	1	0-13	10YR 4/2	DK GR BR	SI LO	NCM
C6.6	2	13-28	10YR 6/8	BR YL	CL LO	NCM
C6.7	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
C6.7	2	20-30	10YR 6/8	BR YL	CL LO	NCM
C6.8	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
C6.8	2	15-30	10YR 6/8	BR YL	CL LO	NCM
C6.9	1	0-12	10YR 3/2	V DK GR BR	SI LO	NCM, root impasse at 12cm
C6.10	1	0-25	10YR 3/2	V DK GR BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C6.10	2	25-35	10YR 5/4	YL BR	CL LO	NCM
C6.11	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 10cm
C6.11	2	20-30	10YR 5/4	YL BR	CL LO	NCM
C6.12	1	0-15	10YR 4/1	DK GR	SI LO	NCM, roots
C6.12	2	15-25	10YR 5/4	YL BR	CL LO	NCM
C6.13	1	0-15	10YR 4/1	DK GR	SI LO	NCM
C6.13	2	15-30	10YR 5/4	YL BR	CL LO	NCM
C6.14	1	0-24	10YR 4/2	DK GR BR	SI LO	NCM
C6.14	2	24-34	10YR 6/8	BR YL	CL LO	NCM, seepage at 32cm
C6.14A	1	0-34	10YR 4/1	DK GR	CL LO	Glass bottle dump - 3 metal, 1 green glass, 2 milk glass (not collected)
C6.14A	2	34-45	10YR 5/4	YL BR	CL	NCM, seepage at 34
C6.14B	1	0-32	10YR 4/1	DK GR	CL LO	Glass bottle dump - all similar to surface - collected representative sample
C6.14B	2	32-34	10YR 5/4	YL BR	CL	NCM
C6.15	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM
C6.15	2	20-30	10YR 4/4	DK YL BR	CL LO	NCM
C6.16	1	0-21	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 10cm
C6.16	2	21-31	10YR 4/4	DK YL BR	CL LO	NCM
C6.17	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM
C6.17	2	18-30	10YR 4/4	DK YL BR	CL LO	NCM
C7.1	1	0-23	10YR 4/1	DK GR	SI LO	NCM, fills with water to 20cm
C7.1	2	23-33	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.2	1	0-21	10YR 4/1	DK GR	SI LO	NCM
C7.2	2	23-33	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM, fills with water to 25cm
C7.3	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM
C7.3	2	16-26	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.4	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM, wet
C7.4	2	17-27	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.5	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, fills w/water to 15cm
C7.5	2	18-28	10YR 5/4	YL BR	SI CL LO	NCM
C7.6	1	0-22	10YR 4/1	DK GR	SI LO	NCM, w/shale, soil moist
C7.6	2	22-32	10YR 5/4	YL BR	SI LO	NCM, w/shale
C7.7	1	0-18	10YR 4/1	DK GR	SI LO	NCM, wet but does not fill w/water
C7.7	2	18-28	10YR 5/4	YL BR	SI LO	NCM
C7.8	1	0-19	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C7.8	2	19-29	10YR 5/4	YL BR	SI LO	NCM
C7.9	1	0-16	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C7.9	2	16-26	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.10	1	0-18	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C7.10	2	18-28	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.11	1	0-21	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
C7.11	2	21-31	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.12	1	0-22	10YR 4/1	DK GR	SI LO	NCM, fills w/ water to 20cm
C7.12	2	22-32	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C7.13	1	0-26	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 25cm
C7.13	2	26-36	10YR 5/4	YL BR	SI CL	NCM
C7.14	1	0-30	10YR 4/1	DK GR	SI LO	NCM, fills w/ water to 25cm
C7.14	2	30-40	10YR 5/4	YL BR	SI CL	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C7.15	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM, wet soils, gravel
C7.15	2	23-39	10YR 3/4	DK YL BR	CL LO	NCM; gravel
C7.16	1	0-21	10YR 4/2	DK GR BR	SI LO	NCM
C7.16	2	21-37	10YR 3/4	DK YL BR	CL LO	NCM, +50% shale
C7.17	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, near modern construction debris (barrels, concrete), seepage at 20cm
C7.17	2	20-25	10YR 3/4	DK YL BR	CL LO	NCM, saturated, 50% shale
C8.1	1	0-17	10YR 4/1	DK GR	SI LO	NCM
C8.1	2	17-27	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM, fills w/seepage at 20cm
C8.2	1	0-16	10YR 4/1	DK GR	SI LO	NCM
C8.2	2	16-26	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM, fills w/seepage at 20cm
C8.3	1	0-16	10YR 4/1	DK GR	SI LO	NCM, wet
