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Phase IA Cultural Resources Assessment Survey of the Proposed Orange Solar Project in Orange, Connecticut

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ABSTRACT

This report presents the results of a Phase IA cultural resources assessment survey for a proposed solar facility in Orange, New Haven County, Connecticut. The project parcel associated with this facility encompasses approximately 85 acres of land at 361 Old Tavern Road, of which 26 acres will be impacted by the proposed facility. The current investigation consisted of: 1) preparation of an overview of the region's prehistory, history, and natural setting; 2) a literature search to identify and discuss previously recorded cultural resources in the region; 3) a review of readily available historical maps and aerial imagery depicting the project parcel and impact areas to identify potential historical resources and/or areas of past disturbance; and 4) pedestrian survey and photo-documentation of the impact areas to determine their archaeological sensitivity.

Based on the totality of the information available, including landscape types, well-drained soil types, proximity to freshwater, and historical context of the area, it is the professional opinion of Heritage that all 26 acres of the project area retain moderate or high sensitivity for yielding archaeological deposits. Moderate sensitivity areas fell within open fields with well-drained soils once used for agricultural activities. The high sensitivity portion of the project area was limited to the south-central impact areas where the Treat Farm structures, a State Register of Historic Places property are located. Archaeological resources, relating to the Treat Family ownership from the Colonial period to the present, likely exist in this area. The standing structures, specifically the residence and English barn, are in good order and demonstrate the historical significance of the property. It is recommended that they remain in place and be protected from negative impacts during construction through consultation with the State Historic Preservation Office prior to construction. In addition, Heritage recommends that Phase IB cultural resources survey of the moderate and high sensitivity areas of the project area be conducted prior to the construction of the solar facility.

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CHAPTER I
INTRODUCTION

This report presents the results of a Phase IA cultural resources assessment survey of a proposed solar facility in Orange, Connecticut (Figure 1). Vanasse Hangen Brustlin, Inc. (VHB) requested that Heritage Consultants, LLC (Heritage) complete the assessment survey as part of the planning process for the proposed solar facility. The parcel of land associated with this facility encompasses approximately 85 acre of land at 361 Old Tavern Road; however, only 26 acres of the parcel will be impacted by the solar development (hereafter referred to as the impact areas), which was accessed from the north side of Old Tavern Road. The project parcel is surrounded on all sides by residential subdivisions. In addition, there is a private school to the northwest and a historical farmstead museum to the south. Heritage completed this investigation on behalf of VHB in April of 2021. All work associated with this project was performed in accordance with the *Environmental Review Primer for Connecticut's Archaeological Resources* (Poirier 1987) promulgated by the Connecticut State Historic Preservation Office (CT-SHPO).

Project Description and Methods Overview

The proposed solar project will be located to the north of Old Tavern Road, to the south of Timberlane Drive, east of Peck Lane, and to the west of Coachmans Road and Treat Lane in Orange, Connecticut. The large project parcel contains open fields and wooded areas situated at elevations ranging from approximately 42.7 to 48.8 m (140 to 160 ft) NGVD. The proposed solar facility will include the construction of 19,760 solar panels within rows spaced at approximately 4.5 m (14.6 ft) in three sections of the project parcel that are currently characterized by open fields. A total of 14 stormwater basins are proposed around the central and eastern rows of solar arrays, and two access roads will extend to the facility from Old Tavern Road, one through the center of the parcel and one through the eastern corner. The proposed solar arrays will be located to the north of the historical Treat Farm house and barn, utilizing the associated agricultural land that is still being farmed. The project also will include the removal of a standing shed and temporary greenhouse.

This Phase IA cultural resources assessment survey consisted of the completion of the following tasks: 1) a contextual overview of the region's prehistory, history, and natural setting (e.g., soils, ecology, hydrology, etc.); 2) a literature search to identify and discuss previously completed cultural resources surveys and previously recorded cultural resources in the region encompassing the project area; 3) a review of readily available historical maps and aerial imagery depicting the project area in order to identify potential historical resources and/or areas of past disturbance; and 4) pedestrian survey and photo-documentation of the project area in order to determine their archaeological sensitivity.

Project Results and Management Recommendations Overview

The review of historical maps and aerial images of the project parcel and impact areas, files maintained by the CT-SHPO, as well as pedestrian survey of the development area, resulted in the detection of a single previously identified archaeological site and one National Register of Historic Places district within 1.6 km (1 mi) mile of the project parcel and impact areas; they are discussed in detail in Chapter V. Further, one of the barns located within the project parcel is associated with the Treat Farm and is listed on the State Register of Historic Places. In addition to the cultural resources discussed above, Heritage combined data from the historical map and aerial image analysis, and the pedestrian survey to stratify the impact areas into zones of no/low, moderate, and high archaeological sensitivity.

Based on the totality of the information available, including landscape type, well-drained soil types, proximity to freshwater, and historical context, it is the professional opinion of Heritage that all 26 acres of the impact areas retain moderate or high sensitivity for yielding archaeological deposits. Moderate sensitivity areas fell within open fields, with well-drained soils, once used for agricultural activities. The high sensitivity portion of the impact areas was limited to the south-central portion of the project parcel where the structures associated with Treat Farm are located. Archaeological resources relating to Treat family ownership from the Colonial period to the present likely exist in this area. In addition, the standing structures, specifically the residence and English barn, retain historical significance and integrity. It is recommended that they be avoided and protected from negative impacts during construction and that consultation with the State Historic Preservation Office take place prior to commencement of construction-related activities. In addition, Heritage recommends that a Phase IB cultural reconnaissance survey of the moderate and high sensitivity portions of the impact areas be conducted prior to the construction of the solar facility.

Project Personnel

Key personnel for this project included Mr. David R. George, M.A., R.P.A, (Principal Investigator), Mr. Cory Atkinson, M.A., (Field Director), Dr. Kristen Keegan (Historian), and Mr. Tevin Jourdain, B.A., (GIS Specialist). Ms. Elizabeth Correia, M.A., compiled this report under the supervision of Mr. George.

CHAPTER II
NATURAL SETTING

Introduction

This chapter provides a brief overview of the natural setting of the region containing the proposed solar facility in Orange, Connecticut. Previous archaeological research has documented that specific environmental factors can be associated with both prehistoric and historical period site selection. These include general ecological conditions, as well as types of fresh water sources present, degree of slopes, and soils situated within a given project area. The remainder of this chapter provides a brief overview of the ecology, hydrological resources, and soils present within the project area and the larger region in general.

Ecoregions of Connecticut

Throughout the Pleistocene and Holocene Periods, Connecticut has undergone numerous environmental changes. Variations in climate, geology, and physiography have led to the "regionalization" of Connecticut's modern environment. It is clear, for example, that the northwestern portion of the state has different natural characteristics than the coastline. Recognizing this fact, Dowhan and Craig (1976), as part of their study of the distribution of rare and endangered species in Connecticut, subdivided the state into various ecoregions. Dowhan and Craig (1976:27) defined an ecoregion as:

> "an area characterized by a distinctive pattern of landscapes and regional climate as expressed by the vegetation composition and pattern, and the presence or absence of certain indicator species and species groups. Each ecoregion has a similar interrelationship between landforms, local climate, soil profiles, and plant and animal communities. Furthermore, the pattern of development of plant communities (chronosequences and toposequences) and of soil profile is similar in similar physiographic sites. Ecoregions are thus natural divisions of land, climate, and biota."

Dowhan and Craig defined nine major ecoregions for the State of Connecticut. They are based on regional diversity in plant and animal indicator species (Dowhan and Craig 1976). Only one of the ecoregions is germane to the current investigation: Western Coastal ecoregion. A summary of this ecoregion is presented below. It is followed by a discussion of the hydrology and soils found in and adjacent to the project area.

<u>Western Coastal Ecoregion</u>

The Western Coastal ecoregion consists of a hilly terrain that extends from Connecticut's coastline to approximately 5 to 7 miles to the north of Long Island Sound (Dowhan and Craig 1976). It is characterized by "coastlands, including extensive tidal marshes, sand beaches, and estuaries, by relatively level but rolling near-shore lands, and by locally rugged and rocky protrusions of upland extending to the shoreline" (Dowhan and Craig 1976:38). Elevations in the Western Coastal ecoregion range from sea level to 152 m (500 ft) NGVD (Bell 1985). The bedrock of the area is primarily metamorphic in origin, and it composed of schists and gneisses deposited during the Paleozoic (Bell 1985). Soils in the region have developed on top of glacial till in upland locales and on top of stratified deposits of silts and sands in the valleys. Soils along the coast are developed upon coastal and tidal deposits (Dowhan and Craig 1976). This ecoregion is also characterized by numerous ponds, rivers, streams, brooks, and wetland areas.

Hydrology in the Vicinity of the Project Area

The proposed solar facility is situated within a larger region that contains several sources of freshwater, including Stubby Plain Brook, Indian River, Clark Pond, Wepawaug River, Lake Wepawaug, as well as unnamed streams, ponds, and wetlands associated with the Housatonic River. These freshwater sources may have served as resource extraction areas for Native American and historical populations. Previously completed archaeological investigations in Connecticut have demonstrated that streams, rivers, and wetlands were focal points for prehistoric occupations because they provided access to transportation routes, sources of freshwater, and abundant faunal and floral resources.

Soils Comprising the Project Area

Soil formation is the direct result of the interaction of many variables, including climate, vegetation, parent material, time, and organisms present (Gerrard 1981). Once archaeological deposits are buried within the soil, they are subject to various diagenic and taphonomic processes. Different classes of artifacts may be preferentially protected, or unaffected by these processes, whereas others may deteriorate rapidly. Cyclical wetting and drying, freezing, and thawing, and compression can accelerate chemically and mechanically the decay processes for animal bones, shells, lithics, ceramics, and plant remains. Lithic and ceramic artifacts are largely unaffected by soil pH, whereas animal bones and shells decay more quickly in acidic soils. In contrast, acidic soils enhance the preservation of charred plant remains.

A review of the soils within the proposed impact area is presented below. These areas are characterized by the presence of five major soil types: Agawam series (29B), Canton and Charlton series (60B), Ninigret and Tisbury series (21A), Raypol series (12), and the Ridgebury, Leicester and Whitman series (3) (Figure 2). A review of the Agawam, Canton and Charlton, and Ninigret and Tisbury soils show that they are very deep, well drained sandy loams and are the types of soils that are typically correlated with prehistoric and historical use and occupation. Portions of the project parcel are also characterized by Raypol and Ridgebury, Leicester and Whitman soils, which are very deep and moderately to poorly drained sandy loams less likely to be associated with prehistoric and historic occupation. Descriptive profiles for each soil type are presented below; they were gathered from the National Resources Conservation Service.

<u>Agawam Series:</u>

The Agawam series consists of very deep, well drained soils formed in sandy, water deposited materials. They are level to steep soils on outwash plains and high stream terraces. Slope ranges from 0 to 15 percent. A typical profile associated with Agawam soils is as follows: **Ap**--0 to 11 inches; dark grayish brown (10YR 4/2) fine sandy loam; light brownish gray (10YR 6/2) dry; weak medium and coarse subangular blocky structure; very friable; common fine and medium roots; strongly acid; abrupt smooth boundary; **Bw1**--11 to 16 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium and coarse subangular blocky structure; very friable; common fine and medium roots; strongly acid; abrupt smooth boundary; **Bw2**--16 to 26 inches; light olive brown (2.5Y 5/4) fine sandy loam; weak medium subangular blocky structure; very friable; common fine and medium roots; strongly acid; clear smooth boundary; **C1**--26 to 45 inches; olive (5Y 5/3) loamy fine sand; massive; very friable; few fine roots; strongly acid; clear smooth boundary; **2C2**--45 to 55 inches; olive brown (2.5Y 4/4) loamy fine sand; massive; very friable; strongly acid; abrupt smooth boundary; and **2C3**--55 to 65 inches; olive (5Y 5/3) loamy sand; single grain; loose; strongly acid.

<u>Canton and Charlton Series:</u>

The Canton series consists of very deep, well drained soils formed in a loamy mantle underlain by sandy till. They are on nearly level to very steep moraines, hills, and ridges. Slope ranges from 0 to 45 percent.

A typical profile associated with Canton soils is as follows: **Oi**--0 to 5 cm; slightly decomposed plant material; **A**--5 to 13 cm; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; friable; common fine roots; 5 percent gravel; very strongly acid (pH 4.6); abrupt smooth boundary; **Bw1**--13 to 30 cm; yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 5 percent gravel; very strongly acid (pH 4.6); clear smooth boundary; **Bw2**--30 to 41 cm; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 5 percent gravel; strongly acid (pH 5.1); clear smooth boundary; **Bw3**--41 to 56 cm; yellowish brown (10YR 5/4) gravelly fine sandy loam; weak medium subangular blocky; friable; common fine and medium roots; 15 percent gravel; strongly acid (pH 5.1); abrupt smooth boundary; and **2C**--56 to 170 cm; grayish brown (2.5Y 5/2) gravelly loamy sand; massive; friable; 25 percent gravel; moderately acid (pH 5.6).

The Charlton series consists of very deep, well drained soils formed in loamy melt-out till. They are nearly level to very steep soils on moraines, hills, and ridges. Slope ranges from 0 to 60 percent. A typical profile associated with Charlton soils is as follows: **Oe**--0 to 4 cm; black (10YR 2/1) moderately decomposed forest plant material; **A**--4 to 10 cm; dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; very friable; many fine roots; 5 percent gravel; very strongly acid; abrupt smooth boundary; **Bw1**--10 to 18 cm; brown (7.5YR 4/4) fine sandy loam; weak coarse granular structure; very friable; many fine and medium roots; 5 percent gravel; very strongly acid; clear wavy boundary; **Bw2**--18 to 48 cm; yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; very friable; common fine and medium roots; 10 percent gravel and cobbles; very strongly acid; clear wavy boundary; **Bw3**--48 to 69 cm; light olive brown (2.5Y 5/4) gravelly fine sandy loam; massive; very friable; few medium roots; 15 percent gravel and cobbles; very strongly acid; abrupt wavy boundary; and **C**--69 to 165 cm; grayish brown (2.5Y 5/2) gravelly fine sandy loam with thin lenses of loamy sand; massive; friable, some lenses firm; few medium roots; 25 percent gravel and cobbles; strongly acid.

<u>Ninigret and Tisbury Series:</u>

The Ninigret series consists of very deep, moderately well drained soils formed in loamy over sandy and gravelly glacial outwash. They are nearly level to strongly sloping soils on glaciofluvial landforms, typically in slight depressions and broad drainage ways. Slope ranges from 0 through 15 percent. A typical soil profile is as follows: **Ap**--0 to 8 inches; very dark grayish brown (10YR 3/2) fine sandy loam; pale brown (10YR 6/3) dry; weak medium granular structure; very friable; many fine roots; strongly acid; **Bw1**--8 to 16 inches; yellowish brown (10YR 5/6) fine sandy loam; weak coarse granular structure; very friable; few fine roots; strongly acid; **Bw2**--16 to 26 inches; yellowish brown (10YR 5/4) fine sandy loam; very weak coarse granular structure; very friable; very few fine roots; common medium distinct light brownish gray (10YR 6/2) and brownish yellow (10YR 6/6) redoximorphic features; strongly acid; and **2C**--26 to 65 inches; pale brown (10YR 6/3) loamy sand and few lenses of loamy fine sand; single grain; loose; many medium distinct light olive gray (5Y 6/2) and many prominent yellowish brown (10YR 5/8) redoximorphic features; strongly acid.

The Tisbury series consists of very deep, moderately well drained loamy soils formed in silty eolian deposits overlying outwash. They are nearly level and gently sloping soils on outwash plains and terraces, typically in slight depressions and broad drainageways. Slope ranges from 0 to 3 percent. A typical soil profile is as follows: **Ap**--0 to 8 inches; very dark grayish brown (10YR 3/2) silt loam; weak coarse granular structure; friable; many very fine and fine roots; few scattered pebbles; strongly acid; abrupt smooth boundary; **Bw1**--8 to 18 inches; yellowish brown (10YR 5/6) silt loam; weak medium and coarse subangular blocky structure; very friable; common very fine and fine roots; few scattered pebbles; strongly acid; clear wavy boundary; **Bw2**--18 to 26 inches; brownish yellow (10YR 6/6) silt loam;

massive; very friable; few fine roots; few scattered pebbles; common medium prominent grayish brown (2.5Y 5/2) iron depletions and common medium distinct strong brown (7.5YR 5/6) masses of iron accumulation; strongly acid; clear wavy boundary; and **2C**--26 to 60 inches; grayish brown (10YR 5/2) extremely gravelly sand; single grain; loose; 60 percent gravel; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation and common medium faint light brownish gray (10YR 6/2) iron depletions; strongly acid.

Raypol Series:

The Raypol series consists of very deep, poorly drained soils formed in loamy over sandy and gravelly outwash. They are nearly level to gently sloping soils in shallow drainageways and low-lying positions on terraces and plains. Slope ranges from 0 to 5 percent. A typical soil profile is as follows: **Ap**--0 to 8 inches; very dark brown (10YR 2/2) silt loam, pale brown (10YR 6/3) dry; weak medium granular structure; friable; common very fine, fine and medium roots; strongly acid; **Bg1**--8 to 12 inches; grayish brown (10YR 5/2) very fine sandy loam; weak medium subangular blocky structure; friable; common very fine, fine and medium roots; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; strongly acid; **Bg2**--12 to 20 inches; grayish brown (10YR 5/2) silt loam; weak medium subangular blocky structure; friable; common fine and medium roots; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; strongly acid; **Bw1**--20 to 26 inches; dark yellowish brown (10YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; common medium prominent yellowish brown (10YR 5/8) and common medium distinct light brownish gray (10YR 6/2) masses of iron accumulation; strongly acid; **Bw2**--26 to 29 inches; olive brown (2.5Y 4/4) very fine sandy loam; massive; friable; 5 percent gravel; common medium prominent yellowish brown (10YR 5/8) masses of iron accumulation and common medium distinct light brownish gray (10YR 6/2) iron depletions; strongly acid; **2C1**--29 to 52 inches; light olive brown (2.5Y 5/4) gravelly sand; single grain; loose; 25 percent gravel; few medium prominent yellowish brown (10YR 5/8) masses of iron accumulation; and **2C2**--52 to 65 inches; dark grayish brown (2.5Y 4/2) very gravelly sand; single grain; loose; 35 percent gravel and 5 percent cobbles; few medium prominent yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid.

Ridgebury, Leicester and Whitman Series:

The Ridgebury series consists of very deep, somewhat poorly and poorly drained soils formed in lodgment till derived mainly from granite, gneiss and/or schist. They are commonly shallow to a densic contact. They are nearly level to gently sloping soils in depressions in uplands. They also occur in drainageways in uplands, in toeslope positions of hills, drumlins, and ground moraines, and in till plains. Slope ranges from 0 to 15 percent. A typical profile associated with Ridgebury soils is as follows: **A**--0 to 13 cm; black (N 2/0) fine sandy loam; weak medium and coarse granular structure; friable; many very fine, fine and medium tree roots; 5 percent gravel and 5 percent cobbles; very strongly acid; abrupt smooth boundary; **Bw**--13 to 23 cm; brown (10YR 4/3) sandy loam; weak medium subangular blocky structure; friable; few fine tree roots; 5 percent gravel and 5 percent cobbles; very strongly acid; abrupt wavy boundary; **Bg**--23 to 46 cm; dark gray (10YR 4/1) gravelly sandy loam; massive; friable; 10 percent gravel and 5 percent cobbles; common fine prominent yellowish brown (10YR 5/6) and common medium distinct reddish brown (5YR 4/4) masses of iron accumulation; very strongly acid; gradual wavy boundary; and **Cd**--46 to 165 cm; gray (5Y 5/1) gravelly sandy loam; massive; firm; 10 percent gravel and 5 percent cobbles; common fine prominent reddish yellow (7.5YR 6/8) masses of iron accumulation; very strongly acid. https://soilseries.sc.egov.usda.gov/OSD_Docs/R/RIDGEBURY.html

The Leicester series consists of very deep, poorly drained soils formed in coarse-loamy till. They are nearly level or gently sloping soils in drainageways and low-lying positions on hills. Slope ranges from 0

to 8 percent. A typical profile associated with Leicester soils is as follows: **Oe**--0 to 3 cm; black (10YR 2/1) moderately decomposed plant material; **A**--3 to 18 cm; black (10YR 2/1) fine sandy loam; moderate medium granular structure; friable; common fine and medium roots; 10 percent gravel and cobbles; strongly acid; clear wavy boundary; **Bg1**--18 to 25 cm; grayish brown (2.5Y 5/2) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 10 percent gravel and cobbles; common medium prominent yellowish red (5YR 5/6) masses of iron accumulation; strongly acid; gradual wavy boundary; **Bg2**--25 to 46 cm; light brownish gray (2.5Y 6/2) fine sandy loam; weak medium subangular blocky structure; friable; few fine and medium roots; 10 percent gravel and cobbles; common fine prominent yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid; gradual wavy boundary; **BC**--46 to 61 cm; pale brown (10YR 6/3) fine sandy loam; massive; friable; few fine roots; 10 percent gravel and cobbles; many medium distinct yellowish brown (10YR 5/6) and yellowish red (5YR 4/6) masses of iron accumulation; strongly acid; clear wavy boundary; **C1**--61 to 84 cm; dark yellowish brown (10YR 4/4) gravelly fine sandy loam; massive; friable; 15 percent gravel and cobbles; many medium distinct yellowish brown (10YR 5/6) masses of iron accumulation and prominent pinkish gray (7.5YR 6/2) iron depletions; strongly acid; gradual wavy boundary and **C2**--84 to 155 cm; dark yellowish brown (10YR 4/4) gravelly fine sandy loam; massive; friable; 15 percent gravel and cobbles; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation; strongly acid.

The Whitman series consists of very deep, very poorly drained soils formed in lodgment till derived mainly from granite, gneiss, and schist. They are shallow to a densic contact. These soils are nearly level or gently sloping soils in depressions and drainageways on uplands. A typical profile associated with Whitman soils is as follows: **Ap** -- 0 to 25 cm; black (10YR 2/1) loam, dark gray (10YR 4/1) dry; weak medium granular structure; friable; 10 percent rock fragments; common medium distinct red (2.5YR 4/8) masses of iron accumulation lining pores; moderately acid; abrupt wavy boundary; **Bg** -- 25 to 46 cm; gray (5Y 5/1) fine sandy loam; massive; friable; 10 percent rock fragments, few medium distinct pale olive (5Y 6/4) and light olive brown (2.5Y 5/4) masses of iron accumulation; strongly acid; abrupt wavy boundary; **Cdg** -- 46 to 79 cm; gray (5Y 6/1) fine sandy loam; moderate medium plates; firm; 10 percent rock fragments; many medium distinct light olive brown (2.5Y 5/4) masses of iron accumulation; moderately acid; clear wavy boundary; **Cd1** -- 79 to 122 cm; olive (5Y 4/3) fine sandy loam; massive; firm; 10 percent rock fragments; few medium prominent dark reddish brown (2.5YR 3/4) masses of iron accumulation; moderately acid; gradual wavy boundary; and **Cd2** -- 122 to 165 cm; olive (5Y 5/3) fine sandy loam; massive; firm; 10 percent rock fragments; moderately acid.

Summary

The natural setting of the area containing the proposed solar facility is common throughout the Western Coastal ecoregion. The major rivers within this ecoregion are the Housatonic River and the Quinnipiac River, which have numerous smaller tributaries. Low slopes dominate the region, and the soils range from very poorly drained to well drained sandy loams. In general, the project region was well suited to Native American occupation throughout the prehistoric era. This portion of Orange was also used since the time of Colonial settlement for homesteads and agricultural land, as evidenced by the presence of numerous historical residences and agricultural fields throughout the region; thus, archaeological deposits dating from the prehistoric and historical era may be expected near or within the proposed impact areas.

CHAPTER III
PREHISTORIC SETTING

Introduction

Prior to the late 1970s and early 1980s, very few systematic archaeological surveys of large portions of the state of Connecticut had been undertaken. Rather, the prehistory of the region was studied at the site level. Sites chosen for excavation were highly visible and they were in such areas as the coastal zone, e.g., shell middens, and Connecticut River Valley. As a result, a skewed interpretation of the prehistory of Connecticut was developed. It was suggested that the upland portions of the state, i.e., the northeastern and northwestern hills ecoregions, were little used and rarely occupied by prehistoric Native Americans, while the coastal zone, i.e., the eastern and western coastal and the southeastern and southwestern hills ecoregions, were the focus of settlements and exploitation in the prehistoric era. This interpretation remained unchallenged until the 1970s and 1980s when several town-wide and regional archaeological studies were completed. These investigations led to the creation of several archaeological phases that subsequently were applied to understand the prehistory of Connecticut. The remainder of this chapter provides an overview of the prehistoric setting of the region encompassing the project area.

Paleo-Indian Period (12,000 to 10,000 Before Present [B.P.])

The earliest inhabitants of the area encompassing the State of Connecticut, who have been referred to as Paleo-Indians, arrived in the area by ca., 12,000 B.P. (Gramly and Funk 1990; Snow 1980). Due to the presence of large Pleistocene mammals at that time and the ubiquity of large fluted projectile points in archaeological deposits of this age, Paleo-Indians often have been described as big-game hunters (Ritchie and Funk 1973; Snow 1980); however, as discussed below, it is more likely that they hunted a broad spectrum of animals.

While there have been numerous surface finds of Paleo-Indian projectile points throughout the State of Connecticut, only two sites, the Templeton Site (6-LF-21) in Washington, Connecticut, and the Hidden Creek Site (72-163) in Ledyard, Connecticut, have been studied in detail and dated using the radiocarbon method (Jones 1997; Moeller 1980). The Templeton Site (6-LF-21) is in Washington, Connecticut and was occupied between 10,490 and 9,890 years ago (Moeller 1980). In addition to a single large and two small fluted points, the Templeton Site produced a stone tool assemblage consisting of gravers, drills, core fragments, scrapers, and channel flakes, which indicates that the full range of stone tool production and maintenance took place at the site (Moeller 1980). Moreover, the use of both local and non-local raw materials was documented in the recovered tool assemblage, suggesting that not only did the site's occupants spend some time in the area, but they also had access to distant stone sources, the use of which likely occurred during movement from region to region.

The only other Paleo-Indian site studied in detail in Connecticut is the Hidden Creek Site (72-163) (Jones 1997). The Hidden Creek Site is situated on the southeastern margin of the Great Cedar Swamp on the Mashantucket Pequot Reservation in Ledyard, Connecticut. While excavation of the Hidden Creek Site produced evidence of Terminal Archaic and Woodland Period components (see below) in the upper soil horizons, the lower levels of the site yielded artifacts dating from the Paleo-Indian era. Recovered Paleo-Indian artifacts included broken bifaces, side-scrapers, a fluted preform, gravers, and end-scrapers. Based on the types and number of tools present, Jones (1997:77) has hypothesized that the Hidden

Creek Site represented a short-term occupation, and that separate stone tool reduction and rejuvenation areas were present.

While archaeological evidence for Paleo-Indian occupation is scarce in Connecticut, it, combined with data from the West Athens Road and King's Road Site in the Hudson drainage and the Davis and Potts Sites in northern New York, supports the hypothesis that there was human occupation of the area not long after ca. 12,000 B.P. (Snow 1980). Further, site types currently known suggest that the Paleo-Indian settlement pattern was characterized by a high degree of mobility, with groups moving from region to region in search of seasonally abundant food resources, as well as for the procurement of high-quality raw materials from which to fashion stone tools.

Archaic Period (10,000 to 2,700 B.P.)

The Archaic Period, which succeeded the Paleo-Indian Period, began by ca., 10,000 B.P. (Ritchie and Funk 1973; Snow 1980), and it has been divided into three subperiods: Early Archaic (10,000 to 8,000 B.P.), Middle Archaic (8,000 to 6,000 B.P.), and Late Archaic (6,000 to 3,400 B.P.). These periods were devised to describe all non-farming, non-ceramic producing populations in the area. Regional archeologists recently have recognized a final "transitional" Archaic Period, the Terminal Archaic Period (3,400-2,700 B.P.), which was meant to describe those groups that existed just prior to the onset of the Woodland Period and the widespread adoption of ceramics into the toolkit (Snow 1980; McBride 1984; Pfeiffer 1984, 1990; Witthoft 1949, 1953).

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

To date, very few Early Archaic sites have been identified in southern New England. As a result, researchers such as Fitting (1968) and Ritchie (1969), have suggested a lack of these sites likely is tied to cultural discontinuity between the Early Archaic and preceding Paleo-Indian Period, as well as a population decrease from earlier times. However, with continued identification of Early Archaic sites in the region, and the recognition of the problems of preservation, it is difficult to maintain the discontinuity hypothesis (Curran and Dincauze 1977; Snow 1980).

Like their Paleo-Indian predecessors, Early Archaic sites tend to be very small and produce few artifacts, most of which are not temporally diagnostic. While Early Archaic sites in other portions of the United States are represented by projectile points of the Kirk series (Ritchie and Funk 1973) and by Kanawha types (Coe 1964), sites of this age in southern New England are identified on the basis of a series of ill-defined bifurcate-based projectile points. These projectile points are identified by the presence of their characteristic bifurcated base, and they generally are made from high quality raw materials. Moreover, finds of these projectile points have rarely been in stratified contexts. Rather, they occur commonly either as surface expressions or intermixed with artifacts representative of later periods. Early Archaic occupations, such as the Dill Farm Site and Sites 6LF64 and 6LF70 in Litchfield County, are represented by camps that were relocated periodically to take advantage of seasonally available resources (McBride 1984; Pfeiffer 1986). In this sense, a foraging type of settlement pattern was employed during the Early Archaic Period.

Middle Archaic Period (8,000 to 6,000 B.P.)

By the onset of the Middle Archaic Period, essentially modern deciduous forests had developed in the region (Davis 1969). It is at this time that increased numbers and types of sites are noted in Connecticut (McBride 1984). The most well-known Middle Archaic site in New England is the Neville Site, which is in Manchester, New Hampshire and studied by Dincauze (1976). Careful analysis of the Neville Site indicated that the Middle Archaic occupation dated from between ca., 7,700 and 6,000 years ago. In

fact, Dincauze (1976) obtained several radiocarbon dates from the Middle Archaic component of the Neville Site. The dates, associated with the then-newly named Neville type projectile point, ranged from 7,740±280 and 7,015±160 B.P. (Dincauze 1976).

In addition to Neville points, Dincauze (1976) described two other projectile points styles that are attributed to the Middle Archaic Period: Stark and Merrimac projectile points. While no absolute dates were recovered from deposits that yielded Stark points, the Merrimac type dated from 5,910±180 B.P. Dincauze argued that both the Neville and later Merrimac and Stark occupations were established to take advantage of the excellent fishing that the falls situated adjacent to the site area would have afforded Native American groups. Thus, based on the available archaeological evidence, the Middle Archaic Period is characterized by continued increases in diversification of tool types and resources exploited, as well as by sophisticated changes in the settlement pattern to include different site types, including both base camps and task-specific sites (McBride 1984:96)

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

The Late Archaic Period in southern New England is divided into two major cultural traditions that appear to have coexisted. They include the Laurentian and Narrow-Stemmed Traditions (Funk 1976; McBride 1984; Ritchie 1969a and b). Artifacts assigned to the Laurentian Tradition include ground stone axes, adzes, gouges, ulus (semi-lunar knives), pestles, atlatl weights, and scrapers. The diagnostic projectile point forms of this time period in southern New England include the Brewerton Eared-Notched, Brewerton Eared and Brewerton Side-Notched varieties (McBride 1984; Ritchie 1969a; Thompson 1969). In general, the stone tool assemblage of the Laurentian Tradition is characterized by flint, felsite, rhyolite, and quartzite, while quartz was largely avoided for stone tool production.

