A Phase I Archaeological Investigation for Site 6, Port Bienville Industrial Park, Hancock County, Mississippi

Submitted to:

Hancock County Port and Harbor Commission
and
Neel-Schaffer, Inc.

Technical Report 17-139
June 2017

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A PHASE I ARCHAEOLOGICAL INVESTIGATION FOR SITE 6, PORT BIENVILLE INDUSTRIAL PARK, HANCOCK COUNTY, MISSISSIPPI

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June 30, 2017

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MANAGEMENT SUMMARY

Project Name: Environmental Due Diligence for Site 6, Port Bienville Industrial Park

PaleoWest Project Number: 17-098

Phase of Survey: Phase 1 Archaeological Investigation

Location: Hancock County, Mississippi

Survey Area: 43 acres (17.4 hectares)

USGS 7.5-minute Topographic Quadrangle: English Lookout, MS (1993)

Section, Township, Range: S24-25 T9S R16W

Results: A search of the Mississippi Department of Archives and History (MDAH) Historic Resources Inventory Database for a 1-mile radius of the project area found a total of 5 previously identified sites and 12 previously conducted surveys. There are no National Historic Register (NHR) eligible sites or properties, or historic cemeteries recorded within the direct area of potential effect (APE). Pedestrian survey and subsurface testing of the project area found no archaeological sites or significant cultural remains.

Fieldwork (subsurface testing) revealed extensive disturbance from previous development within the current project area. There was no evidence of intact cultural material, and all previously recorded sites within the APE were deemed ineligible for inclusion in the National Register of Historic Places (NRHP). This report finds that the proposed undertaking will have no effect on the historic resources of the project area.

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Date of Report: June 30, 2017

INTRODUCTION

This report presents the results of a Phase I Archaeological Investigation for Environmental Due Diligence at Site 6, Port Bienville Industrial Park in Hancock County, Mississippi, completed at the request of Neel-Schaffer, Inc. of Biloxi, Mississippi. The impact area is owned and operated by the Hancock County Port and Harbor Commission.

Site 6 is located in Hancock County within the Port Bienville Industrial Park. The Port Bienville Industrial Park is located south of the town of Pearlington, Mississippi, near the Louisiana state line. This 3,600-acre industrial park is owned and operated by the Hancock County Port and Harbor Commission. Sites 6 falls within Sections 24 & 25, Township 9S, and Range 16W, as shown on the 1993 English Lookout, MS USGS 7.5-minute topographic quadrangle map (Figure 1). Site 6 measures approximately 868 m (2848 ft) long on one side, 630 m (2057 ft) on the other, and 239 m (784 ft) wide, with an area of 43 acres (17.4 hectares) (Figure 2).

Fieldwork was conducted from May 3 to May 9, 2017.

The context of the archaeological investigations for the proposed Port Bienville Industrial Park project is derived from the statutory requirements outlined in Section 106 of the National Historic Preservation Act (NHPA). Section 106 of the NHPA requires a federal agency with jurisdiction over a federal, federally funded, or federally licensed undertaking to take into account the effects of the agency's undertakings on properties included in, or eligible for listing on the National Register of Historic Places (NRHP).

Figure 1. Map showing the vicinity of Site 6.

ENVIRONMENTAL SETTING

PHYSIOGRAPHY

The project area is located in the East Gulf Coastal Plain physiographic zone of south Mississippi. The physiographic zone stretches from the Mississippi River to the Florida Panhandle and from western Tennessee to the Gulf of Mexico. The topography in this region typically ranges from rolling prairie to rugged hills and is characterized by loess bluffs in the west and distinctive lower coastal plain flora.

The project area is situated in the Southern Rolling Plains Physiographic Province of the Mississippi Valley Loess Plains. The Piney Woods region is a high rolling land that was once part of a dense longleaf pine forest that stretched nearly unbroken from Georgia to Texas. According to the MDAH Mississippi Archaeology Trails website, the project area is located in the Pine Hills ecoregion of Mississippi, described as follows:

> Today, almost all of the southern mixed forest and longleaf pine forests are gone, replaced mostly by slash and loblolly pine plantations. The longleaf pine forest provided habitat for now rare or endangered species such as the red-cockaded woodpecker, gopher tortoise, eastern indigo snake, and black pine snake. Wet savannas and bogs contained an array of colorful wildflowers: red lillies, orange milkweeds, yellow pitcher plants, lavender butterworts, and purple sundews. Subsurface materials of the region are composed mostly of the clays and sands of the Hattiesburg and Pascagoula Formations, with some Catahoula Sandstone in the north. Hill summits and higher elevations are composed of Pleistocene and Pliocene-age deposits such as the Citronelle Formation that are generally sandy, gravelly, and porous, and more resistant to erosion than the older underlying Miocene clays and sands.

PALEOENVIRONMENTAL SETTING

Geologically, the project area sits on the Citronelle formation, which consists of tertiary-aged sediments (Omernik and Griffith 2008). Saucier and Sneed (1989) classify the geology as a tertiary upland complex derived from "fluvial sediments from both glacial and non-glacial sources." However, some debate still exists on the origin of these sediments. Though marine fossils are rare throughout the majority of the Citronelle (Isphording and Lamb 1971), a few studies note that certain sections may have been formed, or partially formed, from marine sediments (Means 2009). The Citronelle formation now represents a significant segment of the USGS-defined Gulf Coastal Plain in southern Mississippi, where the project area is located.

Over the last glacial/interglacial cycle, the vegetation in the area has remained largely unchanged. Paleoenvironmental reconstructions conducted with pollen analysis have shown that the vegetation of the region, during the last glacial maximum (ca. 20,000 B.P.), was dominated by southern Diploxylon pines (*Pinus* sp.) (20 to 40 percent), oaks (*Quercus* sp.) (20 percent), and hickories (*Carya* sp.) (20 percent) (Delcourt and Delcourt 1987a). The glacial conditions and the expansion of the Laurentide ice sheet did drive some cold-hearty species like the poplars (*Populus* sp.) and ash (*Fraxinus* sp.) into the region, but these remained minor components (Delcourt and Delcourt 1987b). As the last glacial cycle ended and climate began to warm, these

more northerly vegetation components began to advance back toward the retreating ice sheet. Although there have been several changes in dominance over the last 20,000 years (notably around 8000 B.P., when the percentages of oak pollen briefly surpassed the pines), the major taxa on the landscape have been pines, oaks, and hickories (Delcourt and Delcourt 1987a). In fact, this same study by the Delcourts show that the beta diversity standard deviation (a proxy for species turnover) for the region has remained remarkably low. Today the area falls within Braun's (1950) Southeastern Evergreen region, which once again is dominated by pines, oaks, hickories. Magnolia (*Magnolia* sp.) and hollies (*Ilex* sp.) are also prevalent forest components in this region.

At the local scale, the project area falls within the historic longleaf pine savannah ecosystem (Varner et al. 2005). This ecosystem corresponds with the United States Environmental Protection Agency's Southern Pine Plains and Hills ecoregion (ecoregion #65f) (Omernik and Griffith 2008). A longleaf savannah is an open, fire-dependent forest dominated by longleaf pine (*Pinus palustris*) with a biologically-diverse understory of primarily grasses (*Poaceae* sp.). Varner et al. (2005) and others claim that less than 3 percent of the original longleaf savannah remains today, with logging and fire-suppression being the main sources of loss. In the absence of regular fire, mixed hardwoods and understory shrubs can outcompete the grasses and eventually overtake the landscape (Heuberger and Putz 2003). However, several studies (e.g., Varner et al. 2005) have shown that the reintroduction of fire in these areas can restore the longleaf savannah in a matter of years. In fact, biologists at the University of Southern Mississippi have found similar results on burned test plots of previously fire-suppressed longleaf pine savannah at the Lake Thoreau Environmental Center (Mike Davis, USM biologist, personal communication).

GEOLOGY

Native sedimentary surface rocks such as chert, quartzite and iron stone occur naturally in the region of current study area. Citronelle gravel chert was formed during the Pleistocene and is found in the bluffs above the Mississippi River. Ocola chert is a Gulf Coast Plain agitate that occurs naturally in areas east of the subject property. Tallahatta quartzite is derived from bedrock and commonly found in southeast Mississippi. Prehistoric Native Americans used these surface rocks to manufacture stone tools such as scrapers, knives, and projectile points.