C8.3	2	16-26	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.4	1	0-15	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C8.4	2	15-25	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.5	1	0-18	10YR 4/1	DK GR	SI LO	NCM, wet but does not fill w/water
C8.5	2	18-28	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.6	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 17cm
C8.6	2	17-27	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.7	1	0-20	10YR 3/1	V DK GR	SI LO	NCM, w/shale, STP is W of several mounds of shale, moist but not wet
C8.7	2	20-30	10YR 4/3	BR	SI LO	NCM, w/shale
C8.8	1	0-12	10YR 3/1	V DK GR	SI LO	NCM, small amount of shale
C8.8	2	12-22	10YR 4/3	BR	SI LO	NCM; shale
C8.9	1	0-16	10YR 4/2	DK GR BR	SI LO	NCM
C8.9	2	16-26	10YR 5/4	YL BR	SI CL LO	NCM
C8.10	1	0-18	10YR 3/2	V DK GR BR	SI LO	NCM, w/some shale
C8.10	2	18-28	10YR 5/4	YL BR	SI CL LO	NCM, w/some shale
C8.11	1	0-20	10YR 3/2	V DK GR BR	SI LO	NCM, fills w/water to 20cm
C8.11	2	20-30	10YR 5/4	YL BR	SI CL LO	NCM
C8.12	1	0-22	10YR 4/1	DK GR	SI LO	NCM, fill w/water to 20cm
C8.12	2	22-32	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.13	1	0-18	10YR 4/1	DK GR	SI LO	NCM, fill w/water to 15cm
C8.13	2	18-28	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.14	1	0-28	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 25cm, STP is 3m W of wetland flag W3.26, 5m S of concrete trough C?, 10m S of well
C8.14	2	28-38	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	SI CL	NCM
C8.15	1	0-21	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
C8.15	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C8.16	1	0-26	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C8.16	2	26-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C8.17	1	0-30	10YR 4/1	DK GR	SI LO	NCM
C8.17	2	30-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C8.18	1	0-35	10YR 4/1	DK GR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C8.18	2	35-45	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C9.1	1	0-12	10YR 5/2	GR BR	CL SI	NCM, saturated soils, standing water within 1m, excavation stopped due to seepage
C9.2	1	0-11	10YR 4/2	DK GR BR	CL SI	NCM, excavation stopped due to seepage
C9.3	1	0-19	10YR 4/2	DK GR BR	CL SI	NCM, (root layer) saturated, <2% gravel
C9.3	2	19-45	10YR 5/2 10YR 6/8	GR BR BR YL	CL	NCM, consistently 70% mottled color/texture variant w/ 10% small cobble, pebbles
C9.4	1	0-21	10YR 4/1	DK GR	CL LO	NCM, wet soils
C9.4	2	21-25	10YR 5/2 10YR 6/8	GR BR BR YL	CL	NCM, excavation stopped due to seepage at ~25cm
C9.5	1	0-13	10YR 4/1	DK GR	CL LO	NCM
C9.5	2	13-15	10YR 5/2 10YR 6/8	GR BR BR YL	CL	NCM, seepage at 15cm
C9.6	1	0-10	10YR 3/1	V DK GR	CL LO	NCM, not excavated due to standing water
C9.7	1	0-18	10YR 3/1	V DK GR	CL LO	NCM, nice, dry humus organic inclusions
C9.7	2	18-35	10YR 3/4	DK YL BR	CL LO	NCM, slightly more clay w/<25% shale gravels
C9.8	1	0-13	10YR 3/1	V DK GR	SI LO	NCM, 10 degree rise, 70% shale w/loam
C9.8	2	13-29	10YR 3/4	DK YL BR	SI LO	NCM; 70% shale w/loam
C9.9	1	0-11	10YR 4/2	D GR BR	SI LO	NCM, 70% shale gravels, dry soils (compact roots)
C9.9	2	11-30	10YR 5/4	YL BR	SI LO	NCM
C9.10	1	0-16	10YR 3/1	V DK GR	SI LO	NCM
C9.10	2	16-32	10YR 3/4	DK YL BR	SI LO	NCM, greater (20%) shale concentration
C9.11	1	0-22	10YR 3/1	V DK GR	SI LO	NCM, dry dark gray brown humus
C9.11	2	22-38	10YR 3/4	DK YL BR	SI LO	NCM, wet, silty w/<70% shale gravel, seepage at ~30cm
C9.12	1	0-14	10YR 4/1	DK GR	SI LO	NCM
C9.12	2	14-20	10YR 5/1	GR	S LO	NCM
C9.13	1	0-10	10YR 4/1	DK GR	SI LO	NCM, (standing water) excavation stopped at ~10cm (water)
C9.14	1	0-15	10YR 4/1	DK GR	SI LO	NCM, wet soils, <10% gravel inclusions
C9.14	2	15-31	10YR 5/1	GR	SI LO	NCM
C9.15	1	0-21	10YR 4/1	DK GR	SI LO	NCM, seepage at 20cm
C9.15	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C9.16	1	0-23	10YR 4/1	DK GR	SI LO	NCM
C9.16	2	23-33	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C9.17	1	0-24	10YR 4/1	DK GR	SI LO	NCM
C9.17	2	24-34	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C9.18	1	0-24	10YR 4/1	DK GR	SI LO	NCM, mixed (gravel)
C10.1	1	0-24	10YR 4/2	DK GR BR	SI LO	NCM
C10.1	2	24-35	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	CL LO	NCM, moist soil
