Phase I Intensive Archaeological Survey
of the
Green Development - Beaver River Road Solar Farm
in the
Town of Richmond, Rhode Island

September, 2019

ACS

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Green Development - Beaver River Road Solar Farm
in the
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by
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ACS

for

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Abstract

This report contains the results of a Phase I intensive archaeological survey conducted by ACS (Archaeological Consulting Services) in June and July, 2019. The project area is on 43.67 acres at 172 Beaver River Road in Richmond, Rhode Island. The project proponent intends to create a 5.3 Megawatt solar facility on the property, which is currently an open wheat field with a house that was reportedly converted from an old mill structure in the 1930s according to local informants. In initial review letters by the local historical society and the Rhode Island Historical Preservation & Heritage Commission (RIHPHC), it was noted that the project could have an adverse impact on that house, the historic Jamesford house across the street, and the general area including several other farmsteads, which have been proposed collectively to be included in the National Register of Historic Places (NRHP) as the Beaver River Agricultural District. The reviewers also noted that the project area bears some sensitivity for pre-Contact archaeological resources, and that an archaeological survey of the property was warranted. ACS conducted background research, a pedestrian surface survey, and stratified-systematic subsurface shovel testing to evaluate the archaeological potential of the project area. There were 211 50 cm stratified-systematic tests excavated, as well as 12 judgmental tests. Three quartz projectile points / knives were recorded in three different systematic tests, all within plowzone contexts and with no further pre-Contact materials recovered from surrounding judgmental tests. Post-Contact artifacts were clustered in tests along Beaver River Road, and relate to the location of former outbuildings of the Jamesford farmstead whose principal house was located across the street from the project area at 165 Beaver River Road. Traces of associated foundations are still located in the field, particularly near the existing house and unpaved access drive into the property. Recovered post-Contact materials mostly include 19th century structural and domestic household artifacts in the vicinity of the current and former structures. ACS recommends no further archaeological conservation efforts with respect to pre-Contact cultural resources, although the post-Contact site area along Beaver River Road should be further conserved as an archaeological site that could reveal important information regarding the emergence and waning of dairy agriculture in Rhode Island. The house at 172 Beaver River Road, which is not intended to be demolished, should be subject to a state-level architectural history documentation as a mitigative measure relating to the installation of solar panels in the field behind the house.

Project Summary

Project Name: Green Development - Beaver River Road Solar Farm, Richmond, Rhode Island

Project Purpose: To perform a Phase I intensive archaeological survey of the project area, in compliance with guidelines issued by the Rhode Island Historical Preservation & Heritage Commission.

Project Funding: Green Development LLC, 3760 Quaker Lane, North Kingstown, Rhode Island.

Project Location: 172 Beaver River Road, Richmond, Rhode Island.

Project Size: 43.67 acres.

Investigation Type: Phase I intensive archaeological survey.

Investigation Methods: Background research, pedestrian surface survey, 211 Phase I systematic 50 cm square subsurface shovel tests, 12 judgmental 50 cm square subsurface shovel tests.

Dates of Investigation: June to July, 2019.

Performed by:

ACS (Archaeological Consulting Services), 118 Whitfield Street, Guilford, Connecticut 06437, (203) 458-0550, *acsinfo@yahoo.com, www.acsarchaeology.com.*

Principal Investigators: Gregory F. Walwer, Ph.D., and Dorothy N. Walwer, M.A.

Submitted to:

Narragansett Indian Tribal Historic Preservation Office (John Brown, Tribal Historic Preservation Officer), Narragansett Longhouse, 4425-A South County Trail, Charlestown, Rhode Island 02813, (401) 364-1103.

Reviewing Agency:

Rhode Island Historical Preservation & Heritage Commission (Timothy Ives, Principal Archaeologist), 150 Benefit Street, Providence, Rhode Island 02903-1209, (401) 222-2678. Permit #19-16.

Curation:

Artifacts submitted to the Rhode Island Historical Preservation & Heritage Commission (Charlotte Taylor, Senior Archaeologist), 150 Benefit Street, Providence, Rhode Island 02903-1209, (401) 222-2678. Artifact bags labeled with project code ("RMSF"); shovel test in grid direction units away from a datum set at 0N-0E at the southwest corner of the house at 172 Beaver River Road in 15-meter intervals (e.g. "2N-3E"), layer (e.g. "II"), and 10 cm level below datum for tests with high densities of material.

Recommendations:

Further conservation of existing house and outbuilding site area along the east side of Beaver River Road. State-level architectural history documentation of the house at 172 Beaver River Road as a mitigation measure related to the visual impact of the solar farm behind the structure. Phase II site examination of historic site area if any future impacts are planned. No further conservation efforts for pre-Contact cultural resources as all traces appear to be limited to disturbed plowzone context.

Acknowledgments

ACS (Archaeological Consulting Services) is indebted to the following people and organizations whose assistance helped to make the execution of this project more accessible and thorough:

Timothy Ives, Principal Archaeologist for the Rhode Island Historical Preservation & Heritage Commission in Providence, Rhode Island. ACS thanks Timothy Ives for his review of the survey project and inter-agency coordination.

Charlotte Taylor, Senior Archaeologist for the Rhode Island Historical Preservation & Heritage Commission in Providence, Rhode Island. ACS thanks Charlotte Taylor for her provision of site file information and other important resources for the area.

Kevin Morin, PE, Director of Civil Engineering for Green Development LLC of North Kingstown, Rhode Island. ACS thanks Mr. Morin for his efforts in coordinating the project.

John Brown, Narragansett Tribal Historic Preservation Office (NTHPO) of Wyoming, Rhode Island. ACS thanks Mr. John Brown for his monitoring efforts at the project site.

Andrew Tibbits, current owner of 165 Beaver River Road. ACS thanks Mr. Tibbits for his generous provision of information regarding former and current structures of the project area.

Richard Wolke, Richmond Historical Society, Wyoming, Rhode Island. ACS thanks Mr. Wolke for his information regarding the history of Beaver River Valley.

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CHAPTER 1: INTRODUCTION

Project Description

This report provides the results of a Phase I intensive archaeological survey for a planned solar farm in Richmond, Rhode Island. The project area is in southeast Richmond, to the northwest of Route 2. The property bears the address 172 Beaver River Road. The parcel measures 43.67 acres, and lies on the east side of the road, with the sinuous course of Beaver River and associated wetlands forming the north, east, and south boundaries of the parcel. The proposed development is for a 5.3 Megawatt facility that will include the installation of solar panels and supporting electrical infrastructure on an agricultural lot that is already clear of trees. Existing site plans call for the demolition of a single family house and shed, although project engineers indicate that the structures can be left in place if necessary or warranted.

The Town of Richmond solicited a preliminary review of the project by the RIHPHC. In a letter to the town dated May 31, 2019, RIHPHC noted that the proposed project,

"…will occur within the Beaver River Road Historic District… received a determination of Elibility for listing the National Register of Historic Places… significant for its intact collection of historic farmsteads complemented by a well-preserved agricultural landscape… 172 Beaver River Road as a contributing resource… The late 19th / early 20th century building at 172 Beaver River Road originally may have been an outbuilding that was later converted to a residence. The property had once been part of Jamesford, a historic farmstead that spanned both sides of Beaver River Road and was owned and operated by the James family from 1866 to 1925. The Jamesford farmhouse is the circa 1800 1 ½-story Cape Cod dwelling at 165 Beaver River Road (Plat 85, Lot 2), directly across from the project area. The demolition of 172 Beaver River Road… will have an adverse effect on historic properties. The project will also have an adverse effect on the Jamesford farmhouse… by introducing a modern element that is out of character with the rural nature of this historic farmhouse… have an adverse effect on the historic district's pastoral setting… will physically and visually alter the historic district's rural, agricultural environment and diminish its integrity of setting, feeling and association. While the RIHPHC understands that a balance must be reached to accommodate new development, the proposed encroachment upon this significant historic, cultural and scenic asset would be a regrettable loss to Richmond's historic setting and agricultural heritage. There are no known archaeological sites in the project area, but based on its environmental characteristics and proximity to known sites, the RIHPHC considers it likely that there are archaeological resources present. The RIHPHC recommends that an archaeological survey be conducted to determine if the project will have an adverse effect on significant Native American cultural resources…"

Based on the stated pre-Contact and post-Contact sensitivity of the project area, and given the size of the property, ACS conducted a stratified-systematic subsurface testing strategy, in conjunction with a thorough background research effort and complete pedestrian surface survey to identify any and all cultural resources located within the project area. The survey was performed in compliance with the *Performance Standards and Guidelines for Archaeology in Rhode Island,* containing guidelines issued by RIHPHC for conducting cultural resource management surveys in Rhode Island, with RIHPHC to serve as review agency for the final report. ACS submitted its research design for pre-approval by RIHPHC ahead of the field survey, and RIHPHC issued permit #19-16 for the intensive survey.

Background

The project area is in a mid to lower section of the Beaver River drainage, a lower order stream that has its origins at James Pond to the north in Exeter, and feeds into the Pawcatuck River about two kilometers to the south. The topography of the property is very favorable for human occupation, and is nearly level to gently sloping. The soil types are also suitable but less than ideal for agriculture, with a well drained Enfield silt loam dominant, and more excessively drained Hinckley gravelly sandy loams occurring along the stream. According to a statistical landscape sensitivity model developed and utilized by ACS, the project property has a low (0-20) to moderate (20-75) sensitivity for potential pre-Contact resources, ranging from 9.2 to 21.6 out of a possible 100. The site benefits from well drained soils on a perennial stream, although it is a low order stream with no major tributaries. The soils are suitable for agriculture, although the dominant Enfield soils have a fine particle fraction, and the more excessively drained Hinckley soils do not retain water well. The glacial outwash setting of the property ensures a low water table, although the meltwater sediments are not likely well sorted or stacked, thus affecting ease in constructing subsurface cultural features. While these conditions would not have likely supported substantial village contexts, they could have easily supported short term hunter-gatherer camp sites or task-specific resource extraction sites as part of a relatively mobile settlement pattern, particularly at distances of 100 meters or less of Beaver Brook. RIHPHC site files indicated no previously recorded pre-Contact period sites in close proximity to the project area, although informants indicate one local collector had recovered projectile points from the property in the past by walking the fields.

The historic sensitivity of the property is concentrated along the historic route of Beaver River Road. The Jamesford home and cluster of outbuildings across the street from the project property is a known historic resource of the area, and the existing late historic house on the project property is also regarded as a contributing resource for what has been proposed as the Beaver River Road Historic District. A further factor for consideration of historic sensitivity for the project is that part of what makes the historic district potentially eligible for the National Register of Historic Places is the pastoral agricultural setting in conjunction with the historic architecture. Mitigating factors include the alterations that appear to have been made to the Jamesford house, including a rear addition with concrete block chimney stack, and the fact that the house on the project property is reportedly a conversion of an outbuilding that dates to the late 19th or early 20th century. The Jamesford house across the street from the project was built by Jeremiah Northup around 1800 according to local informants, with the house and the land within the project area coming into the possession of George S. James by the 1830s and 1840s. The Wheeler and then Stamp families owned the project property during the 20th century.

Archaeologically, post-Contact resources are also most likely to be located along the historic course of Beaver River Road, which has been straightened and paved since the 19th century. The historic houses are located very close to the existing road, and given previously documented distances to outbuildings, privies, wells, and other features associated with historic houses at other sites, it is likely that any clusters of historic subsurface contexts would be revealed by tests located within 50 meters of the road.

Methods

ACS was provided with survey maps of the project property, drafted by Green Development, LLC of North Kingstown, Rhode Island. In addition to existing conditions, including topography and wetlands, the maps show the location of the historic house on the property, as well as the cluster of buildings associated with the historic house across the street. They also show the layout of the proposed solar development, which is extensive, and covers nearly the entire available acreage outside wetlands and various setbacks. Because of the setting of the property, both pre-Contact and post-Contact resource sensitivity assessments were conducted for the project. The Narragansett Tribal Historic Preservation Office (NTHPO) intermittently provided a monitor to gauge the work of ACS during its field survey.

Based on the size of the project property and the differential potential sensitivity for pre-Contact and post-Contact resources, ACS conducted a fully saturated subsurface testing strategy in areas to be impacted within 50 meters of Beaver River (and within 50 meters of associated wetlands) to test for potential pre-Contact resources, and within 50 meters of Beaver River Road to test for potential post-Contact resources, as well as two transects through the interior of the property as a control for an overall stratified-systematic testing pattern. All square systematic tests measured 50-cm across and were plotted in standard 15-meter intervals, with about ten percent of the systematic sample fraction additionally reserved as potential judgmental shovel tests.

Field Results

The entire project area was covered with winter wheat during the survey, interspersed with weeds such as goldenrod and ragweed. Animal species identified during fieldwork included white-tailed deer, red-tailed hawk, barn swallow, and woodchuck. Following consultation with RIHPHC, ACS plotted 211 stratified-systematic shovel tests in 15-meter intervals. Four more judgmental shovel tests were placed at 7.5-meter intervals around each of three tests yielding positive traces of pre-Contact cultural resources, for a total of 223 shovel tests excavated. Fieldwork encountered loamy to gravelly loamy soils, with some buried A horizons being encountered in the eastern and southeastern portions of the area tested. These soils appeared to represent a buried wetland, with wet soil, hydric profiles, and standing water being encountered in some of these tests. Plowzone thicknesses varied across the project area as well, with some tests yielding a very shallow 25-30 cm thick plowzone, and others with twice that amount. This is interpreted as being the result of erosion, soil creep, and earthmoving activities. Several proposed test locations along the western edge of the project area were not excavated, as these were located either very close to the existing occupied house or were in very densely overgrown surrounding areas. Probable foundation stones and fill layers were identified in the western portion of the area tested in association with the known location of a large barn, identified by local informants to the north of the existing house.

There were three pre-Contact artifacts recovered during the survey, all from the plowzone in tests 2N-2E, 8N-12E, and 9S-2E. All three are quartz projectile points or portions of projectile

points. The most diagnostic point is a small Squibnocket triangular point from 2N-2E, while the other two are small stemmed Lamoka points with missing bases, and one of the Lamoka lithics is more likely a knife based on evidence of use-wear and/or resharpening of the lateral edges. There were no other pre-Contact artifacts found in association with the points, and no traces of feature contexts. Nor were there any pre-Contact feature contexts or artifacts found in any of the 12 surrounding judgmental tests. Given the lack of other associated material or feature contexts, in addition to their broad distribution that is likely not just attributable to the historic effects of plowing, it is likely that the points represent intermittent, isolated hunting and gathering events. The Squibnocket point clearly places at least one of the events during the Late Archaic period, with the other two representing a broader range of at least Late Archaic through Early Woodland periods.

There were 85 historic artifacts recovered during the survey, the vast majority within 30 meters of Beaver River Road. Historic artifacts mostly include indeterminate heavily oxidized nails, window glass, and a variety of ceramic fragments such as whiteware, ironstone china, porcelain, and stoneware. The range of materials clearly has a structural and domestic household focus, concentrated in the mid to late 19th century. Less typical artifacts include bottle glass, a clay pigeon fragment, iron chain link, and two iron harness buckles. The distribution of historic materials appears to be concentrated between the 4S and 11N lines of tests, and about 30 meters from the road, with almost no artifacts recovered from the 3E line of tests 45 meters from the road. This same delineated area contains all of the known outbuildings associated with the Jamesford farmstead according to local informants, including an old dairy barn on the north side of the access drive where foundations may exist beneath the surface, the existing small outbuilding just south of the access drive, a machine shed and two silos in the vicinity of the access drive, a recently demolished dairy barn just south of the access drive, and the existing house itself, which was converted from some sort of mill building to a residence in 1933.

Recommendations

ACS recommends no further archaeological conservation efforts for pre-Contact cultural resources on the project property. The pre-Contact artifacts recovered during the survey were limited to three projectile points or fragments, with one dating to the Late Archaic period, although all were found in disturbed plowzone contexts, and none in association with other materials or feature contexts. The three points were found widely distributed, and none of the judgmental tests placed in close proximity to any of the points revealed further evidence of pre-Contact cultural activity.

Information from local informants and artifacts from the field survey confirm the concentration of post-Contact historic activity on the project area within a relatively narrow band on the east side of the road, ranging from the north across the street from the Jamesford house and associated outbuildings, south to within 60 meters of the existing house on the project area. None of the associated foundations for any of the outbuildings were positively identified at the Phase I level of testing, although traces of the large barn foundation to the south of the access drive appear to have been encountered, and it remains likely that at least traces of other original

buildings still survive within subsurface contexts. The mix of structural and domestic household materials that pre-date the conversion of the existing house from a mill structure to a residence strongly suggests intensive activity related to the Northup / James / Wheeler historic farmstead, with a wide range of activities documented at the overall site including dairying, raising cattle, raising and harvesting a variety of crops, and blacksmithing. While much of the historic material recovered is derived from plowzone contexts, the reported burial of foundations makes it likely that there are intact subsurface contexts with the potential to yield further information regarding a cohesive cluster of historic farm-related structures and the dynamics of associated activities. It is therefore recommended that an area ranging from 180 meters north of the existing house to 60 meters south of the existing house and within 40 meters of the existing road be further conserved for archaeological resources. Much of the area is already planned to be avoided by virtue of a setback for solar panels, although current site plans indicate impact to the eastern part of the site area. Vegetative screening planned for the eastern side of the road will be limited to a short distance from the road and will not likely impact significant resources, as most of the evidence for historic activity was found in tests placed 30 meters from the road. Alternatively, if this core site area cannot be substantially avoided, a Phase II site examination should be undertaken to evaluate the site's horizontal and vertical boundaries, functional and chronological setting, integrity, and significance or eligibility for the National Register of Historic Places (NRHP). The rest of the project area does not require further historic archaeological conservation.

The existing house of the project area at 172 Beaver River Road and the remains of one historic outbuilding are located within the designated historic site area. Because of extensive alterations to the original structure before conversion to a house in 1933, and a rapidly declining integrity of that structure, ACS notes that it may no longer qualify as a contributing resource to the district, although it has been declared as an eligible contributing resource in submissions to the National Register which issued a finding of eligibility for the district as a whole, consisting of four farmsteads and houses. ACS therefore recommends that the house at 172 Beaver River Road be subject to a state-level architectural history documentation as an appropriate level of mitigation for the resource, in particular to document any structural features related to historic milling activities at the site. ACS also notes that some alterations have also occurred at the Jamesford House across the street, including the addition of a rear 20th century porch with cement chimney stack, although enough of the original elevations exist for this structure to remain as a contributing resource to the proposed district.

Regarding the visual impact of the entire proposed project on the NRHP eligible district, ACS notes that the vistas provided by the existing agricultural fields are integral parts of the agricultural district, although in recent years agriculture has no longer been economically feasible for the owners, and if left fallow the fields would return to a wooded state that would no longer afford the vistas deemed as contributing to the overall resource. Potential alternative developments such as single family housing would result in more intensive and permanent visual impacts to the district than the proposed solar facility. ACS therefore recommends that the vegetative screening planned for the entire length of the east side of Beaver River Road on the project property is sufficient to mitigate potential visual impacts to the district, particularly in light of the temporary nature of the solar facility that, unless renewed, would be removed in 25 years and allow the return of the field to its previously undeveloped state. Since some of the structural aspects of the historic site area are quite close to the road, vegetative screening would

be more beneficially placed along the 40-meter line to the east of the road in the vicinity of the historic site area. If left undeveloped, the historic site area on the east side of the road would further mitigate visual impacts to the existing structural areas as an added benefit to the overall resource. Any future agricultural activity within the site area should be limited to current usage, with plowing depths no greater than 25 cm. It is noted also that the new utility lines to be brought onto the property to service the solar facility are to be underground within the existing pavement and/or adjacent right-of-way.

CHAPTER 2: BACKGROUND

Environmental Setting

The project area is located in the town of Richmond, Washington County, Rhode Island (Figure 1), and within the Coastal Plains and Hills ecoregion. The general project location is in the southeast part of Richmond, to the west of Route 2 (South County Trail), and on the east side of Beaver River Road (Figure 2). The project property bears the address 172 Beaver River Road, and features an existing house located close to the road, and a mostly open field with winter wheat currently growing. The property is Parcel #12 on Map #8E filed at the Richmond tax assessor's office, and measures about 43.5 acres (Figure 3). The eastern boundary of the project area is irregular, following a sinuous setback from Beaver River, while the northern boundary is a wetlands division between two open fields, and the western boundary is the east side of Beaver River Road. The river bends west as it flows south, nearly intersecting Beaver River Road to the south of the project property. The UTM coordinates to the nearest 10 meters for the existing house are (easting / northing): 279,610 / 4594,160 (Zone 19) (Figure 4).

Geologically, Rhode Island is within the Avalon block of formations dating mostly from the late pre-Cambrian to Pennsylvanian era, and representing land that was formerly part of the African plate. Underlying bedrock for the project area is a mass unit of Augen Granite Gneiss (Zeag), a late Proterozoic formation in excess of 570 million years old (Hermes et al. 1994; Dutch 2014) (Figure 5). The formation is part of the larger West Bay Area of the Esmond-Dedham Subterrane covering most of the state of Rhode Island. The Subterrane is set off from the Hope Valley Subterrane of western Rhode Island by the Hope Valley Shear Zone, a prominent fault that lies about two kilometers west of the project area. Bedrock exposures in the area reveal dips on the order of 25 to 60 degrees to the northeast. The formation is a pale to dark gray, medium to coarse grained granite gneiss characterized by large feldspar porphyroclasts, and range from tonalite to granodiorite to quartz monzonite. The principal mineralogy of the formation is sodic plagioclase, quartz, microcline / orthoclase, biotie, hornblende, and epidote, with some amphibolite layering. The durability of the formation could have contributed to the presence of rockshelter sites in the broader region. The project area is at about 100 feet (ca. 30 meters) above mean sea level, dipping slightly to the south and east. The nearly level to gentle slopes of the project area would have been conducive to intensive occupation and use by pre-Contact or earliest historic occupants of the region.

The USDA soil book for Rhode Island indicates that the project area is dominated by Enfield silt loam (EfA), with Hinckley gravelly sandy loam units (HkA, HkC) closer to the river in the southern part of the property (Figure 6). The soils are commonly found on stream terraces and glacial outwash plains. The well drained Enfield soil typically has a stratigraphy that includes a surface layer of dark grayish brown silt loam about seven inches thick, followed by a subsoil of strong brown and light olive brown silt loam 18 inches thick, and a substratum of brown very gravelly sand to five feet deep or more. The soil is frequently associated with well drained Agawam fine sandy loam (AfA), which is found at the southern end of the parcel where there is a proposed detention basin. The Agawam soil typically has a profile of dark brown fine

Figure 1: Map of Rhode Island

Figure 1: Map of Rhode Island showing town and watershed boundaries. Project area is in Richmond, Beaver River watershed of the Pawcatuck regional drainage basin.