In terms of settlement and subsistence patterns, archaeological evidence in southern New England suggests that Laurentian Tradition populations consisted of groups of mobile hunter-gatherers. While a few large Laurentian Tradition occupations have been studied, sites of this age generally encompass less than 500 m^2 (5,383 ft^2). These base camps reflect frequent movements by small groups of people in search of seasonally abundant resources. The overall settlement pattern of the Laurentian Tradition was dispersed in nature, with base camps located in a wide range of microenvironments, including riverine as well as upland zones (McBride 1978, 1984:252). Finally, subsistence strategies of Laurentian Tradition focused on hunting and gathering of wild plants and animals from multiple ecozones.

The second Late Archaic tradition, known as the Narrow-Stemmed Tradition, is unlike the Laurentian Tradition, and it likely represents a different cultural adaptation. The Narrow-Stemmed tradition is recognized by the presence of quartz and quartzite narrow stemmed projectile points, triangular quartz Squibnocket projectile points, and a bipolar lithic reduction strategy (McBride 1984). Other tools found in Narrow-Stemmed Tradition artifact assemblages include choppers, adzes, pestles, antler and bone projectile points, harpoons, awls, and notched atlatl weights. Many of these tools, notably the projectile points and pestles, indicate a subsistence pattern dominated by hunting and fishing, as well the collection of a wide range of plant foods (McBride 1984; Snow 1980:228).

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

The Terminal Archaic Period, which lasted from ca., 3,700 to 2,700 BP, is perhaps the most interesting, yet confusing of the Archaic Periods in southern New England prehistory. Originally termed the "Transitional Archaic" by Witthoft (1953) and recognized by the introduction of technological innovations, e.g., broadspear projectile points and soapstone bowls, the Terminal Archaic has long posed problems for regional archeologists. While the Narrow-Stemmed Tradition persisted through the

Terminal Archaic and into the Early Woodland Period, the Terminal Archaic is coeval with what appears to be a different technological adaptation, the Susquehanna Tradition (McBride 1984; Ritchie 1969b). The Susquehanna Tradition is recognized in southern New England by the presence of a new stone tool industry that was based on the use of high-quality raw materials for stone tool production and a settlement pattern different from the "coeval" Narrow-Stemmed Tradition.

The Susquehanna Tradition is based on the classification of several Broadspear projectile point types and associated artifacts. There are several local sequences within the tradition, and they are based on projectile point type chronology. Temporally diagnostic projectile points of these sequences include the Snook Kill, Susquehanna Broadspear, Mansion Inn, and Orient Fishtail types (Lavin 1984; McBride 1984; Pfeiffer 1984). The initial portion of the Terminal Archaic Period (ca., 3,700-3,200 BP) is characterized by the presence of Snook Kill and Susquehanna Broadspear projectile points, while the latter Terminal Archaic (3,200-2,700 BP) is distinguished by the use of Orient Fishtail projectile points (McBride 1984:119; Ritchie 1971).

In addition, it was during the late Terminal Archaic Period that interior cord marked, grit tempered, thick walled ceramics with conoidal (pointed) bases made their initial appearance in the Native American toolkit. These are the first ceramics in the region, and they are named Vinette I (Ritchie 1969a; Snow 1980:242); this type of ceramic vessel appears with much more frequency during the ensuing Early Woodland Period. In addition, the adoption and widespread use of soapstone bowls, as well as the implementation of subterranean storage, suggests that Terminal Archaic groups were characterized by reduced mobility and longer-term use of established occupation sites (Snow 1980:250).

Finally, while settlement patterns appeared to have changed, Terminal Archaic subsistence patterns were analogous to earlier patterns. The subsistence pattern still was diffuse in nature, and it was scheduled carefully. Typical food remains recovered from sites of this period consist of fragments of white-tailed deer, beaver, turtle, fish, and various small mammals. Botanical remains recovered from the site area consisted of *Chenopodium* sp., hickory, butternut, and walnut (Pagoulatos 1988:81). Such diversity in food remains suggests at least minimal use of a wide range of microenvironments for subsistence purposes.

Woodland Period (2,700 to 350 B.P.)

Traditionally, the advent of the Woodland Period in southern New England has been associated with the introduction of pottery; however, as mentioned above, early dates associated with pottery now suggest the presence of Vinette I ceramics appeared toward the end of the preceding Terminal Archaic Period (Ritchie 1969a; McBride 1984). Like the Archaic Period, the Woodland Period has been divided into three subperiods: Early, Middle, and Late Woodland. The various subperiods are discussed below.

<u>Early Woodland Period (ca., 2,700 to 2,000 B.P.)</u>

The Early Woodland Period of the northeastern United States dates from ca., 2,700 to 2,000 B.P., and it has been thought to have been characterized by the advent of farming, the initial use of ceramic vessels, and increasingly complex burial ceremonialism (Griffin 1967; Ritchie 1969a and 1969b; Snow 1980). In the Northeast, the earliest ceramics of the Early Woodland Period are thick walled, cord marked on both the interior and exterior, and possess grit temper.

Careful archaeological investigations of Early Woodland sites in southern New England have resulted in the recovery of narrow stemmed projectile points in association with ceramic sherds and subsistence remains, including specimens of white-tailed deer, soft and hard-shell clams, and oyster shells (Lavin and

Salwen: 1983; McBride 1984:296-297; Pope 1952). McBride (1984) has argued that the combination of the subsistence remains and the recognition of multiple superimposed cultural features at various sites indicates that Early Woodland Period settlement patterns were characterized by multiple re-use of the same sites on a seasonal basis by small co-residential groups.

Middle Woodland Period (2,000 to 1,200 B.P.)

The Middle Woodland Period is marked by an increase in the number of ceramic types and forms utilized (Lizee 1994a), as well as an increase in the amount of exotic lithic raw material used in stone tool manufacture (McBride 1984). The latter suggests that regional exchange networks were established, and that they were used to supply local populations with necessary raw materials (McBride 1984; Snow 1980). The Middle Woodland Period is represented archaeologically by narrow stemmed and Jack's Reef projectile points; increased amounts of exotic raw materials in recovered lithic assemblages, including chert, argillite, jasper, and hornfels; and conoidal ceramic vessels decorated with dentate stamping. Ceramic types, indicative of the Middle Woodland Period, include Linear Dentate, Rocker Dentate, Windsor Cord Marked, Windsor Brushed, Windsor Plain, and Hollister Stamped (Lizee 1994a:200).

In terms of settlement patterns, the Middle Woodland Period is characterized by the occupation of village sites by large co-residential groups that utilized native plant and animal species for food and raw materials in tool making (George 1997). These sites were the principal place of occupation, and they were positioned close to major river valleys, tidal marshes, estuaries, and the coastline, all of which would have supplied an abundance of plant and animal resources (McBride 1984:309). In addition to villages, numerous temporary and task-specific sites were utilized in the surrounding upland areas, as well as in closer ecozones such as wetlands, estuaries, and floodplains. The use of temporary and task-specific sites to support large village populations indicates that the Middle Woodland Period was characterized by a resource acquisition strategy that can best be termed as logistical collection (McBride 1984:310).

Late Woodland Period (ca., 1,200 to 350 B.P.)

The Late Woodland Period in southern New England dates from ca., 1,200 to 350 B.P., and it is characterized by the earliest evidence for the use of corn in the lower Connecticut River Valley (Bendremer 1993; Bendremer and Dewar 1993; Bendremer et al. 1991; George 1997; McBride 1984); an increase in the frequency of exchange of non-local lithics (Feder 1984; George and Tryon 1996; McBride 1984; Lavin 1984); increased variability in ceramic form, function, surface treatment, and decoration (Lavin 1980, 1986, 1987; Lizee 1994a, 1994b); and a continuation of a trend towards larger, more permanent settlements in riverine, estuarine, and coastal ecozones (Dincauze 1974; McBride 1984; Snow 1980).

Stone tool assemblages associated with Late Woodland occupations, especially village-sized sites, are functionally variable and they reflect plant and animal resource processing and consumption on a large scale. Finished stone tools recovered from Late Woodland sites include Levanna and Madison projectile points; drills; side-, end-, and thumbnail scrapers; mortars and pestles; nutting stones; netsinkers; and celts, adzes, axes, and digging tools. These tools were used in activities ranging from hide preparation to plant processing to the manufacture of canoes, bowls, and utensils, as well as other settlement and subsistence-related items (McBride 1984; Snow 1980). Finally, ceramic assemblages recovered from Late Woodland sites are as variable as the lithic assemblages. Ceramic types identified include Windsor Fabric Impressed, Windsor Brushed, Windsor Cord Marked, Windsor Plain, Clearview Stamped, Sebonac Stamped, Selden Island, Hollister Plain, Hollister Stamped, and Shantok Cove Incised (Lavin 1980, 1988a,

1988b; Lizee 1994a; Pope 1953; Rouse 1947; Salwen and Ottesen 1972; Smith 1947). These types are more diverse stylistically than their predecessors, with incision, shell stamping, punctation, single point, linear dentate, rocker dentate stamping, and stamp and drag impressions common (Lizee 1994a:216).

Summary of Connecticut Prehistory

In sum, the prehistory of Connecticut spans from ca., 12,000 to 350 B.P., and it is characterized by numerous changes in tool types, subsistence patterns, and land use strategies. For much of the prehistoric era, local Native American groups practiced a subsistence pattern based on a mixed economy of hunting and gathering wild plant and animal resources. It is not until the Late Woodland Period that incontrovertible evidence for the use of domesticated species is available. Further, settlement patterns throughout the prehistoric era shifted from seasonal occupations of small co-residential groups to large aggregations of people in riverine, estuarine, and coastal ecozones. In terms of the region containing the proposed project area, a variety of prehistoric site types may be expected. These range from seasonal camps utilized by Archaic populations to temporary and task-specific sites of the Woodland era.

CHAPTER IV
HISTORICAL OVERVIEW

As discussed in Chapter I of this document, the proposed solar facility will be located in the south-central portion of the town of Orange, Connecticut, and close to that town's southern border with the town of Milford. The town of Orange was formed in 1823 from the northern part of the town of Milford and the western part of the city of New Haven; in 1921, the current city of West Haven separated from Orange to become its own municipality. The proposed solar facility location, which will be situated between Old Tavern Road and Timberlane Drive, was first part of Milford according to boundaries established during the eighteenth century; thus, this historical overview will emphasize the history of Milford rather than that of New Haven.

Native American History

The future town of Milford is located in the territory of the Paugussett tribe, according to some historians, which is thought to include a number of sub-groups. Colonists purchased the greater part of the Milford territory in 1639 from the sachem Ansantaway and others of the Wepawaug group. This included a tract lying between the Housatonic River on the west and the East River (later the Indian River) on the east, and northward from the Long Island Sound to a path running to what is now Derby (De Forest 1852; Crofut 1937; Spiess 1934). According to one nineteenth-century historian, a formal ceremony called "twig and turf" was conducted as part of this transaction: "A twig and a piece of turf being brought to the Sagamore, he placed the end of the branch in the clod, and then gave it to the English as a token that he thereby surrendered to them the soil, with all the trees and appurtenances" (Lambert 1838:86). Although the level of detail suggests this might be a real tradition, this interpretation is contrary to modern understandings of Native Americans' beliefs about these transactions. Of course, such a ceremony could have more than one interpretation – for example, that the tribe was giving the English the use of the land and not complete ownership.

The signatories to the 1639 deed were Native Americans named Asantaway, Arracowset, Anshuta, Manamatque, and Tatacenacouse. An additional piece of land on the north side was sold in 1655, and the land between the East River and the New Haven was purchased in 1659. A section known as "Indian Neck," between the East River and the Long Island Sound, was purchased by the colonists in 1660; with this transaction, the sellers reserved a 20-acre planting ground, but in 1661 Asantaway and his two sons sold this as well. In exchange for the deed, the colonists promised to protect Asantaway and his family, and the Native Americans stated that this was the last of the land they owned in Milford. These last three deeds were all signed by Asantway, Toutonome, and Akenash, understood to be the sachem and his sons. As was common during the colonial period, this was not enough to settle claims to the area, and in 1682, 10 heirs of Asantawae (as it was spelled in the document) gave the town a quit-claim deed to the Milford lands to the governor of the colony, for a small consideration. After this, two more sales of land to the north were made: one in 1685, by Conquepotama and Ahuntaway, who were leaders of the Paugussett community at what is now Derby, and two more in 1700 and 1702, by these two and seven others. Most of these later sales were of strips of land that were quite narrow in the east-west direction, so that by 1702 part of Milford's territory extended a long distance northward, to the southern boundary of what is now Naugatuck (Lambert 1838).

At the time of its first land sale in 1639, the Wepawaug group had four large villages in the area (one on the Wepowage river, near where the colonists' church was later built; one at Poconoc or Milford point on the Long Island Sound; one on the Housatonic River north of the later Post Road's Washington Bridge; and one at Turkey Hill, as well as and two smaller ones near the Oyster River in the southwest part of town at Oronoque, also on the Housatonic River. Those Native Americans that had lived near the center of the town moved to Indian Neck after 1639, and later sold that area, as noted above. In 1645, the Native Americans of the area set the forests afire as retaliation against the colonist's expansion into their land. The colonists stopped the conflagration short of their palisaded village, however. Further resistance was recorded in 1653 and 1700; however, none of the colonists were ever killed at Milford. The continuing presence of the area's indigenous peoples is evidenced by an event in 1671; The Native Americans had a fort on the Housatonic River, which several young men of Milford burned to the ground. The youths were fined £10 by the New Haven colony court and the Native Americans rebuilt the fort. The Sachem Asantaway died in ca., 1676, and his successor, Conquepotana, ca., 1731 (Scranton 1816).

In 1680, in accordance with an order by the colony legislature, a committee laid out 100 acres of land for the Milford Native Americans at the intersection of the Housatonic River and Two Mile Brook (then the boundary between Derby and Milford) (Trumbull 1859). Over time, many of the Milford-area Native Americans moved to join the more westerly Potatucks and other groups further away from the colonial encroachments. The Potatucks of Newtown and the Schaghticoke from Kent visited the Milford shoreline regularly for the fishing, until after the Revolutionary War (Lambert 1838). According to Scranton (1816), in 1710 there were 12 families resident at Turkey Hill, and a group of similar size by the Derby Ferry; a slightly smaller group left Oranoke [Oronoque] after they sold to the English in 1680. By 1774, of the 71 Indians reported living in New Haven County, four were in Milford and 20 in Derby. The last Native American to be buried at the cemetery at Turkey Hill, according to Scranton, was Betty Taukus, aged 63, who died in 1794. Records of these Native Americans' Christianization are scarce, although a woman Polly Myreck died as a Christian in 1813. As of ca., 1816, Scranton reported two families still residing on the land (Scranton 1816). An 1818 legislative committee reported that although the reservation had been much encroached upon by colonists over the years; it was valued $2,500.00 and there were 15 individuals residing there, plus five others who were associated with the group but not resident there at the time of the inquiry (Arnold 2007). By the middle of the nineteenth century, according to De Forest, only ten acres of land were left of the reservation, and "a few" people were still residing there (De Forest 1852: 356). Exactly when the last holdouts departed is not known.

Colonial and Revolutionary Era History of Milford

Milford was founded in 1639 by a party of English-born people who had briefly settled in New Haven. They were led by Reverend Peter Prudden, who also drew a few additional settlers from the town of Wethersfield, where he had preached the year before. They had organized their own separate church, with Prudden, on the same day the New Haven colony formed its church. According to Labaree, he was "a man of winning personality and sound common sense – an ideal pioneer leader" (1933:2). That autumn, the group of about 50 families moved to their new land at Wepawage, an area outside the formal jurisdiction of any authorized English colony. There they formed their own government in addition to the church. The first settlement was located on the banks of the Mill or Wepowaug River and the West River (in about the same area as the current population center of Milford). They also built a log palisade around the entire settlement, enclosing approximately a square mile, as protection against the Native Americans, which seemed a wise precaution in 1645 and 1646 (Labaree 1933; Lambert 1838). Although the town was primarily agricultural, like most other colonial settlements, the shipping of goods

by water was also part of the town's economy during the eighteenth century; several merchant ships traveled to Boston, New York, or the West Indies for commercial purposes (Lambert 1838).

The small, independent Milford colony became part of the larger New Haven Colony in 1643. This followed the formation of the United Colonies, a confederation of the colonies of Massachusetts Bay, Plymouth, Connecticut, and New Haven, and several other independent colony-towns near New Haven. It was the decision of the United Colonies that Milford should give up its independence, which it agreed to do after a short period of negotiation. In 1664, the new Royal Charter joined the New Haven Colony with the Connecticut Colony, and Milford perforce went with it. In the meantime, and afterward, of course, the town governed its affairs, especially the granting of land. In addition to the initial grants of home lots and agricultural land to the original settlers, further divisions of land were made both in the area of the first purchase and in the new purchases that were made between 1655 and 1702 (Labaree 1933). In 1685, the town received a patent or formal recognition of its existence and boundaries from the colony legislature, but because the town's proprietors made additional purchases afterward, they secured a revised patent in 1713. This patent gave the southerly point of Milford's eastern boundary as the center of the mouth of the Oyster River (Lambert 1838). By 1700 much but not all of the town's lands had been distributed (Labaree 1933).

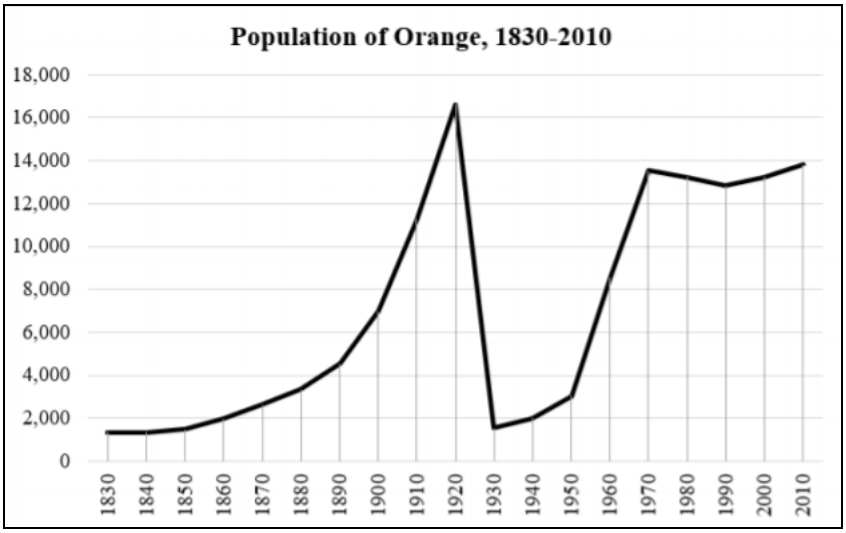
A 1659 listing recorded 79 heads of families in the town of Milford; in 1696 there were 145 heads of families, and in 1702 there were 180 heads of families. The total population in 1756 included 1,633 white residents; in 1762, the town reported 1,661 white residents and 134 black residents (Scranton 1816; Connecticut Colony 1762). The far-flung extent of the town made it inevitable that new towns would be formed from it. The first to move in this direction was Woodbridge, which became the new ecclesiastical society of Amity in 1738, gaining its own militia company in 1742 and a schoolhouse in 1746; it finally sought and gained incorporation in 1784. The future town of Orange began in the 1720s, when a son of wealthy merchant Richard Bryant, who had received 208 acres north of Milford village in a 1687 land distribution, moved to that land; a small village developed nearby, enough that in 1750 the town allowed a school to be kept at "Bryant's Farms" during the winter (Labaree 1933). As was mentioned above, Milford began as Congregational church polity, like New Haven and many other early Connecticut towns, but in time religious pluralism came to Milford, as it did elsewhere. An Episcopal church was formed in 1764 and built a church on the Mill River between 1771 and 1775 (Lambert 1838).

Scranton reported that as of 1774, there were 1,965 whites and 162 black and Native American residents in Milford (1816:281). During the Revolutionary War, a battery was constructed in 1776 on West Point, the west side of the harbor, and named Fort Trumbull; George Washington passed through the town in 1775 on his way to Cambridge, and also several other times. Two attempted invasions by the British, one in 1777 and one in 1779, were repulsed by the forces at Milford (Crofut 1937). In 1777, a group of 200 former prisoners of the British arrived at Milford and were taken under care; many were gravely ill, and before the month was out 46 had died and were buried in the town's graveyard (Lambert 1838).

Early National Period History of Milford (1790-1850)

At the first federal census in 1790, Milford was still a small town with a total population of just over 2,000 (less than half of the population of the city of New Haven, which had 4,484 residents). The population of Milford did not change very much during the period up to 1850, reaching its highest value in 1820, when the town had 2,785 residents – and when New Haven had leaped to over 20,000 residents. Interestingly, the earlier separation of Woodbridge in 1784 (with a starting population of 2,124 people in 1790) seemed to have little overall effect on Milford's population, suggesting that the

town was undergoing relatively rapid growth during this time. As of 1830, Milford's population saw an abrupt drop because Orange had become a separate town. Orange began its existence in 1822, and by 1830 had a total population of 1,341 residents. This population rose only slightly over the next two decades, to 1,476 residents, while Milford's likewise rose very little (population chart below; Keegan 2012).



Orange's separation from Milford had begun with the permission to hold winter schools in 1750, noted above; in 1804, the area's residents took the next step, becoming the ecclesiastical society of North Milford through a petition to the state legislature with 50 signatories. Despite the acquisition of society status, it took the Congregational church until 1810 to raise a meeting house. Also in 1804, a private lending library was formed in town. As of 1816, the society had three school districts with 160 students (Labaree 1933, Scranton 1816). Then in 1822, North Milford was joined with the nearby parish of West Haven (then part of New Haven) to become Orange (Labaree 1933). At the beginning of the nineteenth century, Milford had a variety of local industries: a marble works on the Indian River, six grist mills, seven saw mills, four fulling mills, an oil mill, a pottery, two carding machines and one woolen manufactory. Other manufactures included leather and leather goods, hats, wagons, furniture, and clothes; the town had 11 grocery and dry goods stores, an apothecary, 10 blacksmiths, three tanneries, two ship yards, a hatter, three each of physicians, attorneys, and clergymen, and four justices of the peace. The largest number of businesses were carriage and wagon makers at 15 each; but there were also an unknown number of shoe makers, house carpenter/joiners, and ship carpenters. For cultural life, there were three meeting houses, an Episcopal church, three "Social Libraries" and three "Free schools or academies" (Scranton 1816). A Baptist church was not formed until 1831 (Lambert 1838). On the coast, Milford people harvested large numbers of oysters and clams, and some of other kinds of shellfish; they also caught river and ocean fish, especially shad. The farmers grew a variety of grain and vegetable crops, as well as hay, and most of the inhabitants were farmers. Gardens included many kinds of vegetables and fruits (Scranton 1816).

In 1802, the New Haven and Milford Turnpike Company was incorporated by the state, in order to improve or build a high-quality road for the encouragement of commerce, a policy of most state governments of the period. The road went from the center of Milford on a northeast diagonal to New Haven and continued in existence until at least 1847 (Wood 1919). During the first part of the nineteenth century, the small shipping trade that had formerly flourished in Milford was dwindling, and

the last firm involved failed in 1821, leaving only a few small boats going regularly to New York. In large part, this decline is probably due to the silting-up of the harbor; by the 1820s the main channel was only five feet deep at high tide (Lambert 1838).

In 1837, a historian writing about Orange was careful to discuss the West Haven and North Milford parishes separately; at the time, West Haven had both a Congregational and an Episcopalian church on a green, while North Milford had only a Congregational church. Most of Orange's inhabitants were farmers, according to this account, but the author also passed on reports of a silver mine, a copper mine, the possibility of coal, and the presence of asbestos in the town (Barber 1837). The copper mining efforts revealed that the metal was not present in quantities sufficient to make the effort worthwhile (Hill 1918).

Industrialization, Urbanization, and Modern History of Milford (1850-Present)

At the start of Connecticut's most significant period of industrialization and urbanization, Orange was a small town of less than 1,500 people located next to the rapidly-growing city of New Haven. According to the 1850 federal census of industry, Orange had only three manufactories producing at least $500 in goods annually: a woolen fabric mill employing 10 men and six women (producing $21,000 in fabric per year); a woolen yarn mill employing three men and one woman (producing $2,800 in yarn per year); and a shoe and boot firm employing four men and two women (producing $2,800 in boots and shoes). Its parent town of Milford had 14 firms, four of them employing more than a total of 16 people, while New Haven was crowded with dozens of firms of all kinds (United States Census 1850, Schedule 5). The population figure above shows, however, that between 1850 and 1920, Orange's population grew steadily, to top out at 16,614 residents – and then dropped precipitously to 1,530 residents as of the 1930 census. This dramatic change is explained by the separation of West Haven from Orange in 1921; that section, located next to New Haven, reported over 25,000 residents in 1930 (Keegan 2012). Thus, it is clear that through 1930, the area that is presently the town of Orange remained overwhelmingly rural despite the overall rise in its population. This status did not begin to change until after 1950, when modest increases (to just over 3,000 people) changed to rapid increases through 1970, after which the population has wavered around 13,000 residents (Keegan 2012). These changes reflect the suburbanization trend of the latter part of the twentieth century, as people moved outward from cities like New Haven and West Haven; in Orange's case, this process leveled off after 1970.

According to an 1854 county map, the portion of Orange where the project parcel is located was surrounded by the farmsteads of the Smith, Platt, Clark, Bradley, and Treat families, among others (Figure 3). The project parcel was owned by a man named John Treat at this time. John inherited this land from Treat ancestors, who were among the first settlers of Orange. Robert Treat (1624-1710) was the first Treat ancestor to arrive in Orange and a governor of the Connecticut Colony from 1683 to 1698. Besides residences, the 1854 map also shows two schoolhouses in the general vicinity of the project area, one to the northwest and one to the east. The 1868 Beers atlas shows that the project area parcel is still owned by John (Jonathon) Treat (1800-1887) and is being operated as the J. Treat & Son (Figure 4). At this time John was 68 years old and his son Stiles J. Treat, age 33, who lived with him would have been integral to maintaining the farm. On the 1860 Federal Census, John's wife Mary Baldwin (age 61) and their daughter Anna M. Treat (age 24) were also living within the house at 361 Old Tavern Road with no occupations listed. They would have been equally important in the operation of the family farm. John Treat's agricultural land would have filled the present project area. After John's passing, his son Stiles J. Treat (1837-1907) worked the family farm. Stiles eventually passed the family farm at 361 Old Tavern Road onto his son-in-law Arthur D. Clark (1863-1951) who lived with Stiles throughout his old age.

Across from 361 Old Tavern Road was Alfred Treat's property known as Hayland Farm, located at 398 Old Tavern Road.

As noted above, the town's population remained low and mainly focused on agriculture during the nineteenth century. In 1887, a large new button factory was built in a section of Orange called Tyler City, and also a new school, but the factory had closed by 1895 and the school came to be used as an almshouse (Hill 1918). Efforts to start and encourage industry continued; as part of that, much of the West Haven section was incorporated as a borough in 1873. A county history published in 1892 reported statistics about Orange, including the presence of 1,016 dwelling houses, 20 manufactories, 1,469 neat cattle, and 11 stores. Most of these, as the population numbers discussed above show, must have been in the West Haven section, as the book itself points out. That section also had a Roman Catholic church built in 1876. North Milford, which was roughly area of the current Orange, retained its Congregational church (remodeled in 1864), but its Methodist and Baptist residents were not numerous enough to have built churches (Rockey 1892).

According to another county history, which was published in 1918, larger part of Orange's population, as well as the center of government, was in the West Haven part of the town in the early decades of the twentieth century. Not surprisingly, given the post-1922 population numbers discussed above, the author describes the greater part of Orange as consisting of rural country suitable for farming. The woolen mills on the Wepawaug River had been abandoned, and while a new textile mill had been built in the Allingtown section, all the town's other industries were in West Haven. The author did not consider a seed-growing farm operated by S. D. Woodruff & Sons in central North Milford to be an industrial activity, nor the model dairy farm that Wilson H. Lee opened south of the current project area just after the turn of the twentieth century (Hill 1918). In 1932, a summary of information about Connecticut's towns reported that Orange's principal industry was agriculture, and that it was accessible via railroad stations at Orange and Tyler City, and also by an electric trolley line that ran through Orange on its route from New Haven to Derby (Connecticut 1932).

The aerial photographs for this part of Orange, which extend from 1934 to 2019, document the area's transition from agricultural land to residential development. The 1934 aerial photograph shows the Treat farmhouse and outbuildings within the southern portion of the project parcel (Figure 5; Fairchild 1934). The majority of the project parcel to the north of the farmhouse contained agricultural fields, with some forested area to the north and west. This general region of Orange remains rural with farms all along the nearby roads in 1934. Along Old Tavern Road the Treats (as well as Arthur D. Clark) operated their farms as a dairy business in the twentieth century, delivering milk to Hotel Taft in New Haven and they also raised polo ponies for Yale University (Hitchcock 2012). Wilson H. Lee purchased Hayland Farm in the 1920s and use it for scientific dairy production. Hayland Farm returned to Treat family ownership in 1943; the Treats still operated it as a dairy business. Combining this land with the farm within the present project parcel that had remained in Treat family ownership, the Treats owned 200 acres along Old Tavern Road as of the mid-twentieth century. At this time Clifford E. Treat (1866-1948) owned 361 Old Tavern Road, the project parcel. In 1924, he gave the property to his son Charles F. Treat (1895-1989). After Charles' death 361 Old Tavern Road passed to his daughter Addie Butler Treat (1897-1998). When Addie passed away Treat descendants Jeff Wilson, Heather Bucknam, and Shelby Wilson purchased 361 Old Tavern Road and they continue to operate it as a commercial farm today.

Some of the forested area of the project parcel was converted to agricultural fields by the time of 1951 aerial image, particularly in the northwest corner (Figure 6; USDA 1951). To the northwest of the project parcel, a powerline corridor had been constructed by 1951. The remainder of the general area was

largely rural and agricultural fields, most of which are still present. New residences stand to the east of the project parcel, showing the signs of early suburban development. The full extent of suburban construction is visible by the 2019 aerial (Figure 7). The only open fields still visible are within the project parcel and exist as part of the Treat farm. In the twenty-first century, the farm focused on seasonal produce and Christmas trees, and there was a corn maze within the 361 Old Tavern Road portion. The Treat farmhouse and outbuildings, built beginning in 1816, still stands in the southern portion of the project parcel. Buildings remaining on the farm today include the Colonial farmhouse facing Old Tavern Road, an English barn to its north, a garage which has been attached to the east end of the barn, modern sheds, and a greenhouse to the north and west of the barn, and a secondary dwelling to the west of the barn facing Treat Lane (Hitchcock 2012). The greenhouse was erected on the foundation of a barn that burned down in the 1950s (Levine and Patnaik 2010). Appendix I contains the inventory form for the Treat Farm English barn; this building was listed on the State Register of Historic Places due to its association of ownership and use by a single family beginning in the Colonial period. This continued use has allowed the barn's architecture and proximity to remain intact.