C10.2	1	0-24	10YR 4/2	DK GR BR	SI LO	NCM
C10.2	2	24-34	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	CL LO	NCM, moist soil
C10.3	1	0-21	10YR 4/2	DK GR BR	SI LO	NCM, shale in sub
C10.3	2	21-35	10YR 6/2; 10YR 6/8; 10YR 2/1	LT BR GR; BR YL; BL	CL LO	NCM, moist soil
C10.4	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, some shale
C10.4	2	20-30	10YR 6/2; 10YR 6/8	LT BR GR; BR YL	CL LO	NCM
C10.5	1	0-18	10YR 3/2	V DK GR BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C10.5	2	18-30	10YR 6/8	BR YL	SI LO	NCM
C10.6	1	0-16	10YR 2/2	V DK BR	SI LO	NCM, seepage at 2cm
C10.6	2	16-30	10YR 6/8	BR YL	SI LO	NCM
C10.7	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, in woods
C10.7	2	20-30	10YR 6/2	LT BR GR	SI CL	NCM
C10.8	1	0-18	10YR 4/2	DK GR BR	SI LO	NCM, moist soil
C10.8	2	18-30	10YR 6/2	LT BR GR	SI CL	NCM
C10.9	1	0-12	10YR 2/2	V DK BR	SI LO	NCM, dry
C10.9	2	12-30	10YR 6/2	LT BR GR	SI CL	NCM
C10.10	1	0-18	10YR 2/2	V DK BR	SI LO	NCM, shale and gravel in subsoil
C10.10	2	18-30	10YR 4/6	DK YL BR	SI LO	NCM
C10.11	1	0-26	10YR 4/2	DK GR BR	SI LO	NCM, some shale, dry
C10.11	2	26-37	10YR 4/6	DK YL BR	SI LO	NCM
C10.12	1	0-28	10YR 4/2	DK GR BR	SI LO	NCM, some shale
C10.12	2	28-38	10YR 4/6	DK YL BR	SI LO	NCM
C10.13	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM, wet seepage at 20cm
C10.13	2	23-33	10YR 4/6	DK YL BR	SI LO	NCM
C10.14	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 10cm
C10.14	2	20-30	10YR 4/6	DK YL BR	SI LO	NCM
C10.15	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
C10.15	2	15-34	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C10.16	1	0-25	10YR 4/2	DK GR BR	SI LO	NCM
C10.16	2	25-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C10.17	1	0-35	10YR 4/2	DK GR BR	SI LO	NCM
C10.17	2	35-45	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C10.18	1	0-28	10YR 4/2	DK GR BR	SI LO	NCM
C10.18	2	28-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C11.1	1	0-20	10YR 4/1	DK GR	CL LO	NCM
C11.1	2	20-30	10YR 6/8	BR YL	CL	NCM, seepage at 26cm
C11.2	1	0-17	10YR 4/1	DK GR	CL LO	NCM, seepage at 24cm
C11.2	2	17-31	10YR 6/8	BR YL	CL	NCM
C11.2A	1	0-13	10YR 3/2	V DK GR BR	LO CL	NCM
C11.2A	2	13-33	10YR 5/4 10YR 5/6	YL BR	LO CL	NCM
C11.3	1	0-14	10YR 4/1	DK GR	CL LO	NCM
C11.3	2	14-29	10YR 6/8	BR YL	CL	NCM, seepage at 17cm
C11.4	1	0-12	10YR 3/2	V DK GR BR	CL LO	NCM
C11.4	2	12-28	10YR 5/4	YL BR	CL	NCM
C11.5	1	0-13	10YR 3/2	V DK GR BR	CL LO	NCM
C11.5	2	13-30	10YR 5/4	YL BR	CL	NCM, seepage at 23cm
C11.6	1	0-19	10YR 3/2	V DK GR BR	CL LO	NCM
C11.6	2	19-31	10YR 5/4	YL BR	CL	NCM, seepage at 24cm
C11.7	1	0-22	10YR 4/2	DK GR BR	CL LO	NCM
C11.7	2	22-34	10YR 5/4	YL BR	CL	NCM
C11.8	1	0-26	10YR 4/2	DK GR BR	CL LO	NCM
C11.8	2	26-36	10YR 5/4	YL BR	CL	NCM, seepage at 34cm
C11.9	1	0-27	10YR 4/2	DK GR BR	CL LO	NCM
C11.9	2	27-38	10YR 5/4	YL BR	CL	NCM, seepage at 35cm
C11.10	1	0-22	10YR 4/2	DK GR BR	CL LO	NCM, ground slopes down to a wetter area north
C11.10	2	22-34	10YR 5/6	YL BR	CL LO	NCM
C11.11	1	0-20	10YR 4/2	DK GR BR	CL LO	NCM, seepage at 13cm
C11.11	2	20-31	10YR 5/6	YL BR	CL LO	NCM
C11.12	1	0-17	10YR 4/2	DK GR BR	CL LO	NCM, seepage at 15cm

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C11.12	2	17-28	10YR 5/6	YL BR	CL LO	NCM
C11.13	1	0-17	10YR 4/2	DK GR BR	CL LO	NCM
C11.13	2	17-27	10YR 5/4	YL BR	CL	NCM
C11.14	1	0-30	10YR 4/2	DK GR BR	CL LO	NCM; disturbed
C11.14	2	30-40	10YR 5/6	YL BR	CL	NCM
C11.15	1	0-28	10YR 4/2	DK GR BR	CL LO	NCM; disturbed
C11.15	2	28-41	10YR 5/6	YL BR	CL	NCM
C11.16	1	0-28	10YR 4/2	DK GR BR	CL LO	NCM, road gravel
C11.16	2	28-42	10YR 5/6	YL BR	CL	NCM
C12.1	1	0-14	10YR 4/1	DK GR	CL LO	NCM
C12.1	2	14-30	10YR 6/1 10YR6/8	GR BR YL	CL	NCM
C12.2	1	0-12	10YR 4/1	DK GR	CL LO	NCM
C12.2	2	12-20	10YR 6/1 10YR6/8	GR BR YL	CL	NCM, seepage at 20cm
C12.2A	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM, modified close interval
C12.2A	2	15-33	10YR 5/4	YL BR	CL	NCM
C12.3	1	0-12	10YR 4/1	DK GR	CL LO	NCM
C12.3	2	12-20	10YR 6/1 10YR6/8	GR BR YL	CL	NCM, seepage at 20cm
C12.3A	1	0-21	10YR 4/2	DK GR BR	SI LO	NCM, modified close interval