Figure 2: Map of the Richmond Area

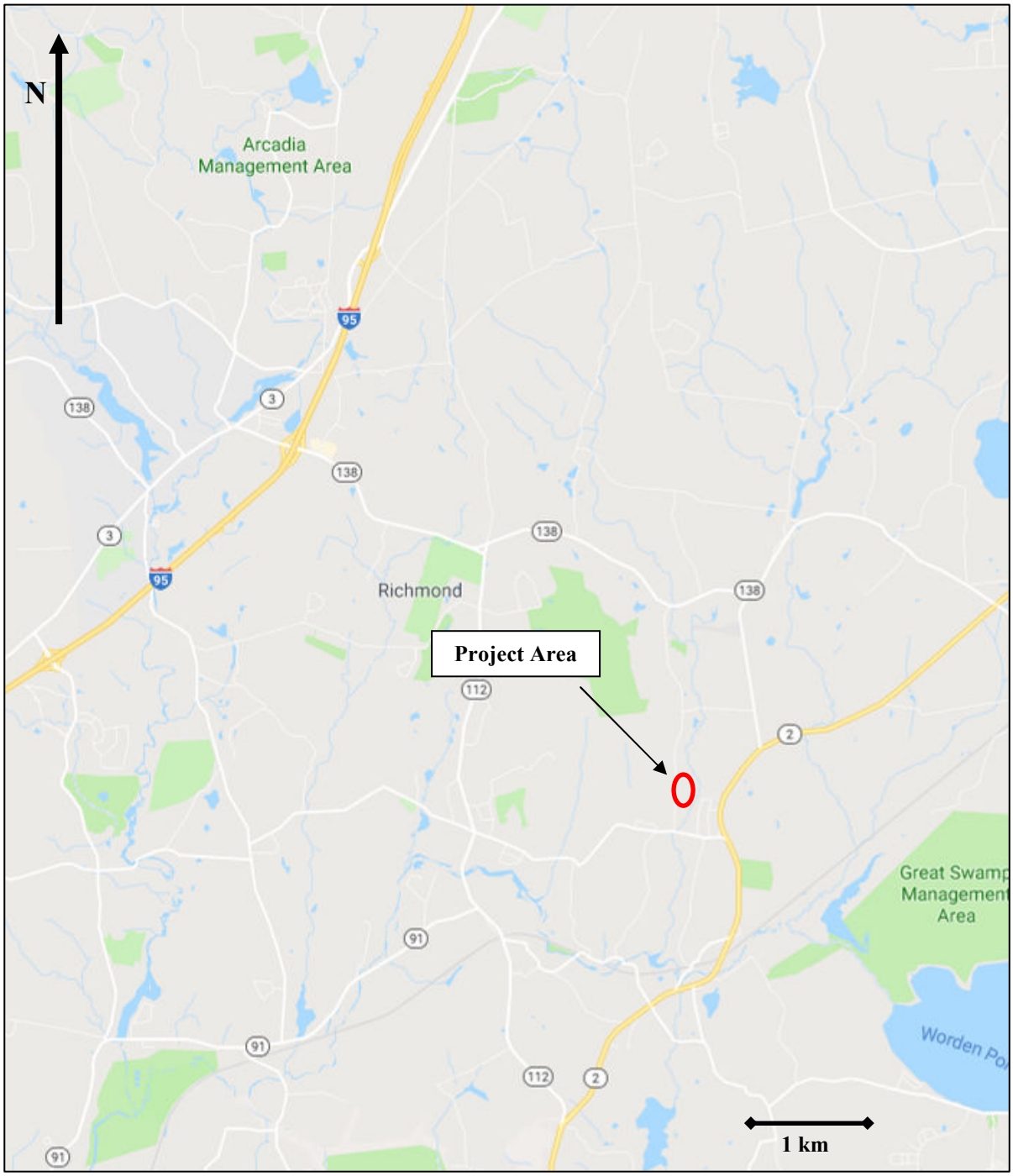

Figure 3: Map of the Project Area

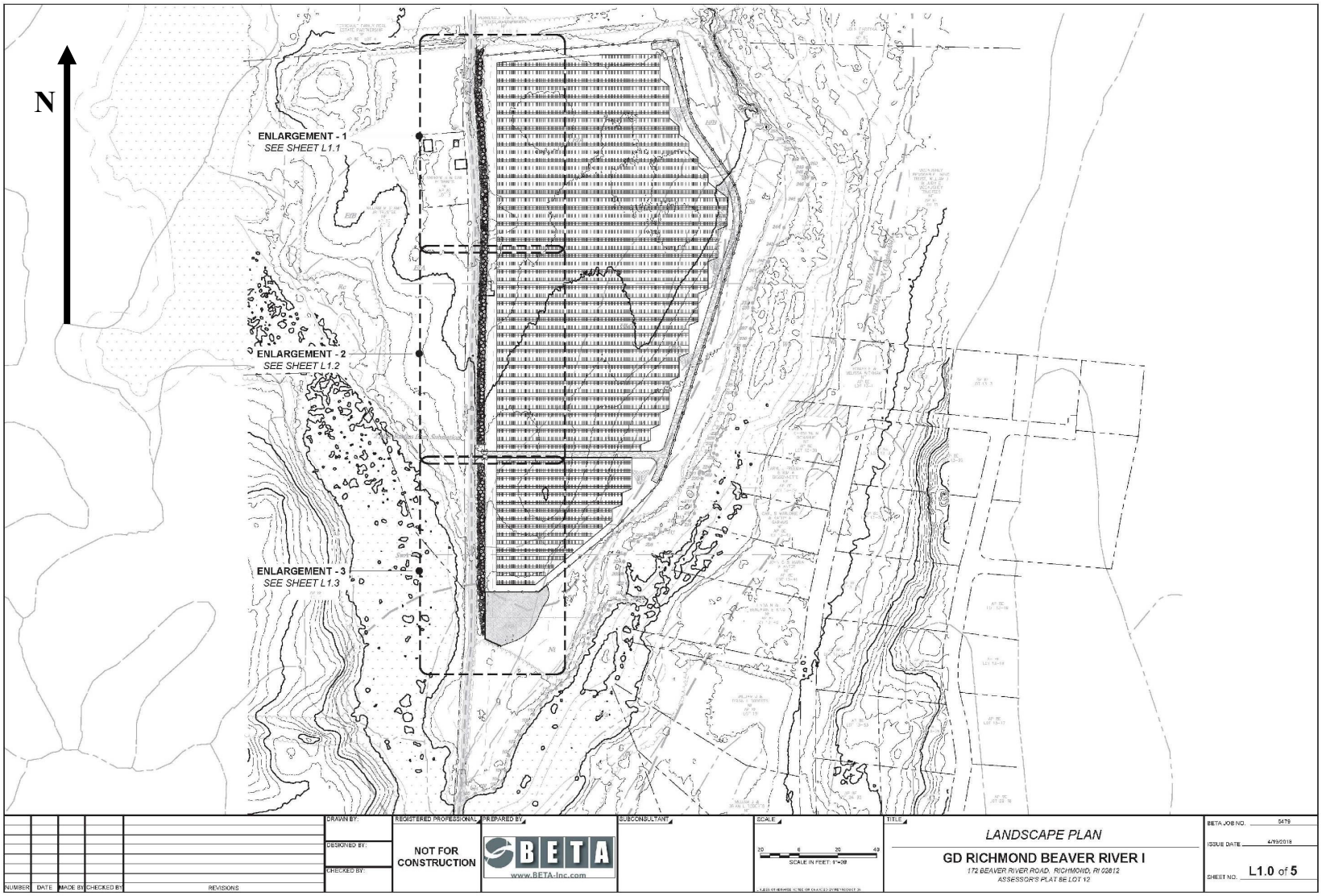

Figure 4: USGS 7.5' Topographic Map, Carolina and Kingston Quadrangles

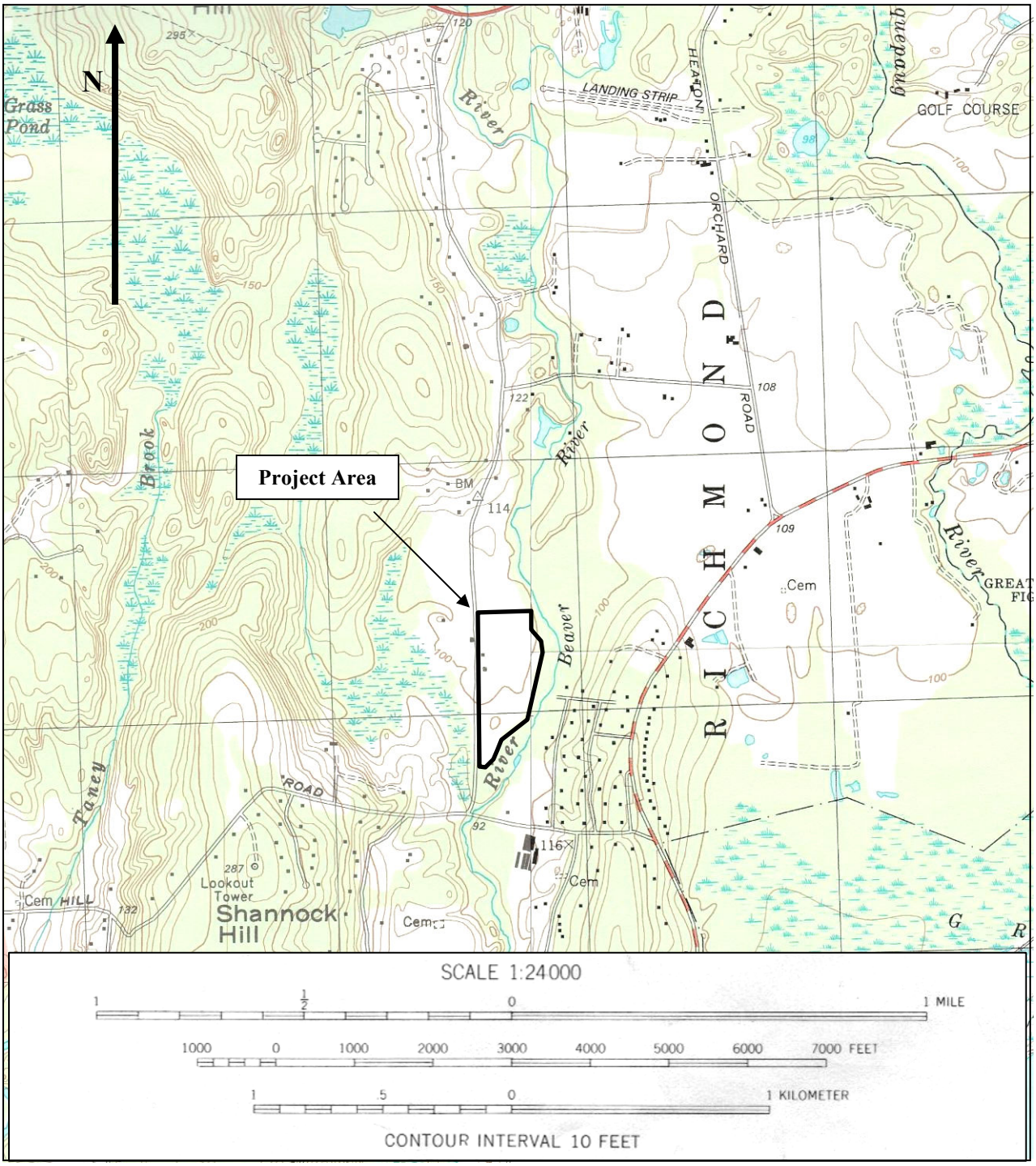

Figure 4: From USGS 2001a, 2001b.

Figure 5: Bedrock Geologic Map of Rhode Island

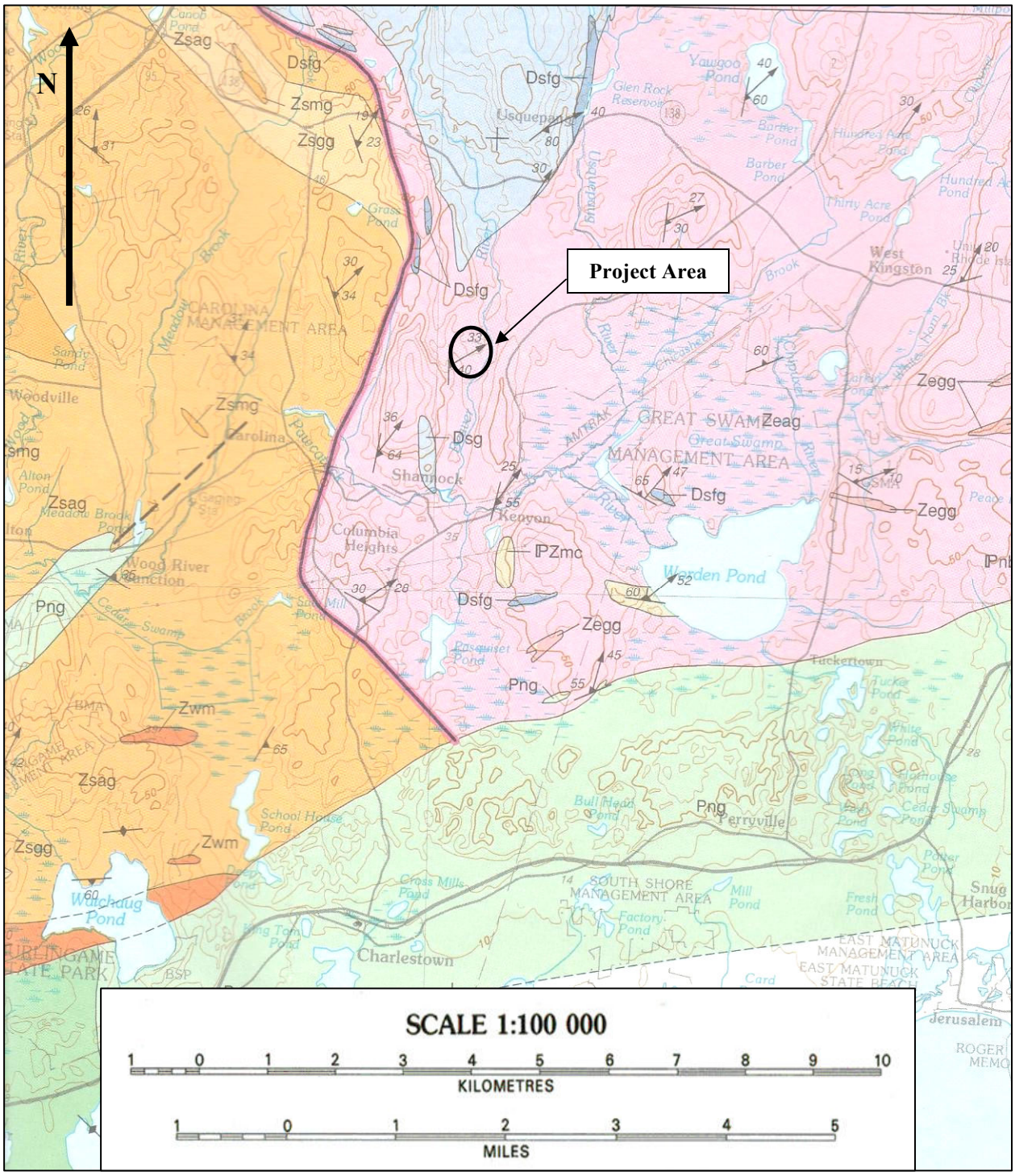

Figure 5: From Hermes et al, 1994.

Figure 6: USDA SCS Soil Map, Rhode Island (Sheet #124)

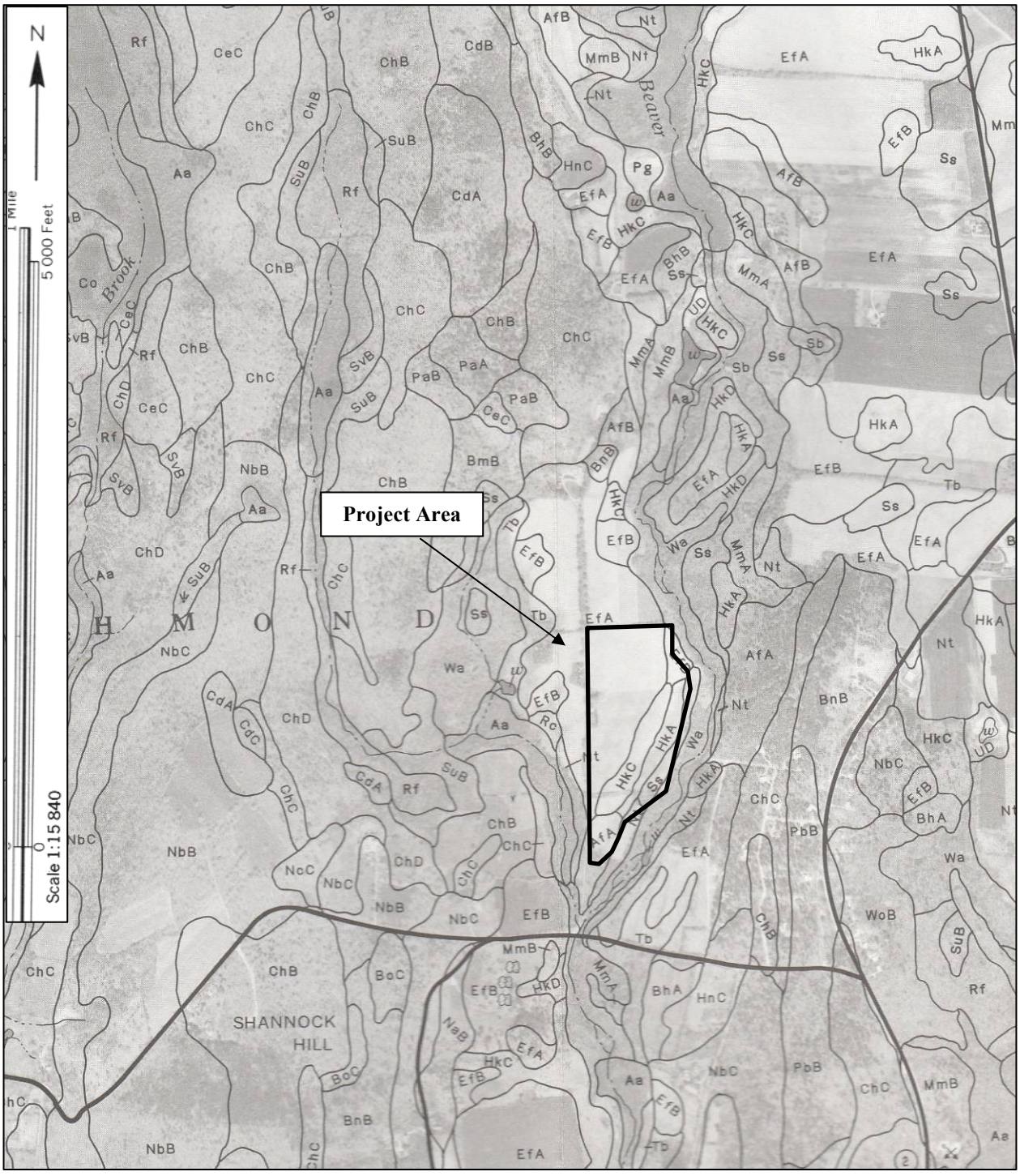

Figure 6: From USDA 1981.

sandy loam about seven inches thick, followed by a subsoil of yellowish brown, reddish yellow, and light yellowish brown fine sandy loam about 25 inches thick, over a substratum of pale brown gravelly sand to five feet deep or more. The excessively drained Hinckley soil includes a surface layer of dark brown gravelly sandy loam about six inches thick, followed by 11 inches of a subsoil of yellowish brown to light yellowish brown gravelly sandy loam to loamy sand, and a substratum of light brownish gray very gravelly sand to five feet deep or more. The Enfield and Agawam soils are better suited for cultivated crops, while the rapid permeability and low available water capacity of the Hinckley soils was not ideal for agricultural efforts, although the drainage characteristics of all the soils were very well suited for pre-Contact and historic habitation.

The project region is in the Pawcatuck regional drainage basin. The Beaver River drainage occupies a central location within the larger regional drainage basin, with Beaver River draining into the Pawcatuck River about two kilometer south of the project area. It forms the eastern boundary of the project property, which is located within the lower portion of the drainage. The river would have ensured a perennial source of water for pre-Contact to post-Contact agricultural and occupational purposes, including hydrological power. The proposed development will be set with a wide setback to the river. Current vegetation on the property is dominated by a winter wheat, with scrub growth along the road, and a wooded cover along the river.

Cultural Background

Regional Pre-Contact Culture

The pre-Contact culture of the project region and southern New England in general can be broadly divided into periods reflecting changes in environment, Native American subsistence and settlement patterns, and the material culture which is preserved in the archaeological record (Table 1). Although it remains controversial today, the conservative estimates for the first occupations of North America are about 18,000 to 15,000 years ago, just after the maximum extent of the last glaciation and the broadest extent of the Bering land bridge (Kehoe 1981:7; Parker 1987:4; Jennings 1989:52; RIHPHC 2002:1). Southern New England itself remained glaciated until about 15,200 B.P. (Snow 1980:103; Gordon 1983:71; Parker 1987:5; McWeeney 1994:181, 1999:6).

Pre-Contact Sequence

The Paleo-Indian period is documented in southern New England after 12,000 years ago and extends to roughly 9,500 B.P. (Swigart 1974; Snow 1980:101; Lavin 1984:7; Moeller 1984, 1999; RIHPHC 2002:44). This was a period of climatic amelioration from full glacial conditions, and a rise in sea levels which fell short of inundating the continental shelf. It was during this time that tundra vegetation was replaced by patches of boreal forests dominated by spruce trees (Snow 1980:114; Parker 1987:5-6), and eventually white pine and several pioneering deciduous genera (McWeeney 1994:182, 1999:7). Early in the period, the environment was conducive to the existence of large herbivores and a low population density of humans who

Table 1: Regional Pre-Contact Chronology

Paleo-Indian Period (12,000-9,500 B.P.)

Environment: Dry and very cold, tundra herbaceous plants and sparse spruce forests shifting to pine forests.
Settlement: Semi-nomadic, restricted wandering.
Subsistence: Very large grazing herbivores and smaller mammals.
Material: Large fluted points (cf. Clovis), knives, drills, scrapers, awls, abraders, perforators, spokeshaves, and hammerstones.
Ritual: Unknown.

Early Archaic Period (9,500-7,500 B.P.)

Environment: Cold, dense pine and deciduous forests.
Settlement: Central-based wandering.
Subsistence: Large foraging herbivores and smaller mammals.
Material: Atlatl, stemmed and bifurcated (Stanly, cf. Kanawha and Lecroy) points, choppers, anvil stones, and others from earlier periods.
Ritual: Unknown.

Middle Archaic Period (7,500-6,000 B.P.)

Environment: Cool, deciduous hardwoods and pine.
Settlement: Central-based, seasonally circulating.
Subsistence: Foraging mammals, fish, and shellfish.
Material: Contracting stemmed points (Neville, Stark, and Merrimac), semi-lunar groundstone knives, banner stones, net plummets, gouges, denticulates, grooved axes, percussed celts and adzes, and others from earlier periods.
Ritual: Unknown.

Late Archaic Period (6,000-3,700 B.P.)

Environment: Moderate, deciduous hardwoods.
Settlement: Central-based or semi-sedentary, seasonally circulating and radiating.
Subsistence: Foraging mammals (deer), small mammals, turtles, birds, fish, shellfish, berries, nuts, seeds.
Material: Groundstone manos, mortars, pestles, and bowls, stone pipes, bone tools, perforated weights, decorative gorgets, corner-notched (Vosburg, Brewerton, and Vestal), side-notched (Otter Creek, Brewerton, and Normanskill), narrow-stemmed (Dustin, Lamoka, Squibnocket, and Wading River), and triangular points (Squibnocket, Brewerton, and Beekman), fish weirs and harpoons, and others from previous periods.
Ritual: Cremation burials with utilitarian funerary objects for limited groups, suggesting possible access to restricted resources (e.g. transportation routes).

Terminal Archaic Period (3,700-2,700 B.P.)

Environment: Moderate, deciduous hardwoods.
Settlement: Semi-sedentary, short-term radiating, long-term seasonally circulating.
Subsistence: Foraging mammals (deer), small mammals, fish, shellfish, turtles, birds, berries, nuts, seeds.
Material: Susquehanna corner-notched points, side-notched and large stemmed points, steatite bowls, canoes, Vinette I pottery, and others from previous periods.
Ritual: Elaborate secondary cremation burials containing high proportions of highly stylized artifacts of non-local material in specialized cemetery sites for limited groups with access to restricted resources (e.g. steatite, transportation routes), suggesting a stratified society and semi-sedentism for some groups.

Early Woodland Period (2,700-2,000 B.P.)

Environment: Cool, deciduous hardwood trees.
Settlement: Central-based, seasonally circulating.
Subsistence: Foraging mammals (deer), small mammals, fish, shellfish, turtles, birds.
Material: Bow and arrow, ceramics, stemmed (Adena-Rossville) and side-notched (Meadowood and Fulton) points, Steubenville / Fox Creek points, some exotic Adena material, and others from previous periods.
Ritual: Combination of cremation burials and primary inhumations, often in habitation settings, suggesting some latent retention of class distinctions during a period of declining ceremonialism and undifferentiated control over critical resources.

Middle Woodland Period (2,000 B.P.-1,000 B.P.)

Environment: Moderate, deciduous hardwood trees.
Settlement: Semi-sedentary, short-term radiating, long-term seasonally circulating.
Subsistence: Agriculture (squash, beans, corn, sunflower, tobacco), foraging mammals (deer), small mammals, fish, shellfish, turtles, birds, berries, and nuts.
Material: Groundstone hoes, cylindrical pestles, many ceramic styles, projectile points (Snyders corner-notched, Long Bay and Port Maitland, Rossville stemmed, Greene), and others from previous periods.
Ritual: Unknown (not yet distinguished from the Late Woodland).

Late Woodland Period (1,000-1,600 A.D.)

Environment: Moderate, deciduous hardwood trees.
Settlement: Semi-sedentary, short-term radiating, long-term seasonally circulating.
Subsistence: Agriculture (squash, beans, corn, sunflower, tobacco, Jerusalem artichoke), foraging mammals (deer), small mammals, fish, shellfish, turtles, birds, berries, nuts, and tubers.
Material: Wigwam homes, Jack's Reef, and Madison and Levanna triangular points, ceramics, and others from previous periods.
Ritual: Primary inhumations in habitation sites, suggesting egalitarian society.

procured these animals as a major subsistence resource, although warming temperatures and denser forests contributed to the extinction of certain species. The projected human social and settlement patterns are those of small bands of semi-nomadic or restricted wandering people who hunted mammoth, mastodon, bison, elk, caribou, musk ox, and several smaller mammals (Snow 1980:117-120). Episodes of sparse vegetation during this period encouraged the use of high lookout points over hollows and larger valleys by people in pursuit of large game (RIHPHC 2002:2). The southern part of New England had an earlier recovery from glacial conditions when compared to areas to the north, however, with a higher density of vegetation that might have precluded Paleo-Indians of the region from focusing heavily on the larger mammals (McWeeney 1994:182). The cultural material associated with this period includes large to medium-sized, fluted projectile points (cf. Clovis), in addition to knives, drills, pieces esquillees and gravers, scrapers, perforators, awls, abraders, spokeshaves, retouched pieces, utilized flakes, and hammerstones (Wilbur 1978:5; Snow 1980:122-127; Moeller 1980; RIHPHC 2002:44).

The Early Archaic period lasted from approximately 9,500 B.P. to 7,500 B.P. (Snow 1980:159; Turnbaugh 1980; Lavin 1984:9; Moeller 1984). Sea levels and temperatures continued to rise during this period as denser stands of forests dominated by pine and various deciduous species replaced the vegetation of the former period (Davis 1969:418-419; Snow 1980:114; Parker 1987:9; McWeeney 1994:184-185, 1999:8-9). This environmental change was rapid and caused a major shift in the animals it supported, including deer, moose, other small to medium-sized mammals, migratory birds, fish, and shellfish. The material culture changed along with the environmental conditions to include the atlatl and smaller stemmed and bifurcated projectile points (Stanly, cf. Kanawha and Lecroy) for procuring smaller, faster game in more closed settings (Wilbur 1978:6-7; RIHPHC 2002:44). The expanded tool set included choppers and anvil stones. Settlement patterns were probably becoming more territorialized towards a central-based wandering character (Snow 1980:171; Forrest 1999). The Early Archaic period is poorly represented in southern New England, probably resulting from a combined effect of low population densities in response to rapidly changing environmental conditions, as well as site location and preservation factors (Snow 1980:168; Lavin 1984:9; McWeeney 1986; Forrest 1999).