SOILS

Site 6 is composed primarily of Ocilla loamy sand (Oc) and Escambia loam (EsA), along with PoB, HIA, and Smithton fine sandy loam (Su). Ocilla loamy sand (Oc) is formed as the tread of stream terraces from sandy and loamy alluvium derived from sedimentary rock. It has a typical profile of loamy sand atop sandy loam, with a slope of 0 to 2 percent, and is somewhat poorly drained. Escambia loam (EsA) is formed of coastal plain shoulders of sandy and loamy marine deposits. The typical profile is loam atop fine sandy loam above loam, with a slope of 0 to 2 percent. Also present with PoB and HIA, described above, is Smithton fine sandy loam (Su). This soil type is formed of loamy alluvium terraces with a profile of fine sandy loam atop sandy loam and loam. It is poorly drained with a high frequency to flooding.

CULTURE HISTORY

Archaeologists have identified several periods of cultural development throughout the prehistoric southeastern United States. These large-scale horizons are commonly known as Paleoindian, Archaic, Woodland, Mississippi, and Protohistoric or Contact periods, in addition to the region-specific Gulf Formational phase. These periods are often subdivided, temporally and spatially, into smaller regional cultural manifestations. Archaeological cultures are based on a number of characteristics, including technological typologies, settlement patterns, subsistence practices, and other diagnostic attributes such as earthen mound building.

PALEOINDIAN

The Paleoindian period refers to the first people that migrated into North America during the Terminal Pleistocene, at least 12,000 B.P. Paleoindians developed the first culture in the Southeastern United States and are believed to have lived as bands of hunter-gatherers. Paleoindian bands practiced extensive, far-ranging mobility and hunted now-extinct species of megafauna (Bonnichsen and Turnmire 1999). Southeastern Paleoindians used chert to manufacture lanceolate hunting tools such as Clovis (Early Paleoindian) and Dalton (Late Paleoindian) points that have been recovered throughout the state of Mississippi. Other Paleoindian projectile point types found in Mississippi included Suwannee and Simpson point types (McGahey 1992). In fact, more Paleoindian projectile points have been recovered in the Southeast than in any other region of the United States (Bense 1994: 42). While the Clovis complex or culture is well-documented across North America, the Dalton complex is largely confined to the Southeastern United States. Although the Dalton type site is located east of Jefferson City, Missouri (Morse 1997:124), numerous Dalton sites have been identified in Mississippi.

ARCHAIC

The Archaic period represents the most successful and enduring lifeway ever practiced in the Southeast. Archaic cultures date from roughly 10,000 B.P. until 3000 B.P. During this time, Archaic peoples increased the variety of regional point types as foraging territories became smaller through time. This decrease in far-ranging mobility led to an increase in seasonal sedentism, although residential and logistic mobility continued throughout the period (Anderson and Hansen 1988). In turn, such increased sedentism eventually led to a diversification of material culture, represented by the first mound and earthen constructions in the southeast and base camp settlements.

GULF FORMATIONAL

The Gulf Formational period dates from 4500 B.P. through 2100 B.P. Walthall and Jenkins (1976) presented this transitional period between the Late Archaic and Middle Woodland cultures at the 1975 Southeastern Archaeological Conference. In their research, they defined the southern Coastal Plain in Eastern and Western geographic sub-regions. Delineation between the sub-regions begins at the intersection of the Alabama and Florida border, at approximately 31° latitude, and runs north and east to the Tombigbee Waterway drainage (Walthall 1980:78–79). The current study area is situated in the Western Gulf Coastal Plain as defined by Walthall. The

appearance of fiber-tempered pottery in the Eastern Coastal Plain along the Atlantic Seaboard marks the beginning of the Gulf Formational stage at approximately 4500 B.P. (Walthall 1980:78) Stallings Island pottery, tempered with vegetable fibers, is considered the earliest ceramics in North America (Walthall 1980:80).

Mineral temper pottery became popular in ceramic manufacturing in the Eastern Coastal Plains during the Middle Gulf Formational period (3200–2500 B.P.). Sand-tempering succeeded the fiber-tempering techniques of the Early Gulf Formational period. The Middle Gulf Formational period experienced advancements, evidenced by the Wheeler Culture, Pickwick Burial Complex, and Bayou La Batre cultures. Archaeologists have characterized this cultural period as a time of interregional trade, population growth, localized environmental adaptations, and developed burial practices (Walthall 1980:91–92).

The Late Gulf Formational period (2500 B.P.–2100 B.P.) is marked by advances in ceramic production including the disappearance of fiber-tempered pottery and the appearance of early Woodland Deptford pottery in the east (Walthall 1980:98).

WOODLAND

The Woodland period dates from 2500 B.P. through 1000 B.P. Native Americans of this time increased earthen mound construction, such as the Bynum Mound Center near Tupelo, Mississippi (Bense 1994:154). In addition, Woodland peoples organized themselves into increasingly complex sociopolitical tribes while intensifying the reliance on maize agriculture. Ceramic production during the Woodland period became more sophisticated as indicated by the Gulf pottery tradition. Pottery designs recovered across Mississippi during the Woodland period include punctuated, brushed, incised, dentate stamped, and rocker stamped, among others (Bense 1994:115). One of the more noteworthy innovations of the Late Woodland period (1500 B.P.–1000 B.P.) was the introduction of the bow and arrow.

MISSISSIPPIAN

The Mississippi period dates from 1000 B.P. until European contact, approximately 500 years ago. Mississippian societies are known for the large platform mound centers such as those seen today at sites in Moundville, Alabama, and Cahokia, Illinois. Native Americans during this time organized themselves into larger, more complex groups known as chiefdoms.

Between 1,000 and 500 years ago, Mississippian cultural traits diffused across the Southeast. Mississippian culture is typically recognized in the archaeological record through the presence of a series of traits, including but not limited to intensive maize cultivation, settlement in the floodplains of major rivers, shell-tempered pottery, rectangular wall-trench structures, pyramidal earthen mounds, and the long-distance circulation of well-crafted prestige objects. The principle trait that defines Mississippian culture beyond all those previously listed is the emergence of a true ranked society. According to Fried (1967:109), rank societies are those in which positions of elevated status are typically inherited within a single group of elites. In Mississippian society, these ranked social groups were politically integrated at the level of chiefdom. According to Bense (1994: 191), “Chiefdoms usually have two general social classes or ranks: elite and

commoner." Mississippian culture, therefore, exhibited a level of social stratification unknown in previous eras.

In addition to the mobilization of material goods and commodities, the chief had the power to mobilize labor, which is then put toward the construction of public works, such as earthen mounds. Between approximately A.D. 900 and 1600, the Southeast was populated by a series of Mississippian chiefdoms that arose and declined across the region at various times. This time period is of particular significance for the cultural continuity of the southeastern United States as much of the inherited trade networks, cultural ties, and technology seen by the European vanguards of exploration were cultivated during this period.

CONTACT PERIOD

Native American culture after European contact and before the Historic period is referred to as the Protohistoric or Contact period. During the Contact period, numerous European inventions were introduced across the Southeastern United States. These items included guns, domesticated livestock, foreign ideas, and catastrophic diseases. The Contact period represents the beginning of a written Southeastern history and the first time European and African influences were felt in South Mississippi.

With the arrival of Spanish explorers on the coasts of Florida, Georgia and South Carolina in the 1520s, expeditions were launched from the Spanish supply base of Cuba to investigate the Gulf Coast. The ill-fated Narvaez expedition of 1527 is believed to have been the first landfall of Europeans in the vicinity of mouth of the Mississippi River. Much of our knowledge of the expedition has been passed down to us through Cabeza de Vaca, a lieutenant of Narvaez who published an account of his experiences following his return to Spain (Covey 1983). Hearing of the "vast riches" found in the interior of southeastern North America, Hernan de Soto sought to capitalize on the wealth identified but not exploited by, Cabeza de Vaca. De Soto was an experienced soldier and veteran of the Pizzaro expedition in South America, an enterprise that provided him with a great deal of personal wealth. He mounted an expedition that would be the first to penetrate the dense woods of North America and would eventually take him through the northern portion of what is now Mississippi. Although de Soto would not return to Spain (he died en route through the Mississippi River Valley), his legacy of contact would continue well into the coming scrabble for territory in the Gulf. By 1600, either directly or indirectly, disease, war, and the introduction of European trade goods rapidly affected traditional regional societies throughout the area (Clayton et al. 1995).

During the seventeenth century, the Muskogean-speaking Choctaw had emerged as a dominant cultural group in Mississippi. The traditional Choctaw territory extended, at the height of their influence, east of the Tombigbee River, and likely as far east as present-day Paulding County, Georgia. The first known historical reference to the Choctaw appears in a 1675 Spanish text, which warns would-be settlers of the "Chata," depicting the group as "fearsome." It is believed that this depiction of the Choctaw in early Spanish texts was intended to dissuade settlement in the area in favor of established missions in Florida. By the time René-Robert Cavelier descended the Mississippi River Valley in 1682, the Choctaw had developed the cultural and political organization that would be in place for the next 150 years.