C12.3A	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
C12.4	1	0-21	10YR 4/1	DK GR	CL LO	NCM, root impasse at 21cm
C12.5	1	0-20	10YR 4/1	DK GR	CL LO	NCM, 100ft interval due to wetlands
C12.5	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	LO CL	NCM, seepage at 30cm
C12.6	1	0-12	10YR 4/1	DK GR	CL LO	NCM
C12.6	2	12-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	LO CL	NCM
C12.7	1	0-18	10YR 4/1	DK GR	CL LO	NCM
C12.7	2	18-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	LO CL	NCM
C12.8	1	0-20	10YR 5/3	BR	SI LO	NCM
C12.8	2	20-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C12.9	1	0-25	10YR 5/2	GR BR	LO CL	NCM
C12.9	2	25-35	10YR 5/6	YL BR	LO CL	NCM
C12.10	1	0-20	10YR 5/2	GR BR	LO CL	NCM
C12.10	2	20-32	10YR 5/6	YL BR	LO CL	NCM
C12.11	1	0-30	10YR 5/3	BR	LO CL	NCM
C12.11	2	30-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	LO CL	NCM
C12.12	1	0-30	10YR 4/2	DK GR BR	LO CL	NCM
C12.12	2	30-42	10YR 5/6	YL BR	LO CL	NCM
C12.13	1	0-27	10YR 4/2	DK GR BR	LO CL	NCM
C12.13	2	27-39	10YR 5/6	YL BR	LO CL	NCM
C12.14	1	0-20	10YR 4/2	DK GR BR	LO CL	NCM
C12.14	2	20-30	10YR 5/6	YL BR	LO CL	NCM
C13.1	1	0-16	10YR 4/1	DK GR	CL LO	NCM, seepage at 14cm
C13.1	2	16-28	10YR 6/8	BR YL	CL	NCM
C13.2	1	0-26	10YR 4/1	DK GR	CL LO	NCM, seepage at 21cm
C13.2	2	26-36	10YR 6/8	BR YL	CL	NCM
C13.2A	1	0-23	10YR 4/2	DK GR BR	LO CL	NCM
C13.2A	2	23-40	10YR 5/4 10YR 5/6	YL BR	LO CL	NCM
C13.3	1	0-17	10YR 4/1	DK GR	CL LO	NCM, seepage at 16cm

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C13.3	2	17-31	10YR 6/8	BR YL	CL	NCM
C13.3A	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
C13.3A	2	12-31	10YR 5/4	YL BR	CL	NCM, seepage at 22cm
C13.4	1	0-12	10YR 4/1	DK GR	CL LO	NCM
C13.4	2	12-31	10YR 6/8	BR YL	CL	NCM, seepage at 26cm
C13.5	1	0-16	10YR 4/1	DK GR	CL LO	NCM
C13.5	2	16-32	10YR 6/8	BR YL	CL	NCM
C13.6	1	0-26	10YR 4/1	DK GR	CL LO	NCM
C13.6	2	26-37	10YR 6/8	BR YL	CL	NCM
C13.7	1	0-24	10YR 4/1	DK GR	CL LO	NCM, seepage at 15cm
C13.7	2	24-34	10YR 6/8	BR YL	CL	NCM
C13.8	1	0-24	10YR 4/1	DK GR	CL LO	NCM
C13.8	2	24-35	10YR 6/8	BR YL	CL	NCM
C13.9	1	0-24	10YR 4/1	DK GR	CL LO	NCM
C13.9	2	24-36	10YR 6/8	BR YL	CL	NCM
C13.10	1	0-24	10YR 4/1	DK GR	CL LO	NCM
C13.10	2	24-36	10YR 6/8	BR YL	CL	NCM
C13.11	1	0-17	10YR 4/1	DK GR	CL LO	NCM
C13.11	2	17-31	10YR 6/8	BR YL	CL	NCM, seepage at 29cm
C13.12	1	0-25	10YR 4/1	DK GR	CL LO	NCM
C13.12	2	25-36	10YR 6/8	BR YL	CL	NCM
C13.13	1	0-24	10YR 4/2	DK GR BR	CL LO	NCM
C13.13	2	24-35	10YR 5/4	YL BR	CL	NCM
C14.1	1	0-25	10YR 4/1	DK GR	SI LO	NCM
C14.1	2	25-35	10YR 6/3 10YR 6/8	PALE BR BR YL	CL LO	NCM, seepage at 35cm
C14.2	1	0-18	10YR 4/1	DK GR	SI LO	NCM
C14.2	2	18-30	10YR 6/3 10YR 6/8	PALE BR BR YL	CL LO	NCM, seepage at 25cm
C14.2A	1	0-19	10YR 4/2	DK GR BR	LO CL	NCM
C14.2A	2	19-43	10YR 5/2 10YR 5/6	GR BR YL BR	LO CL	NCM
C14.3	1	0-20	10YR 4/1	DK GR	SI LO	NCM, seepage at 20cm
C14.3	2	20-30	10YR 6/3 10YR 6/8	PALE BR BR YL	CL LO	NCM
C14.3A	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, wet
C14.3A	2	20-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C14.4	1	0-20	10YR 4/1	DK GR	SI LO	NCM
C14.4	2	20-30	10YR 6/3 10YR 6/8	PALE BR BR YL	CL LO	NCM
C14.5	1	0-36	10YR 4/1	DK GR	SI LO	NCM
C14.5	2	36-46	10YR 6/3 10YR 6/8	PALE BR BR YL	CL LO	NCM, seepage at 36cm
C14.6	1	0-19	10YR 4/2	DK GR BR	SI LO	NCM
C14.6	2	19-30	10YR 6/3 10YR 6/8	PALE BR BR YL	CL LO	NCM
C14.7	1	0-25	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 20cm
C14.7	2	25-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C14.8	1	0-30	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 30cm
C14.8	2	30-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C14.9	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 20cm
C14.9	2	23-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C14.10	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 20cm

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C14.10	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C14.11	1	0-24	10YR 4/2	DK GR BR	SI LO	NCM