Once part of a largely agricultural community, the Treat barn is now one of 20 barns still standing in Orange as of 2012. Otherwise, residential subdivisions have filled in the area and only small forested patches between the houses sitting within one-acre lots remain. Peck Place, a private school, is visible to the north of the project parcel; it caters to increasing number of families with children. Outside of the view shown in Figure 7, nearby landmarks include the Grassy Hill Country Club to the northwest, the historical Hayland Farm to the south that was once owned by the Treat family, and Boston Post Road to the far southeast, which has become a busy commercial strip.

In modern times, the municipal government describes Orange as "a desirable town in which to live," in which "[p]roper zoning foresight has let Orange develop into an open, well-planned residential community which retains the New England simplicity of which the residents are proud" (Orange n.d.). With a population approaching 14,000 residents, the town had a labor force of 7,227 workers in 2012, and 615 firms employing a total of 9,456 people. Only six percent of workers were in the manufacturing sector, with nearly 50 percent in retail and food services, health care, or government. In 2009 the five largest property owners on the grand list were CL&P, two real estate companies, Yale University, and a shopping mall; in the same year, the five largest employers were a retailer, a gas company, a manufacturer of light fixtures, a supermarket, and a beverage distributor. In 2010, slightly more people commuted into Orange from West Haven and New Haven than commuted from Orange to those towns (CERC 2013). Although there was still some agricultural activity in the town in the early twenty-first century, as the aerial photographs show, its proportion of the economy had changed from dominant to negligible.

Conclusion

The documentary record indicates that the proposed facility will be constructed within agricultural land that has been farmed by the Treat family since the first settlement of Orange. The family's Colonial house and associated outbuildings still stand within the southern portion of the project parcel along Old Tavern Road, but outside of the impacts areas associated with the proposed facility. The English barn is listed on the State Register of Historic Places. Nevertheless, unidentified archaeological resources from the long period of use by the Treat family of the project parcel may exist within the impact areas.

CHAPTER V
PREVIOUS INVESTIGATIONS

Introduction

This chapter presents an overview of previous archaeological research completed within the vicinity of the proposed solar facility in Orange, Connecticut. This discussion provides the comparative data necessary for assessing the results of the current Phase IA cultural resources assessment survey, and it ensures that the potential impacts to all previously recorded cultural resources located within and adjacent to the project impact areas are taken into consideration. Specifically, this chapter reviews previously identified archaeological sites and National/State Register of Historic Places properties situated in the project region (Figures 8 and 9). The discussions presented below are based on information currently on file at the Connecticut State Historic Preservation Office (CT-SHPO) in Hartford, Connecticut. In addition, the electronic site files maintained by Heritage were examined during this investigation. Both the quantity and quality of the information contained in the original cultural resources survey reports and State of Connecticut archaeological site forms are reflected below.

Previously Recorded Archaeological Sites and National/State Register of Historic Places Properties/Districts in the Vicinity of the Project Area

A review of data currently on file at the CT-SHPO, as well as the electronic site files maintained by Heritage resulted in the identification of one previously identified archaeological site (107-19) and one National Register of Historic Places district (Orange Center Historic District) situated within 1.6 km (1 mi) of the impact areas associated with the proposed solar facility (Figures 8 and 9). In addition, the English barn associated with Treat Farm discussed in Chapter IV and located within the southern portion of the project parcel is listed on the State Register of Historic Places. These resources are discussed in turn below.

Site 107-19

Site 107-19 was recorded as the Old Tavern Road at State Highway 152 Site by C. Scott Speal of the Connecticut Department of Transportation Office of Environmental Planning on March 10, 2014. The site is located on the southwestern corner of Orange Center Road and Old Tavern Road in Orange, Connecticut, which is to the west of the proposed solar facility (Figure 8). Speal surface collected decorated whiteware, structural glass, brick, and trap stone from the site area on December 5, 2013. All artifacts were identified within a 4.6 x 4.6 m (15 x 15 ft) area. A foundation was also noted in this area, and it was located approximately 6.1 m (20 ft) to the southwest of the road intersection. According to Speal, the former building locations showed signs of impact from driveway construction and landscaping activities associated with a residence at 192 Old Tavern Road. Speal determined that the site was likely a rural homestead dating from the late nineteenth to early twentieth century. Site 107-19 was not assessed applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). Due to distance from the project parcel, Site 107-19 will not be impacted by the proposed solar facility.

Orange Center Historic District

The Orange Center Historic District National Register of Historic Places nomination form was completed by Gregory E. Andrews and David F. Ransom on June 1, 1989. This district contains 58 structures, buildings, and sites (42 contributing elements) along Meetinghouse Lane, Orange Center Road, Schoolhouse Lane, and Tyler City Road in Orange, Connecticut; it is located to the north of the current project area (Figure 9). Buildings included within the district consist of Federal, Greek Revival, Queen Anne, and Colonial Revival

residences. The oldest of these are two houses at 586 and 603 Orange Center Road; both were built ca., 1800 and contain Federal style details. The Congregational Church in the district also displays Federal style architecture and was designed by David Hoadley. In contrast, there are many nineteenth century buildings without high style details, which is typical to a rural setting. The Colonial Revival style is represented in the historic district by the Mary L. Tracy School, the Orange Volunteer Fire House, the Orange Town Hall, and the Orange Public Library. Some buildings in the district also have associated outbuildings, most of which are utilitarian. One example of a decorative Stick Style barn stands in the district at 603 Orange Center Road. Contributing sites include the town green and Orange Cemetery established in 1804, which contains well preserved stones and zinc plate markers. The lack of commercial buildings in this district is due to the fact that historical turnpikes were existed outside the northern and southern boundaries of the village. Meanwhile, Orange Center focused on their agricultural contributions, especially in the areas of raising livestock and dairy farming. The Orange Center Historic District will not be impacted by the proposed solar facility.

Treat Farm Barn

The Treat Farm contains an 1816 Colonial farmhouse and outbuildings within the southern portion of the project parcel at 361 Old Tavern Road in Orange, Connecticut (Figure 9). Outbuildings associated with the farm include an English barn to the north of the Trat Family Colonial residence, a garage which has been attached to the east end of the barn, modern sheds, and a greenhouse to the north and west of the barn, and a secondary dwelling to the west of the barn that faces Treat Lane. The modern greenhouse stands on the foundation of a barn that burned down in the 1950s. Of these resources, the English barn has been listed on the State Register of Historic Places because of its long period of ownership and use by a single family beginning in the Colonial period and continuing to the twenty-first century. This continued use has preserved the barn's architecture and immediate surroundings. The barn measures one-and-half stories in height and has a rectangular plan measuring 9.1 x 31.7 m (30 x 104 ft in area). It also is characterized by a dry laid fieldstone foundation, with a Milk room at the west end; the latter is an addition with a concrete foundation. The barn's walls are clad in white painted vertical wooden boards. The gabled roof has overhanging rake and eaves; it is clad in asphalt shingles. This barn is part of the Treat Farm, which has been occupied by the Treat family since settlement of Orange. While beginning as a family farm, it evolved into a dairy business by the mid-nineteenth century. It continued to be used as a dairy farm until the twenty-first century, when it focused on the sale of seasonal produce. See Appendix I for the inventory form for the Treat Farm barn.

Conclusion

No prehistoric archaeological resources have been previously identified within 1.6 km (1 mi) of the project area. However, as discussed in Chapter II, the natural setting of the project area is suited to Native American occupation and therefore prehistoric resources may exist within the proposed impact areas associate with the solar facility. Site 107-19 and the Orange Center Historic District exemplifies the rural history of the area that was established by the Colonial period. The area remained rural well into the twentieth century until suburban development took over. Site 107-19 and the Orange Center Historic District will not be impacted by the proposed solar facility. However, a State Register of Historic Places barn is located within the project parcel. It was part of the Treat Farm from the Colonial era to the twenty-first century and has integrity in the areas of architecture and setting. Other outbuildings and the 1816 farmhouse associated with the Treat Farm also stand within the project parcel; it is therefore expected that archaeological deposits associated with the long occupation of the parcel by the Treat Family may exist elsewhere on the property and perhaps within the proposed impact areas associated with the proposed solar facility.

CHAPTER VI
METHODS

Introduction

This chapter describes the research design and field methodology used to complete the Phase IA cultural resources assessment survey of the proposed solar facility in Orange, Connecticut. The following tasks were completed during this investigation: 1) study of the region's prehistory, history, and natural setting, as presented in Chapters II through IV; 2) a literature search to identify and discuss previously recorded cultural resources in project region; 3) a review of historical maps, topographic quadrangles, and aerial imagery depicting the impact areas in order to identify potential historical resources and/or areas of past disturbance; and 4) pedestrian survey and photo-documentation of the impact areas in order to determine their archaeological sensitivity. These methods are in keeping with those required by the Connecticut State Historic Preservation Office in the document entitled: *Environmental Review Primer for Connecticut's Archaeological Resources* (Poirier 1987).

Research Framework

The current Phase IA cultural resources assessment survey was designed to assess the archaeological sensitivity of the impact areas associated with the proposed solar facility, as well as to visually examine them for any previously unidentified cultural resources during pedestrian survey. The undertaking was comprehensive in nature, and project planning considered the distribution of previously recorded cultural resources located within the project region, as well as a visual assessment of the proposed impact areas and their surroundings. The fieldwork portion of this undertaking entailed pedestrian survey, photo-documentation, and mapping (see below).

Archival Research & Literature Review

Background research for this project included a review of a variety of historical maps depicting the proposed project parcel and impact areas; an examination of USGS 7.5' series topographic quadrangles; an examination of aerial images dating from 1934 through 2019; and a review of all archaeological sites and National and State Register of Historic Places on file with the CT-SHPO, as well as electronic cultural resources data maintained by Heritage. The intent of this review was to identify all previously recorded cultural resources situated within and immediately adjacent to the impact areas associated with the proposed solar facility, and to provide a natural and cultural context for the project region. This information then was used to develop the archaeological context of the impact areas, and to assess their sensitivity with respect to the potential for producing intact cultural resources.

Background research materials, including historical maps, aerial imagery, and information related to previous archaeological investigations, were gathered from the CT-SHPO. Finally, electronic databases and Geographic Information System files maintained by Heritage were employed during the course of this project, and they provided valuable data related to the project region, as well as data concerning previously identified archaeological sites and National and State Register of Historic Places properties within the general vicinity of the proposed solar facility.

Field Methodology and Data Synthesis

Heritage also performed fieldwork for the Phase IA cultural resources assessment survey of the impact areas associated with the proposed solar project in Orange, Connecticut. This included pedestrian survey, photo-documentation, and mapping of the area containing the proposed solar arrays,

stormwater basing, and access roads. During the completion of the pedestrian survey, representatives from Heritage photo-documented all potential areas of impact using digital media.

CHAPTER VII
RESULTS OF THE INVESTIGATION & MANAGEMENT RECOMMENDATIONS

Introduction

This chapter presents the results of the Phase IA cultural resources assessment survey of the project area in Orange, Connecticut. As stated in the introductory section of this report, the goals of the investigation included completion of the following tasks: 1) a contextual overview of the region's prehistory, history, and natural setting (e.g., soils, ecology, hydrology, etc.); 2) a literature search to identify and discuss previously completed cultural resources surveys and previously recorded cultural resources in the project region; 3) a review of readily available historical maps and aerial imagery depicting the proposed solar facility areas in order to identify potential historical resources and/or areas of past disturbance; and 4) pedestrian survey and photo-documentation of the proposes solar array locations, stormwater basing, and access roads in order to determine their archaeological sensitivity. The results of the survey effort are presented below.

Results of Phase IA Survey

At the time of survey, the study area was characterized by open fields in the northwestern corner, central and south-central portion, and southeastern corner of the larger project parcel (Figure 11; Photos 4, 12, 18 through 28). The fields in the northwestern corner of the project parcel were bordered to the north and south by stone walls. Stone walls also lined the western border of the fields in the central portion of the impact areas (Photo 13). The remainder of the project parcel contained forested land surrounding all of the open fields mentioned above; the forested areas will not be used for the proposed solar facility (Photos 1, 3, and 6). Within the forest in the west-central portion of the project area, four piles of stone from agricultural field clearing were noted (Photo 14). This portion of forest also contained stone walls along its western boundary, and one small segment of stone wall at the north-central portion of the project parcel. Finally, there a stream flowing from north to south through the eastern half of the project parcel was noted; it connects to Old Tavern Road Pond at the southern border of the project parcel (Photo 11).

As discussed in Chapter IV and V, the Treat Farm, located on the project parcel, is historically important because of its long association with the Treat Family, whose ancestors were among the first settlers of Orange. Since their initial purchase of the project parcel, the property has continually been used as a farm, first to support the Treat Family, then as a large dairy business, and finally as a commercial farm with recreational attractions. The Treat farm complex includes an 1816 farmhouse (Photo 34), an English barn to the house's north with modern additions on its east side (Photos 30 and 31), a garage with three retracting doors to the west of the barn (Photo 33), modern sheds and a greenhouse to the north and west of the barn (Photos 32 and 35), and a secondary dwelling dating from 1816 to the west of the barn facing Treat Lane (Photo 37). The modern greenhouse was built on top of a historical stone foundation from a barn that burned own in the twentieth century. These resources were photographed during Phase IA survey of the south-central portion of the project parcel.

The above-referenced English barn is listed on the Connecticut State Register of Historic Places, and the form documenting this building indicates that the nearby 1816 farmhouse is equally significant because of its integrity in the areas of architecture and historical setting. The Treat Farm maintains much of its

rural setting, with farm fields surrounding the buildings; it is still owned by the Treat Family today. This area of Orange was once dominated by agricultural land, and agriculture once sustained the town's economy. The English barn within the project area is one of 20 barns still standing in Orange. Hayland Farm, which is located to the south of the project parcel at 398 Old Tavern Road, is also an important remnant of Orange's agricultural history (Photo 36). Once operated by the Treat Family, Hayland Farm is now a historical museum. Finally, a house dating from 1890 stands just to the south of the project parcel southern boundary at 353 Old Tavern Road; it has not been formally assessed for it historical significance (Photo 29). It is possible that solar panels planned as part of the proposed facility could negatively affect the historic setting of the nearby Treat Family Colonial farmhouse, the Treat farm State Register listed English barn, and the buildings associated Hayland Farm since they would be visible from each of these structures. It is recommended that the project sponsor consult with Connecticut State Historic Preservation Office concerning these potential negative visual effects and ways to avoid or minimize them. This may include moving the solar panels to a different portion of the project parcel or possibly installing vegetative screening to obscure their view from the above-referenced historical resources.

Overall Sensitivity of the Proposed Project Area

The field data associated with soils, slopes, aspect, distance to water, and previous disturbance collected during the pedestrian survey and presented above was used in conjunction with the analysis of historical maps, aerial images, and data regarding previously identified archaeological sites and National/State Register of Historic Places properties to stratify the impact areas into zones of no/low and/or moderate/high archaeological sensitivity. In general, historical period archaeological sites are relatively easy to identify on the current landscape because the features associated with them tend to be relatively permanent constructions that extend above the ground surface (i.e., stone foundations, pens, wells, privies, etc.). Archaeological sites dating from the prehistoric era, on the other hand, are less often identified during pedestrian survey because they are buried, and predicting their locations relies more on the analysis and interpretation of environmental factors that would have informed Native American site choices.

With respect to the potential for identifying prehistoric archaeological sites, the project area was divided into areas of no/low and/or moderate/high archaeological potential by analyzing the landform types, slope, aspect, soils contained within them, and their distance to water. In general, areas located less than 300 m (1,000 ft) from a freshwater source and that contain slopes of less than 8 percent and well-drained soils possess a high potential for producing prehistoric archaeological deposits. Those areas located between 300 and 600 m (1,000 and 2,000 ft) from a freshwater source and well drained soils are considered moderate probability areas. This is in keeping with broadly based interpretations of prehistoric settlement and subsistence models that are supported by decades of previous archaeological research throughout the region. It is also expected that there may be variability of prehistoric site types found in the moderate/high sensitivity zones. For example, large Woodland period village sites and Archaic period seasonal camps may be expected along large river floodplains and near stream/river confluences, while smaller temporary or task specific sites may be expected on level areas with well-drained soils that are situated more than 300 m (1,000 ft) but less than 600 m (2,000 ft) from a water source. Finally, steeply sloping areas, poorly drained soils, or areas of previous disturbance are generally deemed to retain a no/low archaeological sensitivity with respect to their potential to contain prehistoric archaeological sites.

In addition, the potential for a given area to yield evidence of historical period archaeological deposits is based not only on the above-defined landscape features but also on the presence or absence of

previously identified historical period archaeological resources as identified during previous archaeological surveys, recorded on historical period maps, or captured in aerial images of the region under study. In this case, proposed project items that are situated within 100 m (328 ft) of a previously identified historical period archaeological site or a National or State Register of Historic Places district/individually listed property also may be deemed to retain a moderate/high archaeological sensitivity. In contrast, those areas situated over 100 m (328 ft) from any of the above-referenced properties would be considered to retain a no/low historical period archaeological sensitivity.

Management Recommendations

The combined review of historical maps, aerial images, land deeds, and pedestrian survey indicates that the project parcel and the impact areas contain low slopes and well drained soils situated in proximity to freshwater sources. The area is characterized by Agawam, Canton and Charlton, and Ninigret and Tinsbury soils with well drained sandy loams could contain intact B-Horizons deposits. Based on the totality of the information available, including landscape type, well-drained soil types, proximity to freshwater, and historical context it is the professional opinion of Heritage that all 26 acres of the impact areas retain a moderate to high sensitivity for yielding archaeological deposits (Figures 10 and 11; Photos 4, 12, 18 through 28). Moderate sensitivity areas of the project area, including where stormwater basins will be constructed, fall within open fields characterized by well-drained soils once used for agricultural activities. The high sensitivity part of the impact areas was limited to the south-central portion of the impact area where the Treat Farm structures are located. Archaeological resources relating to the Treat Family ownership from the Colonial period to the present may exist in this area, including domestic refuse, architectural debris, and agricultural equipment remains. It is also possible that the impact areas may yield archaeological data associated with past Native American use and occupation. It is recommended that a Phase IB cultural resources reconnaissance survey of the impact areas be completed prior to construction of the proposed solar facility. Finally, the historic standing structures located with the viewshed of the proposed solar facility, including the Treat Family Colonial residence and associated English barn, appear to retain historical integrity and significance. It is recommended that the project sponsor consult with the Connecticut State Historic Preservation Office regarding avoidance or minimization of the viewshed impacts to these buildings prior to construction.

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Figure 1. Excerpt from a USGS 7.5' series topographic quadrangle image showing the location of the project area in Orange, Connecticut.

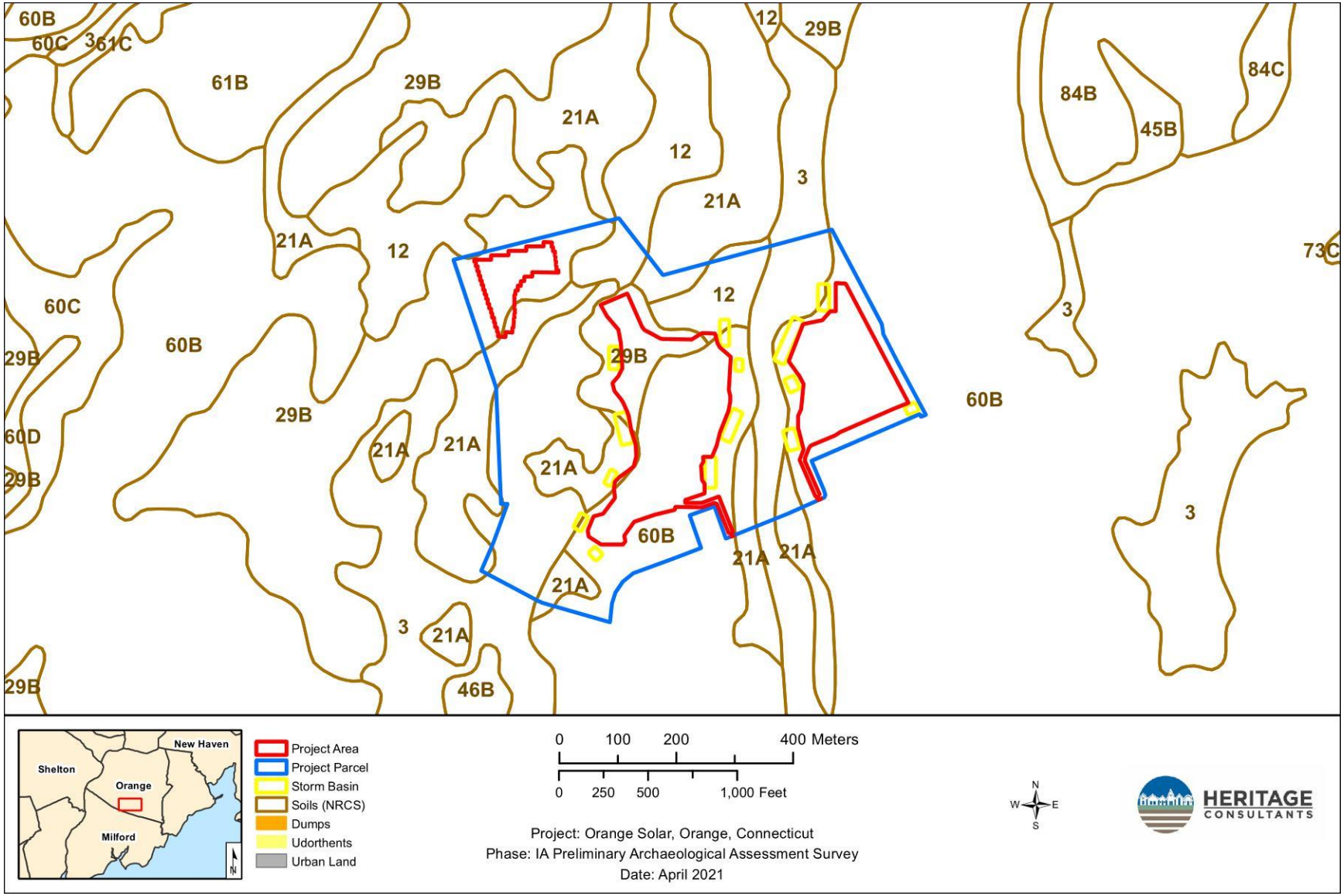


Figure 2. Map of soils located in the vicinity of the project area in Orange, Connecticut.

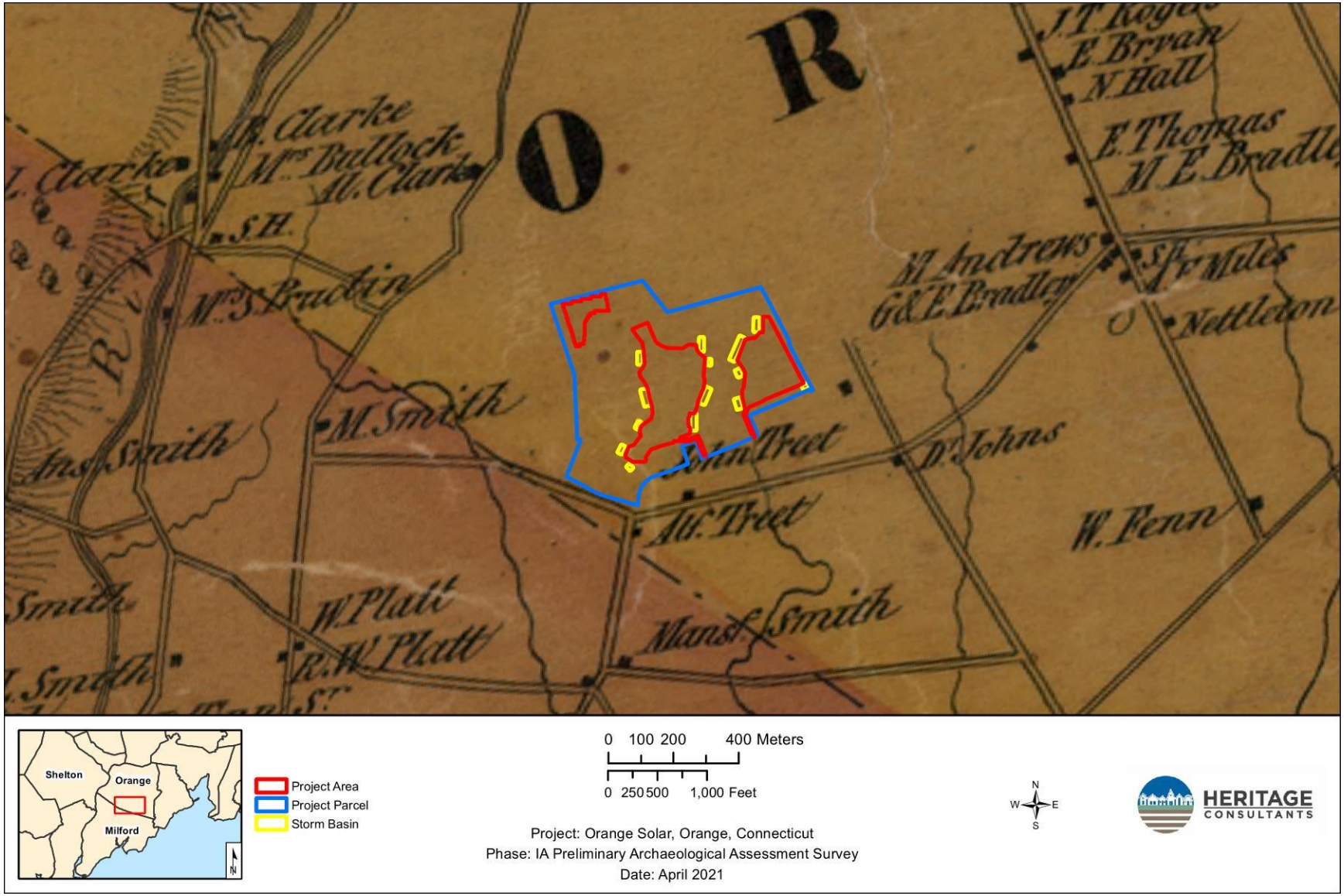


Figure 3. Excerpt from an 1854 historical map showing the location of the project area in Orange, Connecticut.

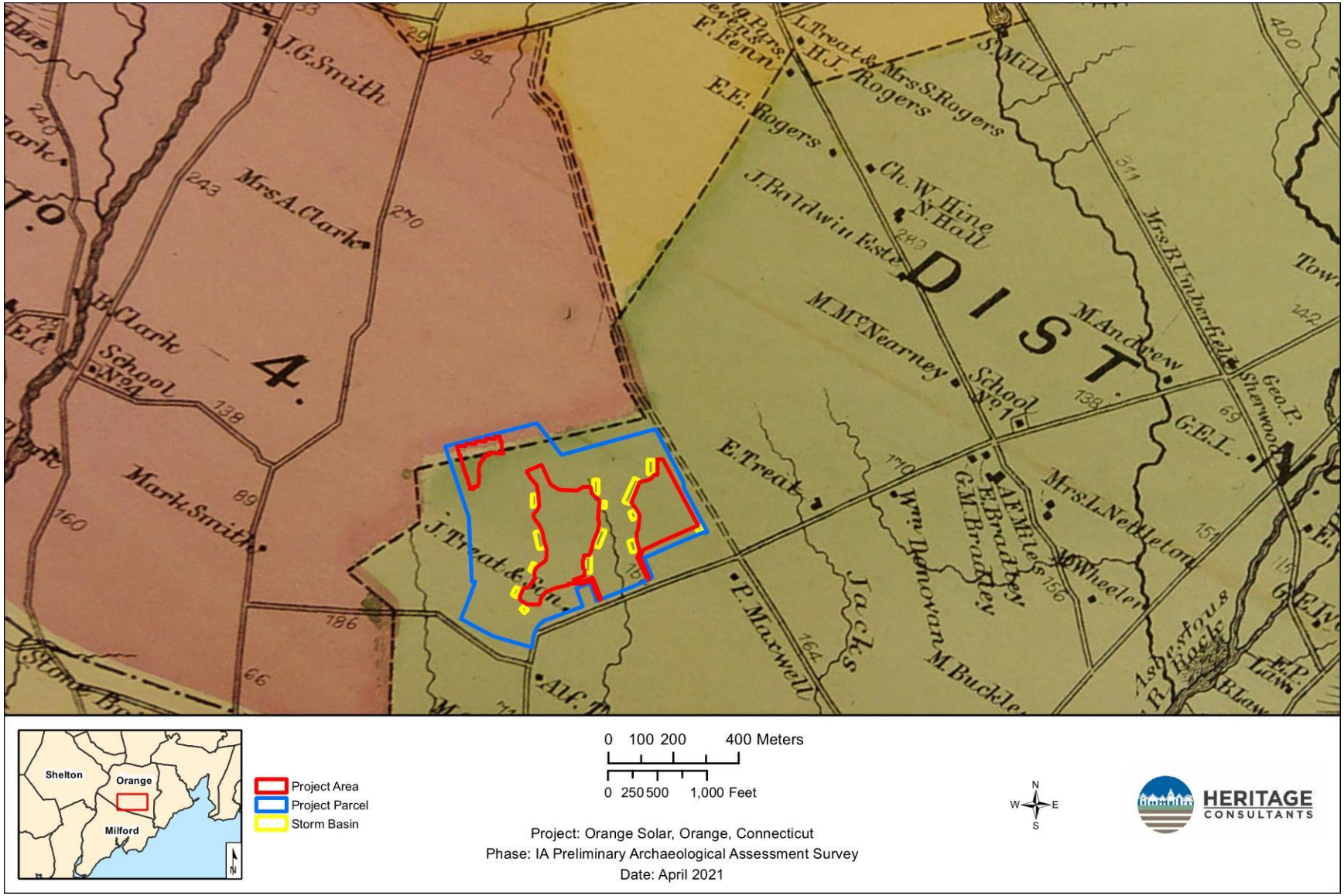


Figure 4. Excerpt from an 1868 historical map showing the location of the project area in Orange, Connecticut.