The Middle Archaic period extended from approximately 7,500 B.P. to 6,000 B.P. (Snow 1980:173; Turnbaugh 1980; Lavin 1984:9; McBride 1984; Jones 1999; RIHPHC 2002:44). It was by the end of this period of increased warming that sea levels and coastal configurations had stabilized and approached their present conditions (Kehoe 1981:211; Parker 1987:9; RIHPHC 2002:6). The period is marked by the establishment of forests with increasing proportions of deciduous hardwoods in relation to the pine predecessors in southern New England (Davis 1969; Snow 1980:114; McWeeney 1999:10). The material culture included square or contracting-stemmed points (Neville, Stark, and Merrimac), semi-lunar groundstone knives, ground and winged banner stones for atlatls, plummets for nets, gouges, denticulates, perforators, percussed celts and adzes and grooved axes for woodworking (Snow 1980:183-184; RIHPHC 2002:44), as well as tools used in previous periods. This more extensive range of material culture indicates a broader subsistence base than in previous periods, including greater fish and shellfish procurement (Wilbur 1978:8; Snow 1980:178-182) which was associated with the stabilization of sea levels towards the end of the period. The increased breadth of subsistence resources had

the effect of increasing scheduling efforts and may have caused settlement patterns to take on more of a central-based or seasonally circulating pattern with bands joining and dispersing on a seasonal basis (Snow 1980:183). Sites found suggest that a wider range of environments and associated site types were exploited, including both large and special task sites in upland areas. This regional pattern supports the suggested settlement pattern of central-based, seasonally circulating or restricted circulating groups of people supported by logistical procurement sites. Middle Archaic sites are fairly rare, again a combined product of rising sea levels and poor site preservation.

The Late Archaic period ranged from approximately 6,000 B.P. to 3,700 B.P. (Snow 1980:187; Lavin 1984:11; McBride 1984: Pfeiffer 1984; Cassedy 1999; RIHPHC 2002:44). This period is marked by a warm-dry maximum evident from pollen cores in the region (Davis 1969:414; Ogden 1977). Hardwood, oak-dominated forests very similar in character to ones established today covered most of southern New England by the Late Archaic (Parker 1987:10; RIHPHC 2002:45). The Late Archaic in southern New England has been divided into two traditions: the Laurentian and the Narrow Point, with the former perhaps being distributed more in the interior. The Laurentian tradition is defined by wider-bladed, notched and eared triangular points, and ground slate points and ulus, while the Narrow Point tradition includes smaller, thicker, and narrower points. The tool kit and general material culture became even more expanded during this period, with the advent of ground stone manos, nut mortars, pestles, and bowls, as well as stone pipes, bone tools, corner-notched (Vosburg, Brewerton, and Vestal), side-notched (Otter Creek, Brewerton, Normanskill), smaller narrow-stemmed (Dustin, Lamoka, Squibnocket, and Wading River), and triangular points (Squibnocket, Brewerton, and Beekman), grooved and perforated weights, fish weirs and harpoons, and decorative gorgets (Wilbur 1978:15-24; Snow 1980:228-231; RIHPHC 2002:44). The groundstone material has been inferred as being associated with an increased vegetable diet that consisted of berries, nuts, and seeds (Snow 1980:231; Lavin 1984:13), including acorn, butternut, chestnut, walnut, hickory, bayberry, blackberry, goose foot, cranberry, partridge berry, service berry, strawberry, and swamp current (Cruson 1991:29). Deer continued to be the predominant meat source, although animal remains recovered from archaeological sites in the region include black bear, raccoon, woodchuck, rabbit, otter, gray squirrel, red fox, gray fox, wolf, wild turkey, grouse, pigeon, migratory fowl, and anadromous and freshwater fish and shellfish (Cruson 1991:28-29). Various sea mammals and fish were procured along the coast, with the modern configuration of the shoreline reached towards the end of the Late Archaic (RIHPHC 2002:5).

The increasing breadth of the subsistence base and material culture was in turn associated with a central-based settlement pattern in which a restricted range of seasonally scheduled and used areas were exploited in a more semi-sedentary fashion than previously (Lavin 1984:13; Dincauze 1990:25; RIHPHC 2002:8). Sites in southern New England suggest that the larger rivers served more as long-term bases within a central-based circulating system than in the Middle Archaic. The interior uplands of the region may have supported a relatively independent set of seasonally circulating groups which used larger wetlands as long-term bases (Wadleigh 1981). Mortuary practices of the time suggest some sedentism for certain groups of people who were buried in specialized secondary cremation cemeteries and who may have had some control over restricted resources (e.g. riparian transportation routes) (Walwer 1996). Although the

cremation sites largely include utilitarian funerary objects, some contain non-local materials which suggest trade association with cultures to the west of the region (Walwer 1996).

The Terminal Archaic period extended from approximately 3,700 B.P. to 2,700 B.P., as defined by the Susquehanna and Small-Stemmed traditions (Swigart 1974; Snow 1980:235; Lavin 1984:14; Pfeiffer 1984; Pagoulatos 1988; Cruson 1991; Cassedy 1999). Steatite, or soapstone, was a frequently used material by this time, and could be fashioned into bowls and other objects. The mass, permanency, and labor intensiveness of creating these heavy items have led to the inference of more sedentary base camps, especially on large rivers where the development of a canoe technology had become fully established and increased the effective catchment area within which groups of people were gathering resources on a continuous basis. The material culture of the period was very similar to the Late Archaic, with a proliferation of stemmed projectile point types including Snook Kill, Bare Island and Poplar Island stemmed points, Orient Fishtail points, Sylvan and Vestal side-notched points, and Susquehanna corner-notched points (RIHPHC 2002:44). The resource base continued to consist of deer and small mammals, nuts, shellfish, turtles, and birds (Snow 1980:249). The first signs of ceramics (Vinette I pottery) tempered with steatite fragments appeared during this period, and archaeological evidence of trade with other regions becomes more substantial for this time.

The distribution of sites and site types during this period suggests that there was a change in settlement to one with fewer, yet larger sites in riverine settings, and associated satellite task-specific sites in the uplands. The implications are less foraging-strategy residential movement and more task-oriented collection activities within a radiating settlement pattern, but probably one in which some degree of seasonal circulation of settlement took place. While sites associated with the Small-Stemmed tradition tend to suggest a more mobile settlement pattern in the interior uplands, sites of the Susquehanna tradition indicate a semi-sedentary collector strategy in major riverine and estuarine environments. At least certain groups exhibited semi-sedentism and some control over restricted resources, as indicated by the elaborate burials of the Terminal Archaic (Walwer 1996). Mortuary practices from the period include secondary cremation interments in formalized cemetery areas, with individual pits containing fragmented utilitarian material from communal cremation areas, as well as highly stylized funerary objects from non-local material (Walwer 1996). The lack of other, less formalized burial types evident in the archaeological record may be a matter of poor preservation, in which case it has been proposed that the cremation cemeteries are representative of a stratified society in which a portion of the people (of the Susquehanna "tradition") were able to generate a surplus economy that supported a semi-sedentary settlement pattern. This surplus may have been generated by the procurement and control over the transportation of steatite from various areas in the surrounding territory.

The Early Woodland period in southern New England extended from about 2,700 B.P. to 2,000 B.P. (Lavin 1984:17; Juli and McBride 1984; Cruson 1991; Juli 1999; RIHPHC 2002:44). A cooling trend during the Early Woodland (Davis 1969:414; Parker 1987:10; McWeeney 1999:11) is thought to have reduced population sizes and regional ethnic distinction as the hickory nut portion of the resource base was significantly decreased, although the apparent decline in populations may possibly be related to other factors such as the inability to confidently distinguish Early Woodland sites from those of other periods (Filios 1989; Concannon 1993).

Climatic deterioration and depopulation are in turn thought to have inhibited the progression towards, and association with, more complex social structures and networks that were developing further to the west and south (Kehoe 1981:215). A proliferation of tobacco pipes may indicate the beginnings of agricultural efforts in the northeast. The Early Woodland of this region, however, exhibits no direct traces of subsistence crop remains, indicating continuity with previous periods in terms of subsistence practices (Lavin 1984:18; RIHPHC 2002:17).

Materially, the period is marked by a substantial development of a ceramic technology, marked by crushed stone temper (RIHPHC 2002:13-14). Diagnostic projectile points can be developmentally traced to indigenous points of previous periods, consisting of many stemmed forms in addition to Meadowood and Fulton side-notched points, Steubenville / Fox Creek points, and Adena-Rossville types, but now may have been used in conjunction with the bow and arrow (Lavin 1984:18). Adena-like boatstones are also found in this period (RIHPHC 2002:44). Although rare contact with the Adena culture is evident throughout assemblages of the period, the Early Woodland in southern New England remained a very gradual transitional period (Snow 1980:279,287; Lavin 1984:19).

A heightened use of ceramics has been erroneously promoted as an automatic indication of increased sedentism in many areas. Instead, central-based camps with restricted seasonal encampments appear to be the dominant settlement pattern (Snow 1980:287; RIHPHC 2002:13). Minimal archaeological evidence appears to suggest a similar settlement pattern to the Terminal Archaic in which large riverine sites served as central bases with upland seasonal dispersal or specific task sites, but with a lesser degree of sedentism. Interior uplands populations also decreased during the Woodland era, perhaps related to the intensification of agricultural resources along major riverine and coastal areas. The trend towards greater mobility may in part be attributed to the decline in the use of steatite that no longer gave certain groups control over critical and restricted resources, as indicated by the declining ceremonialism of burial sites at the time, which were more often located in habitation sites and exhibited combinations of secondary cremation features and primary inhumations (Walwer 1996). This transition in the socio-economics of the region was brought about by the decrease in importance of steatite as ceramics obscured its value for producing durable containers. Partially preserved primary inhumations appear for the first time in the region based on preservation considerations.

The Middle Woodland period lasted from about 2,000 B.P. to 1,000 B.P. (Lavin 1984:19; Juli and McBride 1984; Cruson 1991; Juli 1999; RIHPHC 2002:44). The climate was returning to the conditions basically witnessed today (Davis 1969:420; McWeeney 1999:11). It is a period which exhibited considerable continuity with previous periods in terms of both subsistence and material culture. Cylindrical pestles and groundstone hoes are tools diagnostic of the period and reflect developing agricultural efforts, including the cultivation of squash, corn, and beans on a seasonally tended basis (Snow 1980:279). Direct evidence for agriculture in the form of preserved vegetal remains, however, does not generally appear until the early Late Woodland when corn is thought to have been introduced into the region from the upper Susquehanna and Delaware River Valleys (Bendremer and Dewar 1993:386). Projectile point forms from the period include Snyders corner-notched, LongBay and Port Maitland side-notched, Rossville stemmed, and Greene lanceolate types (RIHPHC 2002:44). A proliferation of ceramic styles was witnessed during the Middle Woodland. Ceramic forms from the Early Woodland were still

being produced as well. Minor traces of the Hopewell cultures to the west are also present in the archaeological record of this period. Site types and distributions in the area imply that a moderate increase of sedentism with aspects of a radiating settlement pattern took place on large rivers, supported by differentiated upland task sites. This trend may have been supported by the expansion of tidal marshes up larger rivers (McBride 1992:14).

The Late Woodland period extended from approximately 1,000 B.P. to 1600 A.D., the time of widespread European contact in the broader region (Snow 1980:307; Kehoe 1981:231; Lavin 1984:21; Feder 1984, 1999). A warmer climate and increased employment of large scale agriculture for subsistence in New England were associated with increased population densities, more sedentary settlements, and more permanent living structures and facilities in larger villages. Settlements in the area, however, tended to remain smaller with only small scale agricultural efforts, and as part of a seasonal round in which smaller post-harvest hunting and task-specific settlements were established in fall, and protected settlements occupied in winter. Instead of maintaining permanent villages near agricultural plots, aboriginal populations engaged in the slashing and burning new plots and let old plots lie fallow periodically. In this area, domestic resources included corn, beans, squash, Jerusalem artichoke, and tobacco (Starna 1990:35). Agriculture was largely maintained by women, with the exception of tobacco (Starna 1990:36). Deer, small mammals, fish and shellfish, migratory birds, nuts and berries, and other wild foods continued to contribute significantly to the diet (Waters 1965:10-11; Russell 1980). Many of the foods produced were dried and/or smoked and stored in baskets and subterranean holes or trenches.

The increasing diversity of wild estuary resources may have served to increase sedentism in the coastal ecoregions of the region (Bragdon 1996:67), while agriculture and sedentism may have been even more prominent along the larger river bottoms (Bragdon 1996:71). Late Woodland settlement patterns of groups in the uplands interior ecozones may have included the highest degree of mobility, while many sites from the central lowlands represent task-specific sites associated with larger settlements along the larger rivers (McBride 1992:16). House structures consisted of wigwams or dome-shaped wooden pole frameworks lashed and covered with hides or woven mats, and clothing was made from animal hides (Starna 1990:37-38). Most of the ceramic forms of the Middle Woodland were still being produced, in addition to the newer forms, and by now with frequent use of shell for tempering (RIHPHC 2002:14). The period exhibits some continuity in terms of projectile point forms, although the Jack's Reef, Madison triangular, and Levanna points are considered diagnostic for the period (RIHPHC 2002:44). As likely with earlier periods, the material culture included various textile products such as baskets and mats, and wooden utensils such as bowls, cups, and spoons (Willoughby 1935; Russell 1980:56).

Unlike groups of the Mississippi valley, the overall cultural pattern for the entire Woodland era in southern New England exhibits considerable continuity. The lack of enormous agricultural surpluses for the time is indicated by the low density of small storage features in habitation sites, as well as the ubiquitous primary inhumation of people without a select portion of graves exhibiting special treatment that would require high energy expenditure (Walwer 1996). As confirmed by early ethnohistoric accounts, this suggests a largely egalitarian and relatively mobile society for the Late Woodland despite the fact that this period marks the highest development of food production (i.e. agriculture) during the course of prehistory in the region.

Corn was undoubtedly important, however, as a disproportionate amount of the simple, flexed burials were oriented towards the southwest which was the aboriginally acknowledged direction for the origins of corn and the Spirit Land.

Pre-Contact Sites of the Area

There are a number of pre-Contact to Contact period sites (Figure 7) within a few kilometers of the project area according to site files of the Rhode Island Historical Preservation and Heritage Commission (RIHPHC). At a couple of kilometers to the northwest of the project area in the White Brook drainage basin, a poorly documented site (#158) reportedly revealed hearths and a stationary mortar in a habitation setting. Another cluster of sites (#2147, 2148, 2149) lies a few kilometers to the north of the project area near wetlands between the Beaver River and Usquepaug River drainages, revealing mostly undiagnostic quartz debitage and a possible hammerstone (Johnston and Handsman 1994).

Many more sites are located along the Usquepaug River that runs south one to two kilometers east of the project area. Projectile points and scrapers made from quartz and quartzite were found at an early reported site (#245) at the lower end of the drainage. Further up the drainage, a lithic quarry site (#908) was documented (RIC 1981). Nearby is a historically mapped location of an "Old Indian Fort" (#963) (Evarts and Richards 1895), which likely correlates with the best approximation for the location of the "Great Swamp Fight" as depicted on USGS topographic maps (see Figure 4). Surface collections conducted in 1960 revealed a range of sites up and down the drainage (#1010-1015, 1022-1024), with projectile points including triangular, side-notched, and stemmed forms likely dating to the Late Archaic period. At site #2085, a professional survey documented a site yielding quartz and argillite lithic debitage to the west of a large marsh at the outlet of Usquepaug River (George et al. 1993).

More sites have been documented at Great Neck, a large hill landform to the east of the confluence of Usquepaug River and the Pawcatuck River that is also adjacent to the Great Swamp to the east, and Worden Pond to the south. A highly disturbed site on the landform was surface collected in 1972, with materials including quartz, slate, and greenstone debitage, quartz scraper, shell, and slate projectile point (#169). Another site (#969) identified 12 years earlier revealed four stemmed quartzite projectile points, with yet another site (#1021) revealing a more prolific assemblage that included projectile points (triangular, stemmed, side-notched), blades, blanks, cores, scrapers, adze, and gorget dating to the Archaic and Woodland eras. At least 12 other sites (#2061-2063, 2065, 2072-2078, 2081) are known from the landform, documented by the same professional survey that noted the site west of the confluence (George et al. 1993). Most of the sites featured undiagnostic quartz lithic debitage, but notable finds include an Otter Creek projectile point found at #2076, indicating occupation in at least the earlier part of the Late Archaic period.

The best documented site in the Great Neck area is the SK 155 site (#2405), recorded during Phase I and Phase II sureys of a transmission alignment (Leveille et al. 2006; Banister et al. 2007). The site dates to the Middle to Late Archaic periods, and yielded a radiocarbon date of 4360±40. A diagnostic Neville projectile point was recovered, along with other lithic scrapers and points, and a range of lithic debitage raw material including argillite, red felsite, rhyolite, and hornfels. Features recorded at the site included hearths, some with delineating rings of stone in tact.

Figure 7: Pre-Contact Sites of the Area

Figure 7: Distribution of pre-Contact and Contact period sites previously recorded in the area within several kilometers of the project area.

Other sites are known along the Pawcatuck River, which runs west a couple of kilometers south of the project area. Closest to the confluence with the Usquepaug River, site #638 revealed a Snook Kill projectile point, indicating a Terminal Archaic occupation. Road construction impacted site #1371, which revealed a wide range of pre-Contact materials such as projectile points, a whestone, knives, scrapers, perforators, bannerstone, pendants and gorgets, and a gun flint indicating the site may have extended into the Contact period or post-Contact era. At site #2446, a professional survey recorded quartz, quartzite, and argillite debitage (HC 2009). Further downstream, another cluster of sites (#2380-2382) revealed mostly lithic debitage, although site #2381 (Bend in the Trail Site) revealed grit-tempered pottery, and site #2382 (Stubtail Snake Site) also revealed calcined bone, charred nut remains, a post mold feature, and grit-tempered and dentate stamped pottery in plowzone contexts, indicating an Early Woodland setting (Ingham et al. 2005).

Pre-Contact Summary

In summary, there is a mixed density of known pre-Contact sites within several kilometers of the project area. There is a general lack of previously recorded sites up and down the Beaver River drainage, and this is likely due to a lack of survey work within the drainage. Local informants indicate that the open field of the project area had been surface collected over the years, and that a number of projectile points had been recovered. An abundance of sites are known from the adjacent Usquepaug River drainage to the east, often at similar locations of open fields surface collected near the river, but also at the Great Neck landform at the southern end of the drainage where it forms a confluence with the Pawcatuck River, and where the drainage is also fed by the Great Swamp immediately to the east. Previously recorded sites indicate a concentration of occupation along these drainages during the Archaic era.

Historic Background

Contact Period

The Contact period is designated here as the time ranging from the first substantial contact between European explorers and Native American inhabitants of southern New England to the time of intensive occupation by European settlers, roughly 1600 to 1700 (Table 2). Initial contact in the broader region occurred in 1524 when Verrazano reached the coast of New England (Terry 1917:16; RIHPHC 2002:21). Others followed in the first decade of the 1600s (Salwen 1983). The spatial configuration of tribal territories at the time of initial contact is fairly well known, although boundaries are also known to have fluctuated significantly, as did the political alliances by which the tribes could be defined (Thomas 1985:138). The Narragansett Indian tribal range was nearly synonymous with the current political boundaries of Rhode Island, except that the Nipmucs of northeast Connecticut had a range extending into northwest Rhode Island, and the Wampanoags of southeast Massachusetts had a range extending into northeast Rhode Island and to the south along the eastern side of Narragansett Bay (RIHPHC 2002:23). Also, the territory of the Pequots lay adjacent to the Narragansetts to the west, while the Eastern Niantics occupied the southeast corner of Connecticut and southwest part of Rhode Island that reached as far east as Charlestown (Speck 1928: Plate 20; Swanton 1952:31 and map insert).

Table 2: Local Historic Chronology

Contact (17th Century)

Various European explorations near the southern coast of New England in early 1600s.
Project area within Narragansett territory.
Severe disease epidemics in 1616-1619 and 1633 reduce aboriginal populations.
Roger Williams forms settlement in 1636 at Narragansett Bay.
Narragansetts assist Mohegans and English in defeat of Pequots in 1637.
Narragansetts assist displaced Wampanoags, brought into King Philip's War of 1675.
Narragansetts suffer defeat at Great Swamp in 1676, merge with Niantics.
Euroamerican encroachments on tribal territory, Narragansett population reduced.

18th Century

Old Post Road established in 1703.
Project area part of Shannock Purchase.
Rhode Island legislature authorizes formation of Narragansett reservation at Charlestown.
Charlestown incorporated in 1738, including Richmond land.
Richmond incorporated in 1747, set off from Charlestown.
Indian Church and School established in Charlestown in 1764.
King Tom Ninigret illegally sells Narragansett tribal land.
Tribal Council rule established after the Revolutionary War.
Surplus agricultural goods and lumber traded to West Indies through Newport.
Jeremiah Northup builds residence on west side of road.

19th Century

Farmstead sold to George Hazard in 1825.
Remaining Narragansett land divested or privatized by colony after 1830s.
George S. James acquires farmstead in 1834.
Railroad through Charlestown by 1837, local products transported to regional cities.
Early milling villages at Shannock and Kenyon on Pawcatuck River.
Shift to dairy and swine and apples in agriculture.

20th Century+

Large influx of Canadian and European immigrants into the region early in the 20th century.
Shift to potatoes in agriculture of area, project area continues some focus on dairy.
Wheeler family buys farmstead in 1925.
Former mill structure or outbuilding converted to residence in 1933.
Stamp family acquires property in 1960s.
Narragansett tribal land re-established at Charlestown in 1975.
Narragansett Indian Tribe receives formal federal recognition in 1983.
Project property proposed for solar farm site.

Thus with some shifting territories through time, the project area is best conceived as Narragansett by the time of contact with Europeans. The Narragansetts were principal rivals of the Pequots, for they were most able to resist Pequot aggression (Guillette 1979:WP2). Linguistically, the various tribes of the area were Algonquin speakers (RIHPHC 2002:22).

Besides intertribal political factors, the fluctuating nature of tribal territory boundaries can be partly attributed to aspects of mobility and subsistence. Ethnohistoric sources offer descriptions of terminal Woodland and early Contact subsistence-settlement strategies of the area (Williams 1936; McBride and Bellantoni 1982; Starna 1990:36-37). Spring settlements were located to take advantage of anadromous fish runs in larger drainages and along the coast. By late spring, attention was focused on tending corn fields on alluvial terraces and glacial meltwater features along perennial streams and rivers. Semi-sedentary settlements near these fields were supported by task-specific hunting and gathering sites. Dispersal in the late fall and winter brought smaller groups into protected, upland or interior valleys where hunting and gathering continued as part of a central-based circulating settlement pattern (RIHPHC 2002:13,22). Family units were clustered in major villages on a seasonal basis. The dispersal phase may have had a longer duration in the Contact period than the Late Woodland, and consisted of smaller subsistence units (single families).

The fortification of some larger villages in the early Contact period was likely a response to intertribal and intercultural political conflicts resulting from increased economic pressures induced by Euroamerican trade relationships (Salwen 1983:94; McBride 1990:101; but see Thomas 1985:136). One such fortified site is known from the Charlestown area, occupied by the Sachem Ninigret and the Eastern Nehantics (RIHPHC 2002:21). The fortified villages are representative of the trend towards increasing sedentism and territoriality during the Contact period. Eventually, Native American populations became dispersed and afflicted by disease, warfare, and intertribal conflict to the point that small, scattered reservations served as the final restricted territories for some indigenous populations.

The economic base for Native Americans in southern New England continued to consist of hunting deer and small mammals, gathering berries, nuts, and roots, and procuring shellfish and fish on larger drainages and along the coast (Waters 1965:7; Salwen 1970:5; RIHPHC 2002:14). This basic subsistence strategy was supported by various horticultural products, including corn as a staple, squash, beans, Jerusalem artichoke, and tobacco (Guillette 1979:CI5; Starna 1990:35). The importance of corn is evident in historic descriptions of ritual activities, including variations of the Green Corn Festival that extended with various groups, including the Mohegans, into the present day (Speck 1909:194; Speck 1928:255; Tantaquidgeon 1972:81; Fawcett 1995:54-57). Elderly women possessed extensive knowledge of wild plants which provided a host of medicines and treatments (Russell 1980:35-37).

The material culture included a mix of aboriginal forms and European goods such as metal kettles and implements (e.g. knives and projectile points), cloth, glass beads, and kaolin pipes (Salwen 1966, 1983:94-96). Wigwams continued to serve as the principal form of housing, in some cases well into the 18th century (Sturtevant 1975; RIHPHC 2002:21-23). Unlike the Late Woodland, Contact period aboriginal lithic products were predominantly manufactured from local quartz sources (McBride and Bellantoni 1982:54). Dugout canoes may have continued to provide a major form of transportation in larger drainages (Salwen 1983:91). Late

Contact period Euroamerican trade goods included various metal tools, glass bottles, ceramic vessels, kaolin clay pipes, and nails (McBride and Grumet 1992).

Wampum (shell beads) served as an important item for exchange by Native Americans with European traders, but their original use was in the form of belts as symbolic signs of allegiance or reciprocity between tribes, and as sacred markers or tokens of honor for individuals (Guillette 1979:CI8; Ceci 1990:58-59; Salisbury 1990:87; Fawcett 1995:59). With European metal drill bits, tribes along the coast were now mass producing wampum for trade with the Dutch and English, who in turn used the shell beads to trade with other tribes farther inland (Salwen 1983:96; Ceci 1990:58). Although wampum was initially traded for Euroamerican goods, it was eventually used to pay fines imposed by colony governments on the tribes for "illegal" acts, while mass production by tribes along the coast led to tribes such as the Pequots and Narragansetts being dominant over their inland counterparts (RIHPHC 2002:25-26). While colonization brought new material goods to Native Americans in the area in exchange for fur, land, and services, the indigenous inhabitants became increasingly subject to legislative economic restrictions by the colonists (Salisbury 1990:83).

Sachems and councils of leading males formed the basic political unit for groups of villages (Gookin 1970 [1674]; Simmons 1986:12), although women often held powerful roles such as those relating to medicine, knowledge, and religion (RIHPHC 2002:22). Tributes paid to sachems were generally used as reserves for the tribe at large. Although sachems were generally assigned by hereditary lineage, this was not always the case (Bragdon 1996:140-141). Additionally, authority was usually enforced by persuasion of a council (RIHPHC 2002:22). Shamans were "magico-religious" specialists of the tribes who also had a considerable role in leadership and decision-making (Speck 1909:195-196; Simmons 1986:43; Starna 1990:42-43). Other special status roles included warriors and persons who had visions, thus social status was largely based on achievement and recognition. Rules of obligation and reciprocity operated on all levels of tribal-wide decision-making (Bragdon 1996:131-134), serving to diffuse centralized authority. While the assignment of lineality (i.e. matrilineal vs. patrilineal) for the area tribes is still debated (Bragdon 1996:157), the well established practice of bride-pricing and traditional accounts support the contention of a patrilineal social organization (Speck 1909:193; Salwen 1983:97). Post-marital residence appears to have been ambilocal.