C14.11	2	24-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C14.12	1	0-24	10YR 4/2	DK GR BR	SI LO	NCM
C14.12	2	24-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	CL LO	NCM
C14.13	1	0-28	10YR 4/2	DK GR BR	SI LO	NCM
C14.13	2	28-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.1	1	0-20	10YR 4/1	DK GR	SI LO	NCM
C15.1	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
C15.2	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C15.2	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.2A	1	0-13	10YR 4/1	DK GR	LO	NCM, saturated soils, dark humus, root inclusions, no gravels
C15.2A	2	13-26	10YR 5/2	GR BR	CL LO	NCM; mottled clay
C15.2A	3	26-44	10YR 5/2 10YR 6/8	GR BR BR YL	CL	NCM, mottled clay
C15.3	1	0-16	10YR 4/1	DK GR	SI LO	NCM, fills w/water to surface
C15.3	2	16-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.3	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.3A	1	0-18	10YR 5/2	GR BR	SI LO	NCM, fills w/water to 10cm
C15.3A	2	18-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.4	1	0-18	10YR 4/1	DK GR	SI LO	NCM, filled w/water to 15cm
C15.4	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.5	1	0-16	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 10cm
C15.5	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, wetland flag W4.7
C15.6	1	0-17	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C15.6	2	17-27	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, 100ft interval, 25ft NW of wetland flag
C15.7	1	0-18	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 15cm
C15.7	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
C15.8	1	0-22	10YR 4/1	DK GR	SI LO	NCM
C15.8	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
C15.9	1	0-22	10YR 4/1	DK GR	SI LO	NCM
C15.9	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
C15.10	1	0-19	10YR 5/2	GR BR	SI LO	NCM
C15.10	2	19-29	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
C15.11	1	0-21	10YR 5/2	GR BR	SI LO	NCM
C15.11	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 25cm
C15.12	1	0-22	10YR 5/2	GR BR	SI LO	NCM, soil wet but does not fill w/water
C15.12	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C15.13	1	0-22	10YR 5/2	GR BR	SA LO	NCM, wet but does not fill w/water
C16.1	1	0-16	10YR 4/1	DK GR	SI CL	NCM
C16.1	2	17-34	10YR 6/1 10YR 5/4	GR YL BR	CL	NCM
C16.2	1	0-15	10YR 4/1	DK GR	SI CL	NCM
C16.2	2	15-16	10YR 6/1 10YR 5/4	GR YL BR	CL	NCM, seepage at 16cm
C16.3	1	0-16	10YR 5/2	GR BR	SI CL	NCM, narrow organic layer
C16.3	2	17-35	10YR 6/1 10YR 5/4	GR YL BR	CL	NCM; mottled clay, few cobbles
C16.4	1	0-21	10YR 5/1	GR	SI CL	NCM
C16.4	2	22-38	10YR 5/4 10YR 6/2	YL BR LT BR GR	CL	NCM
C16.5	1	0-19	10YR 5/1	GR	SI CL	NCM
C16.5	2	19-20	10YR 5/4 10YR 6/2	YL BR LT BR GR	CL	NCM, seepage at ~20cm
C16.6	1	0-18	10YR 5/1	GR	SI CL	NCM
C16.6	2	18-19	10YR 5/4 10YR 6/2	YL BR LT BR GR	CL	NCM, seepage at ~19cm
C16.7	1	0-20	10YR 5/1	GR	SI CL	NCM, wetland delineation, w/large cobbles
C16.7	2	20-21	10YR 5/4	YL BR	SA CL	NCM, sandy inclusions (yellowish brown) in moist clay, seepage at ~20cm
C16.8	1	0-22	10YR 4/1	DK GR	SI	NCM, excavation stopped due to seepage ~22cm
C16.9	1	0-21	10YR 4/1	DK GR	SI	NCM, saturated silty soils, seepage at -21cm
C16.10	1	0-23	10YR 4/1	DK GR	CL SI	NCM
C16.10	2	24-39	10YR 4/2 10YR 6/2	DK GR BR LT BR GR	CL	NCM, clay w/yellowish and dark brown inclusions
C16.11	1	0-19	10YR 4/1	DK GR	CL SI	NCM, very wet soil
C16.11	2	19-22	10YR 6/2 10YR 5/2	LT BR GR GR BR	CL	NCM, excavation stopped due to seepage at ~22cm
C16.12	1	0-22	10YR 4/2	DK GR BR	CL SI	NCM, 100ft interval due to standing water
C16.12	2	22-36	10YR 6/2 10YR 5/2	LT BR GR GR BR	CL	NCM, excavation stopped due to seepage at ~22cm
C17.1	1	0-15	10YR 4/2	DK GR BR	SI LO	NCM
C17.1	2	15-30	10YR 5/4	YL BR	CL LO	NCM
C17.2	1	0-14	10YR 4/2	DK GR BR	SI LO	NCM, 30ft south of wetland flag, water filled test at 20cm
C17.2	2	14-20	10YR 5/4	YL BR	CL LO	NCM
C17.3	1	0-12	10YR 4/2	DK GR BR	SI LO	NCM, water filled test at 18cm
C17.3	2	12-18	10YR 5/4	YL BR	CL LO	NCM
C17.4	1	0-14	10YR 4/2	DK GR BR	SI LO	NCM, 100ft interval due to standing water
C17.4	2	14-20	10YR 5/4 10YR 5/6	YL BR YL BR	CL LO	NCM, seepage at 20cm
C17.5	1	0-18	10YR 5/3	BR	CL LO	NCM, 100ft interval due to standing water, seepage at 18cm
C17.6	1	0-30	10YR 5/3	BR	CL LO	NCM, 100ft interval due to standing water, water filled test at 30cm, adjacent to small creek/ditch
C17.7	1	0-18	10YR 6/2	LT BR GR	CL LO	NCM, 100ft interval due to standing water, water filled test at 18cm, wetland flags end 2m south of STP
C17.8	1	0-16	10YR 6/2	LT BR GR	CL LO	NCM, seepage at 16cm
C17.9	1	0-21	10YR 6/2	LT BR GR	CL LO	NCM, seepage at 21cm
C17.10	1	0-14	10YR 6/2	LT BR GR	CL LO	NCM, seepage at 14cm
C17.11	1	0-20	10YR 6/2	LT BR GR	CL LO	NCM, seepage at 20cm
C17.12	1	0-24	10YR 6/2	LT BR GR	CL LO	NCM, seepage at 24cm
C17.13	1	0-24	10YR 6/2	LT BR GR	CL LO	NCM, 5m south, adjacent to berm

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
C18.1	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
C18.1	2	15-28	10YR 5/4	YL BR	CL LO	NCM
C18.2	1	0-19	10YR 4/2	DK GR BR	CL LO	NCM
C18.2	2	19-31	10YR 5/4	YL BR	CL LO	NCM
C18.3	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
C18.3	2	13-27	10YR 5/4	YL BR	CL LO	NCM
C18.4	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
C18.4	2	13-25	10YR 5/4 10YR 5/8	YL BR	CL LO	NCM
C18.5	1	0-28	10YR 5/3 10YR 5/8	BR YL BR	CL LO	NCM, water filled test
C18.6	1	0-20	10YR 5/3 10YR 5/8	BR YL BR	CL LO	NCM, 100ft interval due to standing water, water filled test
C18.7	1	0-24	10YR 5/3	BR	CL LO	NCM
C18.7	2	24-34	10YR 5/4 10YR 5/8	YL BR	CL LO	NCM
C18.8	1	0-29	10YR 5/3 10YR 6/8	BR BR YL	CL LO	NCM
C18.9	1	0-20	10YR 5/3	BR	CL LO	NCM
C18.9	2	20-33	10YR 5/2 10YR 6/8	GR BR BR YL	CL LO	NCM
C18.10	1	0-27	10YR 5/3	BR	CL LO	NCM
C18.10	2	27-40	10YR 5/2 10YR 6/8	GR BR BR YL	CL LO	NCM
C18.11	1	0-23	10YR 5/3	BR	CL LO	NCM, water filled test
C18.12	1	0-26	10YR 5/3	BR	CL LO	NCM
C18.12	2	26-40	10YR 5/2 10YR 6/8	GR BR BR YL	CL LO	NCM
C18.13	1	0-22	10YR 5/3	BR	CL LO	NCM
C18.13	2	22-35	10YR 5/2 10YR 6/8	GR BR BR YL	CL LO	NCM
C18.14	1	0-27	10YR 5/3	BR	CL LO	NCM
C18.14	2	27-42	10YR 5/2 10YR 6/8	GR BR BR YL	CL LO	NCM
D1.1	1	0-17	10YR 4/1	DK GR	SI LO	NCM
D1.1	2	17-30	10YR 5/2 10YR 5/8	GR BR YL BR	SA LO	NCM
D2.1	1	0-26	10YR 4/1	DK GR	SI LO	NCM, seepage at 15cm
D2.1	2	26-36	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D3.1	1	0-26	10YR 4/2	DK GR BR	SI LO	NCM
D3.1	2	26-36	10YR 6/6 10YR 6/8	BR YL	SI LO	NCM
D4.1	1	0-11	10YR 4/2	DK GR BR	CL LO	NCM
D4.1	2	11-30	10YR 5/4	YL BR	CL	NCM
D4.2	1	0-24	10YR 4/2 10YR 5/4	DK GR BR YL BR	CL LO	NCM, grassy, disturbance near road and water line
D4.2	2	24-36	10YR 5/4	YL BR	CL	NCM
D5.1	1	0-25	10YR 4/2	DK GR BR	LO	NCM, water filled at 20cm
D5.1	2	25-35	10YR 5/8	YL BR	SA LO	NCM
D5.2	1	0-15	10YR 4/2	DK GR BR	LO	NCM, water filled at 10cm
D5.2	2	15-30	10YR 5/8	YL BR	SA LO	NCM
D5.3	1	0-15	10YR 4/2	DK GR BR	LO	NCM
D5.3	2	15-32	10YR 5/8	YL BR	SA LO	NCM, water filled at 22cm
D6.1	1	0-23	10YR 4/2	DK GR BR	SI LO	NCM
D6.1	2	23-35	10YR 5/4 10YR 5/6	YL BR	SI LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
D6.2	1	0-25	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 2cm
D6.2	2	25-35	10YR 5/4 10YR 5/6	YL BR	SI LO	NCM
D6.3	1	0-25	10YR 4/2	DK GR BR	SI LO	NCM, in woods
D6.3	2	25-35	10YR 5/4 10YR 5/6	YL BR	SI LO	NCM, seepage at 29cm
D6.4	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM, edge of road, seepage at surface to sub
D6.4	2	22-32	10YR 5/4 10YR 5/6	YL BR	SI LO	NCM
D7.1	1	0-20	10YR 5/2	GR BR	SI LO	NCM
D7.1	2	20-30	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D7.2	1	0-18	10YR 5/2	GR BR	SI LO	NCM
D7.2	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM, fills w/water to 20cm
D7.3	1	0-21	10YR 4/1	DK GR	SI LO	NCM, fills w/water to surface
D7.3	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D7.4	1	0-24	10YR 4/1	DK GR	SI LO	NCM, fills w/water to surface
D7.4	2	24-34	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D7.5	1	0-28	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
D7.5	2	28-38	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D8.1	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