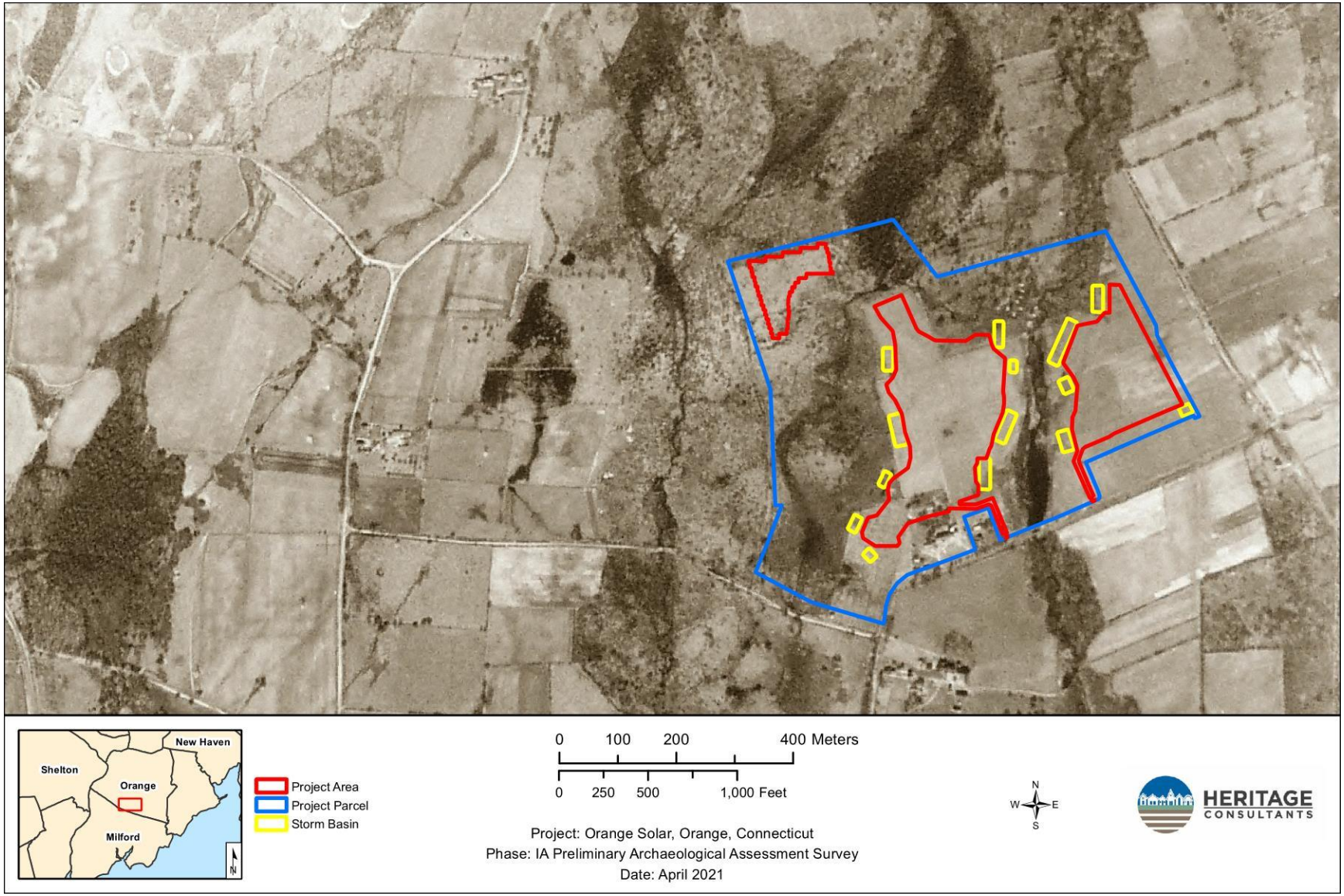


Figure 5. Excerpt from a 1934 aerial photograph showing the location of the project area in Orange, Connecticut.

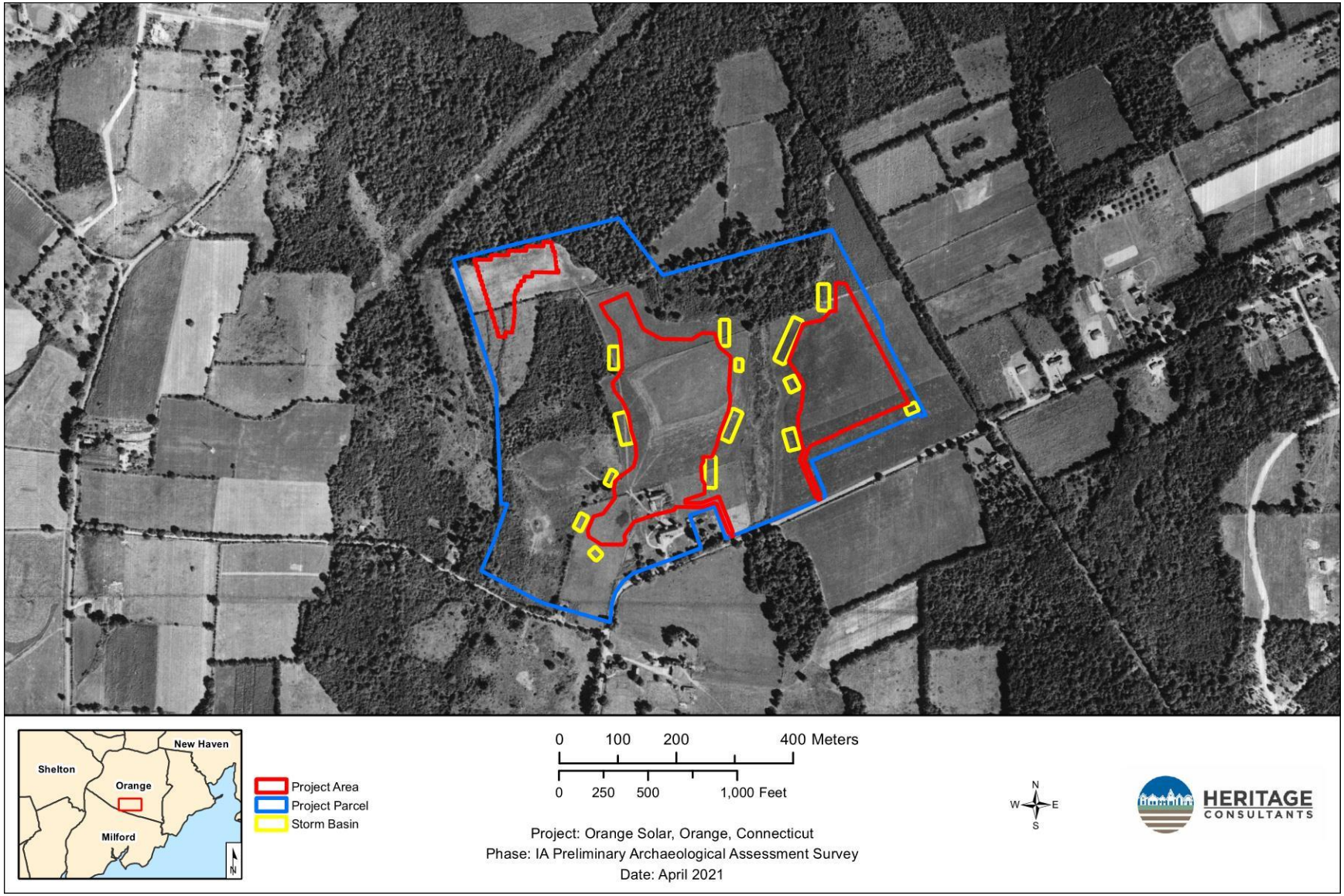


Figure 6. Excerpt from a 1951 aerial photograph showing the location of the project area in Orange, Connecticut.

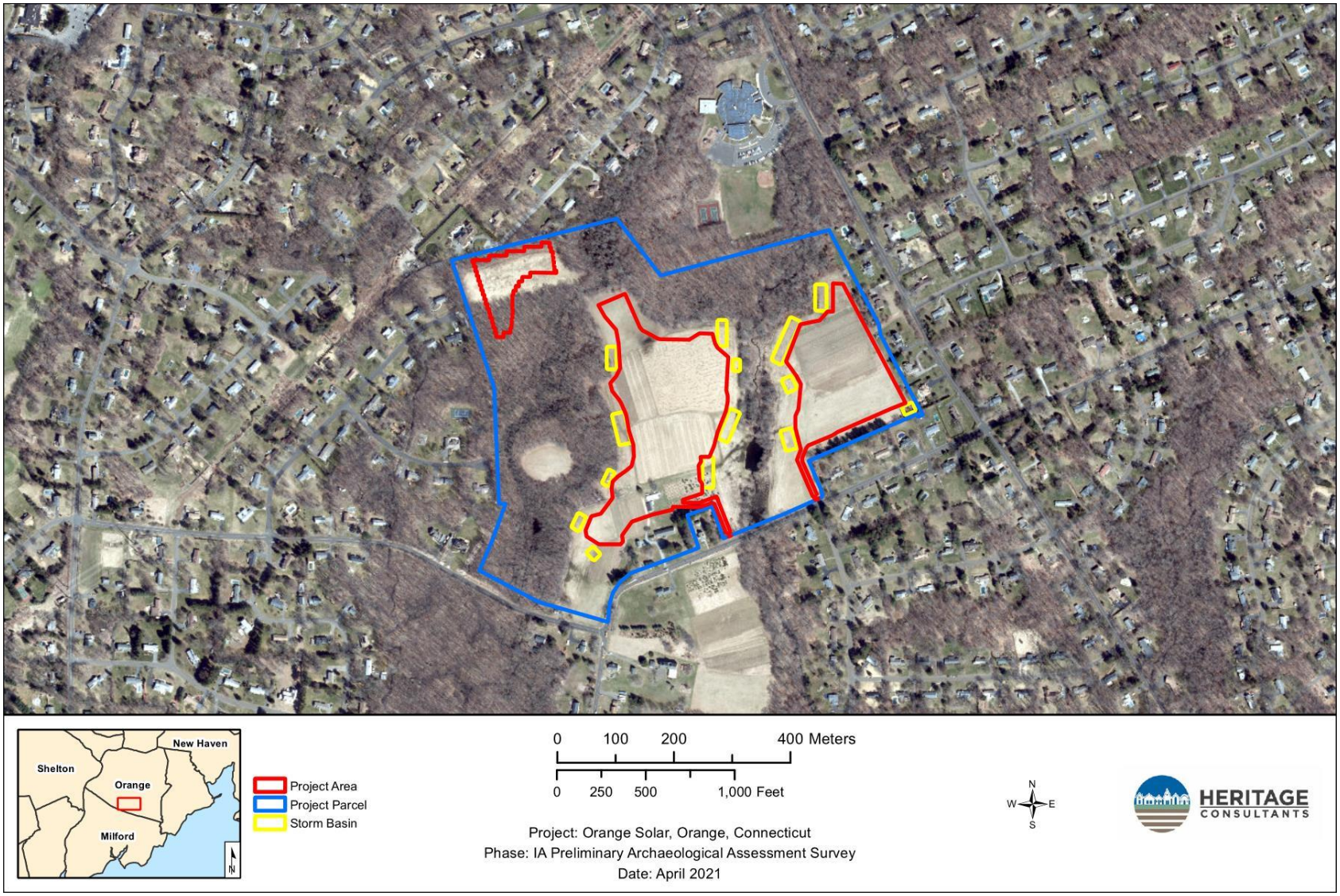
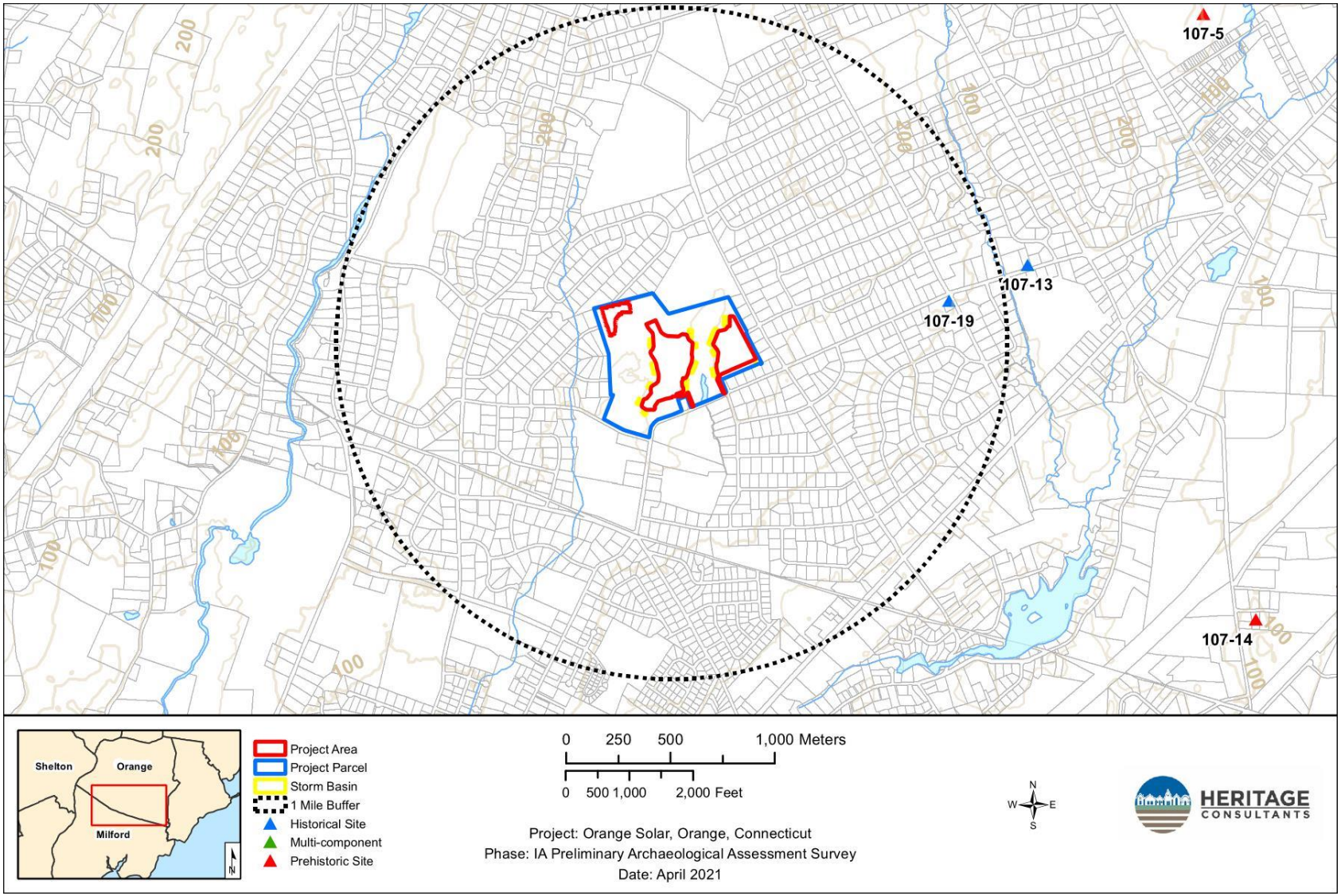


Figure 7. Excerpt from a 2019 aerial photograph showing the location of the project area in Orange, Connecticut.



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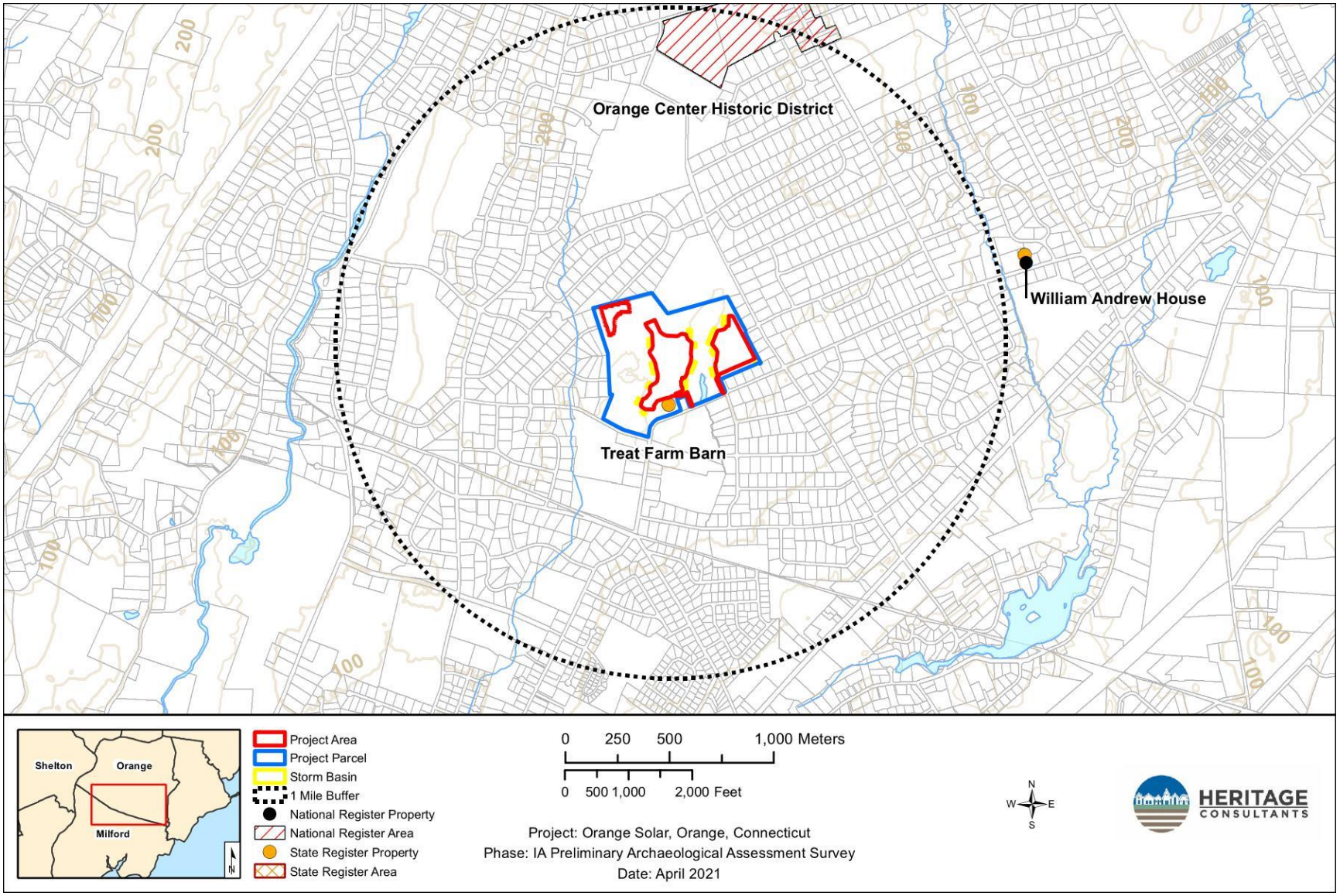

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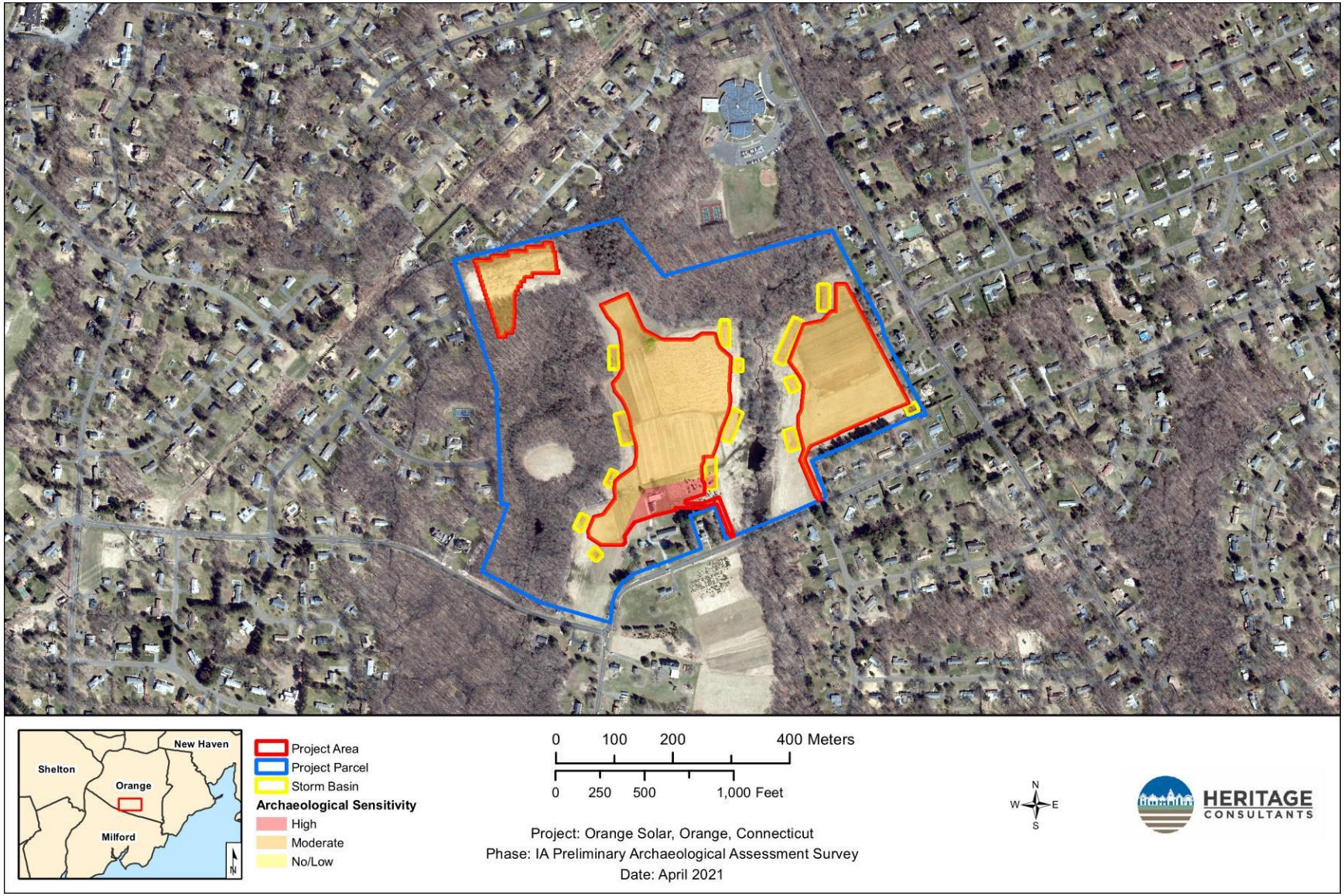

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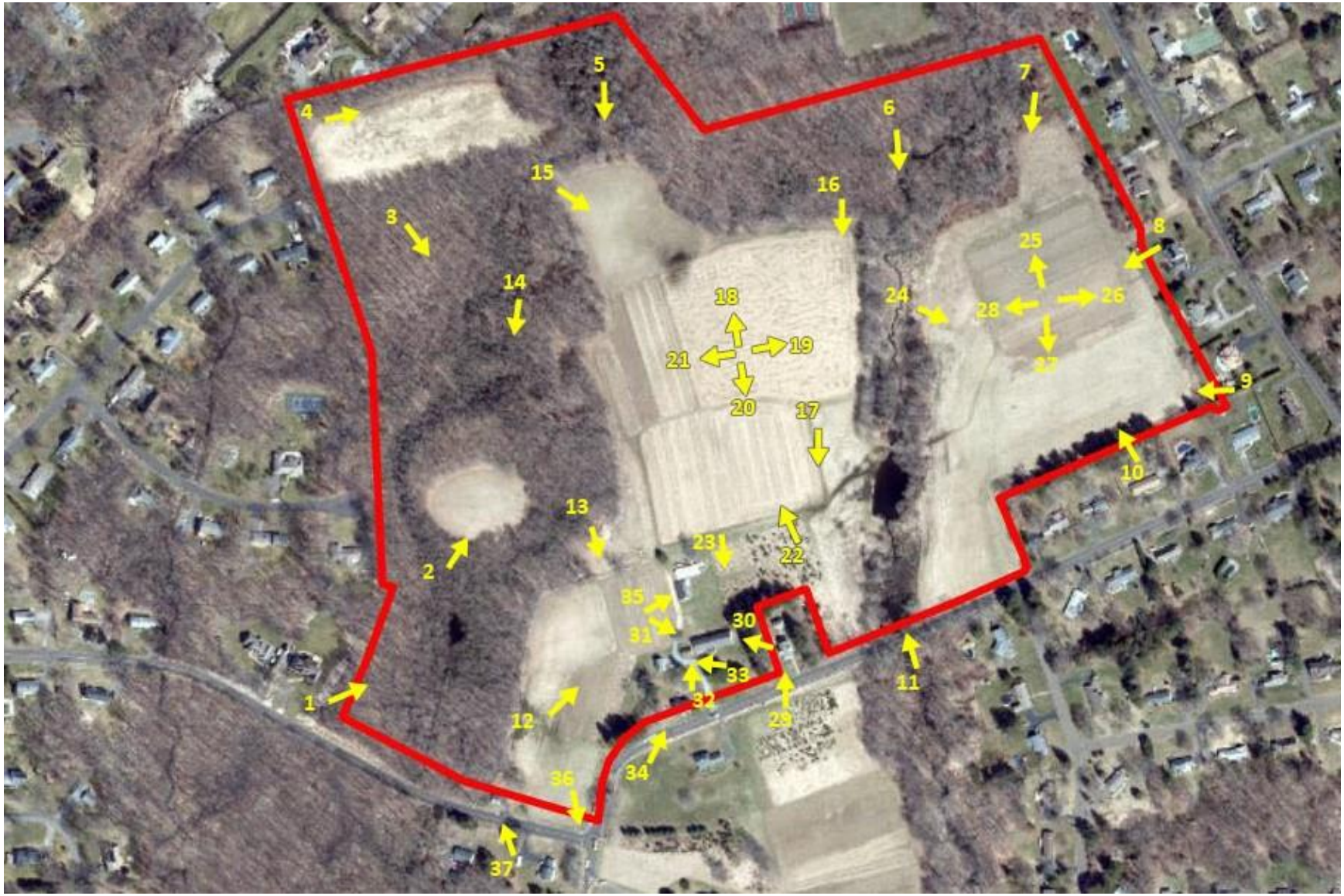

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JULY 2021

PHASE IB CULTURAL RECONNAISSANCE SURVEY OF THE PROPOSED ORANGE SOLAR PROJECT IN ORANGE, CONNECTICUT

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ABSTRACT

This report presents the results of a Phase IB cultural resources reconnaissance survey of a proposed solar facility at 361 Old Tavern Road in Orange, Connecticut. The project parcel associated with the proposed facility encompasses approximately 17.8 acres of land and is located to the north of Old Tavern Road and south of Timberlane Drive. The undertaking will include installation of photovoltaic panels and associated electrical equipment, access roads, and stormwater basins. A Phase IA cultural resources assessment survey of the project area was completed in April of 2021. The pedestrian survey indicated that the project area is characterized by low slopes and well drained soils in proximity to freshwater sources. It was recommended that the area be subjected to a Phase IB cultural reconnaissance survey prior to construction of the solar facility.

A Phase IB cultural reconnaissance survey of the area was completed in June and July 2021. A total of 162 of 162 (100 percent) planned shovel tests were excavated throughout the project area, resulting in the identification of a single archaeological locus. This was designated as the Treat Farm Locus and it yielded 852 prehistoric and 24 historical period artifacts. The prehistoric component consisted of lithic debitage from tool making, expedient stone tools used for resource processing, projectile points used for hunting, and seven soil anomalies with potential cultural association. The historical component produced typical domestic debris (e.g., ceramic sherds, nails, and glass artifacts) associated with the late eighteenth and nineteenth centuries. The prehistoric period component of the Treat Farm Locus is potentially eligible for listing on the National Register of Historic Places under Criterion D. Therefore, a Phase II National Register of Historic Places testing and evaluation of that component is recommended prior to construction of the proposed Orange Solar facility. No additional archaeological examination of the historic period component of the locus is recommended because it lacks the qualities of significance as defined by the Phase II National Register of Historic Places.

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CHAPTER I
INTRODUCTION

This report presents the results of a Phase IB cultural resources reconnaissance survey of a proposed solar facility in Orange, Connecticut (Figure 1). Vanasse Hangen Brustlin, Inc. (VHB) requested that Heritage Consultants, LLC (Heritage) complete the reconnaissance survey as part of the planning process for the proposed facility, which will encompass 17.8 acres of land located at 361 Old Tavern Road. Heritage completed the fieldwork for this investigation in June and July of 2021. All work associated with this project was performed in accordance with the *Environmental Review Primer for Connecticut's Archaeological Resources* (Poirier 1987) promulgated by the Connecticut State Historic Preservation Office (CT-SHPO).

Project Description and Methods

As mentioned above, the parcel on which the proposed solar facility will be constructed is located at 361 Old Tavern Road. The project area will be accessed from a driveway north of Old Tavern Road. The undertaking will include installation of photovoltaic panels and associated electrical equipment, access roads, and stormwater basins. The project area rests at approximate elevations ranging from 42.7 to 48.8 m (140 to 160 ft), and at the time of the survey, the project area was bounded by forested areas to the north, east and west, and Treat Farm fields to the south and an associated historical residence and outbuildings.

The Phase IB cultural resources reconnaissance survey was completed utilizing pedestrian survey, systematic shovel testing, GPS recordation, and photo-documentation. During the survey, Heritage conducted the systematic excavation of shovel tests along parallel survey transects across the proposed project area. The shovel tests were situated at 20 m (65.6 ft) intervals along 14 parallel survey transects spaced 20 meters (65.6 feet) apart. Each shovel test measured 50 x 50 centimeters (19.7 x 19.7 inches) in size, and each was excavated to the glacially derived C-Horizon or until immovable objects (e.g., tree roots, boulders, etc.) were encountered. Each shovel test was excavated in 10 centimeters (3.9 inches) arbitrary levels within natural strata, and the fill from each level was screened separately. All shovel test fill was screened through 0.635 centimeter (0.25 inch) hardware cloth and examined visually for cultural material. Soil characteristics were recorded using Munsell Soil Color Charts and standard soils nomenclature. Each shovel test was backfilled after being recorded.

Project Results

During the Phase IB survey, a total of 162 of 162 (100 percent) planned shovel tests were excavated in the project area. The field effort resulted in the identification of a single archaeological locus in the project area. This was designated as the Treat Farm Locus, and it yielded 852 prehistoric and 24 historical artifacts. The prehistoric component of the site consisted of lithic debitage from tool making, expedient stone tools used for resource processing, projectile points used for hunting, and seven soil anomalies with potential cultural association. Two of the recovered projectile points were temporally diagnostic, dating from the Late Archaic Period (ca., 6,000 to 3,90000 BP). A high density of prehistoric artifacts, as well as a range of tool types (scrapers, spokeshaves, and projectile points) suggest long-term or repeated seasonal use of the site, perhaps as a base camp. Recovered historical artifacts (ceramics, nails, and glass vessel fragments) represent late eighteenth to nineteenth-century field scatter from the use of the property as the farmstead of the Treat family. The prehistoric component of the Treat Farm Locus was assessed as potentially eligible for listing on the National Register of Historic Places applying the criteria for evaluation

(36 CFR 60.4 [a-d]). In contrast, the historical component of the locus was determined to be not eligible for listing on the National Register of Historic Places applying the criteria for evaluation (36 CFR 60.4 [a-d]) due to a low density of recovered artifacts and cultural features, as well as a lack of research potential. Phase II National Register of Historic Places testing and evaluation of the prehistoric component of the Treat Farm Locus is recommended prior to construction of the proposed solar facility.

Project Personnel

Heritage personnel who contributed to the Orange Solar project include Mr. David R. George, M.A., R.P.A., (Principal Investigator); Ms. Kelsey Tuller, M.A., (Field Director); Mr. Tevin Jourdain, B.A., (Geographic Information Specialist); Ms. Barbara Sternal, M.A., (Historian); and Ms. Elizabeth Correia, M.A., (Laboratory Manager).

CHAPTER II
NATURAL SETTING

Introduction

This chapter provides a brief overview of the natural setting of the region containing the proposed solar facility in Orange, Connecticut. Previous archaeological research has documented that specific environmental factors can be associated with both prehistoric and historical period site selection. These include general ecological conditions, as well as types of fresh water sources present, degree of slopes, and soils situated within a given project area. The remainder of this chapter provides a brief overview of the ecology, hydrological resources, and soils present within the project area and the larger region in general.