During the historic period, the Choctaw Nation was divided into three primary groups, Eastern, Western and Southern, each with their own political leader and, at times, allegiances to European powers. Although La Salle was the first French citizen, along with Italian-born Henri de Tonti, to enter the traditional Choctaw territory in 1682, according to his successor Pierre LeMoyne Sieur D'Iberville he apparently made no attempts to contact the group for diplomatic purposes (Weddle 1991).

HISTORIC PERIOD

Choctaw contact with the French in 1699 established a long-standing relationship with the European power, which was largely based on their allegiance against the English during the Wars of Succession (French and Indian Wars). This relationship lasted 65 years until the end of the Seven Years War (1763) when the French were forced to cede all territory east of the Mississippi River to the English (Bense 1994).

Following the Seven Years War, France ceded Louisiana to Spain. Taking advantage of their newly inherited colony, Spain concerned itself with establishing this portion of the Gulf as a military buffer between British Florida and its own flagship colony of Mexico. Fearing a possible disruption in the flow of trade goods from Mexico, the Spanish government actively recruited colonist from the Canary Islands (known as Islenos) to establish four settlements east of New Orleans to protect the area from potential British invasion. The Islenos were well suited to establish farms and plantations in the area due to their experience with raising sugar cane on the Canary Islands since they were colonized in the fifteenth century. The first Islenos arrived in 1778 and settled La Concepcion, to the southwest of the current project area, opposite the mouth of the Pearl River. The settlement was later renamed San Bernado (St. Bernard) after the patron saint of Louisiana's governor Bernardo de Galvez (Chavez 2002). Also at this time, the Choctaw began a migration to the west in order to better establish themselves as a trading conduit between the Spanish and English settlements. By the 1760s the Choctaws had moved further south and established settlements on the north shore of Lake Pontchartrain, where they found ready allies among French colonists who were resistant to English and Spanish authority. Spanish documents of the time refer to these Choctaws as "wandering Indians" (Usner 1992).

Following repeated attempts by Great Britain to cease Spain's financial support of the Whig cause during the American Revolution, Spain declared war on Great Britain in 1779. As part of the global Anglo-Spanish conflict, Governor Galvez led an expeditionary force against British-held territories along the gulf coast. This offensive, known as the Galvez expedition, led to the successful capture of Mobile in 1780 and Pensacola in 1781. Among Galvez's troops was a large contingent of Islenos. Governor Galvez took a keen interest in the success of the Islenos' settlements after the war and ensured their subsidization from the Spanish treasury until 1785 when they were declared self-sufficient (Chavez 2002). Choctaw warriors were largely divided among the East, West and Six Towns during the Anglo-Spanish Conflict, with some taking part in the British defense of Pensacola and the remainder siding with the French, Spanish and Whig forces. It is likely, given the French influence on their part of the nation that the Choctaws in the vicinity of the project area would have sided with the Spanish (Coker and Rea 1981). The capture of Mobile and Pensacola ensured Spanish dominance of the gulf coast until Louisiana was sold to the United States following the territories brief transfer to France in 1803.

After the Treaty of Paris (1783), ending the American Revolution, the English were forced to cede all lands east of the Mississippi River to the newly formed United States. With the no other European powers to compete for land, the young nation set its sights on the vast interior of the continent. As was commonly experienced among native tribes in the southeast following the American Revolution, the Choctaw were forced to fight for their lands and sovereignty. A treaty signed in 1786 affirmed the boundaries of the Choctaw and established them as a sovereign nation. However, the largely sympathetic policies of the Washington administration were replaced with those more conducive to expansion and settlement by white interests (Haynes 2010).

Beginning with the Treaty of Fort Adams in 1801, when the land supporting the proposed project area is located, the Choctaw ceded over 23 million acres of land to the United States. The final land cession took place in 1830 at Dancing Rabbit Creek, which also outlined the terms of the Choctaws removal west to the Oklahoma Territory (Brown 2007). On the agreement that they would become United States citizens, the treaty provided a land allotment for any Choctaws that wished to remain in Mississippi. However, among the roughly 4,000 Choctaws that decided to remain in the state, many never received the land, or were forced to sell their allotment in order to survive. The descendants of these people formed the core of the Mississippi Band of Choctaw Indians, which became a federally recognized tribe in 1945.

LOCAL HISTORY

Hancock County is the southernmost county in Mississippi. Founded in 1812, the county is named for John Hancock, the wealthy American merchant and statesman. Bay Saint Louis is the county seat. Bay Saint Louis was claimed in the name of France by Iberville in 1699 as part of an expedition to find the mouth of the Mississippi River. Hancock County has relied on this major water transport point as part of its economy ever since. During the Civil War, Abraham Lincoln strategically blockaded the Mississippi Sound, severing this high traffic channel.

Railroad service came to Mississippi when the New Orleans, Jackson and Great Northern were constructed through the western edge of Pike County. The Great Northern was chartered in 1851 and construction was completed prior to the Civil War. It connected New Orleans, Louisiana to Canton, Mississippi (Estaville 1973). In Canton, it linked with the Mississippi Central, bringing it into Tennessee, and from there it linked with the Illinois Central, bringing service north to Chicago (Wilson and Rehberg 2014). Following the Civil War, the rail line between New Orleans and Mobile, Alabama was completed. In 1870, daily commuter service to New Orleans was available to residents of Bay Saint Louis. An automobile bridge was built across the Bay of Saint Louis in 1928.

Through the nineteenth and early-twentieth centuries, the local economy of Hancock County relied heavily on the sawmill industry. Timber was brought from miles away to the Weston, Poitevent, Eads mill at Logtown. Rail lines served to support the industry. Port Bienville Industrial Park, located in Bay St. Louis, supplies multi-modal warehouse and trans-load facilities to the Port Bienville Railroad, which operates across Mississippi. The Industrial Park can store up to 429 rail cars at one time, serving a variety of industries that make shipments across the Gulf Coast.

In 1963, NASA established the Stennis Space Center in Hancock County bringing with it a significant source of employment and income for the region. The space center serves as the largest rocket engine test complex in the U.S. The Stennis International Airport, which is included in the current project, was originally called the Hancock County airport until it was renamed for Mississippi Senator John C. Stennis.

In recent history, the Mississippi Gulf Coast was impacted by two major hurricanes that severely damaged private property and public infrastructure: Hurricane Camille in 1969 and Hurricane Katrina in 2005.

METHODS

Phase IA investigations included a records review conducted through the Mississippi Department of Archives and History (MDAH) Historic Resources Inventory Map GIS online mapping database for cultural resources within a 1-mile radius of the project area. The GIS data include information about known archaeological sites and surveys and architectural properties. Archaeological sites, historic structures, and cemeteries were provided as point locations and polygons that were digitized into PaleoWest's ArcGIS-based maps. Associated attribute tabular data for the resources and projects derived from the GIS analysis, desktop review, and site file search were incorporated into the following Results section of the report. Soil data were gathered using the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2017). The Culture History and Environmental Setting sections were produced using a combination of scholarly, grey, and online resources (see References Cited).

Phase IB investigations consisted of pedestrian survey and subsurface testing in the project area. The interval between shovel test pits (STPs) was not to exceed 30 m (98 ft.). STPs were round and measured no more than 30 cm (12 in.) in size. All excavated soil was screened through ¼ in. hardware cloth to facilitate the recovery of artifacts. STPs were excavated in natural stratigraphic layers to culturally sterile subsoils or to a maximum 1 m (ca. 3 ft.) in depth. Soil texture was recorded using standardized terminology and soil colors were recorded using Munsell© soil color charts. STP locations were recorded using a GPS unit with differential corrections applied.

PaleoWest employed a fully digital data collection workflow during field investigations. All images and data were collected digitally using iPad tablets and smartphones connected to office servers over high-speed cellular data networks. Collecting data in the field over cellular networks allowed data to be available to all members of the crew on-site, as well as all off-site PaleoWest staff, in real time. As data were entered in the field, a PaleoWest data manager was concurrently checking and cleaning records, allowing us to address potential issues in the datasets while excavations were open, and before crews left the field. The database system used for data collection in the field was used to provide the platform for data collection and management through analysis and reporting. No artifacts were recovered during this survey. Therefore, no laboratory methods were necessary.

RESULTS

SITE FILE RESEARCH

The Phase IA search of the Mississippi Department of Archives and History (MDAH) found 5 previously identified archaeological sites and 12 prior surveys located within a 1-mile radius of the project area (Figure 2). There are no National Historic Register (NHR) eligible sites or properties, or historic cemeteries recorded within the direct APE. Pedestrian survey and subsurface testing of the project area found no intact cultural material, no archaeological sites or significant cultural remains.