On a larger scale, more powerful tribes demanded tributes from smaller ones, often resulting in loose alliances between the latter. This process created a dynamic political environment that prompted intertribal conflict, especially after contact with Euroamericans (Guillette 1979; Bragdon 1996). The European settlers of the Contact period used this embedded rivalry system to their advantage in trade relationships and the procurement of land. The colonists were placed at a further political advantage because of the severe reduction in aboriginal populations as a result of disease (Starna 1992). Major epidemics occurred between 1616 and 1619, and more severely around 1633 (Snow and Lanphear 1988; Starna 1990:45; Snow and Starna 1989). Diseases introduced into the Americas included chicken pox, cholera, diphtheria, malaria, measles, oncercerosis, poliomyelitis, scarlet fever, smallpox, tapeworms, trachoma, trichinosis, typhoid fever, whooping cough, and yellow fever (Newman 1976:671). Burials of the Contact period reveal stresses beyond fatalities from disease, and also an upheavel

in lifeways as revealed by funerary objects, although with burial orientations (i.e. southwest) continuing to express spiritual continuity with prior periods (RIHPHC 2002:27-29).

The first major Euroamerican settlement of the region was at Plymouth, Massachusetts in 1620, followed by the Massachusetts Bay Colony at Boston in 1629 (RIHPHC 2002:23). From these settlement centers there was quickly established a network of related settlements throughout the region, including that of Roger Williams in 1636 on Narragansett Bay (Williams 1936; RIHPC 1981; RIHPHC 2002:23). While the Wampanoags were particularly devastated by disease epidemics of the early 17th century and as a result had succumbed to pressure to sell land to the Plymouth colonists without realizing the full implications of exclusive ownership, the Narragansetts fared much better against the deadly epidemics, and as a result were able to maintain much stronger political and social structures than many of their Native American counterparts (RIHPHC 2002:23-24,27). Their population under Sachems Canonicus and Miantonomo is estimated to have been about 40,000 at this time, and they engaged in trade with the French and Dutch (RIHPHC 2002:24). Their sale of land to Williams and the English was more measured than many of their Native American counterparts, and this was partly due to Williams' better understanding of Indian use of the land (RIHPHC 2002:27).

In 1637, a contingent of soldiers from the Connecticut colonies was joined by the Mohegan sachem Uncas, who led his newly divergent tribe and some Narragansetts on a campaign against the Pequots (Hauptman 1990:73). Most of the latter were massacred at Mystic Fort, the survivors of which were forced to scatter widely. The Mohegan acceptance of some of the conquered Pequots into its tribe caused hostilities to emerge between the Narragansett sachem Miantonomo and Uncas. The defeat of the Pequots and the emergent hostilities between the Mohegans and Narragansetts led to the Tripartite Treaty of 1638, which in theory allied the Mohegans and Narragansetts, forbade any reorganizing attempts by the Pequots, redistributed Pequot prisoners between the Mohegans and Narragansetts, and provided ownership of Pequot territory to the Connecticut colonists (DeForest 1852:159,181). Some young male Pequots were sold into slavery in the West Indies (Salwen 1983:108; Campisi 1990:118), while many of the Pequots held by the Narragansetts left to be with or near the Mohegans, causing further hostilities between the latter two tribes. The English colonists granted Uncas territory that had not been part of the Tripartite Treaty, heightening the antagonism between the Narragansetts and Mohegans which would continue into the 1640s (Fawcett 1995:14-15).

The English favored alliances with the Mohegans because of proximity and a greater role in the subjugation of the Pequots (Guillette 1979:M6). After numerous skirmishes between the two sachems, the English effectively sanctioned the execution of Miantonomo by Uncas (DeForest 1852:195; RIHPHC 2002:27). The Mohegans and the English colonists continued to exhibit mutual support in King Philip's War of 1675, when they defeated attempts of the Wampanoags of Massachusetts, the Nipmucs, and some Podunks, to thwart the expansion of Euroamerican settlement (Gookin 1836 [1677]; Barber 1838:20-21; DeForest 1852:288).

During the conflict, some Wampanoags took refuge in the Great Swamp area in the southern part of Rhode Island despite the professed neutrality of the Narragansetts, leading to reprisal attacks on the Narragansetts at Great Swamp by the English and subsequent warfare that included the burning of Providence and other towns (RIHPHC 2002:29). This war effectively ended any military threat or potential resistance to full fledged settlement of southern New

England by the Europeans (Fawcett 1995:16), and the estimated population of the Narragansetts was reduced to about 1,000 (RIHPHC 2002:29). Many of the surviving Narragansetts scattered to other regions of the northeast, joining the Niantics in southwest Rhode Island, or remained and survived by becoming domestic servants or laborers for Euroamerican settlers (RIHPHC 2002:29-31). A 30 square mile reservation was set up for the Narragansetts in the Charlestown area by the Rhode Island colonial government in 1709 (RIHPHC 2002:31).

Euroamerican Settlement Expansion & Occupation

By the time of European contact in the region, the Narragansetts (as a combination of Niantics and Narragansetts) were the principal Native American tribe of the region. European contact in the area began when a Dutch trading post was established near Fort Neck Pond at Ninegret Point in Charlestown in ca. 1630 (TCBBC 1976:19; Mandeville 1979:75). Narragansett populations became concentrated in the Charlestown area by the time of King Philip's War, after which settlers of European descent actively farmed territory throughout the region (RIHPC 1992:4). By the time of King Philip's War of 1675, there were 5,000 Euroamerican settlers in Rhode Island (RIHPHC 2002:27), while Native American populations of the area were greatly diminished (Nebiker 1976:9).

The Rhode Island colony appointed the Ninigret family, who had subsumed many Narragansetts in its own original Niantic territory, as ruler of the Narragansett tribe that consisted of people from different tribes and African American communities (RIHPHC 2002:33-36). Thomas Ninagret, born in 1736, and Niantic Sachem at age 10, became known as "King Tom" after returning from education in England (Pellam 2013:70). He established an Indian Church and Indian School in 1764 (Mandeville 1979:73; Pellam 2013:70). King Tom Ninigret illegally sold tribal land to pay debts incurred by the family to maintain an English lifestyle, resulting in a belated shift to rule by tribal council after the Revolutionary War (RIHPHC 2002:34). A detribalization process started in the 1830s and finalized in 1879 resulted in the continued sale of tribal lands and distribution of land to private ownership by individual tribe members that depleted tribal territory until a court case in 1975 started to reverse this trend, with the recovery of 1,800 acres of land in the Charlestown area, and a recognition of the tribe by the federal government in 1983 (RIHPHC 2002:37-39).

Early historic Rhode Island was dominated by agriculture, and in particular by many wealthy landowners who set up plantations that included relying on slaves for labor, and the average size of a farm at this time was about 500 acres. Large plantation owners of the greater Charlestown area were prosperous farmers exporting cheese, hams, and wool (Mandeville 1979:26). Other exported goods of Charlestown in the 18th century included fish, "Narragansett Pacer" horses, and lumber. At this time, Charlestown was part of the "triangle deal" of trading, which included shipping their goods to Newport by way of the King's Highway (Post Road) (Mandeville 1979:27). Newport was a major port importing slaves as part of the slave/sugar/rum triangle of trade with the West Indies (Pellam 2013:76). The Old Post Road was established in 1703, and provided a major route of travel from Boston to New York that coursed along a preceding Native American trail (i.e. Pequot Path).

The greater Charlestown area reportedly had many underground railroad points of refuge for African American slaves trying to reach Canada (Mandeville 1979:46). Even though slavery

had been abolished in Rhode Island by 1774, many descendants of former slaves reportedly took refuge in a wooded area in Charlestown (Mandeville 1979:46).

The land obtained in several land purchases, including the Shannock Purchase, the Stanton Purchase, and the Little Maxon Purchase, included Richmond area lands (Tootell 1977:1). The Shannock Purchase was sold to 27 purchasers on June 28, 1709 as part of an effort by the general assembly to sell off vacant lands (Tootell 1977:16,135). Richmond, Hopkinton, Charlestown, and Westerly were all originally part of Westerly until 1738 when Charlestown was set off as its own town, then including Richmond territory (House 2007:7; RHS 2019).

From 1738 to 1747, Richmond was part of Charlestown, until 1747 when it was set off from Charlestown as its own township (House 2007:7; RHS 2019). Most of the farmers settled in Richmond from England, and early names appearing in town records include Hoxie, Kenyon, Barber, and Clarke (Tootell 1977:35). Several villages arose within Richmond, centered around mills established along local waterways (Tootell 1977:19,35). The villages of Richmond included Alton, Arcadia, Carolina, Hillsdale, Hope Valley, Kenyon, Quarrelsome Corners, Shannock, Tug Hollow, Usquepaugh, Woodville, Wood River Junction, and Wyoming (Tootell 1977:ix). The Hillsdale village area, just over a mile north of Route 138, was the location of an early grist mill on the Beaver River in the mid 18th century (Tootell 1977:61).

The population of Rhode Island continued to grow from 1790 to 1860 (McLoughlin 1986:109), with foreign immigrants increasing from 1% to 16% between 1830 and 1850 (McLoughlin 1986:120). There was also a shift to the manufacturing of cotton-spinning mills in the state. By 1815, seven thousand workers were employed in over 100 spinning mills, which made Rhode Island second in New England of the production of cotton textile products including yarn and cloth (McLoughlin 1986:120). Woolen mills soon followed, focusing on the production of "kersey cloth" used in the production of clothes for slaves (McLoughlin 1986:121). Textile manufacturing continued to grow in Rhode Island after 1830 due to the incorporation of efficient steam powered mills fueled by coal (McLoughlin 1986:122). The first steam powered mill in Rhode Island was built by Samuel Slater in Providence in 1827 (McLoughlin 1986:122). By 1860, there were over 15,000 mill laborers, and the amount of mills in the state had almost doubled (McLoughlin 1986:123). Other expanding industries in the state, concentrating mainly in Providence, included jewelry, silverware, precious metals, and steam-engine production (McLoughlin 1986:123). By 1860, 80% of the state's population was concentrated in the northern area of the state, and Providence had become the main port of the state (McLoughlin 1986:124).

By 1860, the highly industrialized manufacturing jobs made up 50% of the state's employment, where as only 10% of the employed were in agriculture (McLoughlin 1986:124). This change was reflected in the transition of the mills in the Richmond villages from grist and saw mills to cotton and wool mill complexes of the early 19th century, including the textile mills established in Hope Valley in 1810, in Wyoming in 1814, and in Carolina in 1842 (Tootell 1977; RHS 2019). The Pawcatuck River to the south of the project area provided water power for several villages and early mills in the southern part of Richmond, including Shannock and Kenyon to the south of the project area. On the Upper Falls in Shannock, a grist mill and saw mill were established in the mid 18th century, and that area became known as the "Clark's Mills" area, while a grist mill, general store, and blacksmith shop were constructed in the "Knowles'

Mills" lower falls area of Shannock (Tootell 1977:135-6). Bog iron was mined in the western falls area (Tootell 1977:137). A saw mill and iron manufacturing were also established to the south of the project area along the Pawcatuck River in Kenyon in the late 18th century (Tootell 1977:87). Smaller carding mills were also established in this area, but in the mid 19th century, the Kenyon Mills became a large milling and manufacturing complex of cloth which required the construction of tenement houses in 1864, a general store in 1862, a cotton mill in 1866, and a dye house (Tootell 1977:87).

The project area lies in the Beaver River Valley area just north of the villages of Shannock and Kenyon, along the spring-fed Beaver River. There were four principal farms along Beaver River Road between Route 138 and Shannock Hill Road in the late 19th century (Tootell 1977:45). The farm boundaries along Beaver River Road were delineated by several gates that were opened and closed by travelers along the road (Tootell 1977:45). The farm located on the project property was owned by the James family and sold to Stephen D. Wheeler in the early 20th century (Tootle 1977:45). The farm industry of the Beaver River Valley farms changed from predominately dairy farming and apple orchards to potato farming in the early 20th century (Tootell 1977:46). These potatoes were sold in bulk using mechanized processing for use in making potato chips (Tootell 1977:46-47).

The first school house in Richmond was built in 1806, and by 1870, there were 15 school districts in the town (Tootell 1977:166). In 1906, District Schoolhouse 11 was built on Schoolhouse Road off of Beaver Hill Road, northeast of the project property (Tootell 1977:45). The land on which the schoolhouse and the Schoolhouse Road were constructed were purchased from M. Lizzie Kenyon (Tootell 1977:45).

In 1832, the first train from Boston to Providence arrived, and in 1837, the railroad line between Providence and Stonington opened, however, the line was not a true connection until 1890 (Tootell 1977:220-221). Travelers from New England to New York had to board an overnight steamship in Providence to complete the journey, but in1845 a more efficient steamship port was established in Fall River (McLoughlin 1986:126). The railroad was crucial for transporting the raw materials and finished products to and from the mills, as well as delivering coal, produce, and mail to the villages (Tootell 1977:139). The Richmond train stops were in Wood River Junction and Shannock Mills (RHS 2019).

The economy of Rhode Island grew substantially in the late 19th century, and the larger factories required a larger labor force. By the end of the 19th century, Providence was the second largest city in the country in the production of wool, while Rhode Island was the largest producer of worsteads and was one of the largest producers of cotton textiles (McLoughlin 1986:165). Many French-Canadian immigrants came to Rhode Island in the early 20th century to work in the industrialized factories. By 1910, there were 34,000 immigrants from French Canada, 30,000 from Ireland, 27,000 from Italy, and 6,000 from Portugal (McLoughlin 1986:157). The Portuguese population settled primarily in the Providence and Pawtuxet valley, and the Canadians, Irish, and Italians settled in the Central Falls, Woonsocket, and Black Stone Valley areas (McLoughlin 1986:156-7). During this time, Rhode Island was also a leading producer of steam engines, rubber items, metal tools, and jewelry and silverware (McLoughlin 1986:165).

It was also at the end of the 19th century that tourism and resort attractions began to flourish along the Rhode Island coastline. Newport and Watch Hill became lavish summer

vacation spots for the wealthy, and other coastal spots attracted the middle class summer cottages and hotels (McLoughlin 1986:168). By 1923, the southern states were producing more than half of the cotton in the country, and many textile mills in New England were forced to close (McLoughlin 1986:195).

Table 3: Principal Transfers of Property Title

172 Beaver River Road
Richmond, Rhode Island
Tax Map 8E, Parcel 12

1982	Vol. 44, pg. 173	William M. Stamp et al. to William M. Stamp and Carol Stamp (100 acres, as in 23/451)
1960s	Vol. 28, pg. 182	Gerard Albert to Wiliam M. Stamp
1964	Vol. 26, pg. 243	Stephen D. Wheeler to Gerard and Laura Albert (land except house lot on west side of road)
1955	Vol. 23, pg. 451	Gale D. Wheeler to Stephen D. Wheeler and Dorothy C. Wheeler (100 acres, public highway through tract north-south)
1925	Vol. 19, pg. 279	George E.B. James to Gale D. Wheeler
1911	Vol. 16, pg. 593	Mary Hortense James to George E.G. James (dwelling, 2 barns, and other buildings)
1880	Vol. 11, pg. 257	George S. James to Mary Hortense James (100 acres, dwelling, barn, and other buildings, highway through...)
1834	Vol. 7, pg. 444	George W. Hazard to George S. James (quit claim) (dwelling house, barn, and other buildings, 75 acres)
1820	Vol. 6, pg. 354	Jeremiah Northup to George W. Hazard (100 acres with dwelling house and other buildings)

Land records and historic maps indicate that the project property was owned by the James family for much of the 19th century and into the early 20th century (Table 3; Figure 8). The James family acquired the land on both sides of Beaver River Road that includes the Jamesford house in 1834, which in turn was acquired from Jeremiah Northup in 1820. Northup is believed to have built the Jamesford house around 1800 or towards the end of the 18th century, and current owners of the house have a historic plaque indicating Northup as original occupant of the historic home. The Wheeler family owned the project area and associated outbuildings since 1925, and it was shortly thereafter around 1933 that one of the Jamesford outbuildings was converted into the residence on the project area that bears the address 172 Beaver River Road. That outbuilding was reportedly a grain mill prior to being converted into a residence. Aerial and late historic maps from the 20th century show the Jamesford cluster of buildings on the west side of the road, and also the house at 172 Beaver Road as well as a prominent building to the north between the two houses that was a large dairy barn according to local informants (Figures 9-11). Other historic structures indicated by local informants as being on the property include two silos, a milk house, another large barn, and machine shed between the large dairy barn and the house at 172 Beaver River Road. The large barn reportedly measured 32 by 72 feet and was several stories high. Another cattle barn was reportedly located to the east and close to the river.

Figure 8: Historic Sites of the Area (1870)

Figure 8: From Beers 1870.

Figure 9: Historic Sites of the Area (1919)

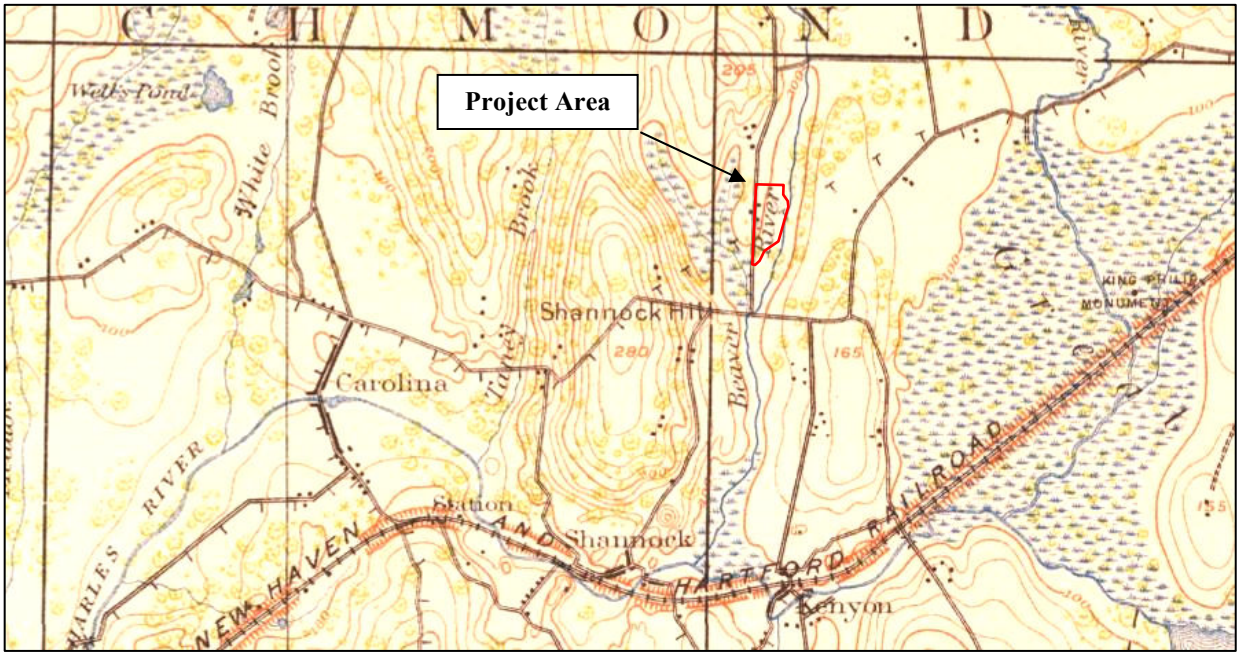

Figure 9: From USGS 1919.

Figure 10: Historic Sites of the Area (1939)

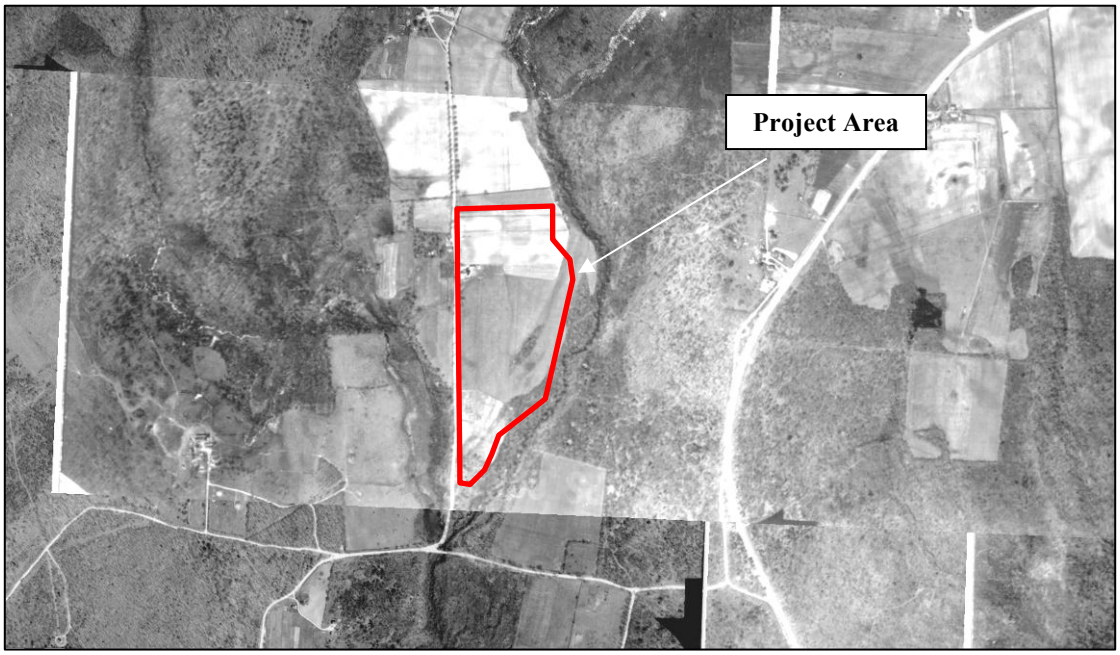

Figure 10: From www.arcgis.com 1939.

Figure 11: Historic Sites of the Area (1943)

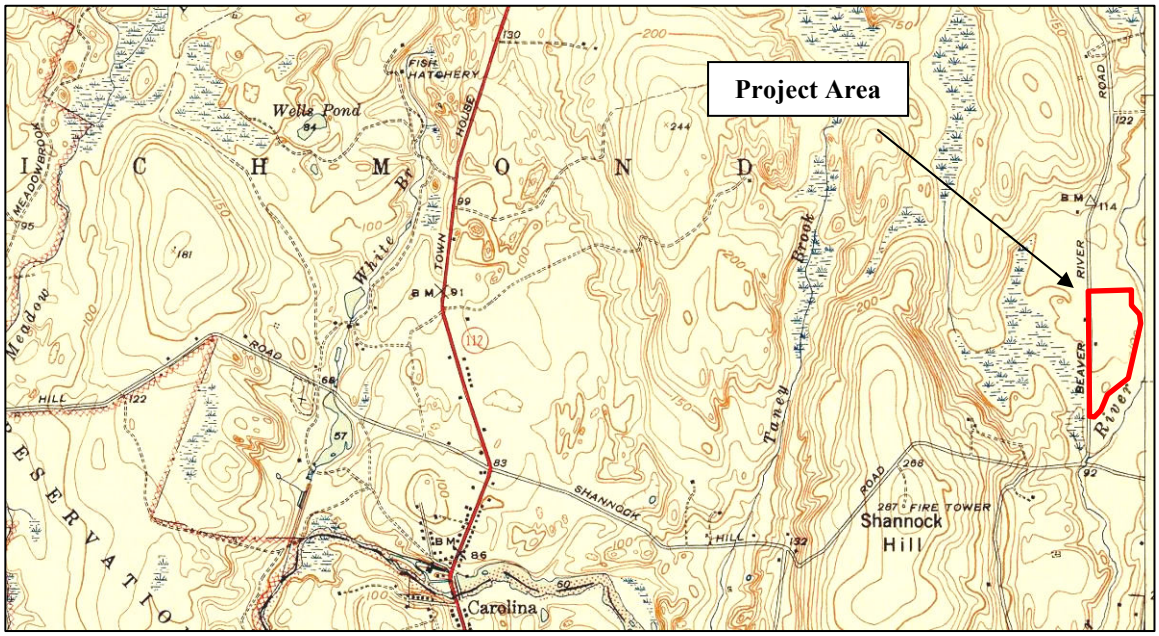

Figure 11: From USGS 1943.

Historic Sites of the Area

A number of post-Contact archaeological sites are known within several kilometers of the project area from professional archaeological surveys. The transmission line survey (George et al. 1993) that documented a dozen pre-Contact sites at Great Neck also revealed a number of post-Contact sites, often superimposing pre-Contact site locations (#2068-2078, 2081). Artifact concentrations were mostly represented by late 18th to 19th century ceramics, including creamware, pearlware, whiteware, and stoneware, as well as window glass. A barn foundation associated with a mid-18th century house of the Worden family (#1069) lies along the Pawcatuck River drainage off Carolina Back Road. The Knowles / Carmichael Mill site (#2419) lies nearby directly on the river, with foundations of the 1834 mill building still present, as well as remains of mill buildings dating to the late 19th century. At the lower falls of Shannock, a survey (88-25) revealed a mortared house foundation in association with associated mill complexes at the G. Weeden site (#1742). Many surveys of the area have not revealed significant traces of either post-Contact or pre-Contact resources within a few kilometers of the project area (Kimbrough 2010; EBI 2010; Strauss 2001; Strauss 2007a, 2007b; 02-08, Mair 2015; Rainey 1992).

The project area is within a district proposed to be recognized by the National Register of Historic Places (NRHP) as the Beaver River Road Historic District, consisting of four farmsteads and principal building clusters along Beaver River Road (RIHPC 1977). While there has been no formal nomination or registration in place, there is a 1994 correspondence from the RIHPHC that indicates a determination of eligibility for the district, but notes that further research and submissions are required for the formal recognition and designation to take place. The houses at Jamesford across the street from the property, as well as 172 Beaver River Road on the property, are indicated as contributing resources.

Historic Summary

Richmond was in an area at the boundary of Niantic and Narragansett territories at the time of contact with Euroamerican settlers. Euroamerican settlement was concentrated around Providence and the bay towns, until King Philip's War of 1675-1676 when settlement became more dense throughout Rhode Island. Reservation land was established in the early 18th century for the Narragansetts in Charlestown. King Tom Ninigret was appointed by the English as tribal leader for the combined Niantics and Narragansett, and he had much Narragansett land in the area sold off to pay personal debts during the 18th century. By the end of the 18th century, Jeremiah Northup had the house built on the west side of the road across from the project area. The farmstead changed hands to the Hazard family and then the James family early in the 19th century. The James family operated the farm on both sides of the road for the rest of the 19th century and into the next, with substantial outbuildings constructed on the east side of the road, including a large dairy barn, grain mill, and others. The Wheelers owned the farm for much of the 20th century, and in the early 1930s they converted a mill structure on the east side of the road into the residence that exists there today. That house and the Jamesford house on the west side of the road, as well as the surrounding landscape, are considered contributing resources to a Beaver River Road Historic District that has been determined to be eligible for the National Register of Historic Places.

CHAPTER 3: METHODOLOGY

Research Methodology

Background

Establishing background information is critical in constructing a research design that is problem oriented. Here the problem is twofold: intensive survey of cultural resources, including those related to both pre-Contact and post-Contact activity in the project area. Background information provides an understanding as to which parts of a survey area are likely to be culturally sensitive as applied in the Phase I intensive survey, and can be instrumental in determining the distribution and density of testing given limited resources of time and funding. Background data also provides an ecological and cultural context by which to interpret how sites reveal past patterns of cultural behavior when related to what is known from the archaeological record of the surrounding region.

The background research in this study includes assessments of environmental context, pre-Contact culture, and historic background of the Richmond area. Primary environmental information was procured from USGS quadrangle 7.5 minute series topographic maps; bedrock geology map of Rhode Island; the USDA soil book for Rhode Island; the USDA NRCS *http://websoilsurvey.nrcs.usda.gov* online soil survey; and preliminary site plans. Secondary sources such as general texts and various guides useful for interpreting what plant and animal life is and may have been relevant to the cultural use of the area were also consulted.

Establishing the present and any past environmental information for an area is critical as cultural behavior is highly integrated with and founded upon resource procurement, while resources are in turn highly integrated with the conditions of the environment (Jochim 1979; Butzer 1982). This relationship is especially greater as one considers earlier groups of people whose technological and social networks may not have provided for the mesh of buffers intervening between humans and environment that is evident in today's modern industrial settings. Once the past and/or present environmental conditions for a project area have been assessed, they can be related to what is known about land-use as indicated by other sites and surveys in the region for predicting archaeological sensitivity across space (Kohler and Parker 1986; Kvamme 1990; Walwer and Pagoulatos 1990; Walwer 1996).

Several types of sources are critical for gathering background cultural information. Pre-Contact cultural data is available through past archaeological surveys and excavations, and traditional cultural knowledge may be available from current Native American tribes. Archaeological studies often rely upon rational application, ethnographic analogy, or less frequently, ethnohistoric, experimental, and folklore studies to provide behavioral interpretations of data derived from the archaeological record. Nevertheless, an abundance of independent sources for a region may provide fruitful information in relation to pre-Contact cultural behavior. Sources consulted in this study include information from books on Native Americans in the northeast, articles from publications such as the *Bulletin of the Archaeological Society of Connecticut*, *Bulletin of the Massachusetts Archaeological Society*, and *Man in the Northeast* (*Northeast Anthropology*); existing archaeological surveys of the area; and site files of the Rhode Island Historical Preservation & Heritage Commission (RIHPHC) which give valuable summary

information for sites in the region. Professional and avocational archaeologists as well as landowners, municipal historians, and project engineers are typically consulted as to knowledge of significant remains in the project area or surrounding region.

For the historic component of the background research, there is a range of records which can be consulted. For this study, primary documents such as historic maps and public land records from the town hall of Richmond were consulted, as were secondary documents in the form of local histories, registers of historic places, and genealogies. Public libraries consulted include the Clark Memorial Library of Shannock, Rhode Island, and the Westerly Public Library of Westerly, Rhode Island. As with pre-Contact background research, local informants, historians, tribal officials, and project engineers can also be important sources of historic cultural resource information. Mr. Andrew Tibbits, current occupant of 165 Beaver River Road (Jamesford House) provided key information regarding the location and nature of former and current structures of the project area, some of which were built or modified by his grandfather. The combined research of these types of sources helps to indicate the potential sensitivity for historic cultural remains within a project setting.

Methodology and Analysis

Research for methodology is based on a combination of past experience and formal training. Part of the formal training for the principal investigators of ACS include lectures and text books which cover methodological issues such as research design and excavation. Research for analysis of the archaeological record is also based upon formal training and published identification guide books. In terms of artifacts, analysis is segmented according to time (prehistoric and historic), and material type (e.g. wooden, metal, lithic, ceramic, etc.), while structures and features are analyzed by comparing case studies. Coordinating the information into a summary and meaningful form is based on knowledge gleaned from both theoretical and practical lectures, articles, and texts.

Field Methodology

Subsurface Testing Design

Open access to the entire property allowed for a complete pedestrian surface survey when ACS conducted its intensive survey in June and July, 2019. This is an important technique in cases where historic features such as foundations leave depressions in the landscape, and often with signs of disturbance or differentiation in vegetation type. Additionally, pre-Contact features and artifacts may be identified in areas where erosion out-paces soil development or deposition of leaf cover. For the current project area, two crew members walked the property in 15-meter parallel intervals in areas to be subsurface tested, and in a less systematic fashion along project area and wetland boundaries. This was particularly effective for the current project area, which has a relatively high surface visibility and sparse winter wheat cover that was just above waist high at the time of the survey. The depositional nature of the project property, and most of this part of the country, however, required that subsurface testing be employed as well. This is generally true in cases where thick vegetation and a relative lack of erosion encourages deep sedimentary and soil profiles.

In the face of temporal and monetary constraints when considering cultural resource management, subsurface sampling design is critical. In this process, a portion or sample of the entire sample frame or population of sample units is selected which will ideally represent the nature of what is to be described (Binford 1964; Ragir 1967; Thomas 1986). A sample strategy that employs the whim of the investigator to position subsurface testing has been shown to be subject to severe biases and results in invalid statements when statistically extrapolating sample data to a whole area or site. Judgmental testing, however, can be fruitful in cases where something is known about the history of a project area, or if prior work has yielded results which require further clarification. Random sampling achieves validity, but may result in large areas remaining untested despite an adequate sample fraction. Where certain portions of an area to be tested have been statistically shown to be more sensitive or prone to the incorporation of cultural material, it may be appropriate to stratify or partition an area into sections which receive differential proportions of testing. For most project areas, a stratification of the landscape is conducted, in which the project area is divided into sections with differing sensitivities in terms of probability for containing cultural resources. This stratification can be made upon the basis of informal knowledge of site locations, or upon statistical models which quantify aspects of the landscape with respect to the relative densities of sites already known to exist in a region (Walwer 1996).

The relatively large size of the project area in this case made a stratified-systematic sample fraction of the project area appropriate for the Phase I intensive survey. Using a transit and measuring tapes, there were 211 shovel tests plotted in standard 15-meter intervals for the Phase I survey (Figure 12). Shovel tests were concentrated within three transects lining Beaver River Road to test for potential post-Contact resources, and in three sinuous transects along the eastern edge of the project area and parallel to Beaver River Road to test for potential pre-Contact resources. In addition, two north-south transects were set within the central part of the property and wheat fields. The distribution of post-Contact testing was based on proximity to Beaver River Road, which was an early established route through Richmond, and the appearance of historic houses and outbuildings along the road according to historic maps, particularly in the vicinity of the Jamesford house across the street. With respect to potential pre-Contact cultural resources, tests were stratified according to the results of a statistical landscape sensitivity model using eight environmental variables known to be associated with the distribution of sites in southern New England *(www.acsarchaeology.com/sensitivity-model.html),* with sensitivity scores for the project property ranging from 9.2 to 21.6 out of a possible 100.0, and therefore within the low (0-20) and moderate (20-75) sensitivity ranges. While the property benefits from its location on a well drained glacial outwash plain in close proximity to the river, the dominant soil is a well drained silt loam that has a fine particle fraction, and there is a substantial buffer between the project area and the main course of the river. The highest scores are achieved closest to the river within units of Hinckley gravelly sandy loam that line the eastern part of the project area closest to the river, thus these areas were most heavily tested.

The research design and field methods of the project were conducted in conformance with guidelines set forth in the *Performance Standards and Guidelines for Archaeology in Rhode Island,* updated by the Rhode Island Historical Preservation & Heritage Commission (RIHPHC), which serves as review agency for the archaeological survey report. RIHPHC approved the

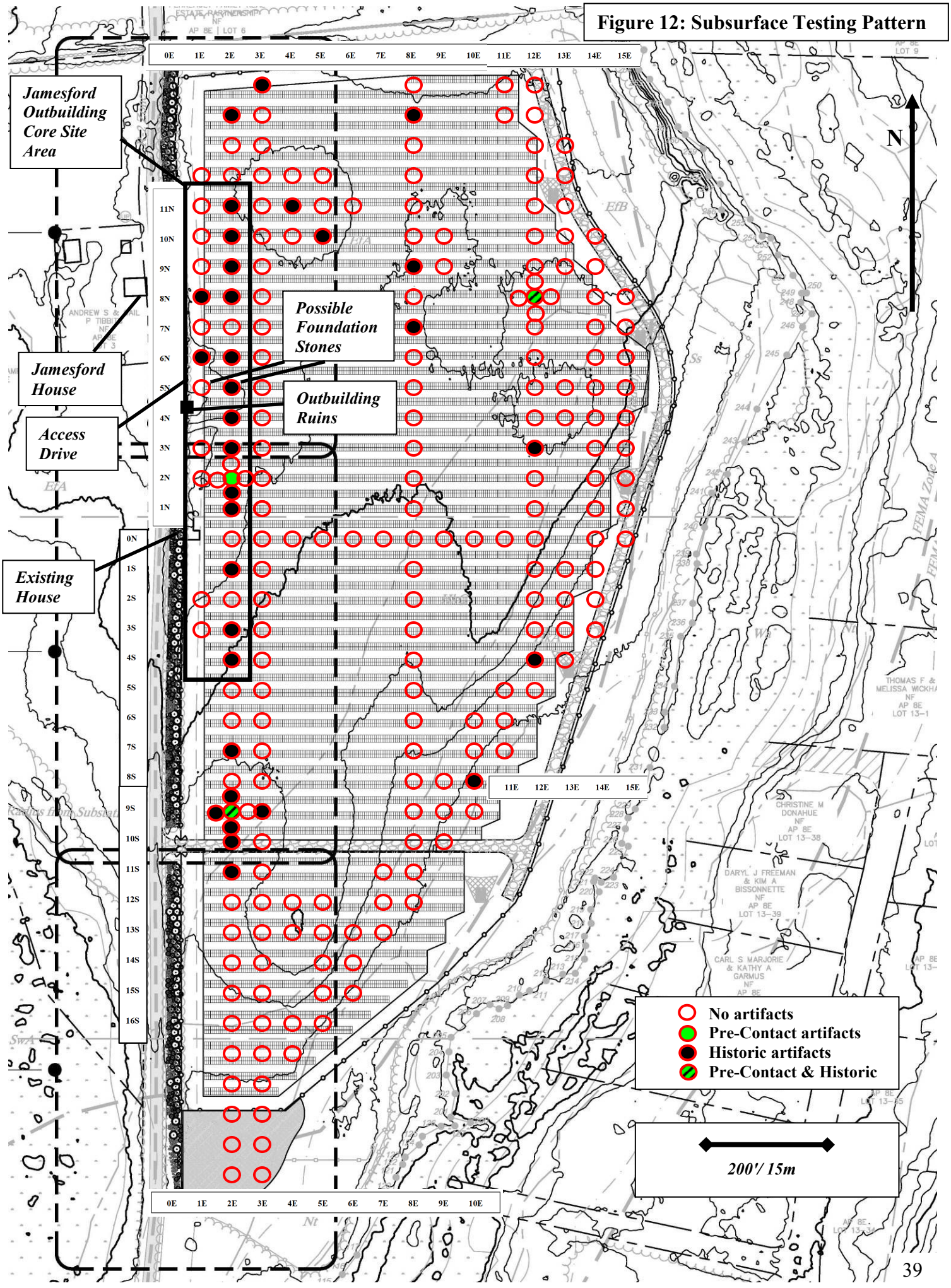

Figure 12: Subsurface Testing Pattern

research design in advance, and issued permit number 19-16 for the project. ACS coordinated with the Narrragansett Tribal Historic Preservation Office (NTHPO), which supplied occasional monitors to review field work.

Subsurface Test Execution

The pedestrian surface survey was performed by two people for the project area in June, 2019. Pedestrian traverses were made in 15-meter intervals following the main subsurface test grid pattern in areas to be subsurface tested and in a less systematic fashion along wetland and project area boundaries. Notes were taken as to any remnant features or structures, with the possibility that judgmental subsurface testing be applied in response to the results of the pedestrian survey. Any recovered artifacts that are clearly in excess of 50 years in age are bagged and provenienced according to the nearest subsurface test location within areas subjected to the standard interval traverses, or to the nearest group of tests and major landscape area otherwise.

A datum point was established at the southwest corner of the existing house at 172 Beaver River Road. Grid lines were established parallel and perpendicular to true north and the faces of the house, with a zero bearing established due east from the southwest corner of the house. Approximately 212 tests were plotted according the original research design, although five tests were eliminated due to access issues in the vicinity of the existing house. Tests were plotted in standard 15-meter intervals.

Square shovel tests measuring 50 cm across were excavated according to natural or cultural layers, with the use of round-point shovels, trowels, trench spades, and augers. The northwest corner of each shovel test was set at the surveyed grid point. Augers were used at the end of each test to confirm aspects of stratigraphy. Shovel tests were not excavated in arbitrary intervals unless high densities of material were encountered. Surface conditions were noted for each test prior to excavation, including any signs of natural or cultural disturbance. Standardized shovel test forms were used to record information such as soil types encountered, their depths, any bags for soil samples or artifacts collected, closing depth and reason for test termination, and any comments pertaining to unique conditions encountered. Extracted soil was screened and any artifacts retained. Hand screens consisted of wood frames with 1/4" mesh through which soil was passed for the recovery of artifacts. Recovered artifacts were provenienced according to test number and layer, and placed in labelled zip-lock bags for laboratory processing. Material that could be positively identified as modern debris was merely noted and left in place. Provenience format for this project and artifact bags consists of a four character project code (RMSF), shovel test number in 15-meter intervals from the designated datum point (e.g. 1S-3E), layer Roman numeral (e.g. II), and arbitrary ten-centimeter level number in cases where there was a high density of artifacts.

All test units were excavated to a depth which confidently exhausts any possibility of cultural resources being present, as indicated by Pleistocene gravels that comprise the "C" horizon of soil units in the project area, or deep subsoil contexts where very deep stratigraphic contexts were encountered. North American archaeologists have the advantage of knowledge that humans were present in the New World only after the end of the Pleistocene, thus Pleistocene sediments are an extremely useful indication for unit termination. Tarps were used to retain shovel test backfill piles, which were returned to the test units subsequent to complete excavation and recording.

Laboratory Procedures

Processing

Processing procedures include those involving cleaning, labeling, conservation, and documentation, as requested by the Rhode Island Historical Preservation & Heritage Commission (RIHPHC 2015). A daily record of soil sample and artifact bags retrieved from the field is maintained in the laboratory. Cleaning procedures depend upon material type. Ceramics, lithic artifacts, and well preserved bone and shell are washed in warm water and scrubbed with plastic brushes. Heavily rusted artifacts are dry-brushed lightly with a soft wire brush. Non-rusted metal artifacts, wood, and poorly preserved bone and shell are cleaned with a dry, soft plastic brush. Charcoal or burnt wood is separated and dry-brushed if necessary. Artifacts cleaned with water are dried on plastic trays, while those processed dry are bagged immediately. All artifacts are given new zip-lock bags, fresh tags, and significant artifacts are bagged separately according to material type. Highly significant artifacts are additionally labeled with India ink covered by an acetate solvent nail-polish, or given a separate labeled bag if direct labeling jeopardizes the integrity of the material or its potential to be studied in the future. Labeled artifacts bear an abbreviated indication of provenience. At the end of the project, all artifacts are submitted to RIHPHC in Providence, Rhode Island.

Analysis

Analysis and identification of artifacts are performed with the use of guide books, type collections (where possible), past experience, and standardized forms. The artifacts are separated by material type, with each material analyzed for designated variables. The variables selected for each material type reflect their significance in terms of identifying chronological and cultural demarcations, as well as variables which may ultimately shed light on the dynamics of behavior with which they were associated.

ACS has generated standardized data forms for lithic materials, faunal remains, and ceramics. This does not exhaust the potential material types, however it covers those which are most often preserved or which show the greatest degree of variability through time and across space. Variables assessed for all materials include those of material type, weight, and horizontal and vertical provenience, and for those other than modern debris, shell, or metal - color and condition or portion present. Lithic artifacts are analyzed for variables of raw material type and texture, manufacturing method, stage in the reduction sequence (including tool type where applicable), presence of heat treatment, indications of use and curation efforts, as well as those involving metric dimensions (size). Ceramic materials are analyzed for variables of raw material or ware type, inclusions or tempering, manufacturing method, firing method, surface treatment, thickness, rim and vessel diameters, container volume, decoration, and maker's marks. Shell is analyzed for species and weight. Finally, bone is analyzed for taxonomic classification, element, age, sex, seasonality, human modification, exposure to heat, and possible use as tools. Weight measurements of all artifacts are made to the nearest 0.1 gram using an Acculab V-1200 electronic balance. Size measurements are made to the nearest tenth of a millimeter with the use of electronic calipers (including partial and item-maximum measurements, or total measurements for complete dimensions). Large data sets are entered into a CSS Statistica database format for generating descriptive statistics and employing other statistical applications.

Soil samples are analyzed for standard variables of color, texture, and pH. Color is measured along the variables of hue or color, value or shade, and chroma or degree of saturation. The standardized Munsell charts also provide names which may be universally recognized. Texture is assessed based on behavior in hand samples as indicated by standard soil science manuals. pH is assessed by the use of soil testing kits. Additionally, those samples which are predominantly sand are analyzed for sorting, sphericity and roundness, and size, all of which help indicate the type of environment and the degree of energy in which they were deposited.

Architectural features and sites are documented in standardized forms published by the Rhode Island Historical Preservation & Heritage Commission (RIHPHC). For purposes of the general report, architectural features and pre-Contact sites as a whole are analyzed in terms of their capacity to explain cultural patterns and historic phenomena, and tend to involve a less standardized procedure based on examining similar case studies. Analysis will frequently involve factors such as spatial distribution, density, and association of artifacts within a site. Copies of all field records and copies of the final report are included in the report. In addition, analysis raw data sheets and a CD with the raw data stored in standard Excel formats are sent to the RIHPHC in cases where large databases are generated.

Expectations

Pre-Contact

Pre-Contact site locations have been shown to be fairly consistent in terms of landscape setting, as were the resources being procured and the environmental setting in which people operated. The rating of pre-Contact site sensitivity for the project property is low to moderate. The lowest sensitivity areas for pre-Contact resources are furthest from the river and within the moderately well drained silt loam soil unit that dominates the property. Higher sensitivity scores are achieved within the Hinckley soil units closest to the river, but only within a moderate sensitivity range due to the undifferentiated nature of supporting glacial meltwater sediments, gravel content in the soil, and low order stream rank of the Beaver River. Thus the project area would not likely have supported large village sites, although these settings were frequently utilized for hunter-gatherer camp sites. In addition, local informants have indicated that over the years an avocational archaeologist had surface collected the property and recovered numerous projectile points. It is thus projected that smaller hunter-gatherer camp sites will be located on the property, with artifacts possibly limited to lithic debitage, and some evidence of short-term structural features such as hearths possible. Given the active plowzone present on the property, any such sites may have been partially or completely impacted by historic agricultural activity. There is also the possibility of encampment activity related to the early historic Great Swamp Fight, whose geographic focus was several kilometers to the southeast.

Post-Contact

Assessment of historic sensitivity during the Phase I intensive survey was based on a compilation of documents such as historic maps, land records, and local histories. The historic sensitivity of the project area appears to be concentrated along Beaver River Road, where there

are two existing historic houses already deemed as contributing resources of the proposed Beaver River Agricultural District that has been determined eligible for the National Register of Historic Places (NRHP). The core of the farmstead in the vicinity of the project area is the Jamesford complex of structures on the west side of the road and outside the project area, while the historic house at 172 Beaver River Road lies within the project area and was associated with numerous other outbuildings along the road, including a large barn, dairy barn, machine shed, and two silos. Information from local informants and historic maps suggest all of the structural aspects of the site were located within 50 meters of the road, although there may have been a cattle barn located closer to the river at one time, and 20th century dumping reportedly occurred in the northeast corner of the property. It is therefore projected that any significant historic resource recovered at the property will be located within 50 meters of the road, and concentrated about or across from the two known historic houses. Features are likely to include foundations related to former structures, and artifacts including structural and domestic household items dating from the late 18th through 20th centuries.

CHAPTER 4: RESULTS

Field Conditions and Test Summary

ACS performed the intensive survey of the project area in June and July, 2019 (Appendix A, see Figure 12). The surface survey was conducted during the plotting of tests on relatively warm and dry days. The project property is on the east side of Beaver River Road, and is almost entirely covered by sparse winter wheat, interspersed with some goldenrod and ragweed plants (Figures 13 and 14). Animals encountered at the property during field work include white-tailed deer, red-tailed hawk, barn swallow, and woodchuck. The eastern sinuous boundary of the project property is along Beaver River, with a wide buffer of secondary forest along the west side of the river. The northern boundary of the field is an artificial alignment of wetlands, while the southern end of the property is just north of where the river approaches the road near its intersection with Shannock Hill Road. The field is nearly level to gently sloping, with a general slight dip to the southeast. A few slight rises occur within the bounds of the property. The pedestrian surface survey of the property did not reveal any traces of pre-Contact cultural resources, nor any post-Contact artifacts definitively in excess of 50 years old.

There were a total of 223 50-cm square subsurface shovel tests conducted for the property, including 211 systematic tests at standard 15-meter intervals, and four judgmental tests placed at 7.5-meter intervals around each of three tests bearing pre-Contact lithic materials. Broadly, the entire project area contains a plowzone, varying in depth from 25 to 50 cm deep below the surface, with the variability likely attributed to historic erosion and agricultural earth-moving activities, and the resulting smoothing out of the grade across the property. Some other plotted tests in the far western part of the property were dismissed due to inability to access the area immediately around the house and some piles of rubble in the vicinity of adjacent former outbuilding locations. Where tests could be placed in this latter area, traces of probable foundation stones and associated fill layers were encountered, particularly to the south of the access driveway where a historic large barn is known to have been located. Tests throughout the project area revealed substrata with very gravelly coarse sand which was generally poorly sorted and sub-angular, thus not reflecting long distance of transport prior to desposition. Soil acidity was close to neutral, reflecting recent agricultural activity (Appendix B).

Tests in the field confirmed the general distribution of projected soil types. Recall that most of the project area is occupied by an Enfield silt loam, with a typical profile having a surface layer of dark grayish brown silt loam about seven inches (18 cm) thick, followed by a subsoil of strong brown and light olive brown silt loam 18 inches (46 cm) thick, and a substratum of brown, very gravelly sand to five feet deep or more. For most of the project area, a dark yellowish brown (10YR 4/4) silt loam dominated as the first layer. The subsoil also tended to be a silt loam, but more variable in color, often ranging from a light olive brown (2.5Y 5/4) to a very pale brown (10YR 7/4) and to about 70 to 80 cm below the surface. The substratum also tended to be variable in color, and a much coarser texture, ranging from a sandy loam to coarse sand to as much as a meter or more below the surface. Gravel was frequently present in tests,

Figure 13: Open Field - North

Figure 13: Northeast view of the project area.

Figure 14: Open Field - South

Figure 14: Southeast view of the project area.

particularly in lower layers of profiles. The upper layer of soil tended to be lighter and deeper than expected, likely as a result of extensive plowing.

Tests in the southern end of the project area tended to be more in line with the projected Agawam fine sandy loam ideal type. Recall that the Agawam soils tend to have a profile of dark brown fine sandy loam about seven inches (18 cm) thick, followed by a subsoil of yellowish brown, reddish yellow, and light yellowish brown fine sandy loam about 25 inches (64 cm) thick, over a substratum of pale brown gravelly sand to five feet deep or more. The upper layer in the field consisted of a dark brown (10YR 3/3) to dark yellowish brown (10YR 4/4) silt loam surface layer generally between 25 and 40 cm deep, followed by a brownish yellow (10YR 6/6) loamy sand to about 60 cm below the surface, and an olive yellow (2.5Y 6/6) coarse sand substratum to 80 cm or more below the surface, with gravel found throughout tests.

Other tests in the east and southeast parts of the property tended to have profiles well matched to the Hinckley ideal soil type, which includes a surface layer of dark brown gravelly sandy loam about six inches (15 cm) thick, followed by 11 inches (28 cm) of a subsoil of yellowish brown to light yellowish brown gravelly sandy loam to loamy sand, and a substratum of light brownish gray very gravelly sand to five feet deep or more. The tests also tended to have a dark brown (10YR 3/3) surface layer, although with a sandy loam texture to 25 to 40 cm deep, followed by a coarser sand or loamy sand subsoil often brownish yellow (10YR 6/6) in color to 60 cm or more below the surface, and a pale yellow (2.5Y 7/3) substratum to a meter or more deep, also with gravel throughout tests.

Pre-Contact Cultural Resources

There were three artifacts recovered from shovel tests that were clearly identified as pre-Contact in origin (Figure 15). All three were found in plowzone contexts, and not in a concentrated area, and in two cases relatively far from the river. A gray quartz Squibnocket projectile point (see Ritchie 1971:127) was found in Test 2N-2E, featuring a typical squat triangular shape with a low base / blade angle, incurvate thinned base edge, and broad distal end which was spalled and may therefore indicate impact prior to abandonment. The diagnostic projectile point dates to the Late Archaic period, and a general consensus date range is 5,150 to 3,450 B.P. A white quartz Lamoka projectile point (see Ritchie 1971:29) from Test 8N-12E features a higher base / blade angle, with ovate blade shape, tapered shoulders, curved stem-shoulder juncture, and acute distal end. A broader date range of 5,500 to 2,000 B.P. reflects the use of this form into the Early Woodland period. The white quartz lithic from Test 9S-2E is also reminiscent of a Lamoka projectile point, but has an asymmetric shape with bilateral beveled blade edge bearing considerable usewear, and thus was likely utilized as a knife. The base of both Lamoka lithic items is missing, likely from impact or breakage during use rather than during manufacturing. There were no other associated pre-Contact artifacts with any of the pre-Contact lithics, and no discernable feature contexts within or below the plowzone at these locations. Collectively, they indicate intermittent use of the site for hunting and gathering, without evidence of encampment. The lack of manufacturing or duration of site use is reflected in the lack of associated debitage and the universal traces of use and breakage of the items.

Figure 15: Projectile Points

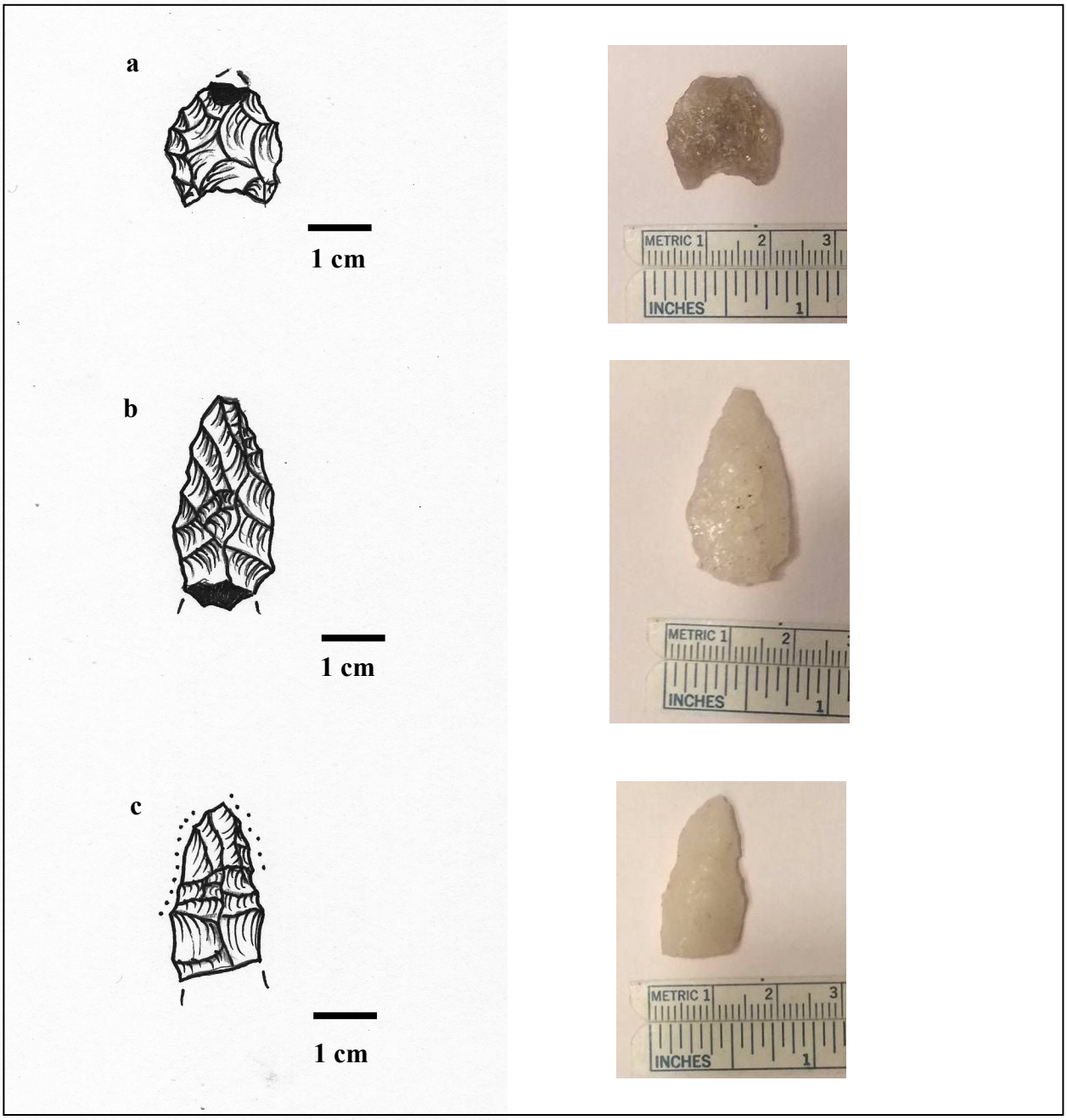

Figure 15: Projectile points recovered during the Phase I intensive survey. a) Squibnocket triangle from Test 2N-2E, Layer I; b) Lamoka point from Test 8N-12E; and c) Lamoka-like knife from Test 9S-2E. Note the distal spall on the Squibnocket from impact and the broken bases on the other two lithics. The lithic knife is less symmetric than the points, and additionally bears evidence of use-wear and/or resharpening on the lateral edges. Drawn to scale.

Post-Contact Cultural Resources

Structures and Features

Existing historic structures within the project area include the house at 172 Beaver River Road (Figures 16 and 17), and the remains of a small outbuilding to the north along the road (Figure 18). The house is within ten feet of the road, and is a one story frame structure with low-pitch gable roof with opening facing the road. The siding appears to be cedar shingle, and there is a cement mortared stone chimney set into the northwest corner of the main part of the house. The chimney contains an outlet pipe for a stove inside the house. A one-story addition or ell extends to the north, with the open part of the gable roof also facing north, thus at right angles with the main part of the house. Wooden window treatments and eaves of the house are deteriorating, and part of the northern wall of the house is missing. The house was reportedly converted to a residence from a former mill building - possibly a grain processing mill structure (Tibbits pers. comm. 2019). Six-over-six pane sash windows occupy the main part of the house, with a mix of single pane casement windows and narrow tall windows on the addition. The current entry door to the house is to the rear, where another later addition features a venting concrete block chimney.

The standing ruins of an outbuilding are located within a few feet of the road to the north. The building is constructed of concrete blocks, and is roughly 16 feet square. The building features cedar shakes as upper siding beneath the roof, with an entry on the north side of the structure. The tax assessor field card for Richmond indicates that the larger barn formerly adjacent to the house to the north and east of the house was demolished in 2004, while at least one 14-foot diameter 36-foot high silo was located in the same vicinity. Other former structures in the area identified on the field card include sheds and greenhouses, while local informants recall a machine shed near the silo(s), and the large dairy barn to the north of the access drive. There were no definitive subsurface feature contexts identified during the survey during shovel testing, although rocks in tests to the south of the access drive (Test # 5N-1E and 5N-2E) likely relate to the foundation of a large barn at that location (Figure 19), while the former dairy barn to the north of the access drive was also indicated as once being set on an unmortared stone foundation (Tibbits pers. comm. 2019). The remains of other outbuildings are likely in close vicinity of the existing house.

Artifacts and Analysis

Other than the three lithic items that could be attributed to a minor prehistoric context on the property, the rest of the material assemblage recovered during the surveys consists of historic artifacts (Appendix C). The historic materials were recovered from 34 of the 223 shovel tests excavated on the property, and mostly from tests within 30 meters of the road. The inventory of materials collected during the survey has been segmented into several broad classes of artifacts, and more detailed artifact categories within these classes. Broad artifact classes include structural materials (n=44 / 51.8%), household ceramics (n=21 / 24.7%), household glass items (n=14 / 16.5%), faunal remains (n=2 / 2.4%), and personal items (n=4 / 4.7%), for a total of 85 post-Contact artifacts collected.

Figure 16: House – East View

Figure 16: East view of house at 172 Beaver River Road.

Figure 17: House – South View

Figure 17: South view of house at 172 Beaver River Road.

Figure 18: Outbuilding Ruins

Figure 18: East view of the small outbuilding north of the house at 172 Beaver River Road.

Figure 19: Former Outbuilding Area

Figure 19: Southwest view of the former outbuilding area (foreground), house at 172 Beaver River Road in background. Historic photogaph of outbuilding area and Jamesford house across the street provided by Mr. Andrew Tibbits, 2019. Note the road has been straightened since the photograph.

Despite the intensive collection of materials, it must be noted that the relative count of artifacts is severely affected by the integrity of individual artifact classes and categories. For instance, glass bottle and ceramic vessel fragments constituted significant proportions of the assemblage, with the material being highly fragmented through time and likely at a higher rate than other materials (e.g. nails) based on proportions of refitting pieces. Also, some categories of materials may be severely under or over-represented due to the irretrievability of highly fragmented items, typically including charcoal, which is often represented only by small flecks too fine to collect from the soil context using normal screening methods, although no charcoal was found during the current survey. In several cases where a single material is found at a location in relatively large quantities or in highly fragmented conditions (e.g. oxidized sheet metal, shell, brick, and coal), only samples are taken as noted in Appendix C. Finally, clearly modern debris such as plastic was generally noted and discarded in place. Within each major material class, mutually exclusive individual categories were devised on the basis of frequency, material, and function as described below.

For structural materials, there were no brick or cut nails found. Just one wire nail was recovered, from Test 4N-2E, and post-dates 1850 when they started to be produced, although it was well after this time that they became widely used (Noel-Hume 1970:253-254). Other hardware items recovered at the site include other indeterminate, heavily oxidized nails and fasteners, and one chain link. Other structural materials recovered include four fragments of heavily oxidized metal wire. The 25 fragments of window glass constituted the most frequent structural material, consisting of mostly non-patinated fragments clear to aqua-tinted fragments that are on the order of two millimeters thick, and do not bear a heavy patination that is often associated with very old pieces. The lack of patination is due in part to the acidity of soils in the area which serves to neutralize weathering effects on silicate materials. Most likely date to after 1832 when the more modern broad glass or "sheet" manufacturing processes resulted in window glass that was relatively uniform with a lack of substantial imperfections such as sand, stress lines, and air bubbles found in older forms of window glass (Noel Hume 1970:234-235).

There were 21 recovered fragments of household ceramics which can be broadly divided into types such as red earthenware (n=1 / 4.8%), pearlware (n=2 / 9.5%), whiteware (n=9 / 42.9%), ironstone china (n=2 / 9.5%), porcelain (n=2 / 9.5%), stoneware (n=4 / 19.1%), and other / indeterminate pieces (n=1 / 4.8%). The other / indeterminate class includes one burnt fragment of earthenware from Test 1N-2E. The single red earthenware rim fragment from Test 3S-2E was also burnt.

The pearlware came from 9S-1.5E where a blue-edged rim fragment was recovered, and from 11N-4E where another piece was found. Pearlware was available in North America by the early 1780s, and is represented mostly by tableware vessel forms. These pieces are usually recognizable by a bluish tint to the glaze, sometimes discernable in crevices, but often with blue specks in the glaze which again was often crackled due to weathering over time. The production of pearlware was becoming quickly replaced by whitewares after 1820, and was largely out of production by 1840 (Noel-Hume 1970:130; South 1977:212). The blue-edged pearlware piece likely dates from 1795 to 1830.

The nine fragments of whiteware recovered during the survey represent the most common ware type in the assemblage, with the only distinctive piece being one from 10N-5E bearing red transfer-printed decoration. The white earthenware sherds recovered during the survey represent vessels produced after 1820 (Noel-Hume 1970:130) as potters began to perfect the whitening of

the glaze which had been targeted for many years by those seeking to imitate the appearance of china. These wares have a date range which broadly extends to the present, although the sherds recovered mostly have a clear crackled glaze which suggests they are not modern. A date range of 1830 to 1850 is projected for transfer-printed fragment.

Other wares are represented in lower frequencies. Semi-vitreous ironstone china was practically non-existent, with the exception of two pieces from 9.5S-2E. Ironstone chinas were frequently made as table and service wares, but because of their durability, other vessel forms include utilitarian vessels such as chamber pots and cooking wares. Ironstone china was manufactured from about 1813 to 1900 or later (Noel-Hume 1970:131; South 1977:211), with a peak of popularity notably between 1840 and 1890. Porcelain is also an infrequent class of ceramics represented on the project property, with only two indistinct pieces recovered. There were also relatively few stonewares represented on the property, including a base fragment of gray stoneware with brown interior slip on a piece from Test 4S-2E; a buff salt-glazed stoneware fragment from 8N-1E that bears engine-turning evidence on the interior surface; another buff salt-glazed stoneware fragment with brown interior slip from Test 10N-2E; and a buff salt-glazed stoneware fragment with more distinctive dark brown Albany slip from Test 14N-8E. The stonewares all likely date to the 19th century, with the Albany slip piece likely postdating 1805.

Household glass items account for 14 or 16.5 percent of the artifact assemblage. Even this relatively low number may be artificially inflated given the likely presence of modern bottle glass introduced into the historic site context, as well as a high degree of fracturing for glass. Clear glass bottle fragments were recovered from shovel tests throughout the project property. Federal laws applied to medicinal and consumed products prohibited the use of dark bottle colors to disguise contents after 1880 (Yount 1971:6), thus most of the represented clear bottles likely post-date that time. Aqua-tinted bottle fragments were also recovered from Tests 4S-12E, Layer II, and 4N-2E, Layer I, and another aqua-tinted bottle finish fragment from Test 15N-3E features air bubbles and a squared applied lip indicating manufacture before 1910. Other household glass items recovered include a fragment of thin curved glass from Test 7N-8E that could represent a light fixture or lantern globe; two fragments of aqua-tinted pressed glass vessel from Test 8S-10E; and a fragment of melted glass from Test 9N-2E.

There were no fuel-related items such as charcoal, coal, or slag recovered from the property. There were just two bone fragments recovered during the survey, including a bird long bone fragment from Test 1.5N-2E, and a saw-cut fragment of a medium to large sized mammal long bone from Test 6N-2E. Four personal items recovered from the property include fragments of heavily oxidized iron buckles from Tests 6N-1E and 11N-2E; a fragment of braided cord from Test 5N-2E; and a fragment of black clay pigeon from Test 3N-2E, with the two iron buckles likely related to domestic animal harnesses.

Overall, the post-Contact material assemblage reflects 19th to early 20th century agrarian activity, concentrated within 30 meters of the road, and from 180 meters north to 60 meters south of the existing house at 172 Beaver River Road. This is roughly the range of the site as reported by local informants and as appearing on historic maps, with more dispersed post-Contact artifacts lightly clustered to the south up to 180 meters to the south of the house. The lack of other residences is indicated by the lack of brick and low density of household goods such as ceramic wares and household glass, most glass consisting of clear beverage bottle fragments likely introduced into the archaeological context throughout the 20th century, and the low density of personal items which mostly relate to agricultural life on the property.

CHAPTER 5: CONCLUSION

Cultural Resource Summary

The Phase I intensive survey of the project area revealed a number of historic structures and remains at the project property, and a relatively low density of post-Contact artifacts in subsurface tests. There were also three pre-Contact lithic items collected. There were 211 shovel tests placed in 15-foot intervals along selected transects, including those placed along the east side of Beaver River Road to evaluate potential post-Contact site contexts related to the historic route of the road, those placed along the river to evaluate potential pre-Contact site contexts, and those placed on high elevation rises and in the middle of the project area as a control.

The three pre-Contact lithic items include two projectile points and a probable knife, all made from quartz. The three were found dispersed across the property in plowzone contexts and without any other associated pre-Contact materials or feature contexts. One gray quartz point is a Squibnocket triangle with a blunt distal spall reflecting a broken tip from impact, and dates to the Late Archaic period. The white quartz Lamoka point has a missing base and more broadlly dates to the Late Archaic through Early Woodland periods. The white quartz lithic knife with missing base also resembles a Lamoka form, although this piece is asymmetric and bears considerable usewear and stepping from resharpening on the lateral edges. These items, in the absence of other materials including debitage, suggest the site was favored as a short-term, intermittently utilized hunting-gathering ground, likely as a result of game being attracted to the river, with historic plowing scattering the lithics over time. Factors that may have limited more intensive habitation include a lack of major tributary nearby, the fine particle fraction of the dominant silt loam soils, and the breadth of wetland soils between the habitable portion of the field and the main channel of the river.

Post-Contact artifacts (n=85) include a range of structural and domestic household materials, although in fairly low densities, suggesting there were no houses located along the east side of Beaver River Road other than the house converted from a mill structure in the early 20th century. Structural materials notably do not include brick or cut nails, and a dominance of window glass likely relates to former outbuildings. The ceramics are dominated by undecorated whitewares, with pearlware representing the earliest form, and some stonewares reflecting an agrarian focus. The ceramic assemblage strongly indicates a mid-19th to early 20th century focus, with glass bottle remains dominated by clear glass suggesting late 19th through 20th century focus. Items designated as personal, including two belt or harness buckles, braided cord, and clay pigeon, are also indicative of an agrarian focus during these time frames. Subsurface structural remains may be present to the north and south of an access drive, where some tests reveled rock likely related to the foundation of a former large barn known to be at that location formerly. Information from local informants and tax assessor field cards also suggest the remains of further outbuildings could be present closer to the existing house, including a machine shed, one or more silos, and large multi-story barn. The ruins of a small 20th century outbuilding constructed of concrete blocks still stands by the side of the road to the north of the house.

The existing house was reportedly converted from an old mill building in the 1930s. The former mill structure is thought to have processed grain, and was substantially modified to include a mortared stone chimney housing a stove pipe, and an addition at the north end that is now missing part of its wall. Another concrete block chimney stack is at the rear of the house where the current main entrance is located, while the front of the building facing the road has no entry. The house and outbuildings belonged to the Jamesford farmstead, whose principal house was located across the street and to the north where there is another cluster of buildings. The complex is named after the James family, who acquired the farm from the George Hazard in the early 19th century, who in turn acquired the structures and land from Jeremiah Northup. Northup is believed to have built the house across the street towards the end of the 18th century.

Recommendations

There were pre-Contact artifacts recovered, although all in disturbed plowzone contexts without evidence of associated materials or feature contexts despite the placement of tightly configured judgmental testing at each of the three find spots. The lack of other materials, including lithic debitage, indicate they were manufactured off site, and their universally broken state may indicate abandonment during use, which most likely consisted of hunting and processing game on an intermittent basis. The presence of three such items, even though dispersed, are indications of a site of activity located within the project property, likely scattered and affected by historic plowing that also may have obscured subsurface feature contexts. The site may have also been affected by years of surface collecting artifacts, as reported by local informants, although presumably a collecting bias that would have also focused on projectile points more than other possible materials, thus the determination of function and duration of site use is still valid. Given the lack of material range and density, lack of *in situ* feature or artifact contexts, and probable lack of new and significant information regarding the pre-Contact archaeological record of the region, ACS therefore recommends that the proposed project will not adversely affect significant pre-Contact cultural resources.

The detailed recommendations issued in this report are devoted to the post-Contact agrarian site related to the existing house on the project property at 172 Beaver River Road. The core area of the site is estimated to measure approximately 40 meters across from the road, and has a length of approximately 240 meters along the road. It extends to the north from the approximate location of a former dairy barn located across from the Jamesford house, south past the former location of silos, machine shed, large barn, and current outbuilding ruins, to the existing house and further to the south. Historic artifacts were found outside this estimated core site area, although the densities of materials are lower, and the estimated site boundaries are inclusive of structures as they appear on historic maps. The remainder of the recommendations regard the historic archaeological context as well as historic structures on and adjacent to the project property, and are based on a number of considerations, including proposed development and extent of impact from construction and future use of the property; site integrity; material density and distribution; the potential ability of sites to add new information to the archaeological record of the region; the relative amount of information already provided through prior testing and documentation; and eligibility for the National Register of Historic Places (NRHP):

1) Proposed Impact and Future Use

Current site plans show impact to the historic site context, and close proximity of the solar panel array to the existing house at 172 Beaver River Road. The array would not directly impact the house on the property or the Jamesford house across the road, although there would be a substantial visual impact. Current plans call for the demolition of the house at 172 Beaver River Road and the installation of substantial vegetative screening along the road that would mitigate the visual impact to the Jamesford house. The solar array is scheduled to be in place for a period of 25 years, with an option to extend the use, thus it presents a less permanent use than would a residential subdivision or similar use. The racking system for the panels is a relatively low impact use in terms of overall square footage, although associated grading to support the infrastructure could be widespread across the site.

2) Site Integrity

The site integrity for the archaeological context of the site is good, although the integrity of the house at 172 Beaver River Road is poor to fair. Shovel tests within the site revealed good stratigraphy, and where disturbed, was likely related to historic construction and agricultural activity, thus a part of the archaeological depositional context. The Jamesford house across the street appears to be in good condition, with a modest amount of exterior alterations that include the installation of a rear porch and concrete block chimney or vent stack associated with the kitchen. Modern outbuildings and one historic barn are also present in the Jamesford cluster of structures.

3) Material Density and Distribution

The material density at the historic archaeological site is modest, with 85 artifacts recovered from the survey which included 223 total tests. Probable traces of a stone foundation are present to the south of the access drive at the reported location of a recently demolished large barn, and informants also indicate buried foundations for a previous dairy barn to the north of the access drive, with other outbuildings known to have been located near the existing house. Collectively, the structures, structural remains, and highest clustering of artifacts across space indicate a relatively cohesive historic archaeological context. The core area of the site is approximated by the course of Beaver River Road on the west to a maximum distance of about 40 meters to the east, and from 180 meters to the north of the existing house to about 60 meters to the south of the house.

4) Prior and Potential Information

A fair amount is already known about the Jamesford farmstead, which once included the historic archaeological context and structures on the project property. The two houses are listed as contributing resources in a correspondence with the Rhode Island Historical Preservation & Heritage Commission (RIHPHC), which confirmed their eligibility as part of a broader proposed Beaver River Road Historic District eligible for the NRHP under Criteria A and C. The correspondence also indicated that more research and reporting was need in order to confidently establish that determination and to formally register the district. The historic archaeological site offers the ability to document a diverse array of structural remains related to a 19th century agrarian site focused on dairy, and may also hold answers to critical questions relating to the

emergence and decline of dairy as an agricultural focus on the region. The historic structure at 172 Beaver River Road was likely a reflection of those transitions, as the original grain mill may have preceded the focus on dairy, and its conversion to a residence in the 1930s may have reflected a decline in dairy related to a consolidation of the industry.

5) Summary

In summary, the solar array presents a long-term, but not permanent use of the agrarian landscape that has been deemed eligible for the NRHP. The historic house at 172 Beaver River Road and the Jamesford house across the street were identified as contributing resources of the agricultural historic district in original correspondences with the National Register. The Jamesford house has good integrity and is clearly eligible, although the decline of the house on the project property may result in its ineligibility as a contributing resource. Because the house is a part of the historic archaeological site that may have the ability to yield significant information, ACS recommends that the house not be demolished, and that the surrounding archaeological context be further conserved, either through *in situ* preservation or conducting a Phase II site examination to further evaluate its boundaries, chronological and functional setting, integrity, and significance and eligibility for the NRHP. Further, ACS recommends that a state-level architectural history documentation of the house at 172 Beaver River Road be conducted, with a focus on determining its prior function in relation to the historic farmstead, and as a further measure of mitigating the resource which is in a declining state of repair. Further, ACS recommends that vegetative screening, currently shown as being along the east side of the road for the entire project property, be set back 40 meters from the road in the vicinity of the core area of the historic site in order to avoid impacting it and to present a minimal amount of field presence in the vicinity of the historic structures. If agricultural activity is to continue within the site area avoided by the solar development, it should be limited to its current use, with plowing no deeper than 25 cm below the surface across the core site area, and should not include deep plantings such as orchard trees or any subsurface disturbance in areas not recently plowed. It is noted by ACS that the project proponent has plans for a complex mix of vegetative screening that will not only shield against visibility of the solar panels, but also against deer which tend to diminish the value of single-species screening. It is also noted that currently there is a substantial amount of scrub growth in the vicinity of the Jamesford house on the east side of the road already, likely related to the former dairy barn site, that shields the house from the vistas of the agricultural fields which are considered important parts of the districts eligibility to the NRHP, and that the proposed temporary use of solar panels that would be removed at the termination of the lease allows for the return of the property to its former state.