Ecoregions of Connecticut

Throughout the Pleistocene and Holocene Periods, Connecticut has undergone numerous environmental changes. Variations in climate, geology, and physiography have led to the "regionalization" of Connecticut's modern environment. It is clear, for example, that the northwestern portion of the state has different natural characteristics than the coastline. Recognizing this fact, Dowhan and Craig (1976), as part of their study of the distribution of rare and endangered species in Connecticut, subdivided the state into various ecoregions. Dowhan and Craig (1976:27) defined an ecoregion as:

> "an area characterized by a distinctive pattern of landscapes and regional climate as expressed by the vegetation composition and pattern, and the presence or absence of certain indicator species and species groups. Each ecoregion has a similar interrelationship between landforms, local climate, soil profiles, and plant and animal communities. Furthermore, the pattern of development of plant communities (chronosequences and toposequences) and of soil profile is similar in similar physiographic sites. Ecoregions are thus natural divisions of land, climate, and biota."

Dowhan and Craig defined nine major ecoregions for the State of Connecticut. They are based on regional diversity in plant and animal indicator species (Dowhan and Craig 1976). Only one of the ecoregions is germane to the current investigation: Western Coastal ecoregion. A summary of this ecoregion is presented below. It is followed by a discussion of the hydrology and soils found in and adjacent to the project area.

<u>Western Coastal Ecoregion</u>

The Western Coastal ecoregion consists of a hilly terrain that extends from Connecticut's coastline to approximately 5 to 7 miles to the north of Long Island Sound (Dowhan and Craig 1976). It is characterized by "coastlands, including extensive tidal marshes, sand beaches, and estuaries, by relatively level but rolling near-shore lands, and by locally rugged and rocky protrusions of upland extending to the shoreline" (Dowhan and Craig 1976:38). Elevations in the Western Coastal ecoregion range from sea level to 152 m (500 ft) NGVD (Bell 1985). The bedrock of the area is primarily metamorphic in origin, and it composed of schists and gneisses deposited during the Paleozoic (Bell 1985). Soils in the region have developed on top of glacial till in upland locales and on top of stratified deposits of silts and sands in the valleys. Soils along the coast are developed upon coastal and tidal deposits (Dowhan and Craig 1976). This ecoregion is also characterized by numerous ponds, rivers, streams, brooks, and wetland areas.

Hydrology in the Vicinity of the Project Area

The proposed solar facility is situated within a larger region that contains several sources of freshwater, including Stubby Plain Brook, Indian River, Clark Pond, Wepawaug River, Lake Wepawaug, as well as

unnamed streams, ponds, and wetlands associated with the Housatonic River. These freshwater sources may have served as resource extraction areas for Native American and historical populations. Previously completed archaeological investigations in Connecticut have demonstrated that streams, rivers, and wetlands were focal points for prehistoric occupations because they provided access to transportation routes, sources of freshwater, and abundant faunal and floral resources.

Soils Comprising the Project Area

Soil formation is the direct result of the interaction of many variables, including climate, vegetation, parent material, time, and organisms present (Gerrard 1981). Once archaeological deposits are buried within the soil, they are subject to various diagenic and taphonomic processes. Different classes of artifacts may be preferentially protected, or unaffected by these processes, whereas others may deteriorate rapidly. Cyclical wetting and drying, freezing, and thawing, and compression can accelerate chemically and mechanically the decay processes for animal bones, shells, lithics, ceramics, and plant remains. Lithic and ceramic artifacts are largely unaffected by soil pH, whereas animal bones and shells decay more quickly in acidic soils. In contrast, acidic soils enhance the preservation of charred plant remains.

A review of the soils within the proposed impact area is presented below. These areas are characterized by the presence of two major soil types: the Agawam series (29B) and the Canton and Charlton series (60B) (Figure 2). A review of these soils show that they are very deep, well drained sandy loams and are the types of soils that are typically correlated with prehistoric and historical use and occupation. Descriptive profiles for each soil type are presented below; they were gathered from the National Resources Conservation Service.

<u>Agawam Series:</u>

The Agawam series consists of very deep, well drained soils formed in sandy, water deposited materials. They are level to steep soils on outwash plains and high stream terraces. Slope ranges from 0 to 15 percent. A typical profile associated with Agawam soils is as follows: **Ap**--0 to 11 inches; dark grayish brown (10YR 4/2) fine sandy loam; light brownish gray (10YR 6/2) dry; weak medium and coarse subangular blocky structure; very friable; common fine and medium roots; strongly acid; abrupt smooth boundary; **Bw1**--11 to 16 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium and coarse subangular blocky structure; very friable; common fine and medium roots; strongly acid; abrupt smooth boundary; **Bw2**--16 to 26 inches; light olive brown (2.5Y 5/4) fine sandy loam; weak medium subangular blocky structure; very friable; common fine and medium roots; strongly acid; clear smooth boundary; **C1**--26 to 45 inches; olive (5Y 5/3) loamy fine sand; massive; very friable; few fine roots; strongly acid; clear smooth boundary; **2C2**--45 to 55 inches; olive brown (2.5Y 4/4) loamy fine sand; massive; very friable; strongly acid; abrupt smooth boundary; and **2C3**--55 to 65 inches; olive (5Y 5/3) loamy sand; single grain; loose; strongly acid.

<u>Canton and Charlton Series:</u>

The Canton series consists of very deep, well drained soils formed in a loamy mantle underlain by sandy till. They are on nearly level to very steep moraines, hills, and ridges. Slope ranges from 0 to 45 percent. A typical profile associated with Canton soils is as follows: **Oi**--0 to 5 cm; slightly decomposed plant material; **A**--5 to 13 cm; very dark grayish brown (10YR 3/2) fine sandy loam; weak fine granular structure; friable; common fine roots; 5 percent gravel; very strongly acid (pH 4.6); abrupt smooth boundary; **Bw1**--13 to 30 cm; yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; friable; common fine and medium roots; 5 percent gravel; very strongly acid (pH 4.6); clear smooth boundary; **Bw2**--30 to 41 cm; yellowish brown (10YR 5/4) fine sandy loam; weak medium subangular

blocky structure; friable; common fine and medium roots; 5 percent gravel; strongly acid (pH 5.1); clear smooth boundary; **Bw3**--41 to 56 cm; yellowish brown (10YR 5/4) gravelly fine sandy loam; weak medium subangular blocky; friable; common fine and medium roots; 15 percent gravel; strongly acid (pH 5.1); abrupt smooth boundary; and **2C**--56 to 170 cm; grayish brown (2.5Y 5/2) gravelly loamy sand; massive; friable; 25 percent gravel; moderately acid (pH 5.6).

The Charlton series consists of very deep, well drained soils formed in loamy melt-out till. They are nearly level to very steep soils on moraines, hills, and ridges. Slope ranges from 0 to 60 percent. A typical profile associated with Charlton soils is as follows: **Oe**--0 to 4 cm; black (10YR 2/1) moderately decomposed forest plant material; **A**--4 to 10 cm; dark brown (10YR 3/3) fine sandy loam; weak fine granular structure; very friable; many fine roots; 5 percent gravel; very strongly acid; abrupt smooth boundary; **Bw1**--10 to 18 cm; brown (7.5YR 4/4) fine sandy loam; weak coarse granular structure; very friable; many fine and medium roots; 5 percent gravel; very strongly acid; clear wavy boundary; **Bw2**--18 to 48 cm; yellowish brown (10YR 5/6) fine sandy loam; weak medium subangular blocky structure; very friable; common fine and medium roots; 10 percent gravel and cobbles; very strongly acid; clear wavy boundary; **Bw3**--48 to 69 cm; light olive brown (2.5Y 5/4) gravelly fine sandy loam; massive; very friable; few medium roots; 15 percent gravel and cobbles; very strongly acid; abrupt wavy boundary; and **C**--69 to 165 cm; grayish brown (2.5Y 5/2) gravelly fine sandy loam with thin lenses of loamy sand; massive; friable, some lenses firm; few medium roots; 25 percent gravel and cobbles; strongly acid.

Summary

The natural setting of the area containing the proposed solar facility is common throughout the Western Coastal ecoregion. The major rivers within this ecoregion are the Housatonic River and the Quinnipiac River, which have numerous smaller tributaries. Low slopes dominate the region, and the soils are well drained loamy sands. In general, the project region was well suited to Native American occupation throughout the prehistoric era. This portion of Orange was also used since the time of Colonial settlement for homesteads and agricultural land, as evidenced by the presence of numerous historical residences and agricultural fields throughout the region; thus, archaeological deposits dating from the prehistoric and historical era may be expected near or within the proposed impact area.

CHAPTER III
PREHISTORIC SETTING

Introduction

Prior to the late 1970s and early 1980s, few systematic archaeological surveys of large portions of the state of Connecticut had been undertaken. Rather, the prehistory of the region was studied at the site level. Sites chosen for excavation were highly visible and located in the coastal zone, e.g., shell middens, and Connecticut River Valley. As a result, a skewed interpretation of the prehistory of Connecticut was developed. It was suggested that the upland portions of the state, i.e., the northeastern and northwestern hills ecoregions, were little used and rarely occupied by prehistoric Native Americans, while the coastal zone, i.e., the eastern and western coastal and the southeastern and southwestern hills ecoregions, were the focus of settlements and exploitation in the prehistoric era. This interpretation remained unchallenged until the 1970s and 1980s when several town-wide and regional archaeological studies were completed. These investigations led to the creation of several archaeological phases that subsequently were applied to understand the prehistory of Connecticut. The remainder of this chapter provides an overview of the prehistoric setting of the region encompassing the project area.

Paleo-Indian Period (12,000 to 10,000 Before Present [B.P.])

The earliest inhabitants of the area encompassing the State of Connecticut, who have been referred to as Paleo-Indians, arrived in the area by ca., 12,000 B.P. (Gramly and Funk 1990; Snow 1980). Due to the presence of large Pleistocene mammals at that time and the ubiquity of large fluted projectile points in archaeological deposits of this age, Paleo-Indians often have been described as big-game hunters (Ritchie and Funk 1973; Snow 1980); however, as discussed below, it is more likely that they hunted a broad spectrum of animals.

While there have been numerous surface finds of Paleo-Indian projectile points throughout the State of Connecticut, only two sites, the Templeton Site (6-LF-21) in Washington, Connecticut and the Hidden Creek Site (72-163) in Ledyard, Connecticut, have been studied in detail and dated using the radiocarbon method (Jones 1997; Moeller 1980). The Templeton Site (6-LF-21) is in Washington, Connecticut and was occupied between 10,490 and 9,890 years ago (Moeller 1980). In addition to a single large and two small fluted points, the Templeton Site produced a stone tool assemblage consisting of gravers, drills, core fragments, scrapers, and channel flakes, which indicates that the full range of stone tool production and maintenance took place at the site (Moeller 1980). Moreover, the use of both local and non-local raw materials was documented in the recovered tool assemblage, suggesting that not only did the site's occupants spend some time in the area, but they also had access to distant stone sources, the use of which likely occurred during movement from region to region.

The only other Paleo-Indian site studied in detail in Connecticut is the Hidden Creek Site (72-163) (Jones 1997). The Hidden Creek Site is situated on the southeastern margin of the Great Cedar Swamp on the Mashantucket Pequot Reservation in Ledyard, Connecticut. While excavation of the Hidden Creek Site produced evidence of Terminal Archaic and Woodland Period components (see below) in the upper soil horizons, the lower levels of the site yielded artifacts dating from the Paleo-Indian era. Recovered Paleo-Indian artifacts included broken bifaces, side-scrapers, a fluted preform, gravers, and end-scrapers. Based on the types and number of tools present, Jones (1997:77) has hypothesized that the Hidden Creek Site represented a short-term occupation, and that separate stone tool reduction and rejuvenation areas were present.

While archaeological evidence for Paleo-Indian occupation is scarce in Connecticut, it, combined with data from the West Athens Road and King's Road Site in the Hudson drainage and the Davis and Potts Sites in northern New York, supports the hypothesis that there was human occupation of the area not long after ca. 12,000 B.P. (Snow 1980). Further, site types currently known suggest that the Paleo-Indian settlement pattern was characterized by a high degree of mobility, with groups moving from region to region in search of seasonally abundant food resources, as well as for the procurement of high-quality raw materials from which to fashion stone tools.

Archaic Period (10,000 to 2,700 B.P.)

The Archaic Period, which succeeded the Paleo-Indian Period, began by ca., 10,000 B.P. (Ritchie and Funk 1973; Snow 1980), and it has been divided into three subperiods: Early Archaic (10,000 to 8,000 B.P.), Middle Archaic (8,000 to 6,000 B.P.), and Late Archaic (6,000 to 3,400 B.P.). These periods were devised to describe all non-farming, non-ceramic producing populations in the area. Regional archeologists recently have recognized a final "transitional" Archaic Period, the Terminal Archaic Period (3,400-2,700 B.P.), which was meant to describe those groups that existed just prior to the onset of the Woodland Period and the widespread adoption of ceramics into the toolkit (Snow 1980; McBride 1984; Pfeiffer 1984, 1990; Witthoft 1949, 1953).

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

To date, few Early Archaic sites have been identified in southern New England. As a result, researchers such as Fitting (1968) and Ritchie (1969), have suggested a lack of these sites likely is tied to cultural discontinuity between the Early Archaic and preceding Paleo-Indian Period, as well as a population decrease from earlier times. However, with continued identification of Early Archaic sites in the region, and the recognition of the problems of preservation, it is difficult to maintain the discontinuity hypothesis (Curran and Dincauze 1977; Snow 1980).

Like their Paleo-Indian predecessors, Early Archaic sites tend to be small and produce few artifacts, most of which are not temporally diagnostic. While Early Archaic sites in other portions the United States are represented by projectile points of the Kirk series (Ritchie and Funk 1973) and by Kanawha types (Coe 1964), sites of this age in southern New England are identified recognized on the basis of a series of ill-defined bifurcate-based projectile points. These projectile points are identified by the presence of their characteristic bifurcated base, and they generally are made from high quality raw materials. Moreover, finds of these projectile points have rarely been in stratified contexts. Rather, they occur commonly either as surface expressions or intermixed with artifacts representative of later periods. Early Archaic occupations, such as the Dill Farm Site and Sites 6LF64 and 6LF70 in Litchfield County, an area represented by camps that were relocated periodically to take advantage of seasonally available resources (McBride 1984; Pfeiffer 1986). In this sense, a foraging type of settlement pattern was employed during the Early Archaic Period.

Middle Archaic Period (8,000 to 6,000 B.P.)

By the onset of the Middle Archaic Period, essentially modern deciduous forests had developed in the region (Davis 1969). It is at this time that increased numbers and types of sites are noted in Connecticut (McBride 1984). The most well-known Middle Archaic site in New England is the Neville Site, which is in Manchester, New Hampshire and studied by Dincauze (1976). Careful analysis of the Neville Site indicated that the Middle Archaic occupation dated from between ca., 7,700 and 6,000 years ago. In fact, Dincauze (1976) obtained several radiocarbon dates from the Middle Archaic component of the Neville Site. The dates, associated with the then-newly named Neville type projectile point, ranged from 7,740±280 and 7,015±160 B.P. (Dincauze 1976).

In addition to Neville points, Dincauze (1976) described two other projectile points styles that are attributed to the Middle Archaic Period: Stark and Merrimac projectile points. While no absolute dates were recovered from deposits that yielded Stark points, the Merrimac type dated from 5,910±180 B.P. Dincauze argued that both the Neville and later Merrimac and Stark occupations were established to take advantage of the excellent fishing that the falls situated adjacent to the site area would have afforded Native American groups. Thus, based on the available archaeological evidence, the Middle Archaic Period is characterized by continued increases in diversification of tool types and resources exploited, as well as by sophisticated changes in the settlement pattern to include different site types, including both base camps and task-specific sites (McBride 1984:96)

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

The Late Archaic Period in southern New England is divided into two major cultural traditions that appear to have coexisted. They include the Laurentian and Narrow-Stemmed Traditions (Funk 1976; McBride 1984; Ritchie 1969a and b). Artifacts assigned to the Laurentian Tradition include ground stone axes, adzes, gouges, ulus (semi-lunar knives), pestles, atlatl weights, and scrapers. The diagnostic projectile point forms of this time period in southern New England include the Brewerton Eared-Notched, Brewerton Eared and Brewerton Side-Notched varieties (McBride 1984; Ritchie 1969a; Thompson 1969). In general, the stone tool assemblage of the Laurentian Tradition is characterized by flint, felsite, rhyolite and quartzite, while quartz was largely avoided for stone tool production.

In terms of settlement and subsistence patterns, archaeological evidence in southern New England suggests that Laurentian Tradition populations consisted of groups of mobile hunter-gatherers. While a few large Laurentian Tradition occupations have been studied, sites of this age generally encompass less than 500 m^2 (5,383 ft^2). These base camps reflect frequent movements by small groups of people in search of seasonally abundant resources. The overall settlement pattern of the Laurentian Tradition was dispersed in nature, with base camps located in a wide range of microenvironments, including riverine as well as upland zones (McBride 1978, 1984:252). Finally, subsistence strategies of Laurentian Tradition focused on hunting and gathering of wild plants and animals from multiple ecozones.

The second Late Archaic tradition, known as the Narrow-Stemmed Tradition, is unlike the Laurentian Tradition, and it likely represents a different cultural adaptation. The Narrow-Stemmed tradition is recognized by the presence of quartz and quartzite narrow stemmed projectile points, triangular quartz Squibnocket projectile points, and a bipolar lithic reduction strategy (McBride 1984). Other tools found in Narrow-Stemmed Tradition artifact assemblages include choppers, adzes, pestles, antler and bone projectile points, harpoons, awls, and notched atlatl weights. Many of these tools, notably the projectile points and pestles, indicate a subsistence pattern dominated by hunting and fishing, as well the collection of a wide range of plant foods (McBride 1984; Snow 1980:228).

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

The Terminal Archaic, which lasted from ca., 3,700 to 2,700 BP, is perhaps the most interesting, yet confusing of the Archaic Periods in southern New England prehistory. Originally termed the "Transitional Archaic" by Witthoft (1953) and recognized by the introduction of technological innovations, e.g., broadspear projectile points and soapstone bowls, the Terminal Archaic has long posed problems for regional archeologists. While the Narrow-Stemmed Tradition persisted through the Terminal Archaic and into the Early Woodland Period, the Terminal Archaic is coeval with what appears to be a different technological adaptation, the Susquehanna Tradition (McBride 1984; Ritchie 1969b). The Susquehanna Tradition is recognized in southern New England by the presence of a new stone tool industry that was based on the use of high-quality raw materials for stone tool production and a settlement pattern

different from the "coeval" Narrow-Stemmed Tradition.

The Susquehanna Tradition is based on the classification of several Broadspear projectile point types and associated artifacts. There are several local sequences within the tradition, and they are based on projectile point type chronology. Temporally diagnostic projectile points of these sequences include the Snook Kill, Susquehanna Broadspear, Mansion Inn, and Orient Fishtail types (Lavin 1984; McBride 1984; Pfeiffer 1984). The initial portion of the Terminal Archaic Period (ca., 3,700-3,200 BP) is characterized by the presence of Snook Kill and Susquehanna Broadspear projectile points, while the latter Terminal Archaic (3,200-2,700 BP) is distinguished by the use Orient Fishtail projectile points (McBride 1984:119; Ritchie 1971).

In addition, it was during the late Terminal Archaic that interior cord marked, grit tempered, thick walled ceramics with conoidal (pointed) bases made their initial appearance in the Native American toolkit. These are the first ceramics in the region, and they are named Vinette I (Ritchie 1969a; Snow 1980:242); this type of ceramic vessel appears with much more frequency during the ensuing Early Woodland Period. In addition, the adoption and widespread use of soapstone bowls, as well as the implementation subterranean storage, suggests that Terminal Archaic groups were characterized by reduced mobility and longer-term use of established occupation sites (Snow 1980:250).

Finally, while settlement patterns appeared to have changed, Terminal Archaic subsistence patterns were analogous to earlier patterns. The subsistence pattern still was diffuse in nature, and it was scheduled carefully. Typical food remains recovered from sites of this period consist of fragments of white-tailed deer, beaver, turtle, fish and various small mammals. Botanical remains recovered from the site area consisted of *Chenopodium* sp., hickory, butternut and walnut (Pagoulatos 1988:81). Such diversity in food remains suggests at least minimal use of a wide range of microenvironments for subsistence purposes.

Woodland Period (2,700 to 350 B.P.)

Traditionally, the advent of the Woodland Period in southern New England has been associated with the introduction of pottery; however, as mentioned above, early dates associated with pottery now suggest the presence of Vinette I ceramics appeared toward the end of the preceding Terminal Archaic Period (Ritchie 1969a; McBride 1984). Like the Archaic Period, the Woodland Period has been divided into three subperiods: Early, Middle, and Late Woodland. The various subperiods are discussed below.

<u>Early Woodland Period (ca., 2,700 to 2,000 B.P.)</u>

The Early Woodland Period of the northeastern United States dates from ca., 2,700 to 2,000 B.P., and it has thought to have been characterized by the advent of farming, the initial use of ceramic vessels, and increasingly complex burial ceremonialism (Griffin 1967; Ritchie 1969a and 1969b; Snow 1980). In the Northeast, the earliest ceramics of the Early Woodland Period are thick walled, cord marked on both the interior and exterior, and possess grit temper.

Careful archaeological investigations of Early Woodland sites in southern New England have resulted in the recovery of narrow stemmed projectile points in association with ceramic sherds and subsistence remains, including specimens of White-tailed deer, soft and hard-shell clams, and oyster shells (Lavin and Salwen: 1983; McBride 1984:296-297; Pope 1952). McBride (1984) has argued that the combination of the subsistence remains and the recognition of multiple superimposed cultural features at various sites indicates that Early Woodland Period settlement patterns were characterized by multiple re-use of the same sites on a seasonal basis by small co-residential groups.

Middle Woodland Period (2,000 to 1,200 B.P.)

The Middle Woodland Period is marked by an increase in the number of ceramic types and forms utilized (Lizee 1994a), as well as an increase in the amount of exotic lithic raw material used in stone tool manufacture (McBride 1984). The latter suggests that regional exchange networks were established, and that they were used to supply local populations with necessary raw materials (McBride 1984; Snow 1980). The Middle Woodland Period is represented archaeologically by narrow stemmed and Jack's Reef projectile points; increased amounts of exotic raw materials in recovered lithic assemblages, including chert, argillite, jasper, and hornfels; and conoidal ceramic vessels decorated with dentate stamping. Ceramic types that are indicative of the Middle Woodland Period includes Linear Dentate, Rocker Dentate, Windsor Cord Marked, Windsor Brushed, Windsor Plain, and Hollister Stamped (Lizee 1994a:200).

In terms of settlement patterns, the Middle Woodland Period is characterized by the occupation of village sites by large co-residential groups that utilized native plant and animal species for food and raw materials in tool making (George 1997). These sites were the principal place of occupation, and they were positioned close to major river valleys, tidal marshes, estuaries, and the coastline, all of which would have supplied an abundance of plant and animal resources (McBride 1984:309). In addition to villages, numerous temporary and task-specific sites were utilized in the surrounding upland areas, as well as in closer ecozones such as wetlands, estuaries, and floodplains. The use of temporary and task-specific sites to support large village populations indicates that the Middle Woodland Period was characterized by a resource acquisition strategy that can best be termed as logistical collection (McBride 1984:310).

Late Woodland Period (ca., 1,200 to 350 B.P.)

The Late Woodland Period in southern New England dates from ca., 1,200 to 350 B.P., and it is characterized by the earliest evidence for the use of corn in the lower Connecticut River Valley (Bendremer 1993; Bendremer and Dewar 1993; Bendremer et al. 1991; George 1997; McBride 1984); an increase in the frequency of exchange of non-local lithics (Feder 1984; George and Tryon 1996; McBride 1984; Lavin 1984); increased variability in ceramic form, function, surface treatment, and decoration (Lavin 1980, 1986, 1987; Lizee 1994a, 1994b); and a continuation of a trend towards larger, more permanent settlements in riverine, estuarine, and coastal ecozones (Dincauze 1974; McBride 1984; Snow 1980).

Stone tool assemblages associated with Late Woodland occupations, especially village-sized sites, are functionally variable and they reflect plant and animal resource processing and consumption on a large scale. Finished stone tools recovered from Late Woodland sites include Levanna and Madison projectile points; drills; side-, end-, and thumbnail scrapers; mortars and pestles; nutting stones; netsinkers; and celts, adzes, axes, and digging tools. These tools were used in activities ranging from hide preparation to plant processing to the manufacture of canoes, bowls, and utensils, as well as other settlement and subsistence-related items (McBride 1984; Snow 1980). Finally, ceramic assemblages recovered from Late Woodland sites are as variable as the lithic assemblages. Ceramic types identified include Windsor Fabric Impressed, Windsor Brushed, Windsor Cord Marked, Windsor Plain, Clearview Stamped, Sebonac Stamped, Selden Island, Hollister Plain, Hollister Stamped, and Shantok Cove Incised (Lavin 1980, 1988a, 1988b; Lizee 1994a; Pope 1953; Rouse 1947; Salwen and Ottesen 1972; Smith 1947). These types are more diverse stylistically than their predecessors, with incision, shell stamping, punctation, single point, linear dentate, rocker dentate stamping, and stamp and drag impressions common (Lizee 1994a:216).

Summary of Connecticut Prehistory

The prehistory of Connecticut spans from ca., 12,000 to 350 B.P., and it is characterized by numerous changes in tool types, subsistence patterns, and land use strategies. Much of the prehistoric era is characterized by local Native American groups who practiced a subsistence pattern based on a mixed

economy of hunting and gathering wild plant and animal resources. It is not until the Late Woodland Period that incontrovertible evidence for the use of domesticated species is available. Further, settlement patterns throughout the prehistoric era shifted from seasonal occupations of small co-residential groups to large aggregations of people in riverine, estuarine, and coastal ecozones. In terms of the region containing the proposed project area, a variety of prehistoric site types may be expected. These range from seasonal camps utilized by Archaic populations to temporary and task-specific sites of the Woodland era.

CHAPTER IV
HISTORICAL OVERVIEW

Introduction

As discussed in Chapter I, the proposed solar facility will be located in the south-central region of the town of Orange, Connecticut, close to that town's southwestern border with the city of Milford. Orange was formed in 1823 from the northern part of the city of Milford and the western part of the city of New Haven. In 1921, the current city of West Haven separated from Orange to become its own municipality. The proposed solar facility location will be situated between Old Tavern Road and Timberlane Drive in an area that was originally part of Milford until the early nineteenth century. For that reason, this historical overview will center on the history of Milford rather than that of New Haven.

Native American History

The area that is now southwestern Connecticut was known as "Wepawaug" and was once the territory of the Paugussett (or Paugasuck) tribe. During the contact period the Paugussetts, had four large villages in the area: one on the Wepawaug River where the Paugusett sachem Ansantaway (or Ansantawae) lived at times, one at Poconoc or Milford point on Long Island Sound, one on the Housatonic River north of the location of the modern-day Washington Bridge, and one at Turkey Hill in what is now western Orange. There were also two smaller villages near the Oyster River in the southwestern part of town at Oronoque, also on the Housatonic River. Native Americans of the region depended on hunting and fishing for sustenance, but also planted some crops along the Housatonic River. Ansantaway and his tribe claimed the land between the Housatonic and Oyster Rivers from the southern coast reaching all the way north to present-day Beacon Falls and Bethany. Though Native Americans did not hold the same beliefs concerning land ownership that the English colonists did, Ansantaway and other tribe members signed a deed in 1639 ceding land in what is now central Milford to the settlers (Rockey 1892). An additional piece of land on the north side was sold in 1655, and the land between the East River and New Haven was purchased by colonists in 1659. A section known as "Indian Neck," between the East River and Long Island Sound, also was purchased by the colonists in 1660. With this transaction, the Native Americans reserved a 20-acre planting ground, but in 1661 Ansantaway and his two sons sold this as well. In exchange for the deed, the colonists promised to protect Ansantaway and his family, and the Native Americans stated that this was the last of the land they owned in Milford. These last three deeds were all signed by "Asantway" (Ansantaway), Toutonome, and Akenash, who were understood to be the sachem and his sons. As was common during the colonial period, this was not enough to settle claims to the area, and in 1682, 10 heirs of "Asantawae" (Ansantaway; who had died in approximately 1676), gave the town a quit-claim deed for the Milford lands to the governor of the colony for a small consideration. After this, two more sales of land to the north were made: one in 1685, by Conquepotama and Ahuntaway, who were leaders of the Paugussett community at what is now Derby, and two more in 1700 and 1702, by these two and seven others. Most of these later sales were of strips of land that were quite narrow in the east-west direction, so that by 1702 part of Milford's territory extended a long distance northward, to the southern boundary of what is now Naugatuck (Lambert 1838).

During the contact period, conflicts erupted between the Native Americans and the settlers. In 1645, the Native Americans of the area set the forests afire as retaliation against the colonist's expansion into their land. The colonists stopped the conflagration short of their palisaded village, however. Further resistance was recorded in 1653 and 1700; however, none of the colonists were killed at Milford. The continuing presence of the area's indigenous peoples is evidenced by an event in 1671. The Native Americans had a

fort on the Housatonic River, which several young men of Milford burned to the ground. The men were fined £10 by the New Haven colony court and the Native Americans rebuilt the fort (Rockey 1892).

In 1680, in accordance with an order by the colony legislature, a committee laid out 100 acres of land for the Milford Native Americans at the intersection of the Housatonic River and Two Mile Brook (then the boundary between Derby and Milford) (Trumbull 1859). Over time, many of the Milford-area Native Americans moved to join the more westerly Potatucks and other groups further away from the colonial encroachments. The Potatucks of Newtown and the Schaghticoke from Kent visited the Milford shoreline regularly for fishing, until after the Revolutionary War (Lambert 1838). According to Scranton (1816), in 1710 there were 12 families resident at Turkey Hill, and a group of similar size by the Derby Ferry; a slightly smaller group left "Oranoke" (Oronoque) after they sold to the English in 1680. By 1774, of the 71 Native Americans reported living in New Haven County, four were in Milford and 20 in Derby. The last Native American to be buried at the cemetery at Turkey Hill, according to Scranton, was Betty Taukus, aged 63, who died in 1794. As of ca., 1816, Scranton reported two families still residing on the land (Scranton 1816). An 1818 legislative committee reported that although the reservation had been much encroached upon by colonists over the years, it was valued at $2,500.00 and there were 15 individuals residing there, plus five others who were associated with the group but not resident there at the time of the inquiry (Arnold 2007). By the middle of the nineteenth century, according to De Forest, only 10 acres of land were left of the reservation, and "a few" people were still residing there (De Forest 1852: 356). Exactly when the last holdouts departed is not known.

Colonial and Revolutionary Era History of Milford

Milford was founded in 1639 by a party of English-born people who had briefly settled in New Haven. Led by Reverend Peter Prudden, the group of about 50 families moved to their new land at Wepawaug (or Wepawage), which was then outside the formal jurisdiction of any authorized English colony. There they formed their own government in addition to a church. The first settlement was located on the banks of the Wepawaug River and the West River (in about the same area as the current population center of Milford). They also built a log palisade around the entire settlement, enclosing approximately a square mile, as protection against the Native Americans, which was a common precaution in 1645 and 1646 (Labaree 1933; Lambert 1838). Although the town was primarily agricultural, like most other colonial settlements, the shipping of goods by water later became part of the town's economy and in time several merchant ships traveled to Boston, New York, or the West Indies for commercial purposes (Lambert 1838).