D8.1	2	12-30	10YR 5/4	YL BR	CL	NCM, seepage at 17cm
D8.2	1	0-15	10YR 4/2	DK GR BR	CL LO	NCM
D8.2	2	15-31	10YR 5/4	YL BR	CL	NCM, seepage at 24cm
D8.3	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
D8.3	2	13-32	10YR 5/4	YL BR	CL	NCM, seepage at 22cm
D8.4	1	0-11	10YR 4/2	DK GR BR	CL LO	NCM
D8.4	2	11-33	10YR 5/4	YL BR	CL	NCM, seepage at 12cm
D8.5	1	0-13	10YR 4/2	DK GR BR	CL LO	NCM
D8.5	2	13-30	10YR 5/4	YL BR	CL	NCM, seepage at 17cm
D8.6	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM, 150ft interval due to earthenmound and gasline
D8.6	2	12-30	10YR 5/4	YL BR	CL	NCM
D9.1	1	0-17	10YR 4/2	DK GR BR	LO	NCM
D9.1	2	17-30	10YR 5/2 10YR 6/8	GR BR BR YL	SA LO	NCM
D9.2	1	0-24	10YR 4/2	DK GR BR	LO	NCM
D9.2	2	24-35	10YR 5/8	YL BR	SA LO	NCM
D9.3	1	0-25	10YR 4/2	DK GR BR	LO	NCM
D9.3	2	25-35	10YR 5/8	YL BR	SA LO	NCM
D9.4	1	0-22	10YR 4/2	DK GR BR	LO	NCM, wet
D9.4	2	22-35	10YR 6/8	BR YL	SA LO	NCM
D9.5	1	0-20	10YR 4/2	DK GR BR	LO	NCM, wet
D9.5	2	20-31	10YR 6/8	BR YL	SA LO	NCM
D9.6	1	0-23	10YR 4/2	DK GR BR	LO	NCM, wet
D9.6	2	23-33	10YR 6/8	BR YL	SA LO	NCM
D9.7	1	0-24	10YR 4/2	DK GR BR	LO	NCM, 100ft interval due to gasline and standing water
D9.7	2	24-35	10YR 5/6	YL BR	SA LO	NCM, wet
D9.8	1	0-25	10YR 4/2	DK GR BR	SI LO	NCM, gravel & shale, E of gasline
D9.8	2	25-37	10YR 6/8	BR YL	CL LO	NCM
D9.9	1	0-28	10YR 4/2	DK GR BR	SI LO	NCM
D9.9	2	28-40	10YR 5/6	YL BR	SA LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
D9.10	1	0-30	10YR 4/2	DK GR BR	SI LO	NCM
D9.10	2	30-40	10YR 5/6	YL BR	SA LO	NCM
D9.11	1	0-27	10YR 4/2	DK GR BR	SI LO	NCM
D9.11	2	27-37	10YR 5/6	YL BR	SA LO	NCM
D9.12	1	0-36	10YR 4/2	DK GR BR	SI LO	NCM
D9.12	2	36-46	10YR 5/6	YL BR	SA LO	NCM
D10.1	1	0-18	10YR 5/2	GR BR	SI LO	NCM
D10.1	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.2	1	0-22	10YR 5/2	GR BR	SI LO	NCM, fills w/water to 20cm
D10.2	2	22-32	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.3	1	0-16	10YR 5/2	GR BR	SI LO	NCM, fills w/water to 15cm
D10.3	2	16-26	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.4	1	0-18	10YR 5/2	GR BR	SI LO	NCM, fills w/water to 15cm
D10.4	2	18-28	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.5	1	0-12	10YR 5/2	GR BR	SI LO	NCM, fills w/water to surface
D10.5	2	12-22	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.6	1	0-12	10YR 4/1	DK GR	SI LO	NCM, fills w/water to surface
D10.6	2	12-22	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.7	1	0-21	10YR 4/1	DK GR	SI LO	NCM
D10.7	2	21-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.8	1	0-19	10YR 4/1	DK GR	SI LO	NCM
D10.8	2	19-29	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.9	1	0-24	10YR 4/1	DK GR	SI LO	NCM
D10.9	2	24-34	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.10	1	0-30	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 25cm
D10.10	2	30-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.11	1	0-30	10YR 4/1	DK GR	SI LO	NCM
D10.11	2	30-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D10.12	1	0-27	10YR 4/1	DK GR	SI LO	NCM
D10.12	2	27-37	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D11.1	1	0-13	10YR 5/3	BR	CL LO	NCM
D11.1	2	13-28	10YR 5/4 10YR 5/8	YL BR	CL LO	NCM
D11.2	1	0-18	10YR 5/3	BR	CL LO	NCM
D11.2	2	18-33	10YR 5/4 10YR 5/8	YL BR	CL LO	NCM
D11.3	1	0-18	10YR 5/3	BR	CL LO	NCM, water-filled test
D11.4	1	0-12	10YR 5/3	BR	CL LO	NCM, water-filled test
D11.5	1	0-12	10YR 5/3	BR	CL LO	NCM, water-filled test
D11.6	1	0-15	10YR 5/3	BR	CL LO	NCM, 100ft/30m interval due to standing water and gasline, water-filled test
D11.7	1	0-24	10YR 4/2	DK GR BR	CL LO	NCM
D11.7	2	24-39	10YR 5/8	YL BR	CL LO	NCM
D11.8	1	0-28	10YR 4/2	DK GR BR	CL LO	NCM
D11.8	2	28-40	10YR 5/8	YL BR	CL LO	NCM

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
D11.9	1	0-23	10YR 4/2	DK GR BR	CL LO	NCM
D11.9	2	23-34	10YR 5/8	YL BR	CL LO	NCM
D11.10	1	0-28	10YR 4/2	DK GR BR	CL LO	NCM
D11.10	2	28-41	10YR 5/8	YL BR	CL LO	NCM
D11.11	1	0-24	10YR 4/2	DK GR BR	CL LO	NCM
D11.11	2	24-40	10YR 5/8	YL BR	CL LO	NCM
D12.1	1	0-16	10YR 4/2 10YR 5/4	DK GR BR YL BR	CL LO	NCM
D12.1	2	16-32	10YR 5/4	YL BR	CL	NCM
D12.2	1	0-16	10YR 4/2 10YR 5/4	DK GR BR YL BR	CL LO	NCM
D12.2	2	16-31	10YR 5/4	YL BR	CL	NCM
D12.3	1	0-15	10YR 4/2 10YR 5/4	DK GR BR YL BR	CL LO	NCM
D12.3	2	15-30	10YR 5/4	YL BR	CL	NCM
D12.4	1	0-17	10YR 4/2 10YR 5/4	DK GR BR YL BR	CL LO	NCM
D12.4	2	17-31	10YR 5/4	YL BR	CL	NCM
D12.5	1	0-16	10YR 4/2 10YR 5/4	DK GR BR YL BR	CL LO	NCM, seepage at 8cm
D12.5	2	16-32	10YR 5/4	YL BR	CL	NCM
D12.6	1	0-17	10YR 4/1	DK GR	CL	NCM, 100ft/30m interval due to standing water and gasline, water-filled test
D12.6	2	17-28	10YR 5/6	YL BR	CL	NCM, rock impasse (shale) 28cm below surface
D12.7	1	0-12	10YR 4/2	DK GR BR	CL LO	NCM
D12.7	2	12-32	10YR 5/4	YL BR	CL	NCM, seepage at 14cm
D12.8	1	0-16	10YR 4/2	DK GR BR	CL LO	NCM
D12.8	2	16-30	10YR 5/4	YL BR	CL	NCM, seepage at 22cm
D12.9	1	0-14	10YR 4/2	DK GR BR	CL LO	NCM
D12.9	2	14-31	10YR 5/4	YL BR	CL	NCM, seepage at 19cm
D12.10	1	0-17	10YR 4/2	DK GR BR	CL LO	NCM
D12.10	2	17-33	10YR 5/4	YL BR	CL	NCM, seepage at 31cm
D12.11	1	0-11	10YR 4/2	DK GR BR	CL LO	NCM
D12.11	2	11-31	10YR 5/4	YL BR	CL	NCM, seepage at 18cm
D13.1	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 20cm
D13.1	2	22-35	10YR 5/2 10YR 6/8	GR BR BR YL	SA LO	NCM, water filled at 30cm
D13.2	1	0-27	10YR 4/2	DK GR BR	SI LO	NCM, seepage at 20cm
D13.2	2	27-38	10YR 5/2 10YR 6/8	GR BR BR YL	SA LO	NCM, roots
D13.3	1	0-20	10YR 4/2	DK GR BR	SI LO	NCM, seepage
D13.3	2	20-30	10YR 6/8	BR YL	SA LO	NCM, water, roots
D13.4	1	0-11	10YR 4/2	DK GR BR	SI LO	NCM
D13.4	2	11-28	10YR 6/8	BR YL	SA LO	NCM
D13.5	1	0-18	10YR 4/2	DK GR BR	LO	NCM, seepage, roots, brush, water all on surface surrounding STP
D13.5	2	18-29	10YR 6/8	BR YL	SI LO	NCM
D13.6	1	0-28	10YR 4/2	DK GR BR	LO	NCM, wet
D13.6	2	28-38	10YR 6/8	BR YL	SI LO	NCM, gravel
D13.7	1	0-17	10YR 4/2	DK GR BR	SI LO	NCM
D13.7	2	17-30	10YR 5/6	YL BR	SA LO	NCM, gravelly
D13.8	1	0-22	10YR 4/2	DK GR BR	SI LO	NCM, heavy brush
D13.8	2	22-32	10YR 6/8	BR YL	LO	NCM, moist
D13.9	1	0-21	10YR 4/2	DK GR BR	SI LO	NCM, rocks, roots, heavy brush - shifted STP 1m s
D13.9	2	21-33	10YR 5/6	YL BR	LO	NCM, water filled at 25cm
D13.10	1	0-24	10YR 4/2	DK GR BR	LO	NCM, water seepage at 20cm

Shovel Test Log for Hamburg Crossings, Phase I

Shovel Test	Stratum	Depth (cm)	Munsell	Soil Color	Soil Description	Comments
D13.10	2	24-34	10YR 5/6	YL BR	SI LO	NCM, wet
D13.11	1	0-18	10YR 4/2	DK GR BR	LO	NCM, wet, water surrounding STP, in high, heavy brush, water seepage at 5cm
D13.11	2	18-29	10YR 5/6	YL BR	LO	NCM
D13.12	1	0-20	10YR 4/2	DK GR BR	LO	NCM
D13.12	2	20-31	10YR 5/6	YL BR	SI LO	NCM
D14.1	1	0-26	10YR 5/2	GR BR	SI LO	NCM
D14.1	2	26-31	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D14.2	1	0-23	10YR 5/2	GR BR	SI LO	NCM
D14.2	2	23-33	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D14.3	1	0-24	10YR 5/2	GR BR	SI LO	NCM, fills w/water to 20cm
D14.3	2	24-34	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D14.4	1	0-25	10YR 5/2	GR BR	SI LO	NCM
D14.4	2	25-35	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D14.5	1	0-33	10YR 4/1	DK GR	SI LO	NCM
D14.5	2	33-43	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D14.6	1	0-30	10YR 4/1	DK GR	SI LO	NCM, fills w/water to 20cm
D14.6	2	30-40	10YR 6/2 10YR 6/8	LT BR GR BR YL	SI CL	NCM
D14.7	1	0-20	10YR 4/2	DK GR BR	CL LO	NCM, water-filled test, 15m interval
D14.8	1	0-30	10YR 4/2	DK GR BR	CL LO	NCM, water-filled test, 15m interval
D14.9	1	0-18	10YR 4/2	DK GR BR	CL LO	NCM, water-filled test, standing water, 15m interval
D14.10	1	0-33	10YR 4/2	DK GR BR	CL LO	NCM
D14.10	2	33-45	10YR 5/8	YL BR	CL LO	NCM
D14.11	1	0-32	10YR 4/2	DK GR BR	CL LO	NCM
D14.11	2	32-45	10YR 5/8	YL BR	CL LO	NCM
E1.1	1	0-10	10YR 4/2 10YR 5/2	DK GR BR GR BR	LO	Modern disturbance, push piles to the S, W & NW, parking lot to the N
E1.1	2	10-30	10YR 5/4 10YR 6/8	YL BR BR YL	LO	Modern disturbance, gravel
E1.2	1	0-13	10YR 4/2 10YR 5/2	DK GR BR GR BR	LO	Modern disturbance
E1.2	2	13-25	10YR 6/8	BR YL	LO	Modern disturbance, gravel
E1.3	1	0-30	10YR 4/1	DK GR	LO	Modern disturbance, shale, brick, asphalt impasse at 30cm
E1.4	1	0-30	10YR 4/2	DK GR BR	SI LO	Modern disturbance, shale