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Appendix A: Field Test Summary

Test #	Layer I Color	Layer I Texture	Layer I Depth cm	Layer II Color	Layer II Texture	Layer II Depth cm	Layer III Color	Layer III Texture	Layer III Depth cm	Layer IV Color	Layer IV Texture	Layer IV Depth cm	Auger cm	Close Reason	Comments
0N-2E	10YR4/4	sloam	48	2.5Y6/4	sloam	80	10YR7/4	csand	90				68	arb	Gravel in Lay III
0N-3E	10YR5/2	sloam	25	10YR6/8	sloam	48	7.5YR5/8	sloam	70	2.5Y7/4	lsand	75	57	arb	Gravel throughout
0N-4E	10YR4/4	sloam	38	10YR6/8	sloam	48	2.5Y6/4	sloam	66	7.5YR5/6	sloam	90	60	arb	Gravel in Lay II, III, IV
0N-5E	10YR4/4	sloam	28	2.5Y6/4	sloam	68	10YR7/4	csand	82				55	arb	Gravel in Lay II and III
0N-6E	10YR4/4	sloam	31	2.5Y6/4	sloam	50	2.5Y6/2	csand	75				50	arb	Gravel throughout
0N-7E	10YR4/4	sloam	35	10YR6/8	sloam	42	2.5Y6/4	sloam	74	2.5Y6/2	csand	95	55	arb	
0N-8E	10YR4/4	sloam	42	2.5Y6/4	sloam	65	10YR7/4	csand	100				70	arb	Gravel throughout
0N-9E	10YR4/4	sloam	38	10YR6/6	sloam	68	2.5Y6/6	csand	90				70	arb	Gravel in Lay III
0N-10E	10YR4/4	sloam	30	10YR6/6	sloam	40	7.5YR5/8	sloam	50	2.5Y6/6	csand	80	60	arb	Gravel throughout
0N-11E	10YR5/3	sloam	30	10YR6/6	sloam	47	7.5YR5/2	sloam	60	2.5Y6/6	csand	75	60	arb	Gravel throughout
0N-12E	10YR5/3	sloam	25	10YR6/6	sloam	38	2.5Y6/6	csand	70				50	arb	Gravel throughout
0N-14E	10YR4/4	sloam	50	10YR2/2	sloam	67	10YR3/3	sloam	80	2.5Y5/6	sloam	85	85	arb	Lay V 7.5YR5/6 csand to 100cm; Gravel throughout
0N-15E	10YR4/4	sloam	48	10YR6/6	sloam	52	2.5Y6/6	csand	70				50	arb	Gravel throughout
1N-2E	10YR4/4	sloam	60	10YR7/4	lsand	100							60	arb	Gravel throughout
1N-3E	10YR3/3	sloam	37	2.5Y6/3	sloam	68	2.5Y7/4	csand	90				60	arb	Gravel throughout
1N-8E	10YR4/4	sloam	40	2.5Y6/4	sloam	60	10YR7/4	csand	85				60	arb	Gravel throughout
1N-12E	10YR4/4	sloam	24	10YR6/6	sloam	37	10YR7/2	sloam	50	2.5Y6/6	csand	80	60	arb	Gravel throughout
1N-14E	10YR4/4	sloam	36	10YR5/8	sloam	50	10YR6/6	sloam	56	2.5Y6/6	csand	80	60	arb	Gravel throughout
1N-15E	10YR4/4	sloam	57	10YR4/2	sloam	64	7.5YR5/2	sloam	80	10YR5/8	csand	95	75	arb	Gravel throughout
1S-2E	10YR4/4	sloam	60	2.5Y6/4	sloam	100	10YR7/4	csand	120				60	arb	
1S-3E	10YR5/2	sloam	38	10YR6/4	sloam	90	2.5Y7/4	lsand	100				60	arb	Gravel throughout
1S-8E	10YR4/4	sloam	38	10YR4/3	sloam	47	10YR5/6	sloam	60	2.5Y6/6	sloam	90	60	arb	Gravel throughout
1S-12E	10YR4/4	sloam	25	2.5Y7/4	csand	60							20	arb	Gravel throughout; excessively drained
1S-13E	10YR4/4	sloam	39	7.5YR5/8	sloam	60	2.5Y7/4	csand	90				60	arb	Gravel throughout
1S-14E	10YR4/4	sloam	46	10YR4/2	sloam	67	7.5YR5/8	sloam	67	10YR6/6	sloam	80	75	arb	Lay V 2.5Y6/6 csand to 100cm; Gravel throughout
1.5N-2E	10YR4/4	sloam	60	2.5Y6/4	sloam	70	10YR7/4	csand	100				70	arb	Gravel throughout
2N-1E	10YR4/4	sloam	10	10YR6/8	sloam	35	2.5Y7/4	csand	46	10YR4/7	sloam	115	85	arb	Gravel throughout
2N-1.5E	10YR4/4	sloam	53	2.5Y6/4	csand	85							70	arb	Gravel throughout
2N-2E	10YR4/4	sloam	60	2.5Y6/4	sloam	64	10YR7/4	sloam	100				60	arb	Gravel throughout
2N-2.5E	10YR4/4	sloam	42	2.5Y6/3	sloam	73	10YR6/8	csand	87	2.5Y6/4	csand	110	90	arb	Gravel in Lay III, IV
2N-3E	10YR3/3	sloam	37	10YR6/4	sloam	52	7.5YR5/8	sloam	73	2.5Y7/4	csand	90	65	arb	Gravel throughout
2N-8E	10YR4/4	sloam	38	2.5Y6/2	sloam	90	2.5Y6/4	sloam	95				40	arb	Gravel in Lay III
2N-12E	10YR4/4	sloam	27	10YR6/6	sloam	50	10YR7/2	sloam	74	2.5Y6/4	csand	85	65	arb	Gravel in Lay IV
2N-14E	10YR4/4	sloam	30	2.5Y6/4	csand	70							40	arb	Gravel throughout
2N-15E	10YR4/4	sloam	58	10YR6/6	sloam	62	10YR3/2	sloam	84	10YR5/6	sloam	90	90	arb	Lay V 2.5Y5/6 csand; Gravel throughout
2S-1E	10YR4/4	sloam	50	2.5Y6/11	sl	70	10YR7/4	csand	90				60	arb	Gravel throughout
2S-2E	10YR4/4	sloam	34	2.5Y6/4	sloam	40	10YR7/4	csand	70				40	arb	Gravel in Lay II and III

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth cm	Layer II Color	Layer II Texture	Layer II Depth cm	Layer III Color	Layer III Texture	Layer III Depth cm	Layer IV Color	Layer IV Texture	Layer IV Depth cm	Auger cm	Close Reason	Comments
2S-3E	10YR5/2	sloam	27	10YR5/6	sloam	42	2.5Y6/6	sloam	70	2.5Y7/4	sloam	95	65	arb	
2S-8E	10YR4/4	sloam	38	10YR4/3	sloam	42	10YR5/6	sloam	70	2.5Y6/6	sand	80	60	arb	Gravel throughout
2S-12E	10YR4/4	sloam	28	10YR6/6	sloam	40	2.5Y6/8	csand	60				40	arb	Gravel throughout
2S-13E	10YR4/4	sloam	60	10YR4/2	sloam	70	10YR6/6	sloam	80	2.5Y6/8	csand	100	80	arb	Lay II mottled with 10YR7/3 sloam; Gravel throughout
2S-14E	10YR4/4	sloam	38	7.5YR5/8	sloam	60	2.5Y6/6	csand	85				60	arb	Gravel throughout
2.5N-2E	10YR4/4	sloam	50	10YR6/8	sloam	78	10YR7/4	csand	110				78	arb	Gravel throughout
3N-1E	10YR6/3	csand	20	7.5YR5/4	sloam	30	10YR6/8	sloam	45	2.5Y7/4	csand	90	54	arb	Fill//cobbles in Lay I
3N-2E	10YR4/4	sloam	66	2.5Y6/4	sloam	80	10YR7/4	sloam	105				80	arb	Gravel in Lay I and II
3N-3E	10YR5/2	sloam	40	2.5Y5/4	sloam	80	2.5Y7/3	csand	90				70	arb	
3N-8E	10YR4/4	sloam	36	2.5Y6/4	sloam	54	10YR7/4	csand	70				56	arb	Gravel throughout
3N-12E	10YR4/4	sloam	30	10YR6/6	sloam	60	2.5Y6/6	csand	80				60	arb	Gravel throughout
3N-14E	10YR4/4	sloam	23	2.5Y6/4	csand	50							35	arb	Gravel throughout
3N-15E	10YR4/4	lsand	40	10YR5/6	sl	65	2.5Y5/6	csand	85				65	arc	Gravel throughout
3S-1E	10YR4/4	sloam	46	2.5Y6/4	sloam	66	10YR7/4	sloam	100				72	arb	
3S-2E	10YR4/4	sl	34	2.5Y6/4	lsand	70	10YR7/4	csand	80				50	arb	Gravel throughout; Lay II mottled with 10YR7/6 lsand
3S-3E	10YR5/2	sloam	38	10YR6/8	sloam	75	2.5Y7/4	sloam	90				60	arb	
3S-8E	10YR4/4	sloam	43	10YR4/3	sloam	47	10YR5/6	sloam	60	2.5Y6/3	sloam	90	60	arb	Gravel throughout
3S-12E	10YR4/4	sloam	40	10YR6/6	sloam	56	2.5Y6/6	csand	80				60	arb	Gravel in Lay II and III
3S-13E	10YR4/4	sloam	49	10YR4/2	sloam	55	10YR4/4	sloam	65	2.5Y6/6	csand	85	70	arb	Gravel throughout
3S-14E	10YR4/4	sloam	35	10YR6/6	sloam	50	2.5Y6/6	csand	70				50	arb	Gravel throughout
4N-2E	10YR5/6	lsand	30	10YR4/4	sloam	68	2.5Y6/4	sloam	108	10YR7/4	sloam	120	80	arb	Gravel throughout
4N-3E	10YR5/2	sl	40	2.5Y5/4	csand	50	2.5Y7/3	csand	60					grv	
4N-8E	10YR4/4	sloam	34	7.5YR5/6	sloam	47	2.5Y6/4	csand	60	10YR7/4	csand	80	58	arb	Gravel throughout
4N-12E	10YR4/4	sloam	32	10YR6/6	sloam	41	10YR7/2	sloam	70	2.5Y6/6	csand	80	63	arb	Gravel in Lay II, III, IV
4N-13E	10YR4/4	sloam	35	10YR7/4	sloam	50	2.5Y6/6	csand	80				50	arb	Gravel throughout
4N-14E	10YR4/4	sloam	23	10YR7/4	sloam	27	2.5Y6/6	csand	50				30	arb	Gravel throughout
4N-15E	10YR4/4	sloam	40	2.5Y6/6	csand	70							45	arb	Gravel throughout
4S-2E	10YR4/4	sloam	33	2.5Y6/4	sloam	78	10YR7/4	csand	95				75	arb	Gravel in Lay II and III
4S-3E	10YR5/2	sloam	40	10YR6/8	sloam	85	2.5Y7/4	csand	100				60	arb	
4S-8E	10YR4/4	sloam	46	10YR5/6	sloam	60	2.5Y6/3	sloam	90				60	arb	Gravel throughout
4S-12E	10YR4/4	sloam	48	10YR3/2	sloam	53	7.5YR5/3	sloam	63	10YR4/4	sloam	74	60	arb	Lay V 10YR7/6 csand to 90 cm; Gravel throughout
4S-13E	10YR4/4	sloam	48	7.5YR4/4	sloam	60	7.5YR5/8	csand	90				65	arb	Gravel throughout
5N-1E	10YR5/2	sloam	18											rck	Located in area of old barn, raised platform; large rock in west side of test; Gravel throughout; Fill
5N-2E	10YR5/2	sl	13	2.5Y5/4	lsand	30								rck	Possible barn fill area; Gravel throughout
5N-3E	10YR5/2	sl	35	2.5Y7/3	csand	50								grv	

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth cm	Layer II Color	Layer II Texture	Layer II Depth cm	Layer III Color	Layer III Texture	Layer III Depth cm	Layer IV Color	Layer IV Texture	Layer IV Depth cm	Auger cm	Close Reason	Comments
5N-8E	10YR4/4	sloam	45	7.5YR5/6	csand	60	10YR7/4	csand	82				60	arb	Gravel throughout
5N-12E	10YR4/4	sloam	30	2.5Y7/3	sloam	46	10YR6/6	csand	64	2.5Y5/6	csand	80	60	arb	Gravel throughout
5N-13E	10YR4/4	sloam	33	10YR7/4	sloam	60	2.5Y6/6	csand	90				60	arb	Gravel throughout
5N-14E	10YR4/4	sloam	28	10YR7/4	sloam	35	2.5Y6/6	csand	55				35	arb	Gravel throughout
5N-15E	10YR4/4	sloam	28	2.5Y6/6	csand	50							25	arb	
5S-2E	10YR4/4	sloam	34	2.5Y6/4	sloam	60	10YR7/4	csand	95				60	arb	
5S-3E	10YR5/2	sloam	38	10YR6/8	sloam	75	2.5Y7/4	csand	60				90	arb	
5S-8E	10YR4/4	sloam	42	10YR5/6	sloam	63	2.5Y6/3	sloam	90				70	arb	Gravel throughout
5S-11E	10YR4/4	sloam	45	2.5Y6/4	sloam	55	10YR3/2	sloam	63	10YR6/8	sloam	80	75	arb	Lay V2.5Y6/4 sloam to 105cm; Fill in Lay II
5S-12E	10YR4/4	sloam	42	2.5Y6/6	sloam	49	10YR3/3	lsand	63	7.5YR5/8	csand	68	70	grv	Lay V 10YR2/2 csand to 90cm; Fill in Lay II; Buried wetland
6N-1E	10YR5/2	sloam	23	2.5Y5/4	sloam	38	2.5Y7/3	sloam	80				50	arb	Gravel throughout
6N-2E	10YR5/2	sloam	49	2.5Y5/4	sloam	75	10YR5/4	sloam	80				60	arb	Gravel throughout
6N-3E	10YR5/2	sloam	55	2.5Y7/3	sloam	90							55	arb	
6N-8E	10YR4/4	sloam	40	2.5Y6/4	sloam	60	10YR7/4	csand	80				60	arb	Gravel throughout
6N-12E	10YR4/4	sloam	32	2.5Y7/3	sloam	51	10YR6/6	sloam	70	2.5Y5/6	csand	85	70	arb	Gravel in Lay IV
6N-14E	10YR4/4	sloam	25	2.5Y5/6	csand	70							50	arb	Gravel throughout
6N-15E	10YR4/4	sloam	38	2.5Y5/6	csand	65							45	arb	Gravel throughout
6S-2E	10YR4/4	sloam	35	2.5Y6/4	sloam	50	10YR7/4	csand	65				50	arb	Gravel in Lay II and III
6S-3E	10YR5/2	sloam	33	10YR5/6	sloam	53	10YR6/8	sloam	70	2.5Y7/4	csand	85	60	arb	Gravel throughout
6S-8E	10YR4/4	sloam	40	2.5Y6/2	sloam	60							40	arb	Gravel throughout
6S-10E	10YR4/4	sloam	50	10YR6/8	sloam	80	2.5Y6/2	lsand	100				80	arb	Gravel throughout
6S-11E	10YR4/4	sloam	55	2.5Y6/6	sloam	65	10YR2/2	sloam	68	10YR4/2	sloam	74	80	arb	Lay V 7.5YR3/2 sloam to 100cm; Lay VI 2.5Y6/2 sand to 106cm; Water at 106cm; Fill in Lay II and III; Gravel in Lay I, II, III, IV, V
7N-1E	10YR5/2	sloam	40	10YR5/4	csand	60	2.5Y7/3	csand	80				60	arb	Gravel throughout
7N-2E	10YR5/2	sloam	40	2.5Y5/4	sloam	80							60	arb	Possible fill in Lay I
7N-3E	10YR5/2	sloam	20	2.5Y7/3	sloam	35	7.5YR4/6	sloam	50	2.5Y6/3	csand	92	60	arb	
7N-8E	10YR4/4	sloam	40	2.5Y6/4	sloam	60	10YR7/4	csand	80				60	arb	Gravel throughout
7N-12E	10YR4/4	sloam	45	10YR6/6	sloam	55	10YR7/2	sloam	70	2.5Y6/4	csand	90	60	arb	Gravel throughout
7N-14E	10YR4/4	sloam	23	10YR4/2	sloam	27	10YR4/4	sloam	39	10YR5/6	sloam	50	70	arb	Lay V 2.5Y5/6 csand to 70cm; Gravel throughout
7N-15E	10YR4/4	sloam	30	2.5Y5/6	csand	70							50	arb	Gravel throughout
7.5N-12E	10YR4/4	sloam	40	10YR6/6	csand	70	2.5Y7/6	csand	90				65	arb	Gravel throughout
7S-2E	10YR4/4	sloam	31	2.5Y6/4	sloam	60	10YR7/4	csand	85				56	arb	Gravel throughout
7S-3E	10YR5/2	sloam	29	10YR5/6	sloam	40	10YR6/8	sloam	55	2.5Y7/4	csand	57	73	arb	Gravel throughout
7S-8E	10YR4/4	sloam	38	2.5Y6/2	csand	78							55	arb	Gravel throughout

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth cm	Layer II Color	Layer II Texture	Layer II Depth cm	Layer III Color	Layer III Texture	Layer III Depth cm	Layer IV Color	Layer IV Texture	Layer IV Depth cm	Auger cm	Close Reason	Comments
7S-10E	10YR3/2	sloam	28	2.5Y5/2	csand	32	10YR4/2	sloam	56	2.5Y6/2	sloam	68	60	arb	Lay V 10YR4/2 sloam to 74cm; Lay VI 2.5Y5/2 csand to 90cm; Fill in Lay II, III, IV; Wetland soil
7S-11E	10YR3/2	sloam	50	10YR4/2	sloam	70							60	grv	Lay II mottled with 2.5Y6/2 sloam; Fill in Lay II; Wetland soil
8N-1E	10YR5/2	sloam	48	10YR5/4	csand	60	2.5Y7/4	csand	90				60	arb	Gravel throughout
8N-2E	10YR5/2	sloam	54	2.5Y5/4	sloam	70	10YR7/3	lsand	110				70	arb	Gravel throughout
8N-3E	10YR5/2	sloam	30	2.5Y6/6	sloam	46	2.5Y7/2	sloam	90				60	arb	
8N-8E	10YR4/4	sloam	43	2.5Y6/4	sloam	70	10YR4/4	sloam	90				65	arb	Gravel throughout
8N-11.5E	10YR4/4	sloam	30	10YR6/8	sloam	39	2.5Y7/3	sloam	75				45	arb	Gravel in Lay I and II
8N-12E	10YR4/4	sloam	36	10YR6/6	sloam	46	2.5Y7/8	csand	70				50	arb	Gravel throughout
8N-12.5E	10YR4/4	sloam	36	10YR5/6	csand	43	10YR6/6	csand	50	2.5Y7/6	csand	80	50	arb	Gravel throughout
8N-14E	10YR4/4	sloam	33	10YR6/6	sloam	60	2.5Y7/8	csand	80				60	arb	Gravel throughout
8N-15E	10YR4/4	sloam	30	2.5Y7/8	csand	70							40	arb	Gravel throughout
8S-2E	10YR4/4	sloam	30	2.5Y6/4	lsand	45	10YR7/4	csand	60				45	arb	Gravel throughout
8S-3E	10YR5/2	sloam	35	10YR5/6	sloam	53	7.5YR5/8	sloam	70	2.5Y7/4	sloam	80	58	arb	Gravel throughout
8S-8E	10YR3/2	sloam	48	10YR2/2	sloam	60	10YR5/6	sloam	80	2.5Y6/4	csand	90	90	arb	Gravel throughout
8S-9E	10YR3/2	sloam	48	10YR3/1	sloam	60	10YR5/3	sloam	63	10YR6/4	csand	85	60	arb	Fill in Lay II, III, IV; Water at 85cm; Gravel throughout
8S-10E	10YR3/2	sloam	50	10YR4/3	sloam	65	10YR3/2	sloam	80	7.5YR4/3	csand	90	60	arb	Fill in Lay II; Gravel throughout; Water at 90cm
8.5N-12E	10YR4/4	sloam	36	10YR6/6	sloam	50	2.5Y7/8	csand	80				50	arb	Gravel throughout
8.5S-2E	10YR4/4	sloam	32	10YR6/6	sloam	55	10YR7/4	csand	90				60	arb	Gravel throughout
9N-1E	10YR5/2	sloam	45	10YR5/4	csand	58	2.5Y7/4	csand	90				60	arb	
9N-2E	10YR5/2	sloam	45	10YR5/4	csand	80	2.5Y7/4	csand	100				62	arb	Gravel throughout
9N-3E	10YR5/2	sloam	40	2.5Y6/6	sloam	70	2.5Y7/2	csand	90				70	arb	Gravel in Lay III
9N-8E	10YR4/4	sloam	45	10YR7/4	csand	75	7.5YR5/4	csand	80				50	arb	Gravel throughout
9N-9E	10YR4/4	sloam	32	2.5Y6/3	sloam	52	10YR6/6	soam	62	2.5Y6/6	csand	90	67	arb	Gravel throughout
9N-12E	10YR4/4	sloam	32	10YR6/6	sloam	38	2.5Y7/8	csand	67				47	arb	Gravel throughout
9N-13E	10YR4/4	sloam	30	10YR6/6	sloam	36	2.5Y6/6	csand	90				50	arb	Gravel throughout
9N-14E	10YR4/4	sloam	25	10YR6/6	sloam	36	10YR5/6	sloam	54	2.5Y7/8	csand	75	55	arb	Gravel in Lay IV
9S-1.5E	10YR4/4	sloam	35	10YR6/6	sloam	60	10YR7/4	csand	95				60	arb	Gravel throughout
9S-2E	10YR4/4	sloam	56	10YR6/6	csand	105	2.5Y7/2	sloam	116				85	arb	
9S-2.5E	10YR4/4	sloam	28	10YR6/6	sloam	70	10YR7/4	csand	100				70	arb	Gravel throughout
9S-3E	10YR5/2	sloam	40	7.5YR5/8	sloam	80	2.5Y7/4	sloam	90				60	arb	Gravel throughout
9S-8E	10YR3/2	sloam	63	10YR2/8	sloam	70	2.5Y6/4	sloam	75	10YR3/2	sloam	90	80	arb	Lay V 10YR5/6 sloam to 105cm; Gravel throughout
9S-9E	10YR3/2	sloam	52	10YR2/3	sloam	60	7.5YR3/2	sloam	75	7.5YR3/4	csand	80	60	grv	Gravel throughout
9S-10E	10YR4/4	sloam	37	10YR5/6	sloam	50	7.5YR3/4	csand	70				50	arb	Gravel throughout
9.5S-2E	10YR4/4	sloam	32	10YR6/6	sloam	48	10YR5/6	sloam	82	2.5Y5/6	csand	95	80	arb	Gravel throughout
10N-1E	10YR5/2	sloam	44	2.5Y5/4	sloam	75	2.5Y7/3	sloam	100				60	arb	

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth cm	Layer II Color	Layer II Texture	Layer II Depth cm	Layer III Color	Layer III Texture	Layer III Depth cm	Layer IV Color	Layer IV Texture	Layer IV Depth cm	Auger cm	Close Reason	Comments
10N-2E	10YR5/2	sloam	40	2.5Y5/4	sloam	75	10YR5/3	lsand	90				60	arb	
10N-3E	10YR5/2	sloam	40	2.5Y6/6	sloam	70	2.5Y7/2	lsand	102				60	arb	
10N-4E	10YR5/2	sloam	41	7.5YR4/6	sloam	48	7.5YR6/6	sloam	75	7.5YR7/3	lsand	82	62	arb	Gravel throughout
10N-5E	10YR5/2	sloam	27	2.5Y4/4	sloam	47	2.5Y7/3	lsand	80				54	arb	Gravel throughout
10N-8E	10YR4/4	sloam	42	10YR7/4	sloam	70							46	arb	Gravel throughout
10N-9E	10YR4/4	sloam	40	10YR6/6	sloam	50	2.5Y6/6	csand	80				50	arb	Gravel throughout
10N-12E	10YR4/4	sloam	30	2.5Y6/3	sloam	48	10YR6/6	sloam	62	2.5Y7/8	csand	90	60	arb	Gravel throughout
10N-13E	10YR4/4	sloam	32	10YR6/6	sloam	57	10YR5/6	sloam	73	2.5Y7/8	csand	100	70	arb	Gravel in Lay II, III, IV
10N-14E	10YR4/4	sloam	30	10YR6/6	sloam	40	10YR5/6	sloam	90	2.5Y7/8	csand	80	60	arb	Gravel in Lay II, III, IV
10S-2E	10YR4/4	sloam	43	2.5Y6/4	lsand	67	10YR7/4	csand	85				50	arb	Gravel in Lay II and III
10S-3E	10YR5/2	sloam	36	10YR5/6	sloam	56	7.5YR5/8	sloam	75	2.5Y7/4	sloam	100	77	arb	Gravel throughout; Iron stains in Lay IV
10S-8E	10YR3/3	sloam	48	2.5Y4/6	sloam	69	10YR2/2	sloam	77	10YR5/2	sloam	85	75	arb	Lay V 2.5Y6/4 csand to 90cm; Lay II mottled with 2.5Y3/1; Fill in Lay II; Water at 80 cm; Buried wetland
10S-9E	10YR7/2	sloam	36	7.5YR5/4	csand	56	2.5Y6/4	csand	80				50	arb	Gravel throughout
11N-1E	10YR5/2	sloam	36	2.5Y5/4	sloam	75	10YR5/3	sloam	90				60	arb	
11N-2E	10YR5/2	sloam	30	2.5Y5/4	sloam	40	10YR7/3	lsand	90				60	arb	
11N-3E	10YR5/2	sloam	30	2.5Y5/4	sloam	70	10YR5/3	lsand	80				60	arb	
11N-4E	10YR4/4	sloam	37	7.5YR5/8	sloam	66	2.5Y7/3	lsand	90				60	arb	
11N-5E	10YR5/2	sloam	25	2.5Y5/4	sloam	40	2.5Y7/3	lsand	65				45	arb	Gravel in Lay III
11N-6E	10YR5/2	sloam	23	2.5Y5/4	sloam	31	2.5Y7/3	lsand	64				50	grv	Gravel throughout
11N-8E	10YR4/4	sloam	38	10YR7/4	csand	80							50	arb	Gravel throughout
11N-12E	10YR4/4	sloam	28	2.5Y6/3	sloam	57	10YR6/6	sloam	67	2.5Y7/8	csand	95	70	arb	Gravel throughout
11N-13E	10YR4/4	sloam	32	10YR5/6	sloam	50	10YR5/3	csand	70				50	arb	Gravel in Lay III
11S-2E	10YR4/4	sl	36	2.5Y6/4	lsand	40	10YR7/4	csand	80				40	arb	Gravel throughout
11S-3E	10YR5/2	sloam	30	7.5Y5/8	sloam	50	2.5Y7/4	sloam	90				60	arb	
11S-7E	10YR3/3	sloam	28	10YR6/6	sloam	42	2.5Y7/4	csand	80				50	arb	Gravel throughout; Water at 80cm
11S-8E	10YR3/3	sloam	50	10YR2/2	sloam	90							70	arb	Lay II mottled with 2.5Y4/6 with iron staining and coarse sand pockets; Fill in Lay II; Buried wetland; Water at 70cm
12N-1E	10YR5/2	sloam	34	2.5Y5/4	sloam	60	10YR7/3	sloam	90				60	arb	Gravel in Lay III
12N-2E	10YR5/2	sloam	30	2.5Y5/4	sloam	60	10YR7/3	lsand	90				60	arb	Gravel in Lay II and III
12N-3E	10YR5/2	sloam	30	2.5Y5/4	sloam	55	10YR5/3	lsand	65				50	arb	
12N-4E	10YR5/2	sloam	36	2.5Y5/4	sloam	60	2.5Y7/3	csand	90				60	arb	Gravel in Lay II and III
12N-5E	10YR5/2	sloam	28	2.5Y5/4	sloam	57	2.5Y7/3	lsand	80				58	arb	Gravel in Lay II and III
12N-8E	10YR4/4	sloam	45	2.5Y6/4	sloam	78	10YR7/4	csand	90				65	arb	Gravel throughout
12N-12E	10YR4/4	sloam	30	2.5Y6/3	sloam	40	10YR6/6	sloam	40	2.5Y7/8	csand	80	60	arb	Gravel throughout

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth cm	Layer II Color	Layer II Texture	Layer II Depth cm	Layer III Color	Layer III Texture	Layer III Depth cm	Layer IV Color	Layer IV Texture	Layer IV Depth cm	Auger cm	Close Reason	Comments
12N-13E	10YR4/4	sloam	30	10YR6/6	sloam	38	10YR5/6	sloam	50	10YR5/3	csand	70	50	arb	
12S-2E	10YR4/4	sloam	42	10YR6/6	sloam	57	10YR7/4	sloam	80				60	arb	Gravel in Lay II and III
12S-3E	10YR5/4	sloam	30	7.5Y5/8	sloam	50	2.5Y7/4	csand	80				56	arb	Gravel throughout
12S-4E	10YR3/3	sloam	28	10YR6/6	csand	41	2.5Y7/3	csand	70				45	arb	Gravel throughout
12S-5E	10YR3/3	sloam	28	2.5Y7/3	csand	65							30	arb	Gravel throughout
12S-7E	10YR3/3	sloam	39	10YR6/6	sloam	67	2.5Y7/4	csand	90				67	arb	Gravel throughout
12S-8E	10YR8/3	sloam	43	10YR6/8	csand	50	2.5Y6/8	csand	75				48	arb	Lay III mottled with 7.5YR5/8 csand; Water at 60cm; not wetland; Gravel throughout
13N-2E	10YR5/2	sloam	36	2.5Y5/4	sloam	60	10YR7/3	sloam	90				60	arb	Gravel in Lay II and III
13N-3E	10YR5/2	sloam	32	2.5Y5/4	sloam	46	2.5Y7/3	lsand	80				50	arb	Gravel in Lay II and III
13N-8E	10YR4/4	sloam	40	2.5Y6/4	sloam	60	10YR7/4	csand	90				60	arb	Gravel in Lay III
13N-12E	10YR4/4	sloam	24	2.5Y6/3	sloam	52	10YR6/6	sloam	72	2.5Y7/8	csand	95	70	arb	Gravel throughout
13N-13E	10YR4/4	sloam	28	10YR5/6	sloam	50	10YR5/3	csand	80				50	arb	Gravel throughout
13S-2E	10YR4/4	al	35	2.5Y6/4	lsand	65	10YR7/4	csand	85				60	arb	Gravel throughout
13S-3E	10YR5/4	sloam	24	7.5YR5/8	sloam	38	2.5Y7/4	csand	70				40	arb	Gravel throughout
13S-4E	10YR3/3	sloam	30	2.5Y7/3	csand	70							40	arb	Gravel throughout
13S-5E	10YR3/3	sloam	26	2.5Y3/3	csand	60							33	arb	Gravel throughout
13S-6E	10YR6/3	sloam	42	10YR6//8	sloam	58	10YR5/6	sloam	80	10YR6/8	csand	80	75	arb	Gravel throughout
13S-7E	10YR3/3	sloam	35	10YR6/8	csand	40	2.5Y6/6	csand	70				50	arb	Gravel throughout
14N-2E	10YR5/2	sloam	40	2.5Y5/4	lsand	60	10YR7/3	lsand	85				60	arb	Gravel in Lay II and III
14N-3E	10YR5/2	sloam	30	2.5Y5/4	sloam	64	2.5Y7/3	lsand	92				60	arb	Gravel in Lay II and III
14N-8E	10YR4/4	sloam	34	2.5Y6/4	sloam	46	10YR7/4	csand	65				45	arb	Gravel throughout
14N-11E	10YR4/4	sloam	37	7.5Y6/6	sloam	52	10YR7/8	csand	55	7.5YR7/8	csand	90	65	arb	Gravel throughout
14N-12E	10YR4/4	sloam	30	10YR6/6	sloam	56	2.5Y7/6	csand	90				60	arb	Gravel throughout
14S-2E	10YR4/4	sl	42	2.5Y6/4	lsand	52	10YR7/4	lsand	65				44	arb	Gravel throughout
14S-3E	10YR5/4	sloam	23	7.5YR4/1	sloam	36	7.5YR5/8	sloam	60	2.5Y7/4	sloam	90	60	arb	Gravel throughout
14S-5E	10YR3/3	sloam	30	2.5Y7/3	csand	70							50	rck	Gravel throughout
14S-6E	10YR3/3	sloam	50	10YR5/6	sloam	65	10YR6/6	csand	90				65	arb	Gravel throughout
15N-3E	10YR5/2	sloam	36	2.5Y5/4	lsand	55	10YR7/3	lsand	90				60	arb	Gravel in Lay II and III
15N-8E	10YR4/4	sloam	30	2.5Y6/4	sloam	50	10YR7/4	csand	90				60	arb	Gravel throughout
15N-11E	10YR4/4	sloam	30	7.5Y6/6	sloam	36	10YR6/6	sloam	60	2.5Y7/8	csand	90	60	arb	Gravel throughout
15N-12E	10YR4/4	sloam	16	7.5YR6/6	sloam	48	2.5Y6/1	sloam	66	2.5Y6/8	sloam	90	60	arb	Gravel in Lay II, III, IV
15S-2E	10YR4/4	sl	30	10YR6/6	lsand	40	10YR7/4	csand	60				60	arb	Gravel in Lay I and II
15S-3E	10YR4/4	sl	27	10YR6/6	lsand	43	2.5Y6/6	csand	80				50	arb	Gravel throughout
15S-5E	10YR3/3	sloam	42	10YR6/6	sloam	60	10YR4/6	sloam	77	2.5Y5/6	sloam	100	85	arb	Gravel throughout
15S-6E	10YR3/3	sloam	38	10YR5/6	sloam	57	10YR6/6	csand	90				60	arb	Gravel throughout; Water at 75cm
16S-2E	10YR4/4	sloam	50	2.5Y6/4	sloam	75	10YR7/4	sloam	80				60	arb	Grave in Lay II and III
16S-3E	10YR4/4	sl	30	10YR6/6	lsand	50	2.5Y6/6	csand	80				60	arb	Gravel throughout
16S-4E	10YR3/3	sloam	40	10YR5/6	sloam	53	2.5Y6/3	lsand	90				65	arb	Gravel throughout

Appendix A: Field Test Summary, continued

Test #	Layer I Color	Layer I Texture	Layer I Depth cm	Layer II Color	Layer II Texture	Layer II Depth cm	Layer III Color	Layer III Texture	Layer III Depth cm	Layer IV Color	Layer IV Texture	Layer IV Depth cm	Auger cm	Close Reason	Comments
16S-5E	10YR3/3	sloam	50	10YR5/6	sloam	62	10YR6/6	csand	92				60	arb	Gravel throughout; Water at 90cm
17S-2E	10YR4/4	sloam	38	2.5Y6/4	sloam	60	10YR7/4	csand	80				60	arb	Gravel throughout
17S-3E	10YR4/4	sl	30	10YR6/6	lsand	67	2.5Y6/6	csand	85				60	arb	Gravel throughout
17S-4E	10YR3/3	sloam	33	10YR5/6	sloam	38	2.5Y6/3	csand	75				50	arb	Gravel throughout
18S-2E	10YR4/4	sloam	46	10YR6/6	sloam	66	2.5Y6/6	csand	70				60	arb	Gravel throughout
18S-3E	10YR4/4	sl	25	10YR6/6	lsand	50	2.5Y6/6	csand	70				50	arb	Gravel throughout
19S-2E	10YR4/4	sloam	42	10YR6/6	sloam	60	2.5Y6/6	csand	70				50	arb	Gravel throughout
19S-3E	10YR4/4	sl	28	10YR6/6	lsand	50	2.5Y6/6	csand	80				43	arb	Gravel throughout
20S-2E	10YR4/4	sl	40	10YR6/6	lsand	60	2.5Y6/6	csand	85				65	arb	Gravel throughout
20S-3E	10YR4/4	sl	23	10YR6/6	lsand	45	2.5Y6/6	csand	75				50	arb	Gravel throughout
21S-2E	10YR4/4	sl	40	10YR6/6	lsand	60	2.5Y6/6	csand	80				60	arb	Gravel throughout
21S-3E	10YR4/4	sl	25	10YR6/6	lsand	58	2.5Y6/6	csand	80				60	arb	Gravel throughout

Abbreviations:

arb - arbitrary termination
csand – coarse sand
com - termination due to compact soil; compact
fsand - fine sand
fsl - fine sandy loam
grv - termination due to dense gravel; gravel, gravelly
lfs - loamy fine sand
lo - lower
lsand - loamy sand
mtld - mottled
prof - profile
rck - termination due to rock; rock, rocky
scl - sandy clay loam
sl - sandy loam
sloam - silt loam
unc - termination due to unconsolidated sediments
wtr - termination due to water

Appendix B: Soil Samples

Test#	*Layer*	*pH*	*Sand content*
7.5N-12E	I	7	
	II	7	
	III	6.5	Poorly sorted, sub-angular, 0.7 sphericity, 0.4 roundness, medium to very coarse, (1/4-2.0mm)
9S-1.5E	I	7	
	II	7	
	III	6.5	Poorly sorted, sub-angular, 0.7 sphericity, 0.4 roundness, medium to very coarse, (1/4-2.0mm)

Appendix C: Features and Artifacts by Test Unit

Test #	*Layer*	*Features and Artifacts*
1N-2E	I	1 fragment indeterminate earthenware, burnt, 0.7g. 1 fragment heavily oxidized indeterminate nail, 4.5g.
1S-2E	I	1 fragment porcelain, 2.1mm max thickness, 0.3g. 1 fragment clear glass bottle, 4.6mm max thickness, 4.9g.
1.5N-2E	I/II transition	1 fragment indeterminate medium/large avian long bone, 1.1g.
2N-2E	I	1 gray quartz Squibnocket projectile point, 60 degree base stem blade angle, biconvex cross section, excurvate blade shape, bilateral bevel blade edge, incurvate base edge, thinned base treatment, distal end broad (spalled), radial flaking pattern, 17.4mm long, 17.8mm wide, 4.1mm thick, 1.5g. (5150-3450 BP).
3N-2E	I	1 fragment black clay pigeon, 1.3g. 1 fragment clear glass bottle, 5.3mm max thickness, 1.6g. 2 fragments clear window glass, 2.0mm max thickness, 0.6g.
3N-12E	I	1 fragment clear glass bottle, 3.7mm max thickness, 3.0g.
3S-2E	I	1 rim fragment red earthenware, burnt, 9.6mm max thickness, 15.2g.
4N-2E	I	1 fragment heavily oxidized wire nail, 7.9g. (>1850) 1fragment aqua-tinted bottle glass, 3.7mm max thickness, 1.2g. 14 fragments clear window glass, 2.3mm max thick, 9.7g.
4S-2E	I	1 base fragment gray stoneware with brown slip on interior, 6.5mm max thickness, 10.9g.
4S-12E	II	1 fragment aqua-tinted glass bottle, 2.0mm max thickness, 1.1g.
5N-2E	I	3 fragments clear window glass, 3.2mm thick, 8.5g. 1 fragment clear glass bottle, 2.2mm max thickness, 0.9g. 8 fragments heavily oxidized indeterminate nails, 31.0g 4 fragments heavily oxidized wire, 19.8g. 4 fragments heavily oxidized indeterminate fasteners, 9.3g. 1 fragment heavily oxidized iron loop or chain link, 169.6g. 1 fragment braided cord, <0.1g.
6N-1E	I	1 fragment heavily oxidized iron buckle, 9.7g.
6N-2E	I	1 fragment indeterminate medium/large mammal bone, saw cut, 1.4g.
7N-8E	I	2 fragments aqua-tinted window glass, 2.3mm thick, 2.6g. 1 fragment clear curved glass, 1.0mm max thickness, 0.3g.
7S-2E	I	1 fragment whiteware, 0.7g. (>1820)

Appendix C: Features and Artifacts by Test Unit, continued

Test #	*Layer*	*Features and Artifacts*
8N-1E	S	1 fragment buff salt-glazed stoneware, engine turned, 3.6mm max thickness, 7.2g.
8N-1E	I	1 fragment glass bottle finish, 2.7g.
8N-2E	I	1 base fragment whiteware, burnt, with partial foot ring, 1.3g. (>1820).
8N-12E	I	1 distal fragment white quartz Lamoka projectile point, 70 degree base blade angle, triangular convex cross section, ovate blade shape, bilateral beveled edge, tapered shoulders, curved stem shoulder juncture, acute distal end, random flaking pattern, 16.1mm max width, 11.0mm max thickness, 3.9g. (5500-2000 BP) 1 fragment clear window glass, 1.0mm thick, 0.1g.
8S-10E	I	2 fragments aqua-tinted vessel glass, pressed decoration, 5.8mm max thickness, 2.7g.
8.5S-2E	I	1 fragment aqua-tinted window glass, patinated, 1.4mm thick, 0.2g.
9N-2E	I	1 fragment aqua-tinted glass, melted, 1.2g.
9N-8E	I	1 fragment porcelain, 2.7mm max thickness, 3.4g. 1 fragment whiteware, 3.7mm max thickness, 0.8g. (>1820) 1 fragment clear glass bottle, with vertical mold seam, 4.1mm max thickness, 2.2g.
9S-1.5E	I	1 blue shell-edged rim fragment pearlware, 3.4mm max thickness, 0.5g. (1795-1830) 1 fragment clear window glass, 1.7mm thick, 0.2g.
9S-2E	I	1 fragment whiteware, 0.2g. (>1820) 1 distal fragment white quartz Lamoka projectile point/knife blade, 70 degree base blade angle, biconvex cross section, ovate blade shape, bilateral beveled blade edge with use wear, acute distal end, random flaking pattern, 12.9mm max width, 7.5mm max thickness, 2.4g. (5500-2000 BP)
9S-3E	I	1 fragment whiteware, 5.4g. (>1820)
9.5S-2E	I	2 fragments ironstone china, 6.9mm max thickness, 12.3g. (1813-1900+)
10N-2E	I	1 fragment buff salt-glazed stoneware with brown slip on interior, 9.1mm max thickness, 11.9g.
10N-5E	I	1 fragment whiteware with red transfer-printed decoration, <0.1g. (1830-1850).
10S-2E	I	1 fragment whiteware, 3.8mm max thickness, 0.8g. (>1820)
11N-2E	I	1 fragment heavily oxidized iron buckle; 81.6g.

Appendix C: Features and Artifacts by Test Unit, continued

Test #	*Layer*	*Features and Artifacts*
11N-4E	I	1 fragment pearlware, 3.6mm max thickness, 0.5g.
11S-2E	I	1 fragment clear glass bottle, 3.0mm max thickness, 0.4g.
14N-2E	I	1 fragment whiteware, 0.7g. (>1820)
14N-8E	I	1 fragment buff salt-glazed stoneware with Albany slip on interior, 8.8mm max thickness, 19.2g. (1805-1900+) 1 fragment clear window glass, 1.6mm thick, 0.4g.
15N-3E	I	1 fragment whiteware, burnt, 1.1g. (>1820) 1 fragment aqua-tinted glass bottle finish, with applied square lip, air bubbles, 4.4mm max thickness, 9.5mm interior finish diameter, 14.4g. (<1910)

State of RI Archaeological Site Form

RI Historical Preservation & Heritage Commission
150 Benefit Street
Providence RI 02903

SITE IDENTIFICATION

RI Site Number: RI 2795 Site Name: Stamp Site

Permit Number: #19-16 Quad: Carolina and Kingston

Town: Richmond Street Address and/or Plat and Lot: 172 Beaver River Road
Tax Map 8E, Lot 12

Present land use: agricultural – winter wheat

Historic land use: agricultural – potatoes, pasture

Owners: X private ☐ town ☐ state ☐ federal (please specify agency: _____)

How located (if through informant, please give name): Andrew Tibbits (2019)
Site confirmed by ACS (July, 2019)

SITE DESCRIPTION

Site Type: Hunting and processing site.

Period: Late Archaic

Approximate size and boundaries, if known: projectile points found scattered across 43.67-acre field, others reportedly surface collected in the past. Bound by Beaver River on the east and south, wetlands drainage on the north, possibly Beaver River Road on the west. Items found within plowzone layer.

Stratigraphy:

☐ Surface finds X Plowed ☐ Stratified ☐ Major Disturbance ☐ Other (please specify)

Site Integrity:

☐ Undisturbed ☐ Good X Fair ☐ Destroyed

Threats to Site:

☐ None known X Private ☐ Erosion ☐ Highways ☐ Vandalism ☐ Other

Recovered Data—please describe artifacts (type, quantity, raw materials, and any diagnostics), features, dates); please use extra sheets as needed.

Three items recovered from subsurface tests, including gray Squibnocket triangular point, Lamoka point, and Lamoka-like knife – all quartz.

Archaeological or Historical Importance (if any):

The Stamp site is of particular interest in that only lithic tools were recovered, and all utilized with evidence of broken hafts or tips. Without any associated debitage or evidence of associated feature contexts, this may indicate a focus on hunting and processing rather than habitation.

ENVIRONMENT

USDA Soil Type: Enfield silt loam (EfA) Present Vegetation: winter wheat Contour Elevation: ca. 100'
Nearest Freshwater: Beaver River Distance: <50m
Nearest Saltwater: salt pond Distance: ca. 10 km

EXCAVATION/PUBLICATION HISTORY:

Level of Testing	By whom/affiliation	Date
☐Surface artifacts observed		
☐Surface collected		
XTested ☐ Phase Ia		
☐ Phase Ib		
X Phase Ic	ACS (Archaeological Consulting Services)	July, 2019
☐ Phase II		
☐ Phase III		
☐ Machine stripping		
☐ Excavated		
☐ Pot hunted		
☐ Monitored		

Repository:

Report title(s): *Phase I Intensive Archaeological Survey of the Green Development – Beaver River Road Solar Farm in the Town of Richmond, Rhode Island.*

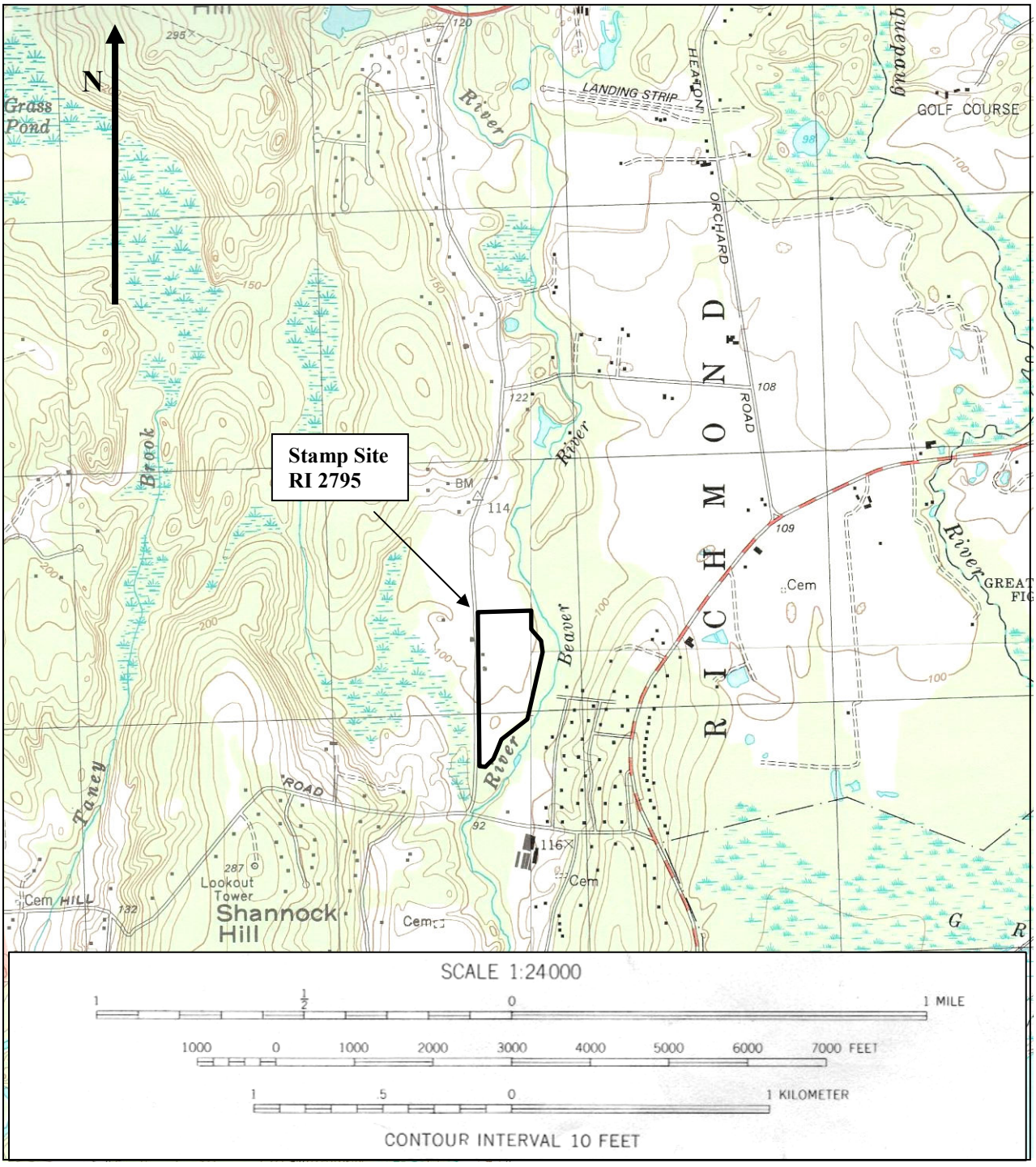
Other references:

ADDITIONAL INFORMATION:

Reported by (name, address, organization, date): September 13, 2019
Gregory F. Walwer, Archaeological Consulting Services (ACS), 118 Whitfield Street, Guilford, CT 06437.

Please attach a section of USGS topo map showing the exact location of the site, and also include a map of the site itself, showing the location of excavated units, if available.

Stamp Site Location Map, Carolina and Kingston Quadrangles



State of RI Archaeological Site Form

RI Historical Preservation & Heritage Commission
150 Benefit Street
Providence RI 02903

SITE IDENTIFICATION

RI Site Number: RI 2796 Site Name: Jamesford Outbuildings

Permit Number: #19-16 Quad: Carolina and Kingston

Town: Richmond Street Address and/or Plat and Lot: 172 Beaver River Road
Tax Map 8E, Lot 12

Present land use: agricultural – winter wheat

Historic land use: agricultural – potatoes, pasture

Owners: X private ☐ town ☐ state ☐ federal (please specify agency: _____)

How located (if through informant, please give name): Andrew Tibbits (2019)
Site confirmed by ACS (July 2019)

SITE DESCRIPTION

Site Type: Agrarian – dairy and grain

Period: 19th century.

Approximate size and boundaries, if known: core area of site is on east side of Beaver Road within 40 meters of the road, 180 meters north of 172 Beaver River Road to 60 meters south of Beaver River Road.

Stratigraphy:

☐ Surface finds X Plowed ☐ Stratified ☐ Major Disturbance ☐ Other (please specify)

Site Integrity:

☐ Undisturbed X Good ☐ Fair ☐ Destroyed

Threats to Site:

☐ None known X Private ☐ Erosion ☐ Highways ☐ Vandalism ☐ Other

Recovered Data—please describe artifacts (type, quantity, raw materials, and any diagnostics), features, dates); please use extra sheets as needed.

85 historic artifacts include window glass; pearlware, whiteware, stoneware, red earthenware, ironstone china, porcelain ceramics; household glass and glass bottle fragments; iron buckles, cord,, and clay pigeon. Reported buried foundations of dairy barns appear confirmed based on fieldstones in tests.

Archaeological or Historical Importance (if any):

The Jamesford Outbuilding site has the potential to offer important information regarding a shifting agricultural economy through time, including a decrease on crops and the rise of dairy during the 19th century, a shift to potatoes during the 20th century, and culminated by a shift to solar in the early 21st century. The range of outbuilding features and associated archaeological contexts could reveal the timing and causes of these shifts in conjunction with historic records.

ENVIRONMENT

USDA Soil Type: Enfield silt loam (EfA) Present Vegetation: winter wheat Contour Elevation: ca. 100'
Nearest Freshwater: Beaver River Distance: 250m
Nearest Saltwater: salt pond Distance: ca. 10 km

EXCAVATION/PUBLICATION HISTORY:

Level of Testing	By whom/affiliation	Date
☐Surface artifacts observed		
☐Surface collected		
XTested ☐ Phase Ia		
☐ Phase Ib		
X Phase Ic	ACS (Archaeological Consulting Services)	July, 2019
☐ Phase II		
☐ Phase III		
☐ Machine stripping		
☐ Excavated		
☐ Pot hunted		
☐ Monitored		

Repository:

Report title(s): *Phase I Intensive Archaeological Survey of the Green Development – Beaver River Road Solar Farm in the Town of Richmond, Rhode Island.*

Other references:

ADDITIONAL INFORMATION:

Reported by (name, address, organization, date): September 13, 2019
Gregory F. Walwer, Archaeological Consulting Services (ACS), 118 Whitfield Street, Guilford, CT 06437.

Please attach a section of USGS topo map showing the exact location of the site, and also include a map of the site itself, showing the location of excavated units, if available.

Jamesford Outbuildings Site Location Map, Carolina and Kingston Quadrangles