The small, independent Milford colony became part of the larger New Haven Colony in 1643. This followed the formation of the United Colonies, a confederation of the colonies of Massachusetts Bay, Plymouth, Connecticut, and New Haven, and several other independent colony-towns near New Haven. It was the decision of the United Colonies that Milford should give up its independence, which it agreed to do after a short period of negotiation. In 1664, the new Royal Charter joined the New Haven Colony with the Connecticut Colony, and Milford perforce went with it. Throughout this time, the town of Milford governed its own affairs, especially the granting of land. In addition to the initial grants of home lots and agricultural land to the original settlers, further divisions of land were made both in the area of the first purchase and in the new land purchases that were made between 1655 and 1702 (Labaree 1933). In 1685, the town received a patent or formal recognition of its existence and boundaries from the colony legislature, but because the town's proprietors made additional purchases afterward, they secured a revised patent in 1713. This patent gave the southerly point of Milford's eastern boundary as the center of the mouth of the Oyster River (Lambert 1838). By 1700 most of the town's lands had been distributed (Labaree 1933).

A 1659 listing recorded 79 heads of families in the town of Milford; in 1696 there were 145 heads of families, and in 1702 there were 180 heads of families. The total population in 1756 included 1,633 white residents; in 1762, the town reported 1,661 white residents and 134 black residents (Scranton 1816; Connecticut Colony 1762). The expansiveness of the town made it inevitable that new towns would be formed from it. The first to move in this direction was Woodbridge, which became the new ecclesiastical society of Amity in 1738. The town finally sought and gained incorporation in 1784. The establishment of the town of Orange began in the 1720s, when a son of wealthy merchant Richard Bryan moved to land his father had received in a 1687 land distribution, which consisted of 208 acres north of Milford village. A small village developed nearby, and in 1750 the town allowed a school to be kept at "Bryan's Farms" during the winter (Labaree 1933). Scranton reported that as of 1774, there were 1,965 whites and 162 black and Native American residents in Milford (1816:281). During the Revolutionary War, a battery was constructed in 1776 on West Point, the west side of the harbor, and named Fort Trumbull. George Washington passed through the town several times, most notably in 1775 on his way to Cambridge. Two attempted invasions by the British, one in 1777 and one in 1779, were repelled by the forces at Milford (Crofut 1937).

Early National Period History of Milford and Orange (1790-1850)

As of the first federal census in 1790, Milford was still a small town with a total population of just over 2,000 residents. Interestingly, the earlier separation of Woodbridge in 1784 (with a starting population of 2,124 people in 1790) seemed to have had little overall effect on Milford's population, suggesting that the town was undergoing relatively rapid growth (Secretary of the State Denise W. Merrill 2021a). At this time, most of the inhabitants of Milford were farmers who grew a variety of grain and vegetable crops, as well as hay. On the coast, locals harvested large numbers of oysters and clams, as well as other kinds of shellfish. They also fished on the river and in the ocean, especially for shad. In addition, Milford had a variety of local industries: a marble works on the Indian River, six grist mills, seven sawmills, four fulling mills, an oil mill, a pottery, two carding machines and one woolen manufacturer. Other items produced in town included leather and leather goods, hats, wagons, furniture, and clothes. The town had 11 grocery and dry goods stores, an apothecary, 10 blacksmiths, three tanneries, two shipyards, a hatter, three each of physicians, attorneys, and clergymen, and four justices of the peace. There were also a large number of carriage and wagon makers, as well as a number of shoe makers, house carpenters and joiners, and ship carpenters. In terms of cultural life, there were three meeting houses, an Episcopal church, three "Social Libraries" and three "Free schools or academies" (Scranton 1816).

In 1802, the New Haven and Milford Turnpike Company was incorporated by the state, in order to improve or build a high-quality road for the encouragement of commerce, a policy of most state governments of the period. The road extended from the center of Milford on a northeast diagonal to New Haven and continued in existence until at least 1847 (Wood 1919). When it came to maritime commerce, during the first part of the nineteenth century, the small shipping trade that had formerly flourished in Milford was dwindling, and the last firm involved failed in 1821, leaving only a few small boats going regularly to New York. This decline is probably due, in large part, to the silting-up of the harbor. By the 1820s, the main channel was only five feet deep at high tide (Lambert 1838). It was around this time that the eastern section of Milford became incorporated as the town of Orange. Orange's separation from Milford had begun with the permission to hold winter schools in 1750. In 1804, the area's residents took the next step, becoming the ecclesiastical society of North Milford through a petition to the state legislature with 50 signatories. Despite the acquisition of society status, it took the Congregational church until 1810 to raise a meeting house. As of 1816, the society had three school districts with 160 students (Labaree 1933, Scranton 1816). Then in 1822, North Milford was joined with the nearby parish of West Haven (then part of New Haven) to become Orange (Labaree 1933). By 1830, Orange had a total population of 1,341

residents. In 1837, a historian writing about Orange was careful to discuss the West Haven and North Milford parishes separately; at the time, West Haven had both a Congregational and an Episcopalian church on a green, while North Milford had only a Congregational church. Most of Orange's inhabitants were farmers, according to this account, but the author also passed on reports of a silver mine, a copper mine, the possibility of coal, and the presence of asbestos in the town (Barber 1837). The copper mining efforts revealed that the metal was not present in quantities sufficient to make the effort worthwhile (Hill 1918).

Industrialization, Urbanization, and Modern History of Orange (1850-Present)

In 1850, at the start of Connecticut's most significant period of industrialization and urbanization, Orange was a small town of less than 1,500 people. At that time, Orange had only three manufactories producing approximately $500.00 in goods annually: a woolen fabric mill employing 10 men and six women, a woolen yarn mill employing three men and one woman, and a shoe and boot firm employing four men and two women (United States Census 1850). As industry grew and developed, so did the town and much of the West Haven section was incorporated as a borough in 1873. As of 1892, Orange had 1,016 dwelling houses, 20 manufactories, 1,469 neat cattle, and 11 stores, mostly located in the West Haven section (Rockey 1892). A large button factory had opened in a section called Tyler City in the North Milford region in 1887, but it was closed by 1895 (Hill 1918). Throughout this time, the population steadily grew and by the end of the nineteenth century, Orange had approximately 4,537 inhabitants (Secretary of the State Denise W. Merrill 2021b).

At the beginning of the twentieth century, Orange was experiencing limited growth. The woolen mills on the Wepawaug River in western Orange had been abandoned. A few industries did exist, including a seed-growing farm operated by S. D. Woodruff & Sons in central North Milford, and a model dairy farm that Wilson H. Lee opened south of the current project area just after the turn of the twentieth century. All of the town's other industries were in the West Haven section. Additionally, the majority of Orange's inhabitants, as well as the center of government, were in West Haven. The greater part of the North Milford section consisted of rural country suitable for farming (Hill 1918). This meant that when West Haven separated in 1921, it caused a dramatic shift in the town. In 1920, the town of Orange had had 16,614 residents, but in 1930, that number dropped to 1,530, while at that time West Haven had 25,808 residents (Secretary of the State Denise W. Merrill 2021c). Before the separation, Orange's principal industries consisted of agriculture and the manufacture of various items, including buckles, church organs, hacksaws, and fireworks (Connecticut 1920). In 1930, Orange's economy was based almost entirely on agriculture, as the manufacturing enterprises that had previously been within its town limits were now located in West Haven (Connecticut 1930). The population of Orange rose slowly during the twentieth century until mid-century when it jumped from 3,032 residents in 1950 to 13,524 in 1970 (Secretary of the State Denise W. Merrill 2021c, 2021d). This increase reflects the suburbanization trend of the latter part of the twentieth century, as people moved outward from cities like New Haven and West Haven. In the case of Orange, this process leveled off after 1970, at which point the economy had shifted from being based in agriculture to other industries, namely printing, woodworking, and home building, as well as the manufacture of items such as burial vaults, truck bodies, cedar furniture, and industrial sheet metal (Connecticut 1970).

By the beginning of the twenty-first century, Orange was a residential community, with approximately 80 percent of land zoned for residential uses (Orange 2015). As of 2020, the town had 13,772 inhabitants and the biggest employment sectors were retail trade as well as hotels and restaurants (AdvanceCT and CTData Collaborative 2020). While manufacturing accounted for only approximately nine percent of jobs, various items were still produced in Orange, including industrial sheet metal, machine screws, and candy

(AdvanceCT and CTData Collaborative 2020; Connecticut 2020). Orange is the location of the corporate headquarters in the United States of the PEZ Candy company. Additionally, PEZ has been producing candy in the town of Orange since the 1970s. The company also opened a visitor center in town in 2011 (PEZ Candy 2021). Other principal industries in Orange include telecommunications, research and development, woodworking, and home building (Connecticut 2020). Limited growth and development is planned for Orange as the town intends to preserve its farmland, and accordingly its rural heritage. In addition, the population is projected to increase slowly, to approximately 15,300 residents by 2040 (Orange 2015). Today Orange can be considered primarily a residential suburb that retains its rural character.

History of the Project Area

According to an 1854 county map, the portion of Orange where the project parcel is located was surrounded by the farmsteads of the Smith, Platt, Clark, Bradley, and Treat families, among others (Figure 3). The project parcel was owned by a man named John Treat at this time. John inherited this land from Treat ancestors, who were among the first settlers of Orange. Robert Treat (1624-1710) was the first Treat ancestor to arrive in Orange and a governor of the Connecticut Colony from 1683 to 1698. Besides residences, the 1854 map also shows two schoolhouses in the general vicinity of the project area, one to the northwest and one to the east. The 1868 Beers map showed that the project area parcel was still owned by John (Jonathon) Treat (1800-1887) and was being operated as J. Treat & Son (Figure 4). At this time John was 68 years old and lived with his son Stiles J., age 33, and other family members (U. S. Census 1860). John Treat's agricultural land would have encompassed the present project area. After John's passing, his son Stiles J. Treat (1837-1907) worked the family farm. Stiles eventually passed the farm at 361 Old Tavern Road onto his son-in-law Arthur D. Clark (1863-1951) who lived with Stiles throughout his old age. Across from 361 Old Tavern Road was Alfred Treat's property known as Hayland Farm, located at 398 Old Tavern Road.

The aerial photographs for this part of Orange, which span from 1934 to 2019, document the area's transition from agricultural land to residential housing. The 1934 aerial photograph shows the Treat farmhouse and outbuildings within the southern portion of the larger parcel containing the project aresa (Figure 5; Fairchild 1934). The majority of the project parcel to the north of the farmhouse contained agricultural fields, with some forested area to the north and west. This general region of Orange remains rural with farms all along the nearby roads in 1934. Along Old Tavern Road, the Treats (as well as Arthur D. Clark) operated their farms as dairy businesses in the twentieth century, delivering milk to Hotel Taft in New Haven. They also raised polo ponies for Yale University (Hitchcock 2012). Wilson H. Lee purchased Hayland Farm in the 1920s and use it for scientific dairy production. Hayland Farm returned to Treat family ownership in 1943 and the Treats continued to operate it as a dairy business. As of the mid-twentieth century, the Treats owned 200 acres along Old Tavern Road, which included Hayland Farm along with the farm where the project parcel is located. At this time, Clifford E. Treat (1866-1948) owned 361 Old Tavern Road, the project parcel. In 1924, he gave the property to his son Charles F. Treat (1895-1989). After Charles' death, 361 Old Tavern Road passed to his daughter Addie Butler Treat (1897-1998). When Addie passed away, Treat descendants Jeff Wilson, Heather Bucknam, and Shelby Wilson purchased 361 Old Tavern Road and they continue to operate it as a commercial farm today.

Some of the forested area of the larger project parcel was converted to agricultural fields by the time of the 1951 aerial image, particularly in the northwest corner (Figure 6; USDA 1951). To the northwest of the project parcel, a powerline corridor had been constructed by 1951. The remainder of the general area was largely rural and consisted of agricultural fields, most of which are still present. New residences stood to the east of the project parcel, showing the signs of early suburban development. The full extent of

suburban construction is visible by the 2019 aerial (Figure 7). The only open fields still visible are within the project parcel and exist as part of the Treat farm. In the twenty-first century, the farm focused on seasonal produce and Christmas trees, and there was a corn maze within the 361 Old Tavern Road portion. The Treat farmhouse and outbuildings, built beginning in 1816, still stand in the southern portion of the parcel and outside of the proposed solar facility area. Buildings remaining on the farm today include the colonial farmhouse facing Old Tavern Road, an English barn to its north, a garage which has been attached to the east end of the barn, modern sheds, and a greenhouse to the north and west of the barn, and a secondary dwelling to the west of the barn facing Treat Lane (Hitchcock 2012). The greenhouse was erected on the foundation of a barn that burned down in the 1950s (Levine and Patnaik 2010). The English barn on the property is listed on the State Register of Historic Places due to its association of ownership and use by a single family beginning in the colonial period. This continued use has allowed the barn's architecture and surrounding area to remain intact.

Once part of a largely agricultural community, the Treat barn is now one of 20 historic barns still standing in Orange as of 2021. Residential subdivisions have filled in the area otherwise and only small forested patches between the houses sitting within one-acre lots remain. Peck Place, a private school which caters to an increasing number of families with children, is visible to the north of the project parcel. Outside of the view shown in Figure 7, nearby landmarks include the Grassy Hill Country Club to the northwest, the historical Hayland Farm to the south that was once owned by the Treat family, and Boston Post Road to the far southeast, which has become a busy commercial strip.

Conclusions

The documentary record indicates that the proposed facility will be constructed within agricultural land that has been farmed by the Treat family since the first settlement of Orange. The family's colonial house and associated outbuildings still stand within the southern portion of the project parcel along Old Tavern Road, but outside of the impact areas associated with the proposed facility. The English barn is listed on the State Register of Historic Places. Nevertheless, unidentified archaeological resources from the long period of use by the Treat family of the project parcel may be expected within the impact area.

CHAPTER V
PREVIOUS INVESTIGATIONS

Introduction

This chapter presents an overview of previous archaeological research completed within the vicinity of the proposed solar facility in Orange, Connecticut. This discussion provides the comparative data necessary for assessing the results of the current Phase IB survey, and it ensures that the potential impacts to all previously recorded cultural resources located within and adjacent to the project impact areas are taken into consideration. Specifically, this chapter reviews previously identified archaeological sites and National/State Register of Historic Places properties situated in the project region (Figures 8 and 9). The discussions presented below are based on information currently on file at the Connecticut State Historic Preservation Office (CT-SHPO) in Hartford, Connecticut. In addition, the electronic site files maintained by Heritage were examined during this investigation. Both the quantity and quality of the information contained in the original cultural resources survey reports and State of Connecticut archaeological site forms are reflected below.

Previously Recorded Archaeological Sites and National/State Register of Historic Places Properties/Districts in the Vicinity of the Project Area

A review of data currently on file at the CT-SHPO, as well as the electronic site files maintained by Heritage resulted in the notation of one previously identified archaeological site (107-19) and one National Register of Historic Places district (Orange Center Historic District) situated within 1.6 km (1 mi) of the impact area associated with the proposed solar facility (Figures 8 and 9). In addition, the English barn associated with Treat Farm discussed in Chapter IV and located within the southern portion of the project parcel is listed on the State Register of Historic Places. These resources are discussed in turn below.

Site 107-19

Site 107-19 was recorded as the Old Tavern Road at State Highway 152 Site by C. Scott Speal of the Connecticut Department of Transportation Office of Environmental Planning on March 10, 2014. The site is located on the southwestern corner of Orange Center Road and Old Tavern Road in Orange, Connecticut, which is to the west of the proposed solar facility (Figure 8). Speal surface collected decorated whiteware, structural glass, brick, and trap stone from the site area on December 5, 2013. All artifacts were identified within a 4.6 x 4.6 m (15 x 15 ft) area. A foundation was also noted in this area, and it was located approximately 6.1 m (20 ft) to the southwest of the road intersection. According to Speal, the former building locations showed signs of impact from driveway construction and landscaping activities associated with a residence at 192 Old Tavern Road. Speal determined that the site was likely a rural homestead dating from the late nineteenth to early twentieth century. Site 107-19 was not assessed applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). Due to distance from the project parcel, Site 107-19 will not be impacted by the proposed solar facility.

Orange Center Historic District

The Orange Center Historic District National Register of Historic Places nomination form was completed by Gregory E. Andrews and David F. Ransom on June 1, 1989. This district contains 58 structures, buildings, and sites, 42 of which are considered contributing elements, along Meetinghouse Lane, Orange Center Road, Schoolhouse Lane, and Tyler City Road in Orange, Connecticut; this district is located to the north of the current project area (Figure 9). Buildings included within the district consist of Federal, Greek Revival, Queen Anne, and Colonial Revival residences. The oldest of these are two houses at 586 and 603 Orange Center

Road; both were built ca., 1800 and contain Federal style details. The Congregational Church in the district also displays Federal style architecture and was designed by David Hoadley. In contrast, there are many nineteenth century buildings without high style details, which is typical to a rural setting. The Colonial Revival style is represented in the historic district by the Mary L. Tracy School, the Orange Volunteer Fire House, the Orange Town Hall, and the Orange Public Library. Some buildings in the district also have associated outbuildings, most of which are utilitarian. One example of a decorative Stick Style barn stands in the district at 603 Orange Center Road. Contributing sites include the town green and Orange Cemetery established in 1804, which contains well preserved stones and zinc plate markers. The lack of commercial buildings in this district is due to the fact that historical turnpikes were existed outside the northern and southern boundaries of the village. Meanwhile, Orange Center focused on their agricultural contributions, especially in the areas of raising livestock and dairy farming. The Orange Center Historic District will not be impacted by the proposed solar facility.

Treat Farm Barn

The Treat Farm contains an 1816 Colonial farmhouse and outbuildings within the southern portion of the project parcel at 361 Old Tavern Road in Orange, Connecticut (Figure 9). Outbuildings associated with the farm include an English barn that is situated to the north of the Treat Family Colonial residence, a garage which has been attached to the east end of the barn, modern sheds, and a greenhouse to the north and west of the barn, and a secondary dwelling to the west of the barn that faces Treat Lane. The modern greenhouse stands on the foundation of a barn that burned down in the 1950s. Of these resources, the English barn has been listed on the State Register of Historic Places because of its long period of ownership and use by a single family beginning in the Colonial period and continuing to the twenty-first century. This continued use has preserved the barn's architecture and immediate surroundings. The barn measures one-and-half stories in height and has a rectangular plan measuring 9.1 x 31.7 m (30 x 104 ft in area). It also is characterized by a dry laid fieldstone foundation, with a milk room at the west end; the latter is an addition with a concrete foundation. The barn's walls are clad in white painted vertical wooden boards. The gabled roof has overhanging rake and eaves; it is clad in asphalt shingles. This barn is part of the Treat Farm, which has been occupied by the Treat family since settlement of Orange. While beginning as a family farm, it evolved into a dairy business by the mid-nineteenth century. It continued to be used as a dairy farm until the twenty-first century, when it focused on the sale of seasonal produce.

Conclusion

No prehistoric archaeological resources have been previously identified within 1.6 km (1 mi) of the project area. However, as discussed in Chapter II, the natural setting of the project area is suited to Native American occupation and therefore prehistoric resources may be expected within the proposed impact area associated with the solar facility. Site 107-19 and the Orange Center Historic District exemplifies the rural history of the area that was established by the Colonial period. The area remained rural well into the twentieth century until suburban development took hold. Site 107-19 and the Orange Center Historic District will not be impacted by the proposed solar facility. However, a State Register of Historic Places barn is located within the project parcel. It was part of the Treat Farm from the Colonial era to the twenty-first century and has integrity in the areas of architecture and setting. Other outbuildings and the 1816 farmhouse associated with the Treat Farm also stand within the project parcel; it is therefore expected that archaeological deposits associated with the long occupation of the parcel by the Treat Family may exist elsewhere on the property and perhaps within the impact area associated with the proposed solar facility.

CHAPTER VI
METHODS

Introduction

This chapter describes the research design and field methods used to complete the current Phase IB cultural resources reconnaissance survey of the moderate/high sensitivity areas associated with the proposed solar facility in Orange, Connecticut. In addition, the location and point-of-contact for the facility at which all cultural material, drawings, maps, photographs, and field notes generated during survey will be curated is provided below.

Research Design

The current Phase IB cultural resources reconnaissance survey was designed to identify all prehistoric and historical cultural resources located within the previously recorded moderate/high sensitivity areas of the project area planned to be impacted by construction. Fieldwork for the project was comprehensive in nature and project planning considered the distribution of previously recorded archaeological sites located near the project parcel, as well as an assessment of the natural qualities of the project area. The methods used to complete this investigation were designed to provide complete and thorough coverage of all portions of the moderate/high sensitivity areas. This undertaking entailed pedestrian survey, systematic subsurface testing, detailed mapping, and photo-documentation.

Field Methods

Following the completion of all background research, the moderate/high sensitivity areas previously identified during the Phase IA cultural resources assessment survey that will be impacted by the proposed Orange Solar facility were subjected to a Phase IB cultural resources reconnaissance survey utilizing pedestrian survey, photo-documentation, GPS recordation, and systematic shovel testing. The field strategy was designed such that the entirety of the moderate/high sensitivity areas were examined visually and photographed. The archaeological field methodology also included subsurface testing of the moderate/high sensitivity areas, during which shovel tests were excavated at 20 m (65.6 ft) intervals along 14 parallel survey transects spaced 20 m (65.6 ft) apart.

During the Phase IB survey, each shovel test measured 50 x 50 cm (19.7 x 19.7 in) in size, and each was excavated until the glacially derived C-Horizon was encountered or until large buried objects (e.g., boulders) prevented further excavation. Each shovel test was excavated in 10 cm (3.9 in) arbitrary levels within natural strata, and the fill from each level was screened separately. All shovel test fill was screened through 0.635 cm (0.25 in) hardware cloth and examined visually for cultural material. Soil characteristics were recorded in the field using Munsell Soil Color Charts and standard soils nomenclature. Shovel test were backfilled after recording.

Curation

Following the completion and acceptance of the Final Report of Investigations, all cultural material, drawings, maps, photographs, and field notes will be curated with:

Dr. Sarah Sportman
Office of Connecticut State Archaeology, Box U-1023
University of Connecticut
Storrs, Connecticut 06269

CHAPTER VII
RESULTS & MANAGEMENT RECOMMENDATIONS

Introduction

This chapter presents the results of the Phase IB cultural resources reconnaissance survey of the impact area associated with the proposed facility in Orange, Connecticut. The Phase IB investigation was completed on behalf of VHB in June and July of 2021 by personnel representing Heritage. The parcel on which the solar facility is planned encompasses a total of 17.8 acres of land located at 361 Old Tavern Road. The project area will be accessed by Old Tavern Road to the south. The project area currently consists of agricultural fields and the project will include the construction of photovoltaic panels and associated electrical equipment, access roads, and stormwater basins (Photos 1 through 6). At this time, the development plans for the facility are still in the design stage. All fieldwork was performed in accordance with the *Environmental Review Primer for Connecticut's Archaeological Resources,* which is promulgated by the Connecticut State Historic Preservation Office (Poirier 1987). Field methods employed during the current investigation consisted of pedestrian survey, mapping, photo-documentation, and subsurface testing throughout the array area. Field methods and results are discussed below.

Results of the Phase IB Cultural Resources Reconnaissance Survey of the Project Area

A total of 162 of 162 (100 percent) planned shovel test pits were excavated in the project area during the Phase IB survey (Figure 10). The Phase IB Cultural Resources Reconnaissance survey resulted in the identification of a single archaeological locus that extended across the entire impact area (Figure 10). It was named the Treat Farm Locus and it is described below. A Connecticut archaeological site form for the Treat Farm Locus is attached in Appendix I.

Treat Farm Locus

The Treat Farm Locus covers the entirety of the proposed impact area associated with the solar facility (Figure 10 and Photos 1 through 6). The locus area encompasses a total of 162 shovel tests along Transects 1 through 14, as well as artifacts recovered from the ground surface. A typical shovel test excavated within the locus area exhibited four soil horizons in profile and reached to a depth of 77 centimeters below surface (30.3 inches below surface). The uppermost soil horizon Ap-Horizon (plow zone) extended from 0 to 28 centimeters below surface (0 to 11 inches below surface) and was described as a deposit of light yellowish brown (10YR 6/4) brown very fine sand. It was underlain by a layer of subsoil (B1-Horizon) that ranged in depth from 28 to 54 centimeters below surface (11 to 21.3 inches below surface) and was described as a dark yellowish brown (10YR 4/6) fine sand. A second layer of subsoil (B2-Horizon) followed, from 54 to 67 centimeters below surface (21.3 to 26.4 inches below surface), and it was described as an olive brown (2.5Y 4/3) medium sand. Finally, the glacially derived C-Horizon reached from 67 to 77 centimeters below surface (26.4 to 30.3 inches below surface) and was classified as a layer of olive (5Y 4/3) medium to coarse sand with decaying rock. A small number of shovel test pits exhibited a stratum of Overburden beneath the Ap-Horizon; it was characterized by olive brown (2.5Y 4/4) coarse silt mottled with the B2-Horizon and showed oxidation, gravel, and cobbles.

Shovel testing of the Treat Farm Locus area resulted in the recovery of a total of 876 artifacts, of which 852 were prehistoric and 24 were historical in origin (see Table 1). A total of 690 artifacts were recovered from the Ap-Horizon between 0 and 50 cmbs (0 and 19.7 inbs), including 32 from the surface; the latter were mainly located in the center of the project area through some were surface collected from the southwestern portion of the surveyed area. Artifacts recovered from the Ap-Horizon consisted of 294

pieces quartz shatter, 59 pieces of quartz shatter with cortex (indicative of primary reduction), 284 quartz secondary thinning flakes, 14 quartz primary reduction flakes with cortex, 2 retouched quartz flakes, 1 quartz biface, 1 quartz end scraper, 6 quartz expedient scrapers, 1 quartz side scraper, 2 quartz spokeshaves, 1 quartz Brewerton side-notched projectile point (ca., 6,000 to 3,900 BP), 1 quartz projectile point midsection, 1 quartz projectile point tip, 1 quartzite primary reduction flake with cortex, 1 chert secondary thinning flake, 1 jasper Brewerton side-notched projectile point (ca., 6,000 to 3,900 BP), 1 flake of flake, 1 drilled slate fragment, 8 clear glazed pearlware body sherds (ca., 1780 to 1830), 1 gray salt-glazed stoneware body sherds with Albany slip (ca., 1825 to 1940), 1 plain whiteware body sherd (ca., 1820 to present), 1 blue transfer printed whiteware body sherd (ca., 1830 to 1860), 1 blue hand painted whiteware body sherd (ca,. 1830 to present), 1 embossed clear glass body shard, 1 clear glass shard with pink coating, 2 clear glass vessel shards, 1 unidentified nail, and 1 unidentified nail shank.

The project area also contained some small pocket of overburden, which presumably resulted from small scale filling and smoothing of some portions of the project area. The overburden contained five quartz secondary thinning flakes and 10 pieces of quartz shatter. This material presumably was moved from one portion of the project area to another either in the modern era or historically. The underlying intact subsoil, the B1-Horizon yielded a total of 38 secondary thinning quartz flakes, 48 pieces of quartz shatter, 10 pieces of quartz shatter with cortex (indicative of primary reduction), 1 quartz side scraper, and 4 plain pearlware body sherds (ca. 1780 to 1830). The latter represented infiltrated finds. The second layer of subsoil, the B2-Horizon, yielded a single quartz core, 29 secondary thinning quartz flakes, 8 pieces of quartz shatter, 6 pieces of quartz shatter with cortex (indicative of primary reduction), 1 blue transfer printed whiteware body sherd (ca. 1830 to 1860), and 1 clear glass window shard. Again, the historical materials represented infiltrated finds.

Table 1. Artifacts recovered from Phase IB survey of the Orange Solar project area.

Horizon	Depth	Material	Type	Subtype	Count
Anomaly 2 Fill	20-30 cmbs	lithic	quartz	flake	4
				shatter	4
				shatter with cortex	1
	30-40 cmbs	lithic	quartz	flake	2
Anomaly 2 Fill Total					**11**
Anomaly 3 Fill	20-30 cmbs	lithic	quartz	flake	3
				shatter	7
Anomaly 3 Fill Total					**10**
Anomaly 4 Fill	20-30 cmbs	lithic	quartz	shatter with cortex	3
Anomaly 4 Fill Total					**3**
Ap	0 cmbs	lithic	chert	flake	1
			jasper	Brewerton side-notched projectile point	1
			quartz	biface	1
				Brewerton side-notched projectile point	1
				end scraper	1
				flake	12
				flake with cortex	1
				projectile point tip	1
				retouched flake	2
				shatter	9
				shatter with cortex	1
				spokeshave	1
	0-10 cmbs	ceramic	pearlware	clear glazed body	3

			stoneware	gray salt glazed body with Albany slip interior	1
			whiteware	blue transfer printed body	1
		glass	clear	pink coated shard	1
				vessel body	1
		lithic	quartz	expedient scraper	3
				flake	129
				flake with cortex	5
				projectile point midsection	1
				shatter	102
				shatter with cortex	24
		metal	ferrous	unidentified nail	1
				unidentified nail shank	1
	10-20 cmbs	ceramic	pearlware	clear glazed body	3
			whiteware	blue hand painted body	1
		glass	clear	embossed vessel body	1
				vessel body	1
		lithic	quartz	expedient scraper	2
				flake	101
				flake with cortex	4
				shatter	144
				shatter with cortex	18
				spokeshave	1
			quartzite	flake with cortex	1
			sandstone	flake	1
			slate	drilled fragment	1
	20-30 cmbs	ceramic	pearlware	clear glazed body	2
			whiteware	clear glazed body	1
		lithic	quartz	expedient scraper	1
				flake	38
				flake with cortex	4
				shatter	36
				shatter with cortex	16
				side scraper	1
	30-40 cmbs	lithic	quartz	flake	3
				shatter	3
	40-50 cmbs	lithic	quartz	flake	1
Ap Total					**690**
B1	10-20 cmbs	lithic	quartz	flake	2
				shatter	2
	20-30 cmbs	ceramic	pearlware	clear glazed body	4
		lithic	quartz	flake	19
				side scraper	1
				shatter	22
				shatter with cortex	6
	30-40 cmbs	lithic	quartz	flake	15
				shatter	23
				shatter with cortex	3
	40-50 cmbs	lithic	quartz	flake	1
				shatter	1
				shatter with cortex	1
	60-70 cmbs	lithic	quartz	flake	1
B1 Total					**101**
B2	10-20 cmbs	lithic	quartz	flake	1
	20-30 cmbs	glass	clear	window shard	1

		lithic	quartz	flake	5
				shatter	3
	30-40 cmbs	ceramic	whiteware	blue transfer printed body	1
		lithic	quartz	flake	9
				shatter with cortex	2
	40-50 cmbs	lithic	quartz	flake	13
				shatter	3
				shatter with cortex	4
	50-60 cmbs	lithic	quartz	core	1
				flake	1
				shatter	2
B2 Total					**46**
Overburden	0-10 cmbs	lithic	quartz	flake	1
				shatter	2
	10-20 cmbs	lithic	quartz	flake	2
				shatter	3
	20-30 cmbs	lithic	quartz	flake	2
				shatter	5
Overburden Total					**15**
Grand Total					**876**

The completion of the Phase IB survey also resulted in the identification of seven soil anomalies that may be indicative of cultural features. Anomaly 1 was identified within Shovel Test 6 along Transect 8 (Photo 7). It extended across the entire floor of the shovel test and ranged in depth from 30 to 37 cmbs (11.8 to 14.6 inbs), where excavation of the shovel test pit was terminated. It was characterized as B1-Horizon soil mottled with dark brown 10YR 3/3 sandy silt and charcoal flecking. No artifacts were recovered from Anomaly 1 soil. This area was protected and backfilled for either preservation in place or examination during additional archaeological fieldwork.

Anomaly 2 was encountered in Shovel Test 2 along Transect 8 at 26 cmbs (10.2 inbs) (Photo 8). It extended to the termination of the shovel test at 40 cmbs (15.7 inbs). Anomaly 2 soil was characterized as dark yellowish brown (10YR 4/6) clayey silt mixed with charcoal and slightly mottled with yellowish brown (10YR 4/4) clayey silt. Charcoal was concentrated in the northern half of the shovel test pit. A total of 11 artifacts were recovered from Anomaly 2 soils, including six quartz secondary thinning flakes, four pieces of quartz shatter, and one piece of quartz shatter with cortex that was indicative or primary reduction. Based on the recovery of associated artifacts, it was presumed that Anomaly 2 was cultural in origin and may have represented a burn feature of some type, possibly a hearth. A portion of this feature remains in the bottom of Shovel Test 2 along Transect 8. It was preserved in place either for avoidance or additional archaeological examination depending on the future configuration of the construction plans.

Anomaly 3 was identified within Shovel Test 2 along Transect 7 at 20 cmbs (7.9 inbs) and it extended to 30 cmbs (11.8 inbs), where excavation was terminated (Photo 9). This soil anomaly was circular in plan and limited to the western half of the shovel test pit. It was described as dark yellowish brown (10YR 4/6) fine sandy loam mottled with dark yellowish brown (10YR 4/4) fine sandy loam mixed with charcoal. A total of 10 artifacts were recovered from Anomaly 3, including three quartz secondary thinning flakes and seven pieces of quartz shatter (Table 1). Since Anomaly 3 yielded prehistoric artifacts and charcoal, it was assumed to be cultural in origin and may have represented a burn feature of some type, possibly a hearth. A portion of this feature remains in the bottom of Shovel Test 2 along Transect 7. This soil anomaly also was preserved in place and scheduled either for avoidance or additional archaeological examination depending on the future configuration of the construction plans.

Anomaly 4 was identified within Shovel Test 1 along Transect 7; it encompassed the entirety of the floor of the shovel test (Photo 10). Soil within Anomaly 4 was recorded as very dark gray (10YR 3/1) loamy clayey silt with light ash-like mixing and charcoal smears. It extended from 20 cmbs (7.8 inbs) to 30 cmbs (11.8 inbs), where excavation was terminated. The investigation of Anomaly 4 resulted in the collection of 3 pieces of quartz shatter with cortex, which were indicative of primary stone tool reduction, indicating that this anomaly was cultural in origin. A portion of this feature remains in the bottom of Shovel Test 1 along Transect 7. It was preserved in place either for avoidance or additional archaeological examination depending on the future configuration of the construction plans.

Anomaly 5 was visible in the northern wall of Shovel Test 3 along Transect 11 (Photo 11). It was described as dark yellowish brown (10YR 3/6) fine silty loam with diffuse charcoal flecking throughout. It soil was limited to depths between 39 and 62 cmbs (15.4 and 24.4 inbs) and it encompassed most of the shovel test. As was the case with Anomaly 4, no artifacts were recovered from Anomaly 5. However, since this anomaly may have been cultural in origin, it was protected and backfilled for either preservation in place or examination during additional archaeological fieldwork.

Anomaly 6 appeared to represent a burn episode that was identified by a circular stain in the northwest corner of Shovel Test 2 along Transect 5 (Photo 12). The anomaly was encountered at 25 cmbs (9.8 inbs) and extended to the excavated base of the shovel test pit, which was terminated at 30 cmbs (11.8 inbs) to preserver the remainder of the anomaly. Soil within Anomaly 6 was characterized as a deposit of dark brown (10YR 3/3) loamy fine sand mixed with charcoal and dark mottling noted towards the western edge. While no artifacts were recovered from Anomaly 6, it was protected and backfilled for either preservation in place or examination during additional archaeological fieldwork.

Finally, Anomaly 7 also represented a burn episode like Anomaly 6; it filled the horizontal dimensions of Shovel Test 13 along Transect 7. It was described as a deposit of very dark grayish brown (10YR 3/2) fine sandy silt mixed with charcoal. Charcoal was especially abundant in the eastern portion of Shovel Test 13. As was the case with Anomaly 6, no artifacts were recovered from Anomaly 7. However, since this anomaly may have been cultural in origin, it was protected and backfilled for either preservation in place or examination during additional archaeological fieldwork.

Management Recommendations

Phase IB survey of the project area resulted in the identification of the Treat Farm Locus, a multicomponent archaeological site containing both prehistoric and historical period cultural material and soil anomalies. The prehistoric component of the locus consists of lithic debitage derived from stone tool manufacture and maintenance, examples of expedient stone tools produced and utilized for resource processing, projectile points used for hunting, and seven soil anomalies with potential cultural association. Temporally diagnostic artifacts recovered from the locus included two projectile Brewerton style projectile points dating from 6,000 to 3,900 BP. The recovery of the projectile points, as well as the large quantity of stone tool manufacturing and maintenance debris, as well as multiple scrapers and expedient tools used for resource processing, suggests that the Treat Farm Locus represents a camp or seasonal use site that was occupied during the Late Archaic Period. Since the prehistoric component of the Treat Farm Locus contains a large assemblage of artifacts; multiple soil anomalies, at least of few of which are clearly cultural in origin; and research potential, Phase II National Register testing and evaluation of the area is recommended unless avoidance of the site or preservation measures are undertaken.

The recovered historical artifacts (ceramics, nails, and glass vessel fragments) represent typical late eighteenth to nineteenth-century domestic field scatter from the use of the property as the farmstead of

the Treat family. The historical period component of the Treat Farm Locus is not eligible for listing on the National Register of Historic Places applying the criteria for evaluation (36 CFR 60.4 [a-d]) since it lacked significant numbers of artifacts, associated cultural feature and research potential. No additional archaeological examination of the historical period component of the Treat Farm Locus is recommended.

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Figure 1. Excerpt from a USGS 7.5' series topographic quadrangle image showing the location of the project area in Orange, Connecticut.

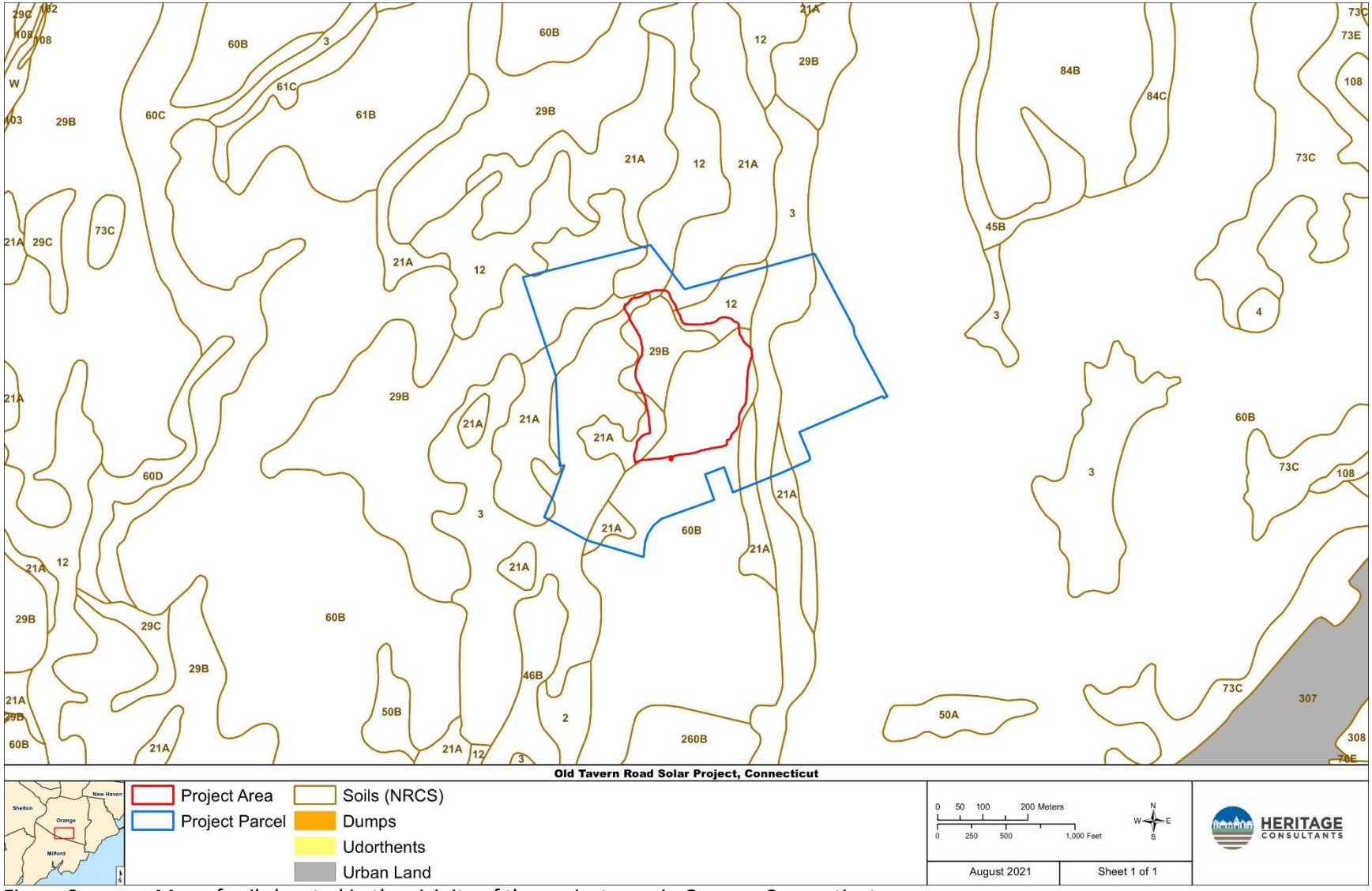


Figure 2. Map of soils located in the vicinity of the project area in Orange, Connecticut.

Figure 3. Excerpt from an 1854 historical map showing the location of the project area in Orange, Connecticut.

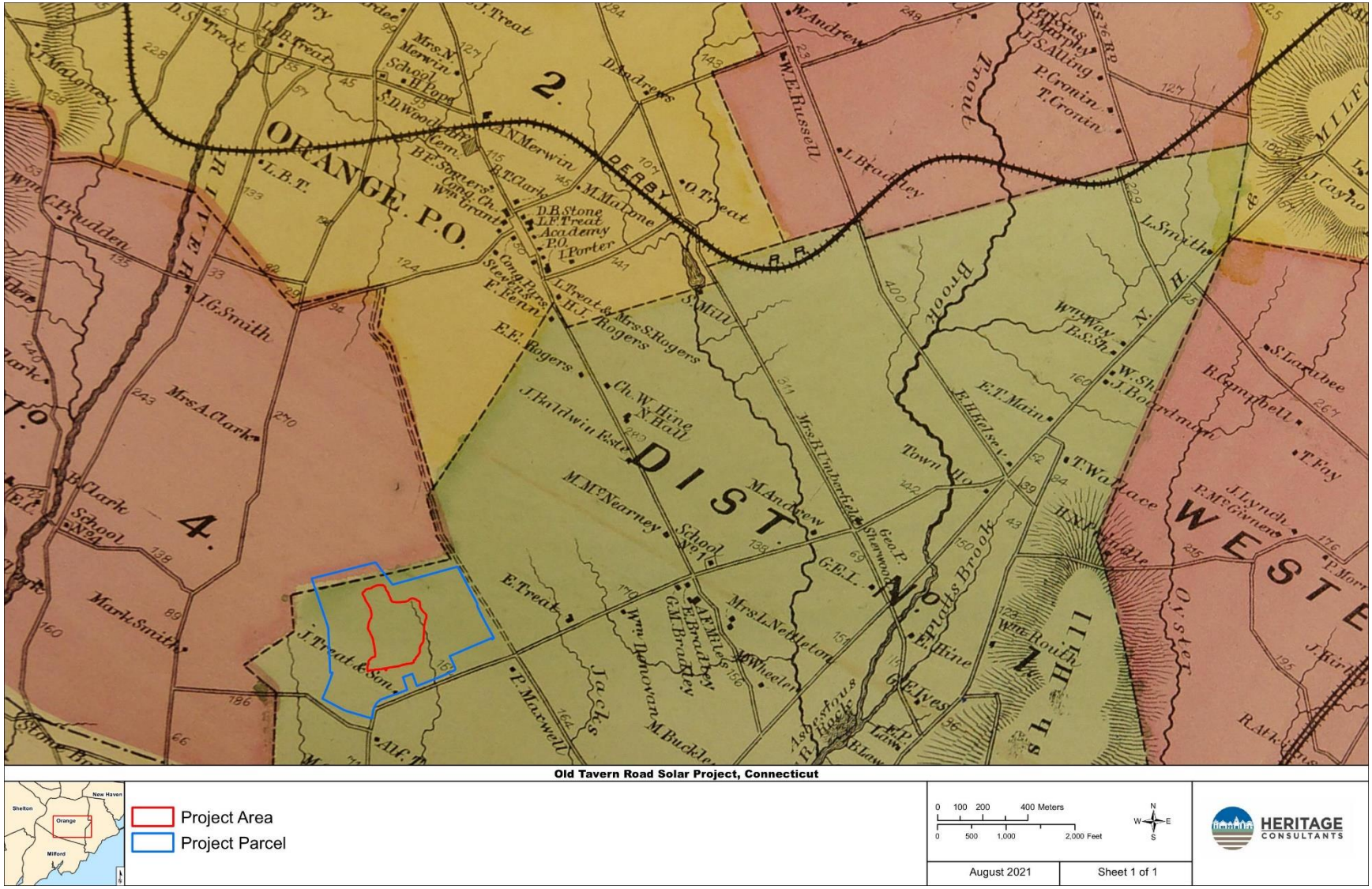


Figure 4. Excerpt from an 1868 historical map showing the location of the project area in Orange, Connecticut.

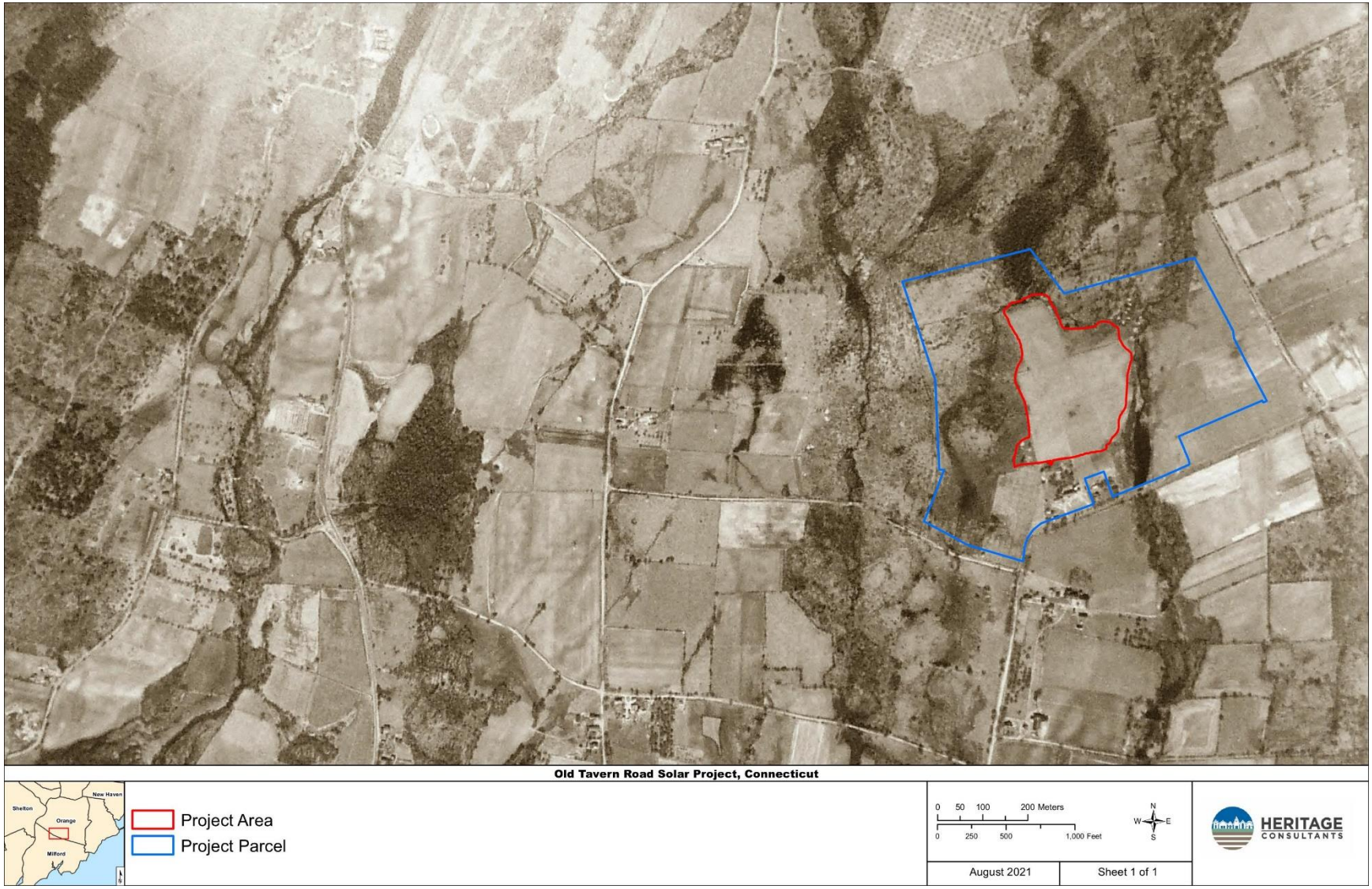


Figure 5. Excerpt from a 1934 aerial photograph showing the location of the project area in Orange, Connecticut.

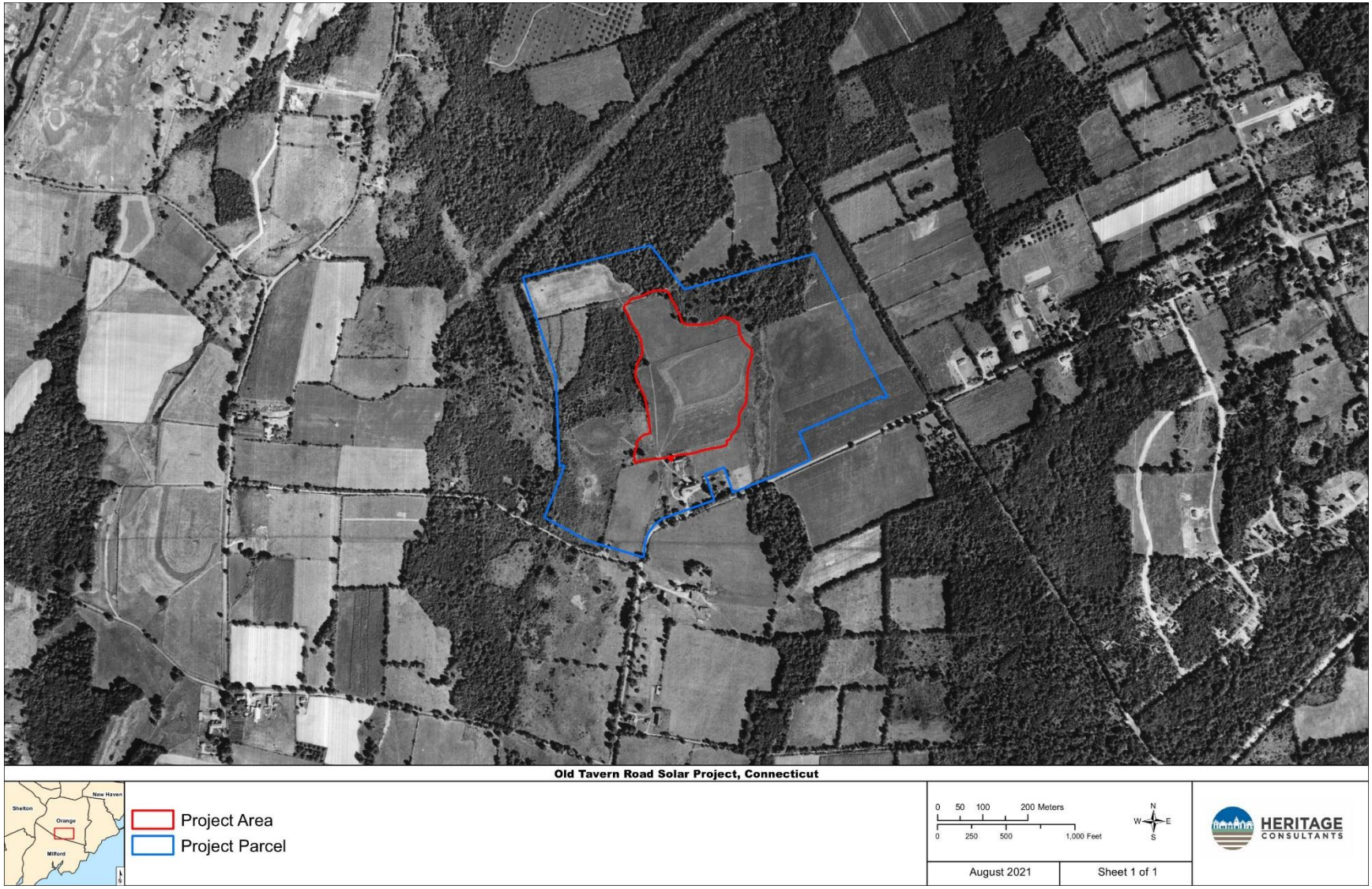


Figure 6. Excerpt from a 1951 aerial photograph showing the location of the project area in Orange, Connecticut.

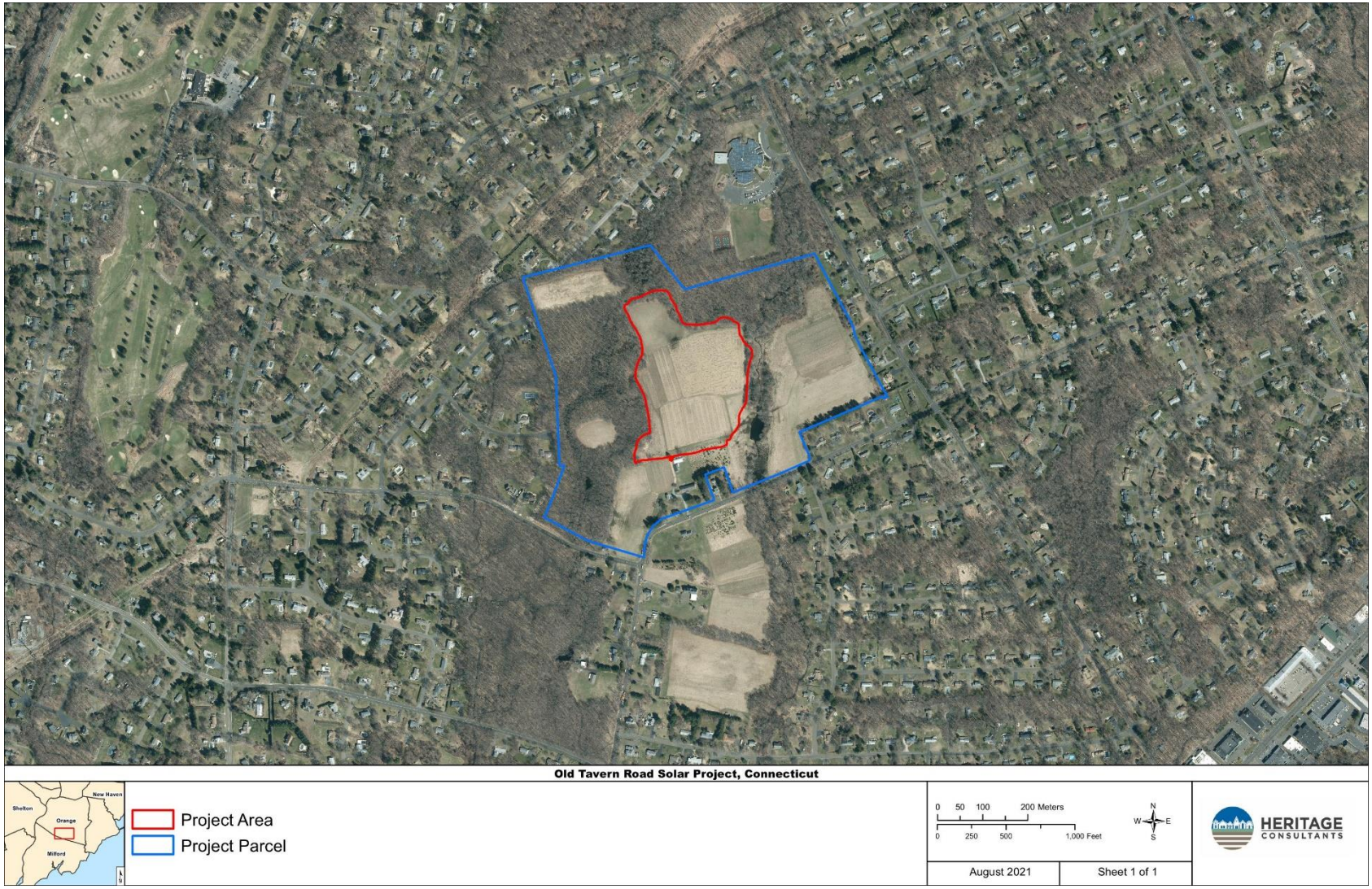


Figure 7. Excerpt from a 2019 aerial photograph showing the location of the project area in Orange, Connecticut.

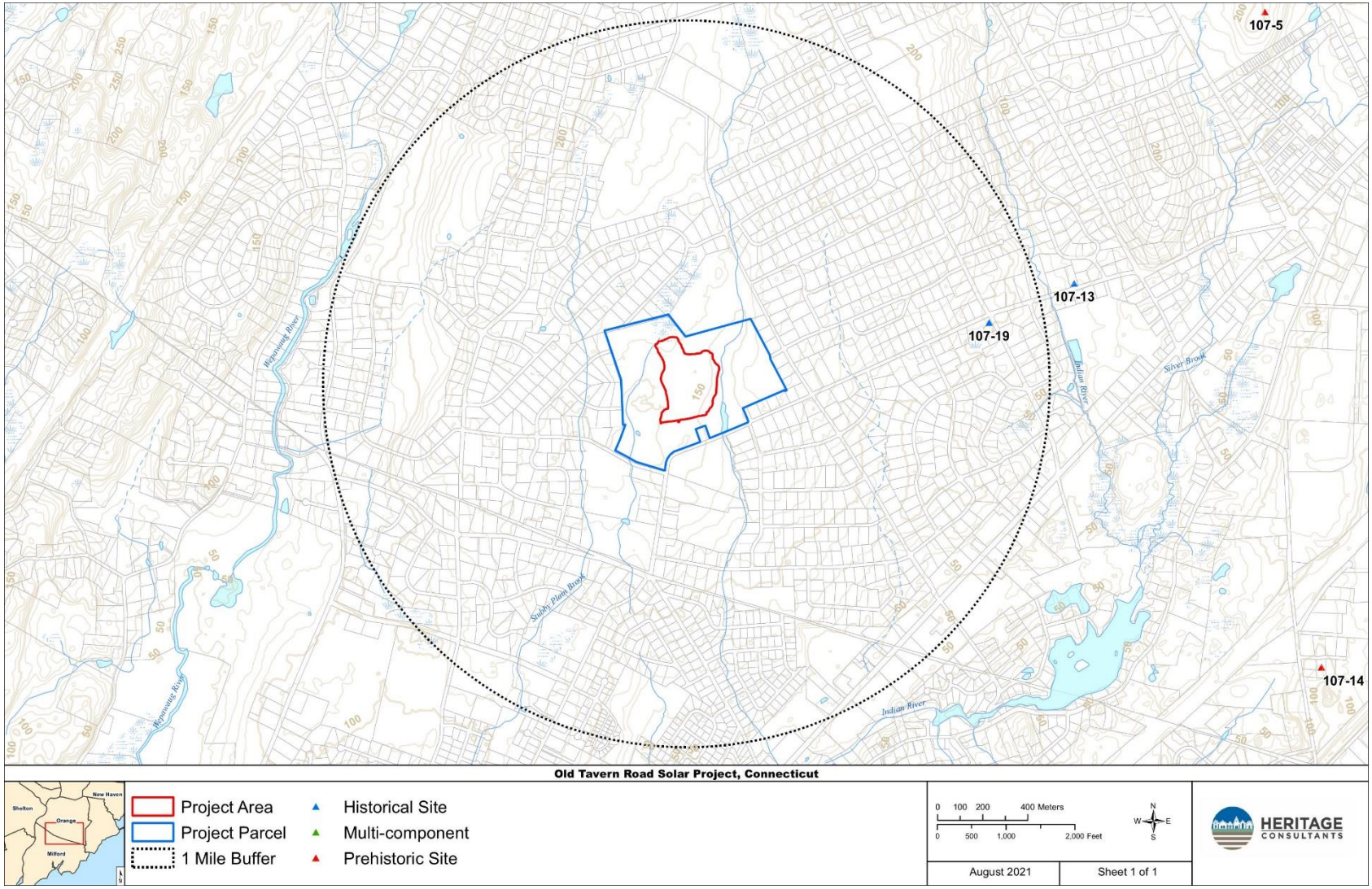


Figure 8. Digital map showing the location of previously identified archaeological sites in the vicinity of the project area in Orange, Connecticut.

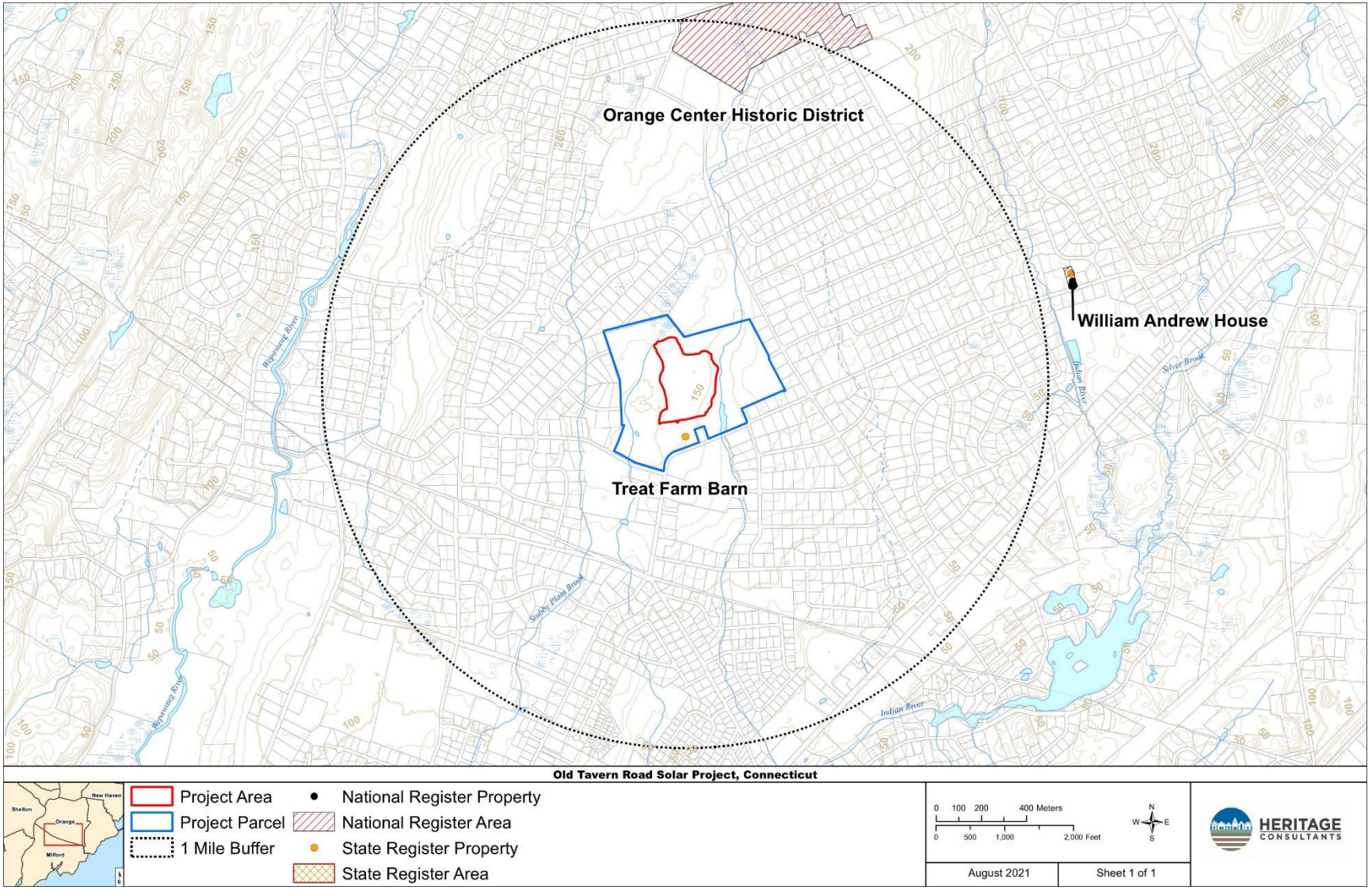


Figure 9. Digital map depicting the locations of previously identified National/State Register of Historic Places properties in the vicinity of the project area in Orange, Connecticut.

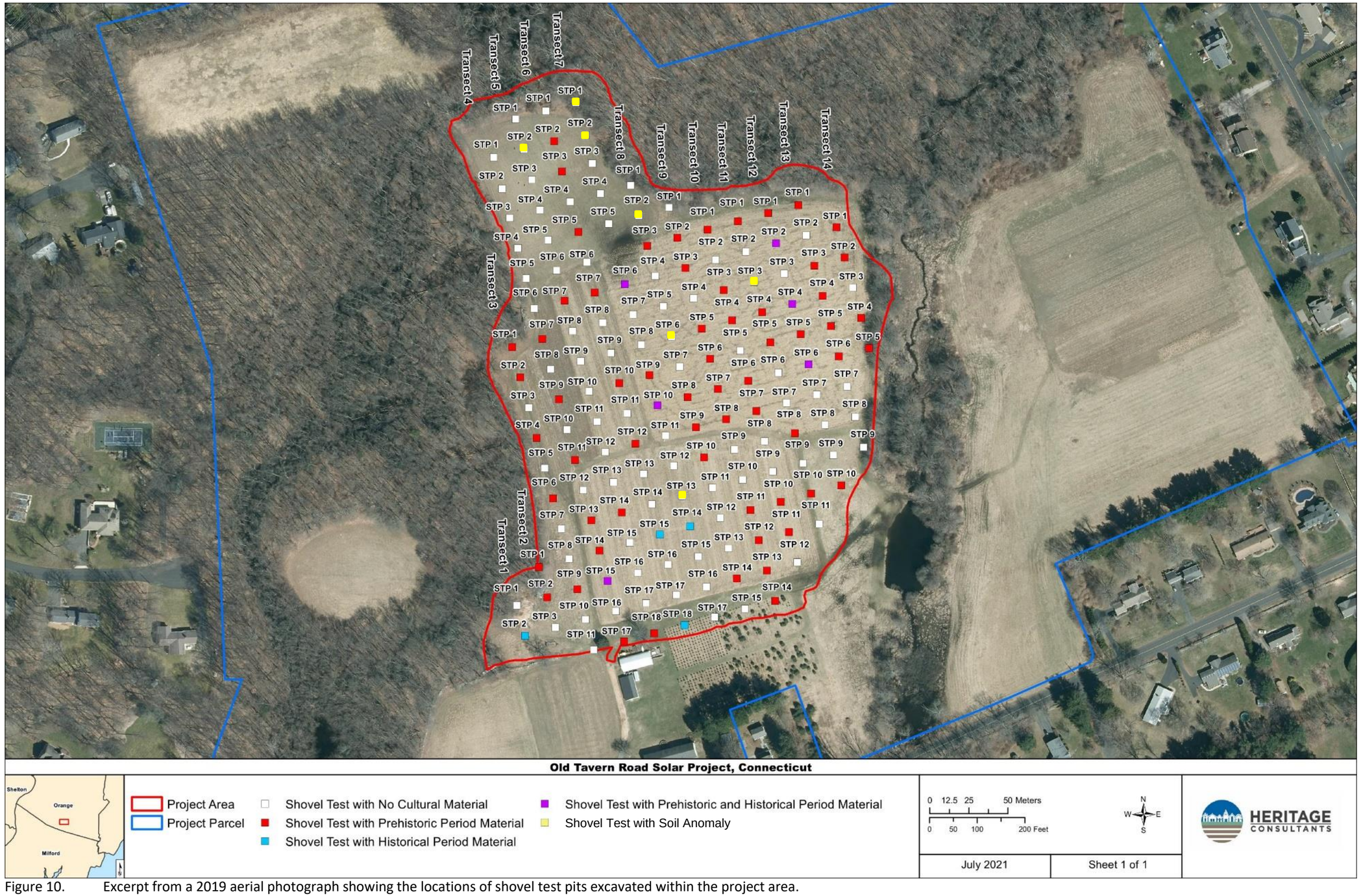


Figure 10. Excerpt from a 2019 aerial photograph showing the locations of shovel test pits excavated within the project area.

Photo 1. Overview of the north-central portion of the Treat Farm Prehistoric Locus facing southeast.

Photo 2. Overview of the south-central portion of the Treat Farm Prehistoric Locus facing north.

Photo 3. Overview of the central portion of the Treat Farm Prehistoric Locus facing north.

Photo 4. Overview of the central portion of the Treat Farm Prehistoric Locus facing east.

Photo 5. Overview of the central portion of the Treat Farm Prehistoric Locus facing south.

Photo 6. Overview of the central portion of the Treat Farm Prehistoric Locus facing west.

Photo 7. Photo showing a plan view of Anomaly 1 in Shovel Test Pit 6 along Transect 8 at 37 cmbs (14.6 inbs).

Photo 8. Photo showing a plan view of Anomaly 2 in Shovel Test Pit 2 along Transect 8 at 38 cmbs (15 inbs).

Photo 9. Photo showing a plan view of Anomaly 3 in Shovel Test Pit 2 along Transect 7 at 30 cmbs (11.8 inbs).

Photo 10. Photo showing a plan view of Anomaly 4 in Shovel Test Pit 1 along Transect 7 at 30 cmbs (11.8 inbs).

Photo 11. Photo showing Anomaly 5 in the north wall of Shovel Test Pit 3 along Transect 11.

Photo 12. Photo showing a plan view of Anomaly 6 in Shovel Test Pit 2 along Transect 5 at 25 cmbs (9.8 inbs).

Photo 13. Photo showing a plan view of Anomaly 7 in Shovel Test Pit 13 along Transect 7 at 27 cmbs (10.6 inbs).

APPENDIX I

CONNECTICUT ARCHAEOLOGICAL SITE FORM FOR THE TREAT FARM LOCUS

HISTORIC RESOURCES INVENTORY
PREHISTORIC ARCHAEOLOGICAL SITES
HIST-7 NEW 9/77

STATE OF CONNECTICUT
CONNECTICUT HISTORICAL COMMISSION
59 SOUTH PROSPECT STREET, HARTFORD,
CONNECTICUT, 06106

FOR OFFICE USE ONLY														
Town No.:							**Site no.:**							
UTM:	1	8	6	6	4	7	1	2	4	5	6	9	8	3	2
QUAD:															**DISTRICT** ☐**YES** ☐**NO**
NR: ☐ACT ☐ELIG. ☐NO															
SR: ☐ACT ☐ELIG. ☐NO															

IDENTIFICATION

1. SITE NAME
Treat Farm Locus

STATE SITE NO.

CAS NO.

2. TOWN/CITY
Orange

VILLAGE

COUNTY
New Haven

3. STREET AND NUMBER (and/or location)
361 Old Tavern Road, within the agricultural fields 465 ft north of Old Tavern Road.

4. OWNER(S)
Treat Farm

☐ **PUBLIC** ☒ **PRIVATE**

5. ATTITUDE TOWARD EXCAVATION
Favorable

6. USE *(Present)*
Agricutural, corn maze

(Historic)
Agricultural

DESCRIPTION

7. PERIOD
☐Paleo ☐Early Archaic ☒Late Archaic ☐Middle Archaic ☐Early Woodland ☐Middle Woodland ☐Late Woodland ☐Contact ☐Unknown ☐Other*(specify)*

8. DATING METHOD
C-14 ☐ Intuition ☐Other*(specify)*
Comparative Materials Brewerton side-notched projectile points

9. SITE TYPE
☐Quarry ☒Camp ☐Rockshelter ☐Shell Midden ☐Cemetery ☐Village ☐Other*(specify)*

10. APPROXIMATE SIZE AND BOUNDARIES
Irregular; maximum dimensions of 369.4 by 263.9 m

11. STRATIGRAPHY
☐Surface finds ☒Plowed ☐Not Stratified ☒Stratified ☐Major Disturbance ☐Other*(specify)*

ENVIRONMENT

12. SOIL

USDA SOIL SERIES
Agawam, Canton and Charlton

CONTOUR ELEVATION
150 ft

SLOPE %
☒ 0-5 ☐ 5-15 ☐ 15-25 ☐ over 25

TEXTURE
☒Sand ☐Clay ☐Silt ☐Other *(specify)*

ACIDITY
☐ less than 4.5 ☐ 4.5-5.5 ☐ 5.6-6.5 ☐ 6.6-7.3 ☐ 7.4-8.4

13. WATER

NEAREST WATER SOURCE
Stubby Plain Brook

SIZE AND SPEED

DISTANCE FROM SITE
700 ft

SEASONAL AVAILABILITY
Year Round

14. VEGETATION

PRESENT
Agricultural field

PAST
Agricultural Field, Woodland

CONDITION

15. SITE INTEGRITY
☐ Undisturbed ☐ Good ☒ Fair ☐ Destroyed

16. THREATS TO SITE
☐ None Known ☐ Highways ☐ Vandalism ☒ Developers ☐ Other *(specify)* ☐ Renewal ☐ Private ☐ Deterioration ☐ Zoning ☐ Unknown

17. SURROUNDING ENVIRONMENT
☒ Open Land ☒ Woodland ☒ Residential ☐ Scattered Buildings visible from site
☐ Commercial ☐ Industrial ☐ Rural ☐ High Building Density ☐ Coastal ☐ Isolated

18. ACCESSIBILITY TO PUBLIC – VISIBLE FROM PUBLIC ROAD
☒ Yes ☐ No

RESEARCH POTENTIAL

19. PREVIOUS EXCAVATIONS

☐ SURFACE COLLECTED	*BY WHOM/AFFILIATION*	*DATE*
☐ POT HUNTED	*BY WHOM/AFFILIATION*	*DATE*
☒ TESTED	*BY WHOM/AFFILIATION* Heritage Consultants, LLC	*DATE* 6/23/2021-7/2/2021
☐ EXCAVATION	*BY WHOM/AFFILIATION*	*DATE*

20. PRESENT LOCATION OF MATERIALS
Heritage Consultants, LLC

21. PUBLISHED REFERENCES
Phase IB Cultural Reconnaissance Survey of the Proposed Orange Solar Project in Orange, Connecticut.

22. RECOVERED DATA *(Identify in DETAIL, including features, burials, faunal material, etc.)*
Ap-Horizon: 353 quartz shatter, 299 quartz flakes, 2 retouched quartz flakes, 1 quartz biface, 7 quartz end scraper, 1 quartz side scraper, 2 quartz spokeshaves, 1 quartz Brewerton side-notched projectile point, 1 quartz projectile point midsection, 1 quartz projectile point tip, 1 chert flake, 1 jasper Brewerton side-notched projectile poin, 1 sandstone flake, 1 drilled slate fragment, 8 clear glazed pearlware body sherds, 1 gray salt-glazed stoneware body sherd, 1 plain whiteware body sherd, 1 blue transfer printed whiteware body sherds , 1 blue hand painted whiteware body sherd, 3 clear glass vessel body shard, 1 clear glass shard with pink coating, and 2 unidentified nails. Overburden: 5 quartz flakes and 10 pieces of quartz shatter. B1-Horizon: 38 quartz flakes, 58 quartz shatter, 1 quartz scraper, and 44 plain pearlware body sherds. B2-Horizon: 1 quartz core, 29 quartz flakes, 14 quartz shatter, 1 blue transfer printed whiteware body sherd, and 1 clear glass window shard. Anomaly 3 Fill: 3 quartz flakes and 7 pieces of quartz shatter.

SIGNIFICANCE

23. ARCHAEOLOGICAL OR HISTORICAL IMPORTANCE
The Treat Farm Prehistoric Locus is a prehistoric archaeological site consisting of lithic debitage from tool making, completed stone tools used for resource processing, projectile points used for hunting, and seven soil anomalies with potential cultural association. Two recovered projectile points were diagnostic, dating from 5,000 to 4,000 BP. This evidence altogether suggests that the Treat Farm Locus is a camp site occupied during the Late Archaic Period.The Treat Farm Locus is potentially eligible for listing on the National Register of Historic Places under Criterion D. This excludes the historical component of the site, which is not significant because of the low-density of recovered historical materials.

PHOTOGRAPH

PHOTOGRAPHER
Cory Atkinson

DATE
April 2021

VIEW
Looking southeast across the site from the north-central boundary

NEGATIVE ON FILE

Place 35 mm contact print here

ADDITIONAL INFORMATION

REPORTED BY

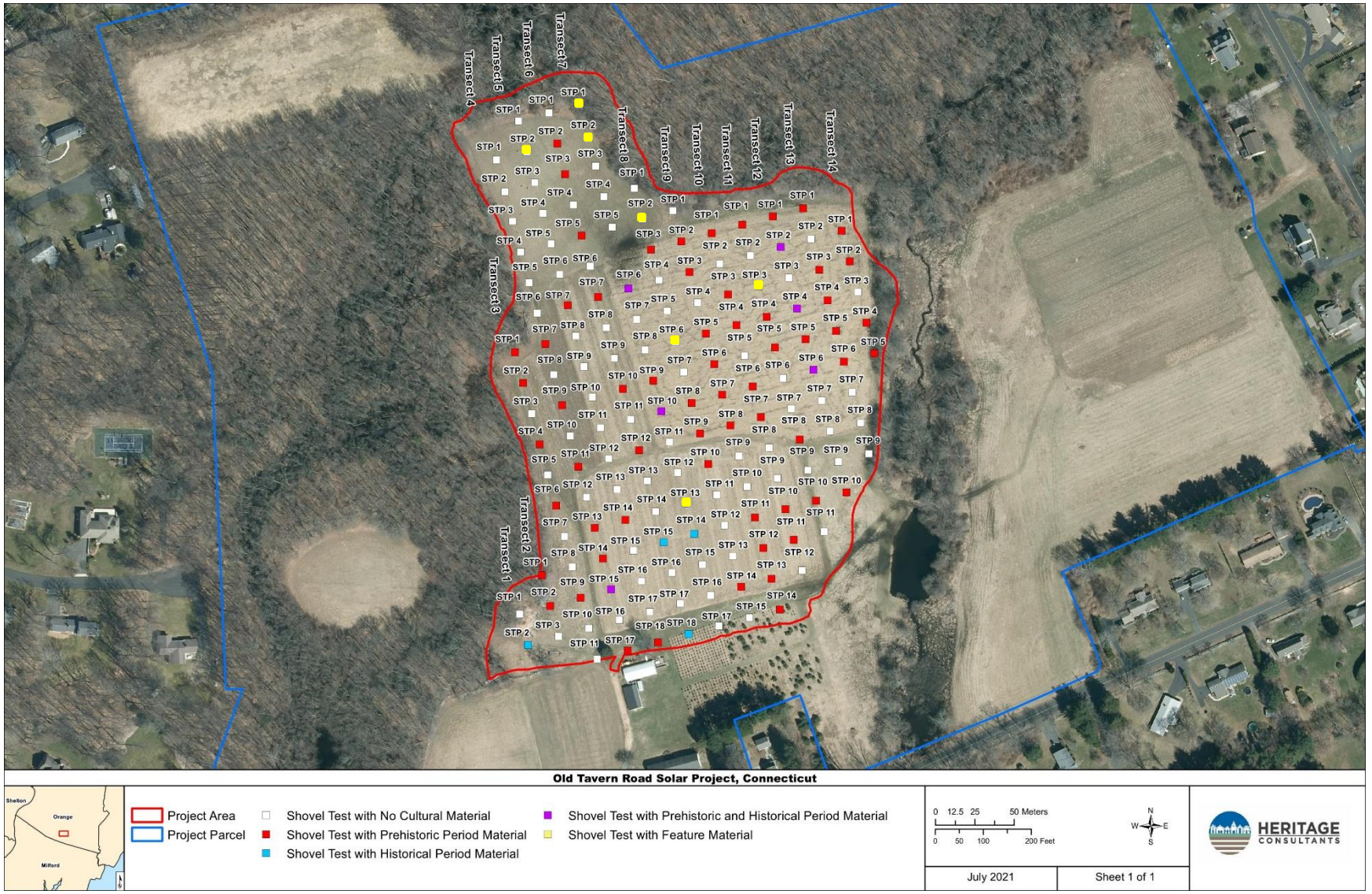
NAME Elizabeth Correia	**ADDRESS** Newington, CT 06111
ORGANIZATION Heritage Consultants, LLC	**DATE** 7/27/2021

FOR OFFICE USE ONLY

FIELD EVALUATION

COMMENTS

USGS Quad map showing the location of the Treat Farm Prehistoric Locus.



Plan view of the Treat Farm Prehistoric Locus showing excavated shovel test pits.

Overview photograph of the Treat Farm Locus looking southeast across the site from the north-central boundary.

HERITAGE CONSULTANTS

August 12, 2021

Ms. Marena Wisniewski
Connecticut State Historic Preservation Office
450 Columbus Boulevard, Suite 5,
Hartford, Connecticut 06103

RE: Scope of Work for Archaeological Examination of the Proposed Orange Solar Project in Orange, Connecticut

Mr. Kochis:

Heritage Consultants, LLC (Heritage), working on behalf of VHB, is pleased to submit this proposed Scope of Work to the Connecticut State Historic Preservation Office for excavation of the recently identified archaeological deposits recently identified within the development area associated with the Orange Solar Project in Orange, Connecticut. The excavation effort will be designed to examine seven areas that were identified during the Phase IB survey that yielded evidence of cultural features, as well as additional shovel testing in proposed stormwater basin areas. The fieldwork effort will be designed to: 1) define more clearly the cultural features identified during the Phase IB survey and excavate them; 2) identify and describe the horizontal and vertical distribution of artifacts and cultural components within the area; 3) recover a larger sample of temporally diagnostic artifacts to permit an accurate characterization of the cultural components of the prehistoric occupation; 4) assess features' ability to provide meaningful botanical and faunal data; and 5) characterize the prehistoric occupation of the site area and describe it with respect to larger regional settlement and subsistence patterns. The following sections described the field and laboratory methods, as well as reporting procedures, that will be employed during the proposed undertaking.

Site Mapping

Prior to initiating excavations, a permanent project datum, labeled with the coordinates N0, E0, will be positioned within the locus area. All subsequent coordinates, i.e., delineation shovel tests and units will be provided with north and east prefixes relative to those datum locations. The control grid also will provide the x and y coordinates for all specific measurements, e.g., point proveniences for temporally diagnostic artifacts collected from area and elevations taken during the mapping phase of the investigation. Finally, all shovel tests excavated during the previously completed Phase IB survey also will be tied to the control grid.

Shovel Testing

During a previously completed Phase IB effort, Heritage employed a subsurface testing regime throughout the stormwater basins associated with the solar facility. While this testing regime was sufficient enough to determine that archaeological deposits exist throughout the area, limited supplemental shovel testing will be necessary to refine the horizontal and vertical boundaries of the prehistoric deposits there, as well as to recover a larger sample of cultural material in these portions of the site. The shovel testing will be conducted at 10 m (16.4 ft) intervals around previously completed Phase IB shovel tests to refine the density and spatial distribution of archaeological deposits within the stormwater basins.

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Each shovel test will measure approximately 50 x 50 cm (20 x 20 in) in size, and each will be excavated until glacially derived C-Horizon soils or impediments (e.g., large rocks, tree roots) area encountered. Each shovel test will be excavated in 10 cm (4 in) artificial levels within natural strata, and the fill from each level will be screened separately. All shovel test fill will be passed through 0.64 cm (0.25 in) hardware cloth. Munsell Soil Color Charts will be used to record soil color; texture and other identifiable characteristics also will be recorded using existing standard soils nomenclature. All shovel tests will be backfilled immediately upon completion of the archaeological recordation process.

Unit Excavation

A total of seven excavation measuring 2 x 2 m (6.6 x 6.6 ft) in size will be excavated in those portions of the development area that yielded evidence of cultural features during the Phase IB investigation. All unit excavation will be conducted by hand and each unit will be excavated in 10 cm (4 in) arbitrary levels within natural strata, and the fill from each level will be screened separately. The unit excavations will be tied to the control grid and labeled with the appropriate provenience information (e.g., N10, E5). Excavations will extend to until the glacially derived C-Horizon is encountered. All generally excavated soils will be screened through 0.64 cm (0.25 in) hardware cloth, while feature matrix that is not saved for flotation analysis (see below) will be screened through 0.32 cm (0.125 in) mesh for the recovery of small artifacts, charcoal, and faunal/archaeobotanical remains. Munsell Soil Color Charts will be used to record soil color; soil texture and other identifiable characteristics also will be recorded using standard soils nomenclature. Finally, stratigraphic profiles for at least two walls of each excavation unit will be prepared and photographed.

In addition, standard volumetric soil samples will be taken from all exposed cultural features for flotation analysis. For large cultural features (e.g., large pits, hearths, middens), 5 liters of soil will be collected per feature; when smaller than 5 liters in volume (e.g., postmolds, small pits, caches), the contents of entire feature will be collected. Handling of the soils samples in the laboratory will involve flotation of the collected matrices in an attempt to collect archaeological remains that otherwise might not be seen during hand excavation of during screening of soils in the field (see below).

Laboratory Analysis

The laboratory analysis of recovered cultural material collected during the excavations will follow established archaeological protocols. All field specimen bag proveniences first will be crosschecked against the field notes and the specimen inventories for accuracy and completeness. Following this quality-control process, all recovered material will be washed by hand, air-dried, and sorted into basic material categories. The nature and structure of the laboratory analysis will be determined by the goals of the project. In general, the artifact analysis will consist of making and recording a series of observations for each specimen. The observations will be chosen to provide the most significant and temporally/functionally diagnostic information about each specimen. Separate databases may be employed to store, organize, and manipulate the data generated by the analytical process. Separate databases will be used for the analysis of the recovered historic cultural material, prehistoric lithic objects, and/or prehistoric ceramic artifacts. The different databases will reflect the differences in the analytical protocols used to study the different types of materials.

As mentioned above, flotation of soil collected from cultural features will occur during the laboratory analysis. During completion of the flotation regime, the volume of each soil sample first will be recorded in a Feature Log, which will include Sample Number, Locus Designation/Site Number, Feature Number, Provenience (e.g., shovel test/unit number, soil horizon, depth, etc.), Collection Procedures, Collector, and Date Collected, as well as any other pertinent information about the sample. Once that basic data is

collected, the sample will be subjected to flotation, using the following technique. The soil sample will be placed in a large basin filled with clean water. It then will be carefully agitated to release all small items that may float, including charcoal fragments, pieces of bone, charred seeds, etc. This material will be skimmed from the top of the water, placed on a tray to dry at room temperature and labeled as "light fraction." Once the light fraction is removed from the sample, the basin will be emptied of water and the remaining contents of the soil sample will be passed through a series of fine geological sieves. The material caught in the sieves will be collected, placed on a tray to dry at room temperature, and labeled as "heavy fraction(s)." Both the light and heavy fractions then will be examined for small artifacts, bone fragments, and plant remains, which will be collected for further analysis. This examination will be completed both with the naked eye for larger items and with a binocular microscope for the collection of small items. Once the light and heavy fractions have been "picked" and it is determined that no additional archaeological materials remain in them, they will be discarded. The procedures for analysis of the archaeological materials recovered from flotation of the soils samples is discussed below.

All faunal specimens recovered from during the flotation effort or hand collected during the fieldwork for the Site Examination will be identified to the lowest taxon possible following standard zoological classification and nomenclature. The same will be true of animal bone fragments recovered during flotation of soils samples collected from cultural features. For each identified specimen, a record will be made of the element represented (e.g., femur, humerus, skull fragment), portion of element recovered (e.g., proximal, distal, and/or shaft), its symmetry (right or left), any evidence of modification (burning, gnawing, cutting, and/or polishing), and its weight. Quantification of the faunal materials recovered from will include counts of the total numbers of identified specimens of each taxon (NISP), as well as the weights of the identified specimens. The collected data will be included in the report of investigations and will provide information concerning dietary contributions of various type of animals to the site occupants, seasonality of occupation, and any information concerning the prehistoric ecology of the project region.

In addition, plant remains identified during the flotation effort will be collected and analyzed. During analysis, carbonized plant remains will be size-sorted using a 2 mm geological sieve. Uncarbonized, modern plant debris will be removed after sieving, set aside, and not analyzed further since they will likely represent modern intrusions. In contrast, the carbonized plant material measuring 2 mm in size or larger will be sorted, counted, and weighed by material class. Archaeobotanical specimens that pass through the 2 mm sieve (the residual fraction) will be scanned for seeds and other plant parts lacking in the large sized fraction. Detailed taxonomic analyses will be conducted of all plant remains, including nuts and carbonized seeds/seed fragments. Taxonomic identification and analysis of archaeobotanical specimens will be conducted using standard seed and nut identification manuals, and, where available, voucher specimens maintained at the archaeological laboratory of Heritage. As is the case with faunal remains, the recovery of archaeobotanical remains will be important to the understanding of the diet of the site's, the prehistoric ecology of the area, and seasonality of the occupation.

Radiocarbon Dating

It is also anticipated that radiocarbon samples collected during the excavation effort. Samples will be selected that are associated with prehistoric features or buried occupational surfaces so that a radiometric date for the deposits can be determined. Heritage sends all recovered radiocarbon samples for processing to Beta Analytic Inc., at 4985 SW 74th Court, Miami, Florida 33155.

Report Preparation

Once the laboratory analysis has been completed, a report that summarizes the results of the fieldwork of will be prepared. The report of Investigations will include a description of identified archaeological resources; a discussion of the local geology and environment; an overview of the regional prehistory and previous archaeological investigations completed in the region; descriptions of the field and laboratory methods utilized to complete the investigation; a discussion of the results of the fieldwork; artifact descriptions and analyses; and interpretation of the site and its fit within the larger prehistoric settlement and subsistence patters in southern Connecticut. Heritage will provide VHB with a PDF copy of the Report of Investigations and, after review and comment, will supply two hard copies submission to the Connecticut State Historic Preservation Office for review and comment.

Assuming the project would begin in the Spring of 2022, Heritage would be prepared to start fieldwork on April 15, 2022 providing the ground has thawed. It would then be anticipated that fieldwork would be completed by May 13, 2022. A Management Summary describing the results of the project will delivered to the CT-SHPO within two weeks of the close of fieldwork (by May 27, 2022). It is anticipated that the CT-SHPO will approve the Management Summary within two weeks of submission, allowing the project to move forward (by June 10, 2022). If you have any questions regarding this Scope of Work please do not hesitate to contact me at (860) 299-6328 or via email at dgeorge@heritage-consultants.com. Once again and as always, we are at your service.

Sincerely,

David R. George

David R. George, M.A., R.P.A

Department of Economic and Community Development

State Historic Preservation Office

September 21, 2021

Mr. David R. George
Heritage Consultants
PO Box 310249
Newington, CT 06131

Subject: Phase IA Cultural Resource Assessment Survey and Proposed Scope of Work
Phase III Data Recovery Excavation
Orange Solar Project
361 Old Tavern Road
Orange, Connecticut
ENV-22-0245

Dear Mr. George:

The State Historic Preservation Office (SHPO) has reviewed the Phase IA Cultural Resource Assessment Survey and Proposed Scope of Work for a Phase III Data Recovery Excavation of seven areas, located within the boundaries of the above-referenced project. The proposed facility includes the installation of a 26 acre solar photovoltaic (PV) electric generating facility located within an approximately 85 acre parcel, bounded by Timberlane Drive to the north, Peck Lane to the west, Coachmans Road and Peck Lane to the eats, and Old Tavern Road to the south. Access to the facility is to be by two new roads, originating from Old Tavern Road. Additional improvements include 14 stormwater basins, located around the central and eastern arrays.

One previously recorded archaeological site is located within 1 mile of the project area; however, it will not be impacted by the proposed undertaking. One property listed on the National Register of Historic Places (NR), the Orange Center Historic District (NR# 89001089), is located with 1 mile of the project area; however, it will not be impacted by the proposed undertaking. One property listed on the State Register of the Historic Places, Treat Farm (Record No. 4919) is located directly adjacent to the Project Area, within the Project Parcel.

The proposed testing, evaluation, and report preparation outlined in the Scope of Work proposal is consistent with the standards set forth in the *Environmental Review Primer for Connecticut's Archaeological Resources*, and can proceed.

Regarding potential impacts to Treat Farm, this office concurs that visual screening should be developed and implemented as part of the final site plan for the facility.

Department of Economic and Community Development

State Historic Preservation Office

SHPO appreciates the cooperation of all interested parties in the professional management of Connecticut's cultural resources. We look forward to reviewing the Phase III Data Recovery Excavation report once it is complete. These comments are provided in accordance with the Connecticut Environmental Policy Act. For additional information, please contact Marena Wisniewski, Environmental Reviewer, at (860) 500-2357 or marena.wisniewski@ct.gov.

Sincerely,

Jonathan Kinney
Deputy State Historic Preservation Officer