APPENDIX A

ENVIRONMENTAL ASSESSMENT

PROPOSED "POWER LINES" SOLAR PROJECT

20-1 SHORT HILLS ROAD

OLD LYME, CONNECTICUT

NEW LONDON COUNTY

Prepared for:

Cobb Road, LLC

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Essex, CT 06426

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October 2019

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1 Project Introduction

All-Points Technology Corporation, P.C. ("APT") prepared this Environmental Assessment ("EA") on behalf of Cobb Road, LLC ("Cobb Road") for the proposed installation of a ±1.95 megawatt[1] ("MW") solar-based electric generating facility ("Project" or "Facility") located in the Town of Old Lyme, Connecticut. This EA has been completed to support Cobb Road's submission to the Connecticut Siting Council ("Council") of a petition for declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the construction, maintenance, and operation of the Project.

The proposed Project will be located at 20-1 Short Hills Road in Old Lyme, Connecticut ("Site"). The Site itself is a privately-owned irregular shaped parcel that consists of approximately 120.23 acres of primarily undeveloped land. The Site is transected from west to east by an Eversource electrical distribution line right of way ("Eversource ROW"); a single-family residence and a small cabin are located in the northeastern and southeast corners of the property, respectively. The Site vicinity is characterized as rural, with a mix of largely undeveloped land and sparse residential development. Figure 1, *Site Location Map*, depicts the location of the Site and surrounding area.

Upon its completion, the Facility will occupy approximately 11.16 acres of the Site with an additional ±1.56 acres of disturbance beyond the Facility limits, for a total of ±12.72 acres, to enable development ("Project Area"). The Facility, located directly adjacent to the Eversource ROW, will be comprised of approximately 7,704 TSM-DE14H 390W photovoltaic modules ("panels") installed at a tilt angle of 25.0 degrees; twelve (12) Solectria XGI 1500-166 inverters; one (1) pad mounted switchgear; one (1) 2,000 kVA transformer, and one (1) service interconnection point. A ground-mounted racking system, with posts mounted on screw anchors, will be used to secure the panel arrays; while the Facility will be enclosed within a seven (7)-foot tall chain-link security fence. Electrical interconnection to existing distribution poles located within the Eversource ROW will require the installation of five (5) new utility poles. No utility poles will be located within the Facility.

[1] AC – Alternate Current (3.0 MW DC – Direct Current)

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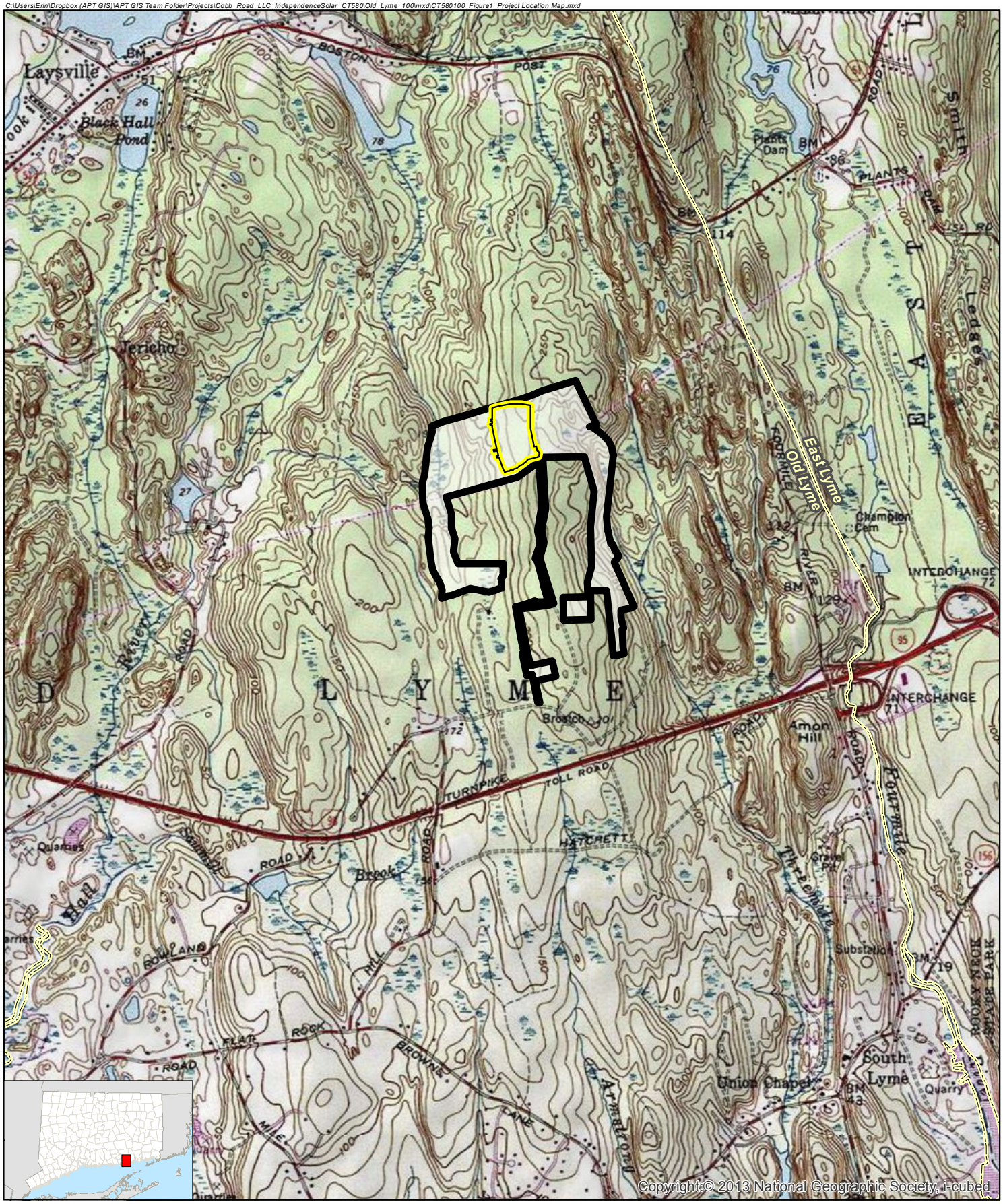

Legend

- Site
- Project Area
- Municipal Boundary

2,000 1,000 0 2,000 Feet

Figure 1
Project Location Map

Proposed Solar Facility
20-1 Short Hills Road
Old Lyme, CT

Cobb Road, LLC

Map Notes:
Base Map Source: USGS 7.5 Minute Topographic Quadrangle Maps: Old Lyme (1976), CT
Map Scale: 1 inch =2,000 feet
Map Date: September 2019

ALL-POINTS TECHNOLOGY CORPORATION

2 Existing Conditions

2.1 Project Location

The Site is a privately-owned irregular shaped parcel located at 20-1 Short Hills Road in Old Lyme, Connecticut. The Site consists of approximately 120.23 acres of primarily undeveloped land that is transected from west to east by an Eversource ROW. The Project Area is centrally located on the Site. The existing Eversource ROW runs west to east alongside the southern side of the Project Area.

Regionally, the Site lies within the Eastern Coastal Ecoregion[2], an area characterized by its location along the Connecticut coastline to Long Island Sound with elevations ranging from sea level to ±400 feet above mean sea level ("AMSL"), metamorphic and igneous bedrock and soils developed on stratified deposits of sand, gravel and silt, glacial till and tidal marine deposits.

The Site's existing topography is generally level with a slight slope down from east to west. Elevations within the Site range from approximately 230 feet AMSL on its eastern side to approximately 200 feet AMSL to the western side.

2.2 Site Access

Currently, the Site is accessed via an existing gravel drive (including an easement) that originates at the northern extent of the Great Oak Road cul-de-sac and extends north into the Site.

Figure 2, *Existing Conditions Map*, depicts current conditions on the Site, its access, abutting properties, and several features discussed herein.