Surveys

All 12 prior surveys are outlined in the table below (Table 1). The APE of Site 6 has no overlapping surveys.

Table 1. Surveys Within the Project Vicinity

Survey Number	Survey Title	Date	Author	Summary
03-088	A CR Evaluation of an Emergency Streambacnk Stabilization Project (Section 14), Port Bienville Industrial Park, Hancock County, MS	2003	Sims	46 Acres: 7 judgmental STPs, extensively disturbed drainage corridor, no cultural resources reported
05-407	Port Bienville Industrial Park Group Site/EG Archaeological Report for a Proposed Temporary Housing Tract	2005	Birkedal, Hight, Moore, Schoenberg	10 Acres: Survey + 10 STPs, documented disturbance, no cultural resources reported
08-1551	An Archaeological Survey of Proposed Approach Improvements on Lower Bay Road at Port Bienville Industrial Park, Hancock County, Mississippi	2008	Jackson	6.5 Acres: Two transects of 30m interval STPs, no cultural resources reported
09-0690	A Phase I CRA of a Proposed Mining Site in S7, 13, 14, and 23 T9S R16W, and a portion of S18 T9S R15W, Hancock County, MS	2008	Thorne	1,414 Acres: Survey + 249 STPs, disturbance from pine plantation activities, no cultural resources reported
12-0251	CRS Port Bienville- Proposed Railroad Spur, 3.5 Acres in Hancock County, Mississippi, S24 T9S R16W	2012	Roberts, McMahon	3.5 Acres: Survey + 27 STPs, disturbance from land altering activities, no cultural resources reported
12-0306	A Phase I CRS of Proposed Dock Dredging Areas of the Port Bienville Industrial Park Canal, Hancock County, MS	2012	Alvey and Baca	20 Acres: Survey + 11 STPs, all areas disturbed by dock construction. Relocated two previously recorded sites: HA506 destroyed by construction activities; 22Ha501 still listed on NRHP.
15-0053	Phase I CRS of the Proposed Anderson Rail Spur, Hancock County, Mississippi	2015	Jackson & Glass	1 Acre: survey conducted by TerraX. No survey report available on MDAH.
82-011	Archaeological Survey of Lot 8 and a Portion of Lot 7 Port Bienville Industrial Park, Conducted for	1982	Heisler	Overlaps APE of Site 4. 89 Acres: Survey + 10 STPs. Two prehistoric sites found, determined not

	Hancock County Port and Harbor Commission			significant due to extensive development disturbance.
83-096	Archaeological Survey of Selected Areas of the Port Bienville Industrial Park	1983	Heisler	Overlaps APE of Site 11. 350 Acres: Survey + test pit + auger holes, prehistoric sites determined ineligible due to clearing and dredging disturbance
93-267	CRS of a Proposed Spoil Pile Site in Hancock County, MS, Preformed at the Request of Mr. Larry Lewis for Brown and Mitchell, Inc.	1993	Mann	9 Acres: Survey + 15-20m interval STPs and auger tests, disturbance from land altering activities , no cultural resources reported
96-056	CRS of Approximately 320 Acres, Hancock County, Mississippi	1996	Lauro	320 Acres: Survey + 30m interval STPs. 1 unknown aboriginal surface scatter and 5 historic sites recorded, all determined not eligible except for 22HA615 Old Powell Home Site.
98-038	CRS of Approximately 25 Acres, Hancock County, MS, Port Bienville Industrial Complex	1998	Lauro	25 Acres: Survey + 30m interval STPs, no cultural resources reported

Sites

Five sites are located in the vicinity of the project area, none of which will be affected by the proposed development (Figure 2).

Extensive cultural resource assessment has been conducted within the Port of Bienville Industrial Park over the last 50 years because it was the locus of intense prehistoric and historic activity. The following table summarizes the 5 previously reported sites within a 1-mile radius of the Site 6 project area.

Table 2. Sites Within the Project Vicinity

Site Number	Site Name	Period	Material	NRHP
HA539	Ford #6	Unknown Aboriginal	Landform with no archaeological materials	Unevaluated
HA559	Gonzales Marine Site	Middle and Late Woodland	Sparse scatter including 1 buff grog tempered plain sherd, 2 pieces burned daub	Unknown
HA560	Lot 7 Site	Unknown Aboriginal	1distal end of white chert blade	Unevaluated
HA615	Old Powell Home Site	Historic 19th-20th C.	Historic ceramic sherds, bottle and window glass, wire and cut nails, brick and metal fragments, 2 marked graves (1904 and 1936)	Ineligible
HA617	Unnamed	Historic 19th-20th C.	Ceramic sherds, bottle glass, wire and cut nails	Ineligible

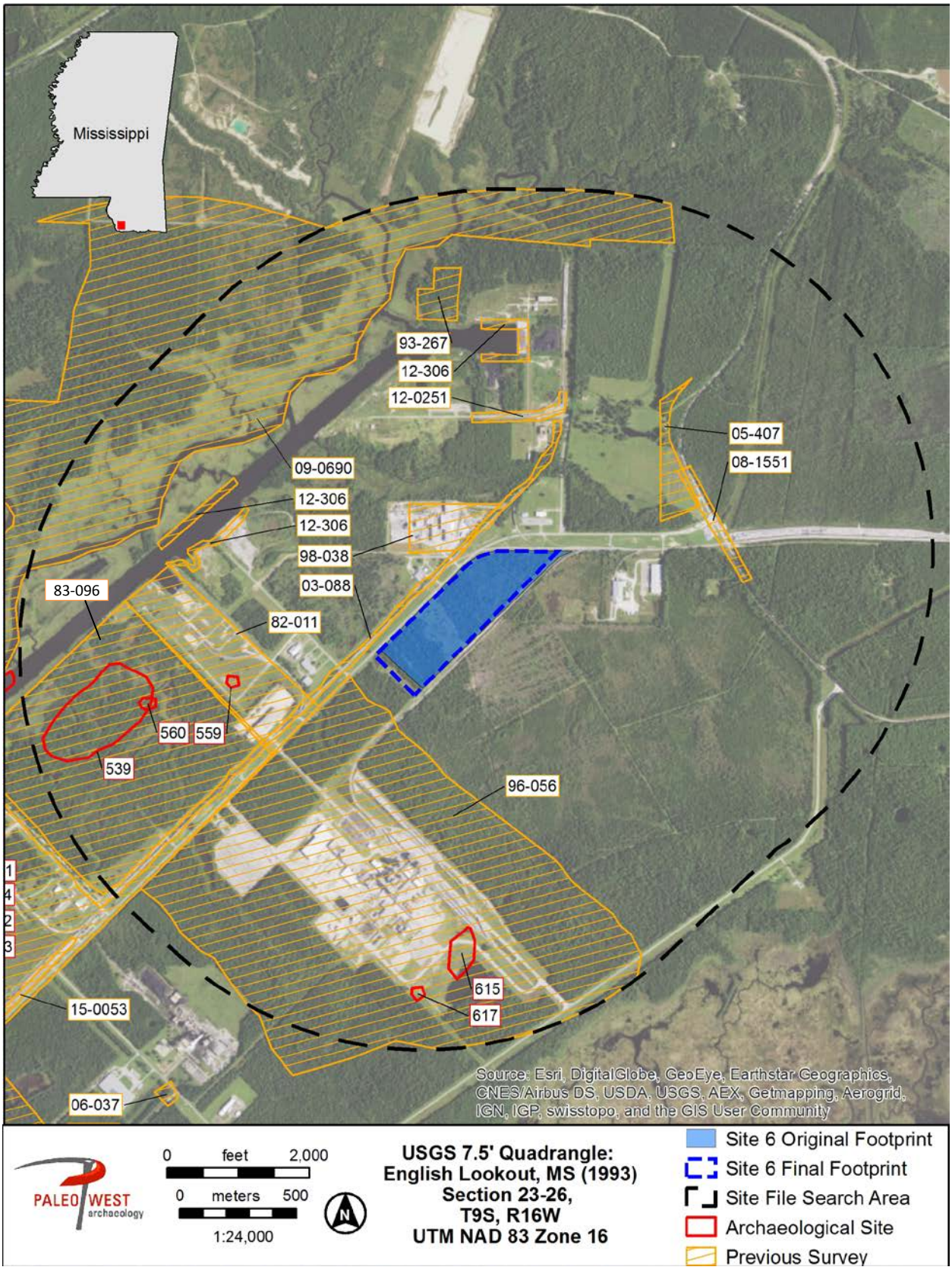

Figure 2. Previous sites and surveys within a 1-mile vicinity of Site 6.

PEDESTRIAN SURVEY AND SUBSURFACE TESTING

Phase IB consisted of pedestrian survey and subsurface testing. Pedestrian survey of the project area found evidence of extensive disturbance due to previous railway and road construction, and associated ditch construction.

Ground cover was extensive in some areas with dense vegetation and cleared in others. Much of the project area is low lying and wet and considered low probability. These areas were systematically checked for any elevations which might have archaeological potential. Due to standing water and boggy conditions some shovel tests were not excavated.

Subsurface testing investigated 157 STP locations. Across the project area, subsurface testing revealed extensive disturbance from previous development. Extremely mottled soils were common at depths down to 30 cm, at which point sterile subsoil was encountered. This disturbance could be reflective of numerous activities associated with industrial park development, ranging from clearing, leveling, and ditch construction, to the deposition of dredged material.

There was no evidence of intact cultural material in the project area, and all previously recorded sites within the APE were no longer evident and deemed ineligible for inclusion in the NRHP. Fieldwork results for Site 6 are described below.

Site 6

Site 6 covers an area of approximately 46 acres. It lies on a roughly southwest to northeast axis. It is bordered on the northwest and north by a main access road, more wooded area to the south, and by a rail line on the southeast. Three raised dirt access roads cut across the project area, dividing it roughly in thirds. It was the only project area within the Port Bienville Industrial Park that had not been at least partially surveyed previously. As such, there were no known sites to be examined. The entire footprint of Site 6 was covered by pedestrian survey at 30 m intervals, which ran west to east following true cardinal direction. Much of Site 6 was covered in dense vegetation including pine woods and thorny vines, so visibility was quite low (Figure 3). Site 6 was also characterized by standing water and boggy conditions, which presents very low probability for archaeological material (Figure 4). Drainage channels were apparent throughout the wooded areas. An open field condition in the lower third of Site 6 proved to be quite wet (Figure 5). The whole southwestern edge of Site 6 was dry due to an artificial berm which served to protect the rail line from standing water (Figure 6). The northwest and north edges were likewise dry from berming for the paved access road.

Figure 3. Dense vegetation in southern portion of Site 6.

Figure 4. Typical wet, boggy condition in the wooded areas of Site 6.

Figure 5. NW corner of wet field condition in Site 6.

Figure 6. Facing northeast along berm that forms the SE boundary of Site 6, rail line to right, lower wet area to left.

Site 6 was excavated on a 30-m grid running true west-east for ease of navigation through the dense wooded conditions (Figure 11). Site 6 was covered by a total of 157 STPs (STPs 001–139 and 636–655). Fifty-two STPs, predominately in the middle and upper thirds, were not excavated due to standing water (Appendix A). Within the wooded areas, the water was anywhere from 2 to 6 inches deep (Figure 9). A portion of the open field within the lower third of the project area was left unexcavated due to standing water (Figure 10). The first two days of excavation were rainy, which contributed to the wet conditions. As a precaution, Site 6 was revisited on the last day of excavation after a period of dry weather. Two additional transects of STPs were run through the middle third of the project area, in woods that had been left unexcavated due to standing water. The soils were still extremely wet. The few STPs that could successfully be excavated showed evidence of spodic subsoils (see Appendix A for complete STP results). For the lower third, a typical soil profile consisted of 20 cm of brown loam atop 20 cm of sterile yellowish-brown clay loam (Figure 7). A typical profile for the wet areas of the middle and northern third consisted of 30 cm of dark grayish brown sandy clay atop light brownish gray sandy clay mottled with yellowish brown hydric staining (Figure 8). Bermed areas of Site 6 showed evidence of land moving disturbance, with a typical profile of 20 cm of dark gray loamy sand atop sterile highly mottled yellowish brown sandy loam.

Figure 7. STP 007 profile, typical soil profile for southern portion of Site 6.

Figure 8. STP 655 profile, typical for boggy woods condition in Site 6.

Figure 9. STP 085 is centrally located in Site 6, typical standing water condition.

Figure 10. Typical standing water condition in central field of Site 6.

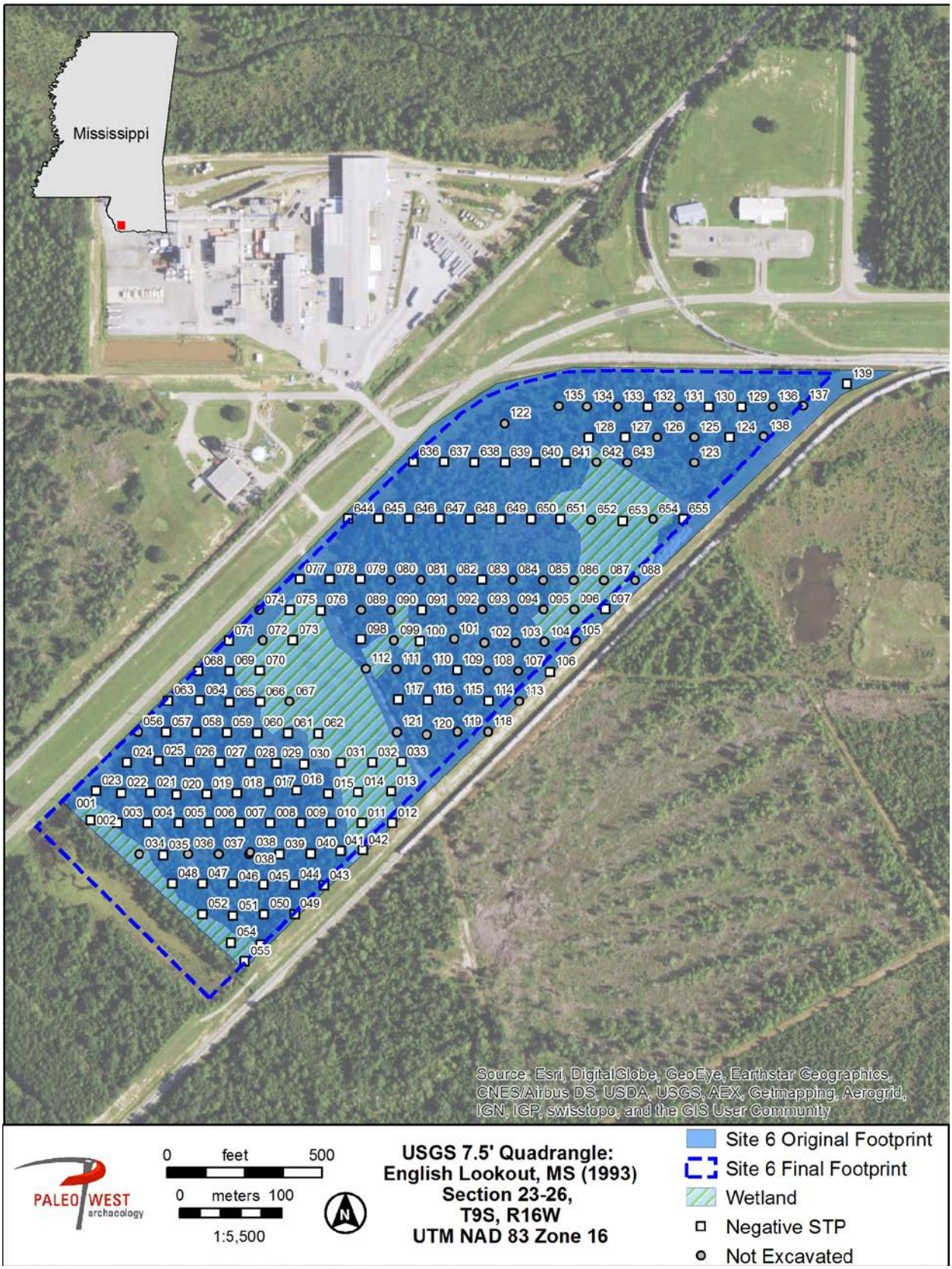

Figure 11. Results map for Site 6.

CULTURAL RESOURCES SENSITIVITY ASSESSMENT

No traces of prehistoric or historic cultural material was found in either the surface survey or subsurface investigations of the project area. There is no evidence to suggest that the project area contains intact prehistoric or historic cultural deposits, and it should not be considered archaeologically sensitive due to development disturbance and wetland conditions.

RECOMMENDATIONS

Four criteria are applied during the evaluation of an archeological resource's eligibility for inclusion in the NRHP. Normally, a resource must be at least 50 years of age and meet at least one of the following four criteria to be considered eligible for inclusion in the NRHP:

- Be associated with events that have made a significant contribution to the broad patterns of our history (Criterion A);
- Be associated with the lives of persons significant in our past (Criterion B); or
- Embody the distinct characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); or
- Yield, or be likely to yield, information important in prehistory or history (Criterion D).

If the significance of a resource is established, then it is necessary to determine if the resource retains the integrity for which it is significant. The integrity of a resource is evaluated in regard to its location, setting, design, materials, workmanship, feeling, and association.

Pedestrian survey and subsurface investigations did not identify any prehistoric or historic cultural material or features within the proposed project area. Previous construction and development resulted in significant ground disturbance, which makes it unlikely for the project area to yield additional information. Based on the results of this archaeological investigation, PaleoWest Archaeology and Gulf South Associates recommends a finding of "no historic properties affected" and that the project be allowed to proceed as designed without further historic review.

If archaeological remains are discovered in course of construction it is recommended that all work in the vicinity should stop immediately, the Mississippi Department of Archives and History should be contacted, and a professional archaeologist brought in to conduct an assessment.

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Appendix A: STP Results

STP Number	Stratum: Depth	Munsell Soil Description	Comments
001	I:0-22	10YR4/3 Roots brown sandy loam	NCM
	II:22-40	2.5Y6/4 mineral staining light yellowish brown sandy loam	NCM
002	I:0-15	10YR4/3 brown loamy sand	NCM
	II:15-25	10YR5/4 yellowish brown loamy sand	NCM
003	I:0-27	10YR4/2 Roots dark grayish brown loamy sand	NCM
	II:27-37	10YR5/6 mineral staining yellowish brown	NCM
004	I:0-18	10YR4/3 Roots brown loam	NCM
	II:18-30	10YR5/6 yellowish brown clay loam	NCM
005	I:0-20	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:20-30	7.5YR5/4 brown loamy sand	NCM
006	I:0-20	10YR4/4 dark yellowish brown sandy loam	NCM
	II:20-30	7.5YR5/4 brown	NCM
007	I:0-20	10YR4/3 Roots brown loam	NCM
	II:20-40	10YR5/6 yellowish brown clay loam	NCM
008	I:0-16	10YR4/2 Roots dark grayish brown loamy sand	NCM
	II:16-27	2.5Y6/6 Roots olive yellow loamy sand	NCM
	III:27-37	10YR6/6 Roots brownish yellow sandy loam	NCM
009	I:0-25	10YR4/4 dark yellowish brown sandy loam	NCM
	II:25-35	10YR5/4 yellowish brown loamy sand	NCM
010	I:0-22	10YR4/1 Roots dark gray sandy loam	NCM
	II:22-32	10YR5/6 Roots yellowish brown sandy loam	NCM
011	I:0-10	10YR3/3 dark brown sandy loam	NCM, disturbed w/ 7.5yr c6/4 clay
	II:10-40	10YR3/2 very dark grayish brown sandy loam	NCM
	III:40-50	7.5YR5/4 brown loamy sand	NCM, w/ oxidation
012	I:0-20	10YR6/3 pale brown sandy loam	NCM
	II:20-34	10YR4/3 brown loam	NCM, compact
	III:34-40	10YR6/2 light brownish gray clay loam	NCM, hydric mottled with 10yr 5/8
013	I:0-45	10YR4/1 Roots dark gray loam	NCM, likely once marsh/wetland soils, disturbed
	II:45-55	10YR6/3 Roots pale brown sandy loam	NCM
014	I:0-15	10YR4/4 dark yellowish brown sandy loam	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
	II:15-30	10YR5/4 yellowish brown loamy sand	NCM, w/ oxidation
015	I:0-18	10YR4/1 Roots dark gray loamy sand	NCM
	II:18-28	10YR5/6 Roots yellowish brown sandy clay loam	NCM
016	I:0-20	10YR4/4 dark yellowish brown sandy loam	NCM
	II:20-30	10YR5/4 yellowish brown	NCM
017	I:0-20	10YR4/3 Roots brown loam	NCM
	II:20-30	2.5Y5/6 light olive brown clay loam	NCM
018	I:0-20	10YR5/3 Roots brown loamy sand	NCM
	II:20-30	10YR5/6 Roots yellowish brown sandy loam	NCM, STP located in an area around ruts, likely disturbed
019	I:0-15	10YR4/4 dark yellowish brown sandy loam	NCM
020	I:0-23	10YR5/3 Roots brown loamy sand	NCM
	II:23-33	10YR5/6 Roots yellowish brown sandy loam	NCM
021	I:0-20	10YR4/4 dark yellowish brown sandy loam	NCM
	II:20-30	10YR5/4 yellowish brown loamy sand	NCM
022	I:0-20	10YR4/3 Roots brown loam	NCM
	II:20-30	10YR5/6 yellowish brown clay loam	NCM
023	I:0-30	10YR4/3 brown sandy loam	NCM, STP offset 10m E to stay in project area
	II:30-40	10YR5/4 Roots yellowish brown loamy sand	NCM
024	I:0-8	10YR4/2 Roots dark grayish brown loamy sand	NCM
025	I:0-15	10YR4/4 Roots dark yellowish brown sandy loam	NCM
026	I:0-18	10YR5/6 Roots yellowish brown loam	NCM
	II:18-30	2.5Y5/6 light olive brown clay loam	NCM
027	I:0-21	10YR4/3 Roots brown loamy sand	NCM
	II:21-31	10YR5/6 Roots yellowish brown sandy loam	NCM
028	I:0-20	10YR4/4 dark yellowish brown loamy sand	NCM
	II:20-30	10YR5/4 yellowish brown sandy clay	NCM
029	I:0-16	10YR4/3 Roots brown loamy sand	NCM
	II:16-26	10YR5/6 Roots yellowish brown sandy loam	NCM
030	I:0-10	10YR4/4 dark yellowish brown sandy loam	NCM
	II:10-20	10YR5/4 yellowish brown sand	NCM, w/ oxidation

STP Number	Stratum: Depth	Munsell Soil Description	Comments
031	I:0-20	10YR3/2 very dark grayish brown loam	NCM
	II:20-40	10YR5/3 brown clay loam	NCM, hydric mottled w 10yr 6/8
032	I:0-10	10YR5/2 Roots grayish brown sandy loam	NCM, likely wetland/marshy soil very disturbed
033	I:0-10	10YR4/4 dark yellowish brown	NCM
	II:10-20	10YR5/4 Channery yellowish brown loamy sand	NCM
034	Not Excavated	N/A	Not excavated due to standing water
035	I:0-10	10YR4/4 dark yellowish brown sandy loam	NCM
	II:10-30	10YR5/4 yellowish brown loamy sand	NCM
036	Not Excavated	N/A	Not excavated due to standing water
037	Not Excavated	N/A	Not excavated due to standing water
038	Not Excavated	N/A	Not excavated due to standing water
039	I:0-25	10YR5/2 Roots grayish brown loamy sand	NCM
	II:25-35	10YR6/4 Roots light yellowish brown sandy loam	NCM
040	I:0-20	10YR4/3 brown sandy loam	NCM
	II:20-30	10YR5/4 yellowish brown	NCM
041	I:0-20	10YR4/3 Roots brown loam	NCM
	II:20-32	10YR5/6 yellowish brown clay loam	NCM, very wet. Inundation at 32 cm bmgs
042	I:0-20	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:20-30	10YR5/6 yellowish brown sandy clay loam	NCM
043	I:0-22	10YR4/1 Roots dark gray loamy sand	NCM
	II:22-26	10YR7/3 Roots very pale brown sandy clay loam	NCM
	III:26-53	10YR2/1 Roots black sandy loam	NCM, modern burning evident, root impasse
044	I:0-22	10YR4/3 Roots brown loamy sand	NCM
	II:22-32	10YR5/6 Roots yellowish brown loamy sand	NCM
045	I:0-20	10YR4/4 dark yellowish brown sandy loam	NCM
	II:20-30	10YR5/4 yellowish brown loamy sand	NCM
046	I:0-20	10YR4/3 brown sandy loam	NCM
	II:20-30	10YR5/4 yellowish brown loamy sand	NCM
047	I:0-30	10YR4/4 dark yellowish brown sandy loam	NCM
	II:30-40	10YR7/3 very pale brown sand	NCM
048	I:0-20	10YR3/3 Roots dark brown loam	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
	II:20-40	2.5Y5/6 light olive brown sandy clay loam	NCM
050	I:0-15	10YR4/4 dark yellowish brown sandy loam	NCM
	II:15-25	10YR5/4 yellowish brown sandy clay	NCM
051	I:0-18	10YR4/3 brown loam	NCM
	II:18-40	10YR5/6 yellowish brown clay loam	NCM
052	I:0-18	10YR4/3 Roots brown loam	NCM
	II:18-30	2.5Y5/6 light olive brown sandy clay loam	NCM
053	I:0-12	10YR4/3 Gravel brown sandy loam	NCM, STP on access road, disturbed, mottled with 10yr 5/6
054	I:0-29	10YR5/3 Roots brown sandy loam	NCM
	II:29-39	10YR6/6 Roots brownish yellow sandy loam	NCM
055	I:0-18	10YR4/3 Roots brown loam	NCM
	II:18-30	2.5Y5/6 light olive brown sandy clay loam	NCM, wet. Water at 30 cm bmgs
056	Not Excavated	N/A	Not excavated due to standing water
057	I:0-25	10YR4/4 dark yellowish brown sandy loam	NCM
	II:25-35	10YR5/4 yellowish brown loamy sand	NCM
058	I:0-10	10YR4/3 brown sandy loam	NCM
	II:10-20	10YR5/4 yellowish brown loamy sand	NCM
059	I:0-10	10YR4/4 dark yellowish brown sandy loam	NCM
	II:10-20	10YR5/4 yellowish brown loamy sand	NCM
063	I:0-17	10YR4/1 Gravel dark gray loamy sand	NCM
	II:17-27	10YR7/4 Gravel very pale brown sandy loam	NCM, disturbed under telephone line mottled with 10yr 5/8 and 10 yr 4/1
064	I:0-20	10YR5/3 Roots brown loamy sand	NCM
	II:20-30	10YR6/6 Roots brownish yellow sandy loam	NCM
065	I:0-21	10YR5/3 Roots brown loamy sand	NCM
	II:21-31	10YR6/6 Roots brownish yellow sandy loam	NCM
066	I:0-26	10YR4/1 Roots dark gray loamy sand	NCM
	II:26-36	10YR6/6 Roots brownish yellow sandy loam	NCM, in field with standing water, mottled with 10YR7/4 and 10YR4/1
067	Not Excavated	N/A	Not excavated due to standing water
068	I:0-10	10YR3/3 dark brown loam	NCM, grass area well maintained
	II:10-28	10YR5/3 brown clay loam	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
	III:28-40	2.5Y5/6 light olive brown sandy clay loam	NCM
069	I:0-20	10YR5/3 Roots brown loam	NCM
	II:20-40	2.5Y5/6 light olive brown silty clay	NCM, wet but not inundated
070	I:0-20	10YR4/3 Roots brown sandy loam	NCM
	II:20-28	10YR4/1 Roots dark gray sandy loam	NCM
	III:28-38	10YR6/6 Roots brownish yellow loamy sand	NCM, mottled with 10YR 5/8 and 10YR 4/1
071	I:0-10	10YR4/4 mottled w/ 7.5 yr 5/5 clay and10 yr 5/4 sand dark yellowish brown sandy loam	NCM
072	Not Excavated	N/A	Not excavated due to standing water
073	I:0-15	10YR4/4 dark yellowish brown loamy sand	NCM, mottled w/ 7.5yr clay and 10YR 5.4 sand
074	Not Excavated	N/A	Not excavated due to standing water
075	I:0-17	10YR4/3 brown loam	NCM
	II:17-26	10YR5/6 yellowish brown clay loam	NCM
	III:26-43	10YR5/1 gray sandy clay loam	NCM, hydric mottled with 10 yr 5/8, wet
076	I:0-10	10YR4/3 Roots brown sandy loam	NCM
077	I:0-40	10YR3/3 dark brown sandy loam	NCM
078	I:0-21	10YR4/1 Roots dark gray loamy sand	NCM
	II:21-31	10YR6/1 Roots gray sandy loam	NCM
079	I:0-10	10YR4/1 Roots dark gray loamy sand	NCM, terminated due to water inundation
080	Not Excavated	N/A	Not excavated due to standing water
081	Not Excavated	N/A	Not excavated due to standing water
082	Not Excavated	N/A	Not excavated due to standing water
083	I:0-32	10YR3/1 Roots very dark gray loamy sand	NCM
	II:32-42	10YR6/2 Roots light brownish gray sandy loam	NCM
084	Not Excavated	N/A	Not excavated due to standing water
085	Not Excavated	N/A	Not excavated due to standing water
086	Not Excavated	N/A	Not excavated due to standing water
087	Not Excavated	N/A	Not excavated due to standing water
088	Not Excavated	N/A	Not excavated due to standing water
089	Not Excavated	N/A	Not excavated due to standing water
090	Not Excavated	N/A	Not excavated due to standing water
091	I:0-5	10YR4/4 dark yellowish brown sandy loam	NCM, terminated due to water inundation
092	Not Excavated	N/A	Not excavated due to standing water
093	Not Excavated	N/A	Not excavated due to standing water
094	Not Excavated	N/A	Not excavated due to standing water
095	Not Excavated	N/A	Not excavated due to standing water
096	Not Excavated	N/A	Not excavated due to standing water

STP Number	Stratum: Depth	Munsell Soil Description	Comments
097	I:0-5	10YR4/4 dark yellowish brown sandy loam	NCM mottled with 10yr 7/6 and 10yr4/3, terminated due to water inundation
098	I:0-20	10YR3/2 very dark grayish brown loam	NCM, wet. Water at 20 cm bmgs
099	Not Excavated	N/A	Not excavated due to standing water
100	I:0-10	10YR3/2 Organic, pine needles very dark grayish brown loam	NCM, very wet rich organic loam. Water at 10 cm bmgs
101	Not Excavated	N/A	Not excavated due to standing water
102	Not Excavated	N/A	Not excavated due to standing water
103	Not Excavated	N/A	Not excavated due to standing water
104	Not Excavated	N/A	Not excavated due to standing water
105	Not Excavated	N/A	Not excavated due to standing water
106	I:0-11	10YR4/3 Gravel brown sandy loam	NCM, mottled with 10yr6/2 and 10 yr5/6
	II:11-21	10YR5/6 Gravel yellowish brown sandy loam	NCM, mottled with 10yr 6/2
107	Not Excavated	N/A	Not excavated due to standing water
108	Not Excavated	N/A	Not excavated due to standing water
109	I:0-10	10YR3/2 Roots very dark grayish brown loamy sand	NCM
110	Not Excavated	N/A	Not excavated due to standing water
111	Not Excavated	N/A	Not excavated due to standing water
112	Not Excavated	N/A	Not excavated due to standing water
113	Not Excavated	N/A	Not excavated due to standing water
114	I:0-35	10YR4/3 Roots brown sandy loam	NCM
	II:35-45	10YR5/4 Roots yellowish brown loamy sand	NCM
115	Not Excavated	N/A	Not excavated due to standing water
116	I:0-7	10YR4/4 dark yellowish brown sandy loam	NCM
	II:7-20	10YR5/4 yellowish brown loamy sand	NCM
117	I:0-7	10YR4/4 dark yellowish brown loamy sand	NCM
	II:7-17	10YR5/4 w/ ox yellowish brown loamy sand	NCM
118	Not Excavated	N/A	Not excavated due to standing water
119	Not Excavated	N/A	Not excavated due to standing water
120	Not Excavated	N/A	Not excavated due to standing water
121	Not Excavated	N/A	Not excavated due to standing water
122	Not Excavated	N/A	Not excavated due to standing water
123	Not Excavated	N/A	Not excavated due to standing water
124	I:0-10	10YR4/1 Gravel dark gray loamy sand	NCM
125	Not Excavated	N/A	Not excavated due to standing water
126	Not Excavated	N/A	Not excavated due to standing water
127	I:0-10	10YR4/1 Roots dark gray loamy sand	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
128	I:0-10	10YR4/1 Roots dark gray loamy sand	NCM
129	I:0-5	10YR5/4 yellowish brown	NCM, gravel and shell from grading
130	I:0-5	10YR4/4 dark yellowish brown sandy loam	NCM
131	Not Excavated	N/A	Not excavated due to standing water
132	I:0-10	10YR4/4 dark yellowish brown sandy loam	NCM
133	Not Excavated	N/A	Not excavated due to standing water
134	Not Excavated	N/A	Not excavated due to standing water
135	Not Excavated	N/A	Not excavated due to standing water
136	Not Excavated	N/A	Not excavated due to standing water
137	Not Excavated	N/A	Not excavated due to standing water
138	Not Excavated	N/A	Not excavated due to standing water
139	I:0-20	10YR4/1 Roots dark gray loamy sand	NCM
	II:20-30	10YR5/8 Roots yellowish brown sandy loam	NCM, mottled with 10yr4/1 and 7.5yr8/1
636	I:0-22	10YR5/1 Roots gray loamy sand	NCM
	II:22-32	10YR7/1 Roots light gray sandy loam	NCM
637	I:0-18	10YR5/1 Roots gray loamy sand	NCM
	II:18-28	10YR7/1 Roots light gray loamy sand	NCM, mottled with 10yr6/6 and 10yr4/3
638	I:0-20	10YR5/1 Roots gray loamy sand	NCM
	II:20-30	10YR7/1 Roots light gray loamy sand	NCM, mottled with 10yr6/6
639	I:0-17	10YR5/1 Roots gray loamy sand	NCM
	II:17-27	10YR7/1 Roots light gray loamy sand	NCM
640	I:0-16	10YR5/1 Roots gray loamy sand	NCM
	II:16-26	10YR7/1 Roots light gray loamy sand	NCM, mottled with 10yr6/6
641	I:0-10	10YR5/1 Roots gray loamy sand	NCM, mottled with 10yr7/1 and 10yr6/6
642	Not Excavated	N/A	Not excavated due to standing water
643	Not Excavated	N/A	Not excavated due to standing water
644	I:0-5	10YR3/3 dark brown silty clay loam	NCM, mottled w7.5yr clay
	II:5-20	10YR5/3 brown silt loam	NCM
645	I:0-20	10YR4/3 brown sandy clay loam	NCM
	II:20-30	10YR5/3 brown loamy sand	NCM
646	I:0-20	10YR4/3 brown sandy clay loam	NCM
	II:20-30	10YR5/3 brown loamy sand	NCM
647	I:0-25	10YR3/3 dark brown sandy clay loam	NCM, mottled w7.5yr clay
	II:25-35	10YR5/3 brown loamy sand	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
648	I:0-15	10YR3/3 dark brown sandy clay loam	NCM, mottled w7.5yr clay
	II:15-25	10YR5/3 brown loamy sand	NCM
649	I:0-10	10YR4/3 brown sandy clay loam	NCM
	II:10-25	10YR5/6 yellowish brown loamy sand	NCM
650	I:0-20	10YR4/3 brown sandy clay loam	NCM
	II:20-30	10YR5/3 brown loamy sand	NCM, w/ oxidation
651	I:0-10	10YR3/3 dark brown sandy clay loam	NCM, mottled w7.5yr clay
	II:10-20	10YR5/3 brown loamy sand	NCM, w/ oxidation
652	Not Excavated	N/A	Not excavated due to standing water
653	I:0-20	10YR4/2 Roots dark grayish brown sandy clay	NCM
	II:28-40	10YR6/3 pale brown sandy clay	NCM, mottled w 10yr 5/8, water at 40 cm bmgs
654	Not Excavated	N/A	Not excavated due to standing water
655	I:0-31	10YR4/2 Roots dark grayish brown sandy clay	NCM
	II:31-45	10YR6/2 light brownish gray sandy clay	NCM, mottled w 10 yr 5/8, water at 45 cm bmgs

Appendix B: STP Locations

Area	STP	Easting	Northing
Site 6	001	252870	3347820
Site 6	002	253900	3347820
Site 6	003	253930	3347820
Site 6	004	253960	3347820
Site 6	005	253991	3347820
Site 6	006	254021	3347820
Site 6	007	254051	3347820
Site 6	008	254081	3347820
Site 6	009	254111	3347820
Site 6	010	254141	3347820
Site 6	011	254171	3347820
Site 6	012	254201	3347820
Site 6	013	254200	3347852
Site 6	014	254167	3347851
Site 6	015	254138	3347849
Site 6	016	254107	3347853
Site 6	017	254079	3347851
Site 6	018	254048	3347850
Site 6	019	254018	3347849
Site 6	020	253988	3347848
Site 6	021	253967	3347855
Site 6	022	253930	3347848
Site 6	023	253909	3347852
Site 6	024	253940	3347880
Site 6	025	254004	3347879
Site 6	026	254001	3347881
Site 6	027	254031	3347880
Site 6	028	254061	3347879
Site 6	029	254086	3347879
Site 6	030	254114	3347878
Site 6	031	254150	3347880
Site 6	032	254181	3347880

Area	STP	Easting	Northing
Site 6	033	254210	3347880
Site 6	034	254000	3347790
Site 6	035	254000	3347790
Site 6	036	254000	3347790
Site 6	037	254030	3347790
Site 6	038	254060	3347790
Site 6	039	254090	3347790
Site 6	040	254120	3347790
Site 6	041	254150	3347793
Site 6	042	254172	3347794
Site 6	043	254140	3347758
Site 6	044	254110	3347759
Site 6	045	254080	3347759
Site 6	046	254050	3347760
Site 6	047	254020	3347760
Site 6	048	253990	3347760
Site 6	049	254110	3347731
Site 6	050	254080	3347731
Site 6	051	254050	3347729
Site 6	052	254020	3347731
Site 6	053	254078	3347701
Site 6	054	254050	3347700
Site 6	055	254059	3347683
Site 6	056	253950	3347910
Site 6	057	253978	3347910
Site 6	058	254008	3347910
Site 6	059	254038	3347909
Site 6	060	254068	3347909
Site 6	061	254098	3347909
Site 6	062	254128	3347908
Site 6	063	253980	3347941
Site 6	064	254011	3347968
Site 6	065	254040	3347939
Site 6	066	254071	3347940
Site 6	067	254100	3347940
Site 6	068	254010	3347970
Site 6	069	254040	3347970
Site 6	070	254070	3347970
Site 6	071	254040	3348000
Site 6	072	254073	3348000
Site 6	073	254103	3348000
Site 6	074	254070	3348030
Site 6	075	254100	3348030
Site 6	076	254130	3348030
Site 6	077	254110	3348060
Site 6	078	254139	3348060

Area	STP	Easting	Northing
Site 6	079	254169	3348060
Site 6	080	254199	3348060
Site 6	081	254229	3348060
Site 6	082	254259	3348060
Site 6	083	254289	3348060
Site 6	084	254319	3348059
Site 6	085	254349	3348059
Site 6	086	254379	3348059
Site 6	087	254409	3348059
Site 6	088	254440	3348059
Site 6	089	254170	3348030
Site 6	090	254200	3348030
Site 6	091	254230	3348030
Site 6	092	254260	3348030
Site 6	093	254290	3348030
Site 6	094	254320	3348030
Site 6	095	254350	3348030
Site 6	096	254380	3348030
Site 6	097	254410	3348031
Site 6	098	254170	3348001
Site 6	099	254203	3348000
Site 6	100	254228	3347999
Site 6	101	254261	3348001
Site 6	102	254291	3347998
Site 6	103	254322	3347998
Site 6	104	254351	3347998
Site 6	105	254381	3348000
Site 6	106	254356	3347969
Site 6	107	254325	3347970
Site 6	108	254295	3347970
Site 6	109	254265	3347971
Site 6	110	254235	3347971
Site 6	111	254205	3347972
Site 6	112	254175	3347972
Site 6	113	254326	3347940
Site 6	114	254296	3347941
Site 6	115	254266	3347941
Site 6	116	254236	3347941
Site 6	117	254207	3347942
Site 6	118	254295	3347910
Site 6	119	254265	3347910
Site 6	120	254235	3347908
Site 6	121	254205	3347910
Site 6	122	254331	3348213
Site 6	123	254363	3348230
Site 6	124	254533	3348200

Area	STP	Easting	Northing
Site 6	125	254498	3348200
Site 6	126	254462	3348200
Site 6	127	254430	3348200
Site 6	128	254394	3348200
Site 6	129	254545	3348230
Site 6	130	254513	3348230
Site 6	131	254483	3348230
Site 6	132	254453	3348230
Site 6	133	254423	3348230
Site 6	134	254393	3348230
Site 6	135	254364	3348231
Site 6	136	254575	3348230
Site 6	137	254605	3348231
Site 6	138	254567	3348201
Site 6	139	254648	3348252
Site 6	636	254222	3348175
Site 6	637	254252	3348175
Site 6	638	254282	3348175
Site 6	639	254312	3348175
Site 6	640	254342	3348175
Site 6	641	254372	3348175
Site 6	642	254402	3348175
Site 6	643	254432	3348175
Site 6	644	254157	3348120
Site 6	645	254187	3348119
Site 6	646	254217	3348119
Site 6	647	254247	3348119
Site 6	648	254277	3348119
Site 6	649	254307	3348119
Site 6	650	254337	3348119
Site 6	651	254366	3348119
Site 6	652	254397	3348118
Site 6	653	254428	3348117
Site 6	654	254457	3348119
Site 6	655	254487	3348119