[2] Mehrhoff, Leslie, J. 1978. Rare and Endangered Vascular Plant Species in Connecticut. The New England Botanical Club, in Cooperation with the U.S. Fish and Wildlife Service.

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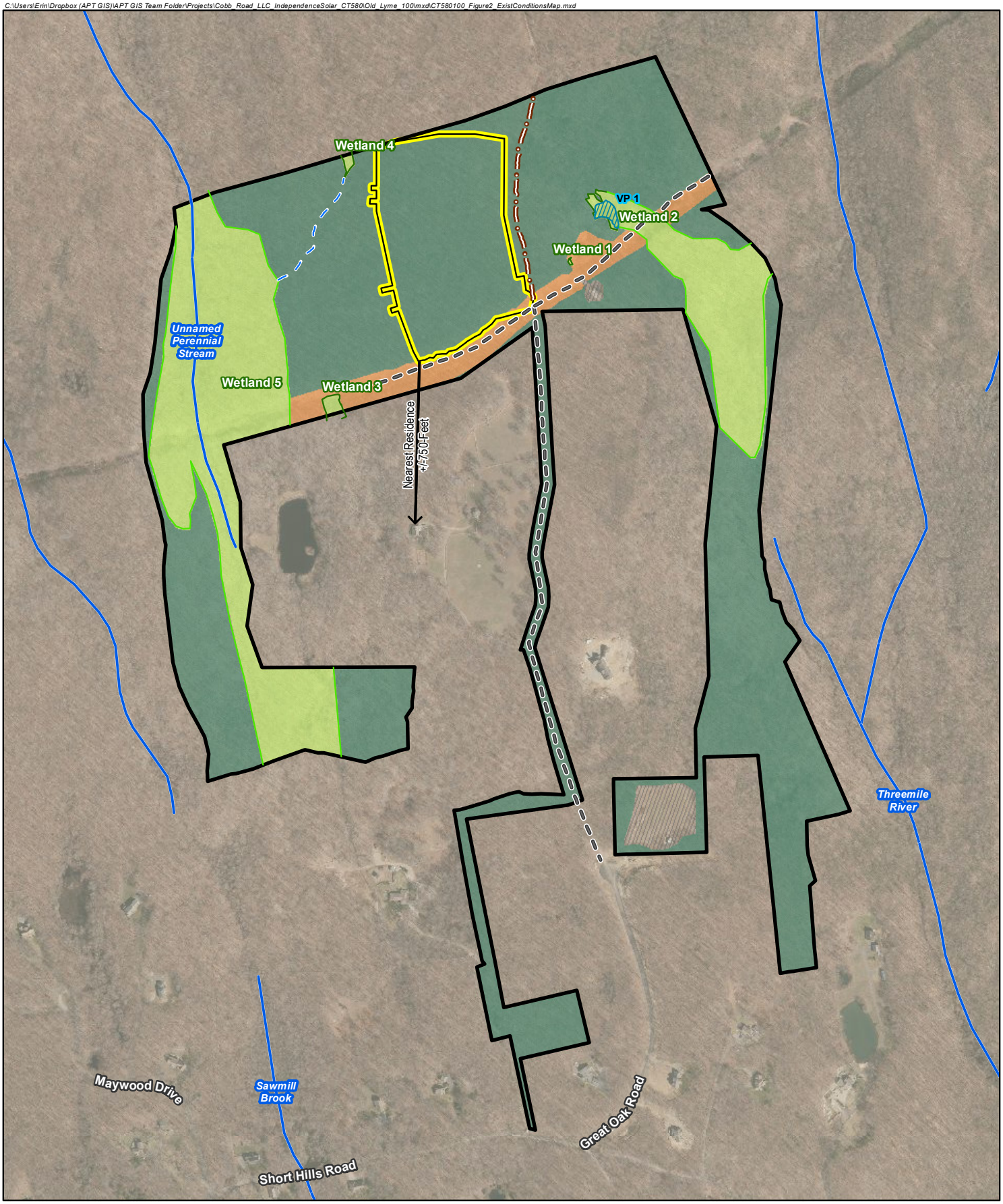

Legend

- Site
- Project Area
- Gravel Access Road
- Dirt/Grass Trail
- Watercourse (CTDEEP)
- Existing Drainage Swale
- Approx. Wetland Boundary
- Delineated Wetland Boundary
- Vernal Pool

Habitat Cover Type

- Developed
- Mixed Hardwood Forest
- Old Field (ROW)
- Wetland

N W E S

600 300 0 600 Feet

Figure 2
Existing Conditions Map

Proposed Solar Facility
20-1 Short Hills Road
Old Lyme, CT

Cobb Road, LLC

Map Notes:
Base Map Source: CTECO 2016 Aerial Photograph
Map Scale: 1 inch =600 feet
Map Date: September 2019

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2.3 Habitat and Wildlife

The Project Area is located primarily within a Mixed Hardwood Forest (uplands) adjacent to Old Field habitat associated with the Eversource ROW. Additional habitat types located on the Site, beyond the Project Area, include Wetland (primarily forested) and Developed areas. While small in size, transitional ecotones separate the Project Area cover types introduced above, consisting mainly of scrub/shrub habitats between the Forested and Old Field ROW areas. The habitat types and their vegetative communities are depicted on Figure 2, *Existing Conditions Map,* and described below.

2.3.1 Habitat Types

Mixed Hardwood Forest

The majority of the Site, approximately 83.87 acres, consists of Mixed Hardwood Forest habitat. The forest within this upland habitat type is largely comprised of even-aged second growth forest with low structural diversity and strata development, while understory and mid-story stratum are sparsely vegetated.

The tree canopy consists of hickories (*Carya sp.*), black birch (*Betula lenta*), black oak (*Quercus velutina*), white oak (*Quercus alba*), musclewood (*Carpinus caroliniana*), American beech (*Fagus grandifolia*), red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), black cherry (*Prunus serotina*) and sassafras (*Sassafras albidium*).

Understory shrub vegetation includes highbush blueberry (*Vaccinium corymbosum*), lowbush blueberry (*Vaccinium angustifolium*), mapleleaf viburnum (*Viburnum acerifolium*), huckleberry (*Gaylussacia baccata*) and mountain laurel (*Kalmia latifolia*), along with the invasive non-native Japanese barberry (*Berberis thunbergii*).

The herb layer includes hay-scented fern (*Dennstaedtia punctilobula*), greenbriar (*Smilax rotundifolia*), Pennsylvania sedge (*Carex pennsylvanica*), grapevine (*Vitis sp.*), Christmas fern (*Polystichum acrosticroides*) and Canada mayflower (*Maianthemum canadense*).

Old Field (managed utility ROW)

This habitat type encompasses approximately 5.55 acres and occurs within the areas of the Site associated with the Eversource ROW. The habitat includes areas adjacent to the narrow gravel access road and vegetation within the maintained ROW (beneath the wires and around the structures) is managed as "Old Field" habitat, consisting of herbaceous species (e.g., grasses) interspersed with low woody shrubs.

Dominant plant species include sumacs (*Rhus spp.*), mountain laurel, sweet fern (*Comptonia peregrina*), lowbush blueberry, greenbriar, goldenrods (*Solidago sp.*), deer-tongue grass (*Dichanthelium clandestinum*), wild strawberry (*Fragaria vesca*), rushes (*Juncus sp.*) and the invasive, non-native Asiatic bittersweet (*Celastrus orbiculatus*), Japanese barberry and multiflora rose (*Rosa multiflora*).

Developed

Small peripheral Developed areas are located on the Site. These areas consist of existing access roads, residential structures, edge-maintained lawn and landscaped areas. Collectively, Developed areas comprise approximately 2.05 acres of the Site.

Wetlands

A total of five (5) wetlands were identified on the Site.[3] However no wetlands or watercourses were identified within the Project Area. The information presented below describes the results of field surveys that took place on March 3rd and 21st, and April 11, 2019 by APT Wetland Scientists Dean Gustafson and Eric Davison. Further information is provided in Appendix A, *Wetland Inspection Report*.

Wetland 1

This resource is located approximately 214 feet east of the Project Area and consists of a very small (±400 sf), isolated anthropogenic (man-made) feature that formed when an excavated borrow pit intercepted the seasonal high groundwater table. As a result, this area now sustains seasonal wetland hydrology and supports a predominance of hydrophytes (wetland plants). The hydrology associated with Wetland 1 is classified as temporarily flooded, which refers to a wetland resource that is flooded for brief periods of time during the growing season, but is dry a majority

[3] Of those five (5) wetlands, four (4) were delineated; the approximate wetland boundary of Wetland 5 was identified in the field- for because it is located greater than 500 feet from the Project Area.

of the year (as the water table is otherwise well below the ground surface). Due to the small size of the wetland and its limited hydroperiod (i.e., little to no standing water), its ability to support wetland-dependent wildlife is severely limited. It offers no breeding habitat for species that require standing water (e.g., vernal pool species) or groundwater discharge (e.g., stream salamanders).

Vegetation within Wetland 1 consists of a scrub-shrub community. Dominant plant species include willow (*Salix sp.*), tussock sedge (*Carex stricta*), rushes, broadleaf meadowsweet (*Spirea latifolia*) and the invasive, non-native multiflora rose.

Wetland 2

Wetland 2, located approximately 379 feet east of the Project Area, is a headwater wetland system that drains to the east via an earthen outlet, eventually flowing to the Threemile River. Within this wetland, a man-made pond was dug by the current property owner approximately twenty (20) years ago. The wetland hydrology associated with this wetland ranges from seasonally saturated along the wetland fringe, to permanently flooded within the pond basin. The central (deepest) portions of the pond exceed six (6) feet.

The pond basin is largely unvegetated. Shallow backwater areas adjacent to the pond contain some shrub islands dominated by highbush blueberry, sweet pepperbush (*Clethra alnifolia*) and winterberry (*Ilex verticillata*). Tree cover consists of red maple, swamp white oak (*Quercus bicolor*), green ash (*Fraxinus pennsylvanica*) and tupelo (*Nyssa sylvatica*). Ground cover is sparse due to the deep shade cast by a shrub layer of mountain laurel.

Wetland 3

Wetland 3, located ±396 feet southwest of the Project Area, is a hillside seep wetland within the Eversource ROW. This wetland system extends farther south off the Site and eventually drains west into a larger, riparian forested wetland system that is associated with an unnamed perennial stream (part of Wetland 5).

Vegetation consists of a scrub-shrub community dominated by non-native multiflora rose, highbush blueberry, green bulrush (*Scirpus atrovirens*), soft rush (*Juncus effuses*), sensitive fern (*Onoclea sensibilis*) and brambles (*Rubus spp*.).

Wetland 4

Wetland 4, located ±104 feet west of the Project Area, is a shallow depressional wetland that extends northward off the Site. A topographic swale extends south/southwest from the southern end of Wetland 4 and eventually makes its way to Wetland 5. However, there is no defined bank and channel within this topographic swale feature and there is no evidence of any surface flow from Wetland 4 into this feature. As such, it does not satisfy the Connecticut Inland Wetlands and Watercourses Act definition of an "intermittent watercourse", and is therefore not a jurisdictional resource.

Vegetation within this wetland consists of a forested community dominated by red maple, yellow birch (*Betula alleghaniensis*) and winterberry. Ground cover is sparse due to deep shade cast by the forest overstory.

Wetland 5

Wetland 5, located over 500 feet west of the Project Area, is a large forested wetland system with an interior unnamed perennial watercourse that flows north. Bordering forested wetlands are characterized by hillside seep systems that drain westward, thereby providing base flow to the perennial stream.

Vegetation consists of a forested community dominated by red maple, yellow birch, highbush blueberry, sweet pepperbush, winterberry and skunk cabbage (*Symplocarpus foetidus*).

Vernal Pools

A single embedded or "cryptic" vernal pool (identified as "Vernal Pool 1" or "VP1") occurs within Wetland 2 in the aforementioned man-made pond. VP1 was surveyed for the presence of indicator species on March 21st and April 11th of 2019. Two indicator species were confirmed breeding in the pool: wood frog (*Rana sylvatica*) and spotted salamander (*Ambystoma maculatum*). These two species are common statewide as well as within the southeast coastal region.

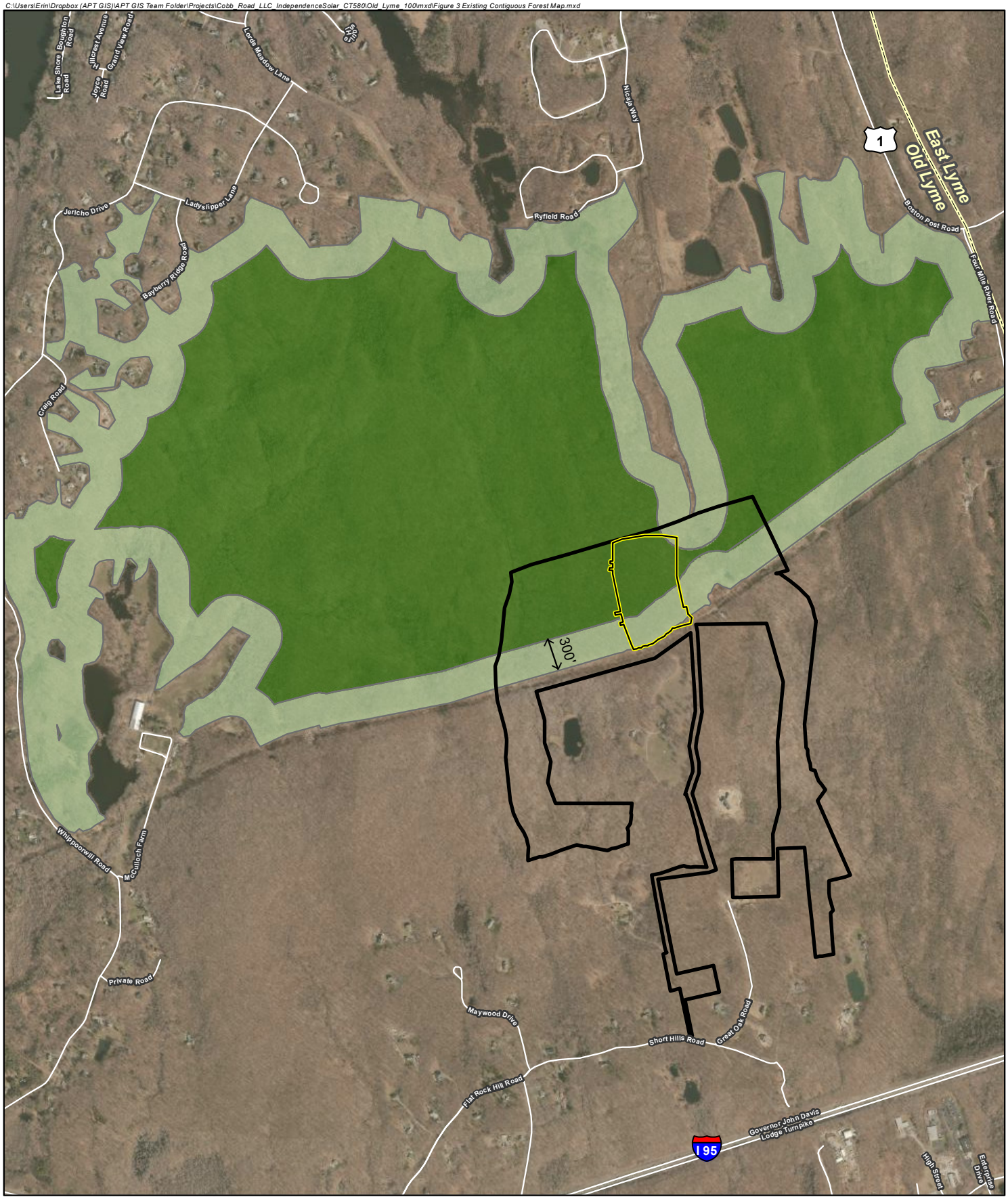
Egg mass counts were conducted in order to quantitatively assess breeding productivity; a total of 926 spotted salamander and 16 wood frog egg masses were observed. Other species observed in the vernal pool (and surrounding wetland) include red-spotted newt (*Notophthalmus viridescens*), gray treefrog (*Hyla versicolor*), green frog (*Rana clamitans*), wood duck (*Aix sponsa*) and crayfish.

2.4 Core Forest Determination

APT evaluated the size and extent of the contiguous forest block (i.e., core forest) present within and adjacent to the Site. APT initially reviewed two publicly available GIS-based datasets designed to assess impacts to core forest habitat: the CT DEEP's Forestland Habitat Impact Map and UConn's Center for Land Use Education and Research's Forest Fragmentation Analysis ("FFA") study. The first source, the CT DEEP's *Forestland Habitat Impact Mapping,*[4] does not include the Site within an area mapped as core forest. The second source was UConn's FAA[5] study designates "core forest" as areas greater than 300 feet from non-forested habitat. This 300-foot zone is referred to as the "edge width" or "edge forest"; and although it supports many species, it represents sub-optimal breeding habitat for forest-interior birds, due to its decreased forest quality, increased levels of disturbance, and increased rates of nest predation and brood parasitism within this transitional forest edge ("edge effect"). The FFA study further identifies three (3) categories of core forest: small (< 250 acres); medium (250-500 acres); and large (>500 acres). The FFA analysis indicates that the Site falls within the southern portion of a "large core" forest block that stretches north and east towards Route 1, and west towards Whippoorwill Road. This is generally consistent with APT's independent GIS analysis (based on 2016 leaf-off aerial photography), which indicates that the total contiguous forest cover (including areas both on and off the Site) is approximately 709 acres (see Figure 3 *Existing Contiguous Forest Map*). Forest Areas currently influenced by edge effect (totaling approximately 288 acres) shall reduce the aggregate amount of forest interior habitat is approximately 421 acres. This would fall within the FFA study's classified range of a "medium" core forest. Regardless, it represents a significant core forest block with respect to its importance for forest-interior birds, particularly when considering that a second large contiguous forest block lies immediately to the south of the Eversource ROW.

[4] Source: http://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=7b81844bab634281b544c20bf2d7bfb8: This spatial screening layer identifies prime continuous and connected core forestland blocks. It is intended to identify areas of potential forestland habitat impacts relative to solar installation applications made to the Connecticut Siting Council. If the project intersects with the Forestland Habitat Impact Map there is a potential for material effects to core forest.

[5] CLEAR's FFA: http://clear.uconn.edu/projects/landscape/forestfrag/forestfrag_public%20summary.pdf



Legend

- Site
- Project Area
- Municipal Boundary

Existing Forest Block (+/-709 Acres)

Type

- Core Forest (+/-421 Acres)
- Edge Forest (+/-288 Acres)

**Existing Forest within the Project Area: +/-12.2 acres*
+/-8.2 Acres of Core Forest
+/-4.3 Acres of Edge Forest

N
W E
S

1,200 600 0 1,200 Feet

Figure 3
Existing Contiguous Forest Map

Proposed Solar Facility
20-1 Short Hills Road
Old Lyme, CT

Cobb Road, LLC

Map Notes:
Base Map Source: CTECO 2016 Aerial Photograph
Map Scale: 1 inch = 1,200 feet
Map Date: September 2019

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2.5 Wildlife

Breeding Bird Survey

Avian surveys were conducted on May 9th, 23rd, 30th and June 7th, 2019 by APT Scientist Eric Davison. Bird surveys were conducted between the hours of 6:00am and 9:00am. Surveys were conducted under partly cloudy to sunny skies, with light winds (Beaufort Wind Scale 0-2[6]). All birds observed via sight or sound were recorded. Birds were sighted visually via the naked eye or via 8 x 42 binoculars or a 400mm telephoto lens. A habitat-based line transect survey method was employed. The methodology included surveying the habitat types during each Site visit, where the line transects passed within approximately 300 feet of all portions of the Project Area. Bird species observed are listed in Table 1, provided below.

[6] The Beaufort scale, officially known as the Beaufort wind force scale, is a descriptive table that depicts the force of wind by a series of numbers from 0 to 12. The Beaufort scale is useful for estimating wind power without wind instruments. Scale rating of 0-2 is equal to 0 to 7 mile per hour winds or a "light breeze".
Source: https://www.nationalgeographic.org/encyclopedia/beaufort-scale/

Table 1: Observed Bird Species

Common Name	Scientific Name	Habitat Type	Use Code
American goldfinch	*Carduelis tristis*	2	H
American robin	*Turdus migratorius*	1,2	M
Barred owl	*Strix varia*	1	S (OF)
Black-capped chickadee	*Parus atricapillus*	1	M
Blue jay	*Cyanocitta cristata*	1	M
Blue-winged warbler	*Vermivora pinus*	2	M
Brown-headed cowbird	*Molothrus ater*	1,2	M
Common raven	*Corvus corax*	2	X
Common yellowthroat	*Geothlypis trichas*	2	M
Eastern bluebird	*Sialia sialis*	2	H
Eastern towhee	*Pipilo erythrophthalmus*	2	M
Eastern wood-pewee*	*Contopus virens*	1	M
Field sparrow	*Spizella pusilla*	2	M
Gray catbird	*Dumetella carolinensis*	2	M
Great-crested flycatcher	*Myiarchus crinitus*	1,2	M
Hairy woodpecker*	*Picoides villosus*	1	M
Hermit thrush	*Catharus guttatus*	1	M (OF)
House wren	*Troglodytes aedon*	1,2	M
Northern cardinal	*Cardinalis cardinalis*	2	M
Northern oriole	*Icterus galbula*	2	M
Ovenbird*	*Seiurus aurocapillus*	1	M
Pileated woodpecker	*Dryocopus pileatus*	1	B
Prairie warbler	*Dendroica discolor*	2	M
Red winged blackbird	*Agelaius phoeniceus*	4	M (OF)
Red-bellied woodpecker	*Melanerpes carolinus*	1	M
Red-eyed vireo*	*Vireo olivaceus*	1	M
Red-tailed hawk	*Buteo jamaicensis*	1,2	H
Rose-breasted grosbeak	*Pheucticus ludovicianus*	1	S
Scarlet tanager*	*Piranga olivacea*	1	S
Song sparrow	*Melospiza Melodia*	2	S
Tree swallow	*Tachycineta bicolor*	2	H
Tufted titmouse	*Parus bicolor*	1	M
Turkey vulture	*Cathartes aura*	1,2	X
White-breasted nuthatch	*Sitta carolinensis*	1	M
Wild turkey	*Meleagris gallopavo*	1,2	M
Wood duck	*Aix sponsa*	3	X
Wood thrush*	*Hylocichla mustelina*	1	M

Observations occurred during May and June 2019 – *Species of Greatest Conservation Need (GCN)
Habitat Types: 1 = Mixed Hardwood Forest; 2 = Old Field (utility ROW); 3 = Forested Wetland; 4 = emergent wetlands
Breeding Codes (following CT Bird Atlas code system): X – Observed; Possible (H or S); Probable (M,P,T,C,N,A,B);
(OF) = song/call heard offsite only

The Connecticut Department of Energy and Environmental Protection ("CTDEEP") 2015 *Wildlife Action Plan* has identified priority habitats and the declining species that are of Greatest Conservation Need ("GCN") in the state. The Site includes two (2) priority habitats – Old Field (i.e., early-successional/shrubland) and Mixed Hardwood Forest (including core forest).

Avian surveys documented the use of these priority habitats by a number of GCN species. GCN forest-interior songbirds confirmed on the Site include the ovenbird, scarlet tanager, wood thrush and eastern wood pewee. The primary limiting factor with respect to the habitat quality for forest-interior birds is that much of the forest within the Project Area is edge forest (±four (4) acres). In this case, the utility line corridor serves as the primary habitat fragmentation feature resulting in the presence of edge forest.

Early-successional habitat dependent GCN species confirmed on the Site include the blue-winged warbler, prairie warbler, field sparrow and eastern towhee. The primary limiting factor with respect to the quality of Old Field habitat is its size. In this case, the width of the habitat (i.e., the maintained ROW) is only approximately 100 feet. Many Old Field dependent species are area-sensitive, and therefore more suitable habitat quality is located within larger habitat patches as opposed to narrow linear habitat patches such as what is present on the Site.

2.6 Rare Species

The CTDEEP Natural Diversity Data Base ("NDDB") program performs hundreds of environmental reviews each year to determine the impact of proposed development projects on state listed species and to help landowners conserve the state's biodiversity. In furtherance of this endeavor, the CTDEEP also developed maps to serve as a pre-screening tool to help applicants determine if there is the potential project-related impact to state-listed species.

The NDDB maps represent approximate locations of (i) endangered, threatened and special concern species and, (ii) significant natural communities in Connecticut. The locations of species and natural communities depicted on the maps are based on data collected over the years by CTDEEP staff, scientists, conservation groups, and landowners. In some cases, an occurrence represents a location derived from literature, museum records and/or specimens. These data are compiled and maintained in the NDDB. The general locations of species and communities are symbolized as shaded (or cross-hatched) areas on the maps. Exact locations have been masked to protect sensitive species from collection and disturbance and to protect landowner's rights whenever species occur on private property.

APT reviewed the most recent CTDEEP NDDB mapping (June 2019) to determine if any such species or habitats occur within the vicinity of the Site. According to the available CTDEEP NDDB maps, the Site is not located within 0.25 mile of a NDDB buffer area; the nearest NDDB buffer area is located approximately 0.86 mile to the east of the Site. Therefore, as it relates to the presence of endangered species or a significant natural community on the Site, there is no need to consult with the CTDEEP for this Project, either under current NDDB or Connecticut Siting Council criteria. A graphic showing the nearest NDDB buffer area to the Project is included in Appendix B, *CT DEEP NDDB Overview Map.*

Northern Long-eared Bat: The northern long-eared bat ("NLEB"; *Myotis septentrionalis*) is a federally-listed[7] threatened species known to occur in the vicinity of the Site. The NLEB's range encompasses the entire State of Connecticut and suitable NLEB roost habitat includes trees (live, dying, dead, or snag) with a diameter at breast height ("DBH") of three (3) inches or greater.

The *Northern long-eared bat areas of concern in Connecticut to assist with Federal Endangered Species Act Compliance map* (February 1, 2016) was reviewed to determine the locations of any known maternity roost trees or hibernaculum in the state. This map reveals that there are currently no known NLEB maternity roost trees in Connecticut. The nearest NLEB habitat resource to the Site is located in North Branford, approximately 22 miles to the west.

2.7 Ground and Surface Water Classification

2.7.1 Groundwater

Groundwater underlying the Site is classified by the Connecticut Department of Energy and Environmental Protection ("CTDEEP") as "GA". This classification indicates groundwater within the area is presumed to be suitable for human consumption without treatment. Designated uses in GA-classified areas include existing private and potential public or private supplies of drinking water and base flow for hydraulically-connected surface water bodies. Based upon a review of available CTDEEP mapping, the Site is not located within a mapped preliminary or final Aquifer Protection Area ("APA").

2.7.2 Surface Water

Based upon a review of CTDEEP mapping, the majority of the Site is located in Major Drainage Basin 4 (Connecticut River), Sub Regional Drainage Basin 4020 (Lieutenant River), and Local

[7] Listing under the federal Endangered Species Act

Drainage Basin 4020-04 (Unnamed brook at mouth above Mill Brook). The extreme northeastern corner of the Site is located in Major Drainage Basin 2 (Southeast Coastal Basin), Sub Regional Drainage Basin 2000 (Southeast Shoreline), and Local Drainage Basin 2000-47 (Unnamed pond at the outlet on Threemile River). The nearest named surface waterbody is the Northeast Branch Black Hall River which is located approximately 825 feet north of the Project Area. Northeast Branch Black Hall River is classified by the CTDEEP as a "Class A" surface water body. Designated uses for Class A surface water bodies include habitat for fish and other aquatic life and wildlife; potential drinking water supplies; recreation; and water supply for industry and agriculture.

2.8 Floodplain Areas

APT reviewed the United States Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Maps ("FIRM") for the Site. A FIRM is the official map of a community on which FEMA has delineated both the special hazard areas and risk premium zones applicable to the community. The Site is mapped on FIRM PANEL #09011 00459 J, dated August 5, 2013. Based upon the reviewed mapping, the Site is classified as Zone X, which is defined as areas of minimal flooding, typically above the 500-year flood level.

2.9 Soils and Geology

Surficial materials on and within the vicinity of the Site are comprised of thin and thick deposits of glacial till while soils located on and within the vicinity of the Site are identified as Paxton and Montauk fine sandy loams (3 to 8 percent slopes, very stony) and Charlton-Chatfield complex (0 to 15 percent slopes, very rocky). Paxton and Montauk fine sandy loams are well-drained soils consisting of coarse-loamy lodgment till derived from gneiss, granite, and/or schist. Charlton-Chatfield complex are well-drained soils consisting of coarse-loamy melt-out till derived from granite, gneiss, and/or schist.

Bedrock geology beneath the Site is identified as Plainfield Formation plus Potter Hill Granite Gneiss plus Narragansett Pier Granite. Plainfield Formation is described as an interlayered light-gray, thin-bedded quartzite, in places with feldspar, mica, graphite, or pyrite; light to medium-gray gneiss composed of quartz, oligoclase, and biotite (rarely microcline); medium to dark-gray schist composed of quartz, oligoclase, biotite, sillimanite, and garnet; dark-gray or green gneiss composed of plagioclase, quartz, biotite, and hornblende (commonly with diopside), amphibolite, diopsite-bearing quartzite, and calc-silicate rock.

Potter Hill Granite Gneiss is described as a light-pink to gray, tan-weathering, fine to medium-grained, rarely porphyritic, well-foliated (not lineated) granitic gneiss composed of microcline, quartz, oligoclase (or albite), biotite, and magnetite, minor muscovite, and local garnet.

Narragansett Pier Granite is described as a pink to red, medium to coarse-grained (commonly pegmatitic), generally massive (not gneissic) granite composed of microcline, oligoclase, quartz, and biotite, and accessory muscovite and magnetite with considerable associated pegmatite.

2.10 Farmland Soils

In accordance with the Code of Federal Regulations, CFR Title 7, part 657, farmland soils include land that is defined as prime, unique, or farmlands of statewide or local importance based on soil type. They represent the most suitable land for producing food, feed, fiber, forage, and oilseed crops.

According to the Connecticut Environmental Conditions Online Resource Guide[8], there are currently no soils located on the Site that are identified as prime, unique, or farmlands of statewide or local importance.

2.11 Historic and Archaeological Resources

Heritage Consultants LLC ("Heritage Consultants") of Newington, Connecticut, reviewed relevant historic and archaeological information to determine whether the Site holds potential cultural resource significance. Their review of historic maps and aerial images of the Site, examination of files maintained by the Connecticut State Historic Preservation Office ("SHPO"), and a pedestrian survey of the Site revealed that the proposed Project is not located within the immediate vicinity of any National or State Register of Historic Places properties or historic standing structures.

In terms of archaeological potential, review of the same resources determined that the Site is located within the vicinity of two (2) previously identified archaeological sites. Both sites consist of prehistoric rock shelters and their presence demonstrates archaeological resources exist in the region. In addition, the pedestrian survey determined that approximately seven (7) acres of land within the eastern portion of the Project Area have the potential to contain intact archaeological deposits while the remaining ±4.7 acres located within the western portion of the Project Area were considered to possess a no/low sensitivity for containing intact archaeological deposits.

[8] Connecticut Environmental Conditions Online (CTECO) Resource Guide www.cteco.uconn.edu.

APT submitted Project and Site historic/cultural information to the SHPO for agency review and comment on June 28, 2019. SHPO responded on July 2, 2019, agreeing that portions of the Project Area retain a moderate to high degree of potential to contain intact archaeological deposits, and recommended that a Phase 1B Professional Cultural Resources Assessment and Reconnaissance Survey be performed.

At the recommendation of the SHPO, Heritage Consultants completed a Phase 1B Cultural Resources Assessment and Reconnaissance Survey for the proposed Project during the week of August 5th through August 9th, 2019. Fieldwork for this assessment included a pedestrian survey, photo-documentation, and the excavation of shovel tests across the Project Area. The shovel testing regime included the excavation of 171 shovel tests throughout the moderate/high archaeologically sensitive portions of the Project Area. This survey resulted in the recovery of prehistoric artifacts from fourteen (1) of the excavated shovel tests. Laboratory analysis of the collected items indicated that they all represented waste from stone tool manufacturing, including flakes and pieces of shatter. No temporally diagnostic artifacts or cultural features were identified during the Phase 1B survey, which suggests that the collected items represent a very short-term occupation dating from an unknown prehistoric period. Since the excavated areas did not produce evidence of substantial numbers of artifacts, temporally diagnostic materials, and/or cultural features, the Project Area was assessed as lacking in research potential. Therefore, the excavated areas were assessed as ineligible for listing on the National Register of Historic Places and no additional archaeological examination of these areas or the remainder of the Project Area is recommended prior to construction of the proposed Project.

A copy of the *SHPO Correspondence and Phase 1A and 1B Cultural Resources Assessment and Reconnaissance Survey Reports* are included in Appendix C.

2.12 Scenic and Recreational Areas

No State Designated Scenic Roads or scenic areas are located near the Site. The nearest recreational area is The Old Lyme Land Trust's Lay Preserve which abuts the Site to the west/northwest. Additional open space/recreational areas are located east of the Site. There are additional recreation areas located within the Town, but not proximate to the Site. See Figure 3, *Surrounding Features Map,* for those resources located within one-mile of the Site.

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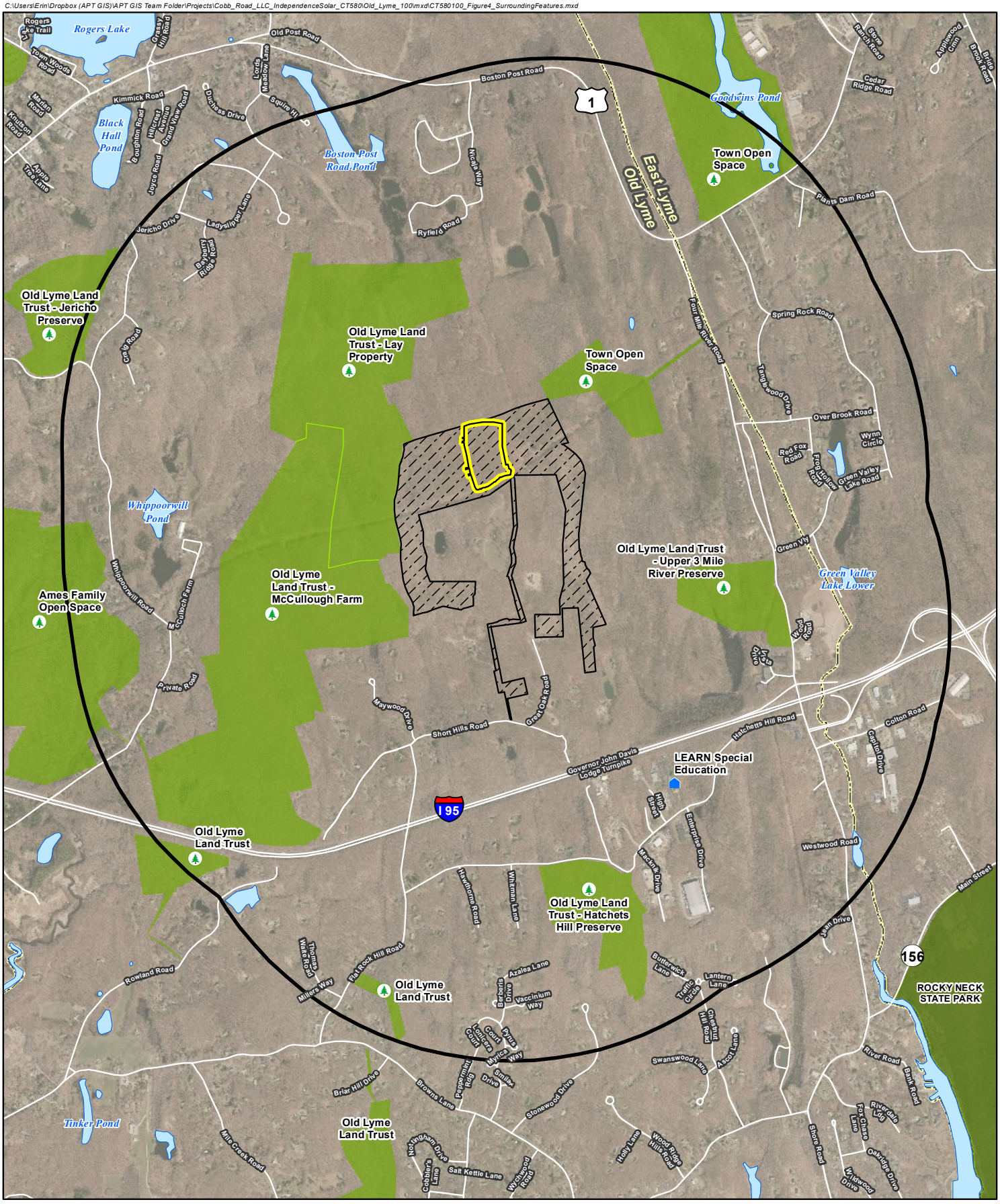

Legend

SurroundingFeatures w/in 1mi.

- School
- Park/Recreation
- 1-Mile Radius
- Site
- Project Area
- Open Water
- Municipal and Private Open Space Property
- State Forest/Park
- Municipal Boundary

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Map Notes:
Base Map Source: CTECO 2016 Aerial Photograph
Map Scale: 1 inch =2,000 feet
Map Date: September 2019

Figure 4
Surrounding Features Map

Proposed Solar Facility
20-1 Short Hills Road
Old Lyme, CT

Cobb Road, LLC

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2.1 Noise

The entire Project Area is undeveloped, where no noise sources presently exist. Some noise associated with the existing single-family home and small cabin likely take place as would be expected within any residentially developed property.

2.2 Lighting

Exterior lights associated with the existing single-family home and small cabin are the only permanent lighting sources that currently exist on the Site.

3 Effects on the Environment

The purpose of this Section is to analyze and discuss the Project's potential effects on the environment and demonstrate that the proposed development will have no significant adverse effect on the surrounding environment.

3.1 Proposed Project Development

The Project Area will require approximately 12.72 acres of disturbance which will include land clearing, regrading, and interior access road development. Once constructed, the Facility will consist of a ±1.95-megawatt[9] solar field and occupy approximately 11.16 acres. The Project Area, consisting of ±12.72 acres, is primarily located within a Mixed Hardwood Forest habitat with a small component located within the northern portions of the Old Field (managed utility ROW) habitat. The Project Area, which is generally level with a slight decrease in slope from east to west, will require some manipulation (cuts/fills) and regrading to allow for Facility development and installation of stormwater and erosion and sedimentation controls. In addition, approximately twelve (12) acres of trees will be removed for construction and to prevent shading of the Facility.

The ±1.95-megawatt Facility will be comprised of approximately 7,704 TSM-DE14H 390W photovoltaic modules installed at a tilt angle of 25.0 degrees; twelve (12) Solectria XGI 1500-166 inverters; one (1) pad mounted switchgear; one (1) 2,000 kVA transformer, and one (1) service interconnection point. The solar arrays will use a ground mounted racking system with posts mounted on screw anchors to minimize soil disturbance during installation. The entire Facility will be enclosed within a seven (7)-foot tall chain-link security fence.

Electrical connections to existing distribution poles located within the Eversource ROW will require the installation of five (5) new utility poles. No utility poles will be located within the Facility.

Once construction is complete, disturbed areas will be seeded to re-establish or enhance permanent cover.

Figure 5, *Proposed Conditions Map*, depicts the proposed Project Area. Project Plans are provided in Appendix D.

[9] AC – Alternate Current (3.0 MW DC – Direct Current)

3.2 Public Health and Safety

The proposed Project is not expected to create any impact with regard to public health or safety issues. The proposed Project will meet or exceed all local, state, national and industry health and safety standards and requirements. The Facility will not consume any raw materials, will not produce any by-products and will be unstaffed during normal operating conditions. The Facility will be enclosed by a seven (7)-foot tall chain-link fence. The main entrance to the Facility, located in the southeast corner of the Project Area, will be gated, limiting access to authorized personnel only. All Town of Old Lyme emergency response personnel will be provided access codes to all on-site locks. Two (2) secondary gated access points located along the western fence line will also be installed to provide additional accesses for maintenance vehicles.

Overall, the Project will meet or exceed all health and safety requirements applicable to electric power generation. Each employee working on the Site will:

- Receive required general and Project specific health and safety training;
- Comply with all health and safety controls as directed by local and state requirements;
- Understand and employ the health and safety plan while on the Project Site;
- Know the location of local emergency care facilities, travel times, ingress and egress routes; and
- Report all unsafe conditions to the construction manager.

With regard to the Project's impact on local traffic patterns, construction equipment will be required to access the Site during normal working hours. Please refer to Appendix E, the *Construction Schedule* and *Construction Work Hours/Days Letter* for detailed information concerning the construction schedule and proposed construction work hours/days. After construction is complete and the Facility (unstaffed) is operable, traffic at the Site will be minimal. It is anticipated that the Facility will require mowing two (2) times per year. Routine maintenance of the electrical equipment will occur once (1) per year. Annual maintenance will typically involve two (2) technicians for a day. Any equipment that breaks down will be repaired on an as-needed basis.

As it relates to the Facility itself, the solar modules are designed to absorb incoming solar radiation and minimize reflectivity, such that only a small percentage of incidental light will be reflected off the panels. This incidental light is significantly less reflective than common building materials, such as steel, or the surface of smooth water. The panels will be tilted up toward the southern sky at a fixed angle of twenty-five (25) degrees, thereby further reducing reflectivity.

The leading edge of the panels will be approximately twenty-four (24) inches above the existing ground surface, which will provide adequate room for any accumulating snow to "sheet" off. Any production degradation due to snow build-up has already been modeled into the annual system output and performance calculations. At this time, Cobb Road does not envision requiring any "snow removal" operations; rather, the snow will be allowed to melt or slide off.

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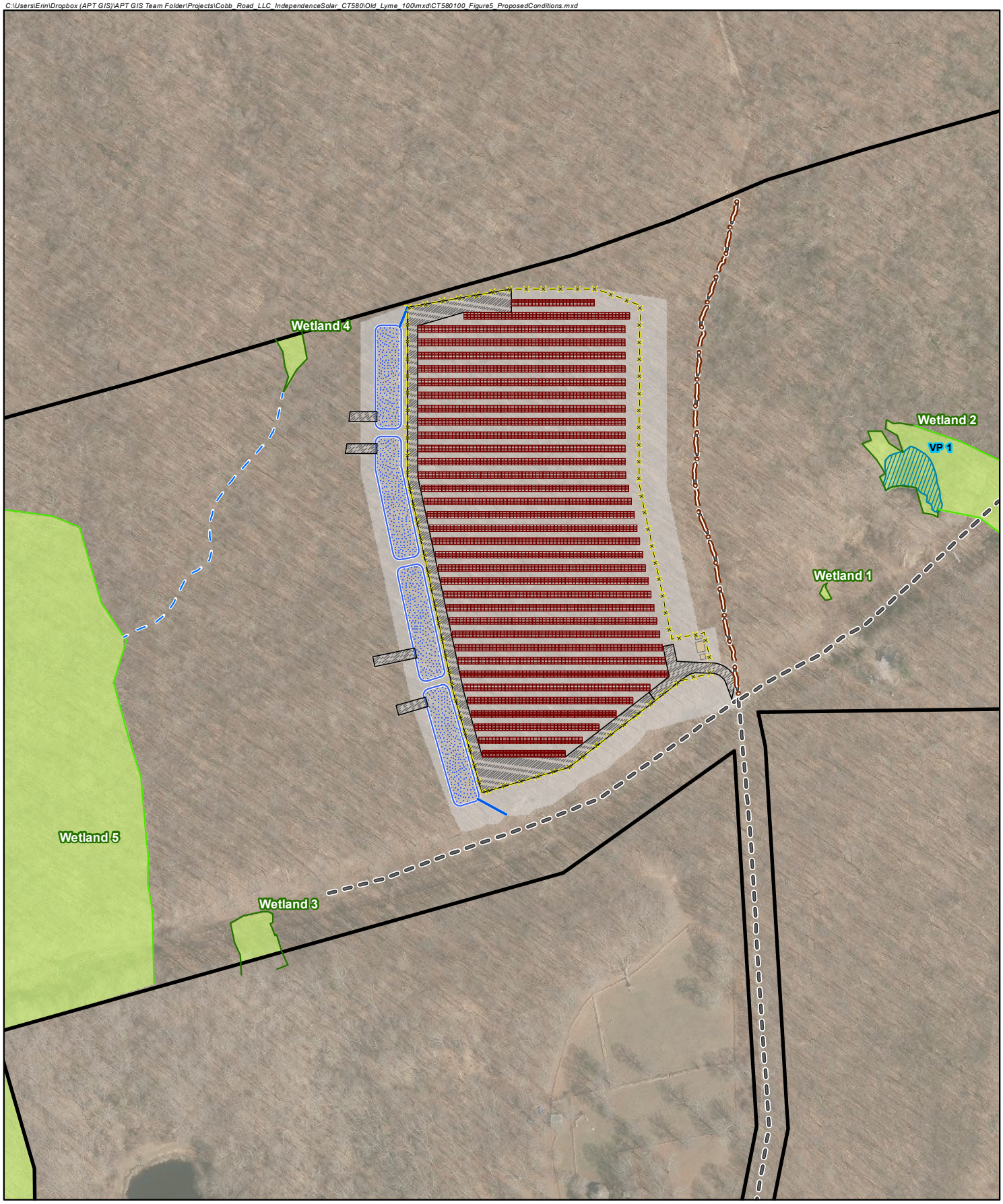

Legend

- Site
- Project Area
- Gravel Access Road
- Dirt/Grass Trail
- Delineated Wetland Boundary
- Approx. Wetland Boundary
- Wetland Area
- Vernal Pool
- Existing Drainage Swale
- Perimeter Fence
- Solar Panels
- Proposed Swale
- Concrete Pad
- Gravel
- Stormwater Basin

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Figure 5
Proposed Conditions Map

Proposed Solar Facility
20-1 Short Hills Road
Old Lyme, CT

Cobb Road, LLC

Map Notes:
Base Map Source: CTECO 2016 Aerial Photograph
Map Scale: 1 inch = 250 feet
Map Date: September 2019

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3.3 Local, State and Federal Land Use Plans

The Project is consistent with state and Federal land-use plans and will support the state's energy policies and strategies by developing a renewable energy resource while not having a substantial adverse environmental effect. Although local land use application processes do not specifically apply to this Project, it has been designed to meet the intent of the local land use regulations. The Site lies within the Town of Old Lyme's Rural Residence (RU-80) Zone.

3.4 Existing and Future Development

The Project was selected by Eversource and awarded a 15-year contract to participate in the Low Emissions Renewable Energy Credit ("LREC") program[10]. The Project's output will be used to help Connecticut meet its emissions reduction targets via the State of Connecticut's Renewable Portfolio Standards[11]. The power from the Project is expected to be sold back to Eversource via its self-generation tariff. The Project will benefit the local community by improving electrical service for existing and future development in the Town of Old Lyme through the availability of enhanced local generating capacity that does not rely on the congested regional electrical transmission networks.

3.5 Roads

There is an existing gravel access drive that originates at the northern extent of Great Oak Road and extends north into the Site. This pre-existing road will be used to access the Site and will require no improvements. Inside the Project Area, ±1,644 feet of new gravel roads and ±902 feet of compacted earth will be constructed to allow for access and maintenance of the Facility. See Figure 5, *Proposed Conditions Map* and Appendix D, *Project Plans.*

3.6 Wetlands

No wetlands or watercourses will be directly impacted by the Project. The Project has also been designed to avoid encroaching closer than 100 feet to any nearby wetland resources. All clearing and grading limits for the Facility's infrastructure (solar arrays, associated equipment, storm water

[10] Conn. Gen. Stat. § 16-244(r), 16-244(s),16-244(t) and 16-245(a) require that Eversource & UI enter into 15-year contracts to purchase renewable energy credits (RECs) from qualifying projects in Connecticut at a fixed price for 15 years. A REC, is issued for each Megawatt-hour (MWh) of energy generated from certain clean or renewable sources or for each MWh of energy saved through the installation of energy efficiency measures.

[11] All electricity sold in Connecticut includes a mandatory amount of renewable energy, referred to as Connecticut's Renewable Portfolio Standard or RPS. The utilities and licensed suppliers buy or trade RECs to meet these standards.

basins, access road, etc.) will maintain a minimum setback of approximately 100 feet to all wetland areas. The nearest distances of the Project Area and Facility relative to the five (5) wetland features are summarized in Table 2 below.

Table 2: Wetland Buffer Distances to Project

Wetland ID	Distance to Project Area[12] (feet)	Distance to Facility[13] (feet)
Wetland 1	±214	+235
Wetland 2	±379	+431
Wetland 3	±396	±466
Wetland 4	±104	±194
Wetland 5	±511	±597

Potential short-term temporary impacts associated with the Project's construction activities will be minimized by the proposed sedimentation and erosion controls which will be installed and maintained during construction activities in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*. A phased sedimentation and erosion control plan will be implemented, including four (4) temporary sediment traps along the west side of the Project Area. These measures will properly protect nearby downgradient wetland resources (Wetlands 4 and 5). Potential long-term secondary impacts to wetland resources associated with the operation of this Facility are minimized by the following factors: the Facility will be unstaffed (thereby generating negligible traffic); gravel and compacted earth roads reduce the creation of impervious surfaces; treating the majority of the ground beneath the solar arrays with native grass/vegetation provides opportunity for surface water to infiltrate or slow prior to entering the four (4) grass lined infiltration basins; and, any stormwater runoff that enters the basins will be infiltrated, with the larger storm events discharging through the basins' overflow weir and onto the surrounding upland forest floor (where a minimum 100-foot buffer has been established to the nearest wetland resources). The infiltration basins have been designed to treat 100 percent of the Water Quality Volume. Stormwater generated by the proposed development will be properly handled and treated in accordance with the *2004 Connecticut Stormwater Quality Manual*. Supporting stormwater management calculations, including the design of the infiltration basins, are provided in the Stormwater Management Report, which is provided under separate cover.

[12] Limits of Disturbance
[13] Facility Security Fence

To promote protection of wetlands and avoid unintentional impacts to these resources, best management practices ("BMPs") have been incorporated into the Facility design. The proposed BMPs are outlined in the Wetland Protection and Vernal Pool Protection Plan (see Appendix F for details). By implementing these management techniques, the proposed Project development will not result in any adverse impact to wetland resources.

3.7 Vernal Pool

Construction and operation of the Facility would not result in a direct physical impact to Vernal Pool 1 ("VP1") located within Wetland 2. It is widely documented that vernal pool dependent amphibians are not solely dependent upon the actual vernal pool habitat for breeding (i.e., egg and larval development). Instead, they require surrounding upland forest habitat for most of their adult lives. Accepted studies recommend protection of adjacent habitats up to 750 feet from the vernal pool edge for obligate pool-breeding amphibians.[14]

In order to evaluate potential impacts to VP1 and its surrounding upland habitat, the resource was assessed using methodology developed by Calhoun and Klemens (2002) in combination with the US Army Corps of Engineers New England District's *Vernal Pool Best Management Practices (BMPs)* (January 2015)[15]. Collectively, these methodologies assess vernal pool ecological significance based on two (2) parameters: 1) biological value of the vernal pool and, 2) conditions of the critical terrestrial habitat. The biological rating is based on the presence of state-listed species and the abundance and diversity of vernal pool indicator species. The terrestrial habitat is assessed based on the integrity of the vernal pool envelope ("VPE" - within 100 feet of the pool's edge) and the critical terrestrial habitat ("CTH" - within 100-750 feet of the pool's edge). Based on these observations, intact forest represents the highest value habitat within both of these conservation zones to support breeding opportunities for the various obligate vernal pool indicator species that rely on forested habitat (e.g., wood frog and spotted salamander). Based on the observations of two (2) obligate vernal pool species breeding, VP1 meets the biological criteria for a Tier 1 pool.

The landscape condition of the VP1 was then evaluated to determine the existing and proposed quality of the terrestrial (non-breeding) habitat. Vernal pools with 25% or less developed areas

[14] Calhoun, A.J.K. and M.W. Klemens. 2002. Best Development Practices (BDPs): Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States. WCS/MCA Technical Paper No. 5

[15] https://www.nae.usace.army.mil/Portals/74/docs/regulatory/VernalPools/VPBMPsJan2015.pdf

in the CTH are identified as having high priority for maintaining this development percentage (including site clearing, grading and construction).

The results of the landscape analysis show that, due to the relatively small amount of disturbance associated with the Project, the proposed development would not result in a degradation of the existing tier rating or terrestrial habitat integrity of VP1. The VPE (total area is 1.64 acres) will not be impacted by the proposed development and is approximately 307 feet from any and all Project-related activities.

The total area of the CTH (±45.55 acres) associated with the vernal pool includes a combination of Mixed Hardwood Forest (±37.66 acres), forested wetlands (±4.56 acres), transitional Old Field (ROW) habitat (±3.14 acres) and developed areas (±0.19 acres). VP1's CTH has ±1% development under existing conditions resulting in the 75% non-development criterion tipping point not being exceeded (99% non-development).

The proposed Facility and its entrance[16] are located within a portion of the CTH and would result in ±6.4 acres of additional development. This represents an increase of ±14% development within the CTH associated with VP1, and maintains a total area of development well below the 25% threshold. Therefore, the proposed increase in development will not result in a degradation of the tier status of this vernal pool. The loss of ±6.4-acres, proposed along the western periphery of the CTH, consists of Mixed Hardwood Forest (±6.28 acres) and Old Field (ROW) (±0.2 acres). Please refer to Figure 6, *Vernal Pool Analysis Map,* for a table that identifies area calculations for both the existing and proposed conditions of the vernal pool.

The proposed habitat loss within the CTH is not anticipated to result in a significant negative impact on the obligate vernal pool species populations utilizing VP1. Mixed Hardwood Forest habitat occurs within a majority of the CTH and beyond in all cardinal directions, with the exception of the existing Old Field habitat (associated with the maintained ROW) which generally bisects the CTH, just south of VP1. Due to the extensive amount of suitable supporting upland habitat surrounding VP1, it is reasonable to assume that the proposed development within the Project Area will not result in a significant degradation to the supporting terrestrial habitat.

Further, as part of the post-construction management plan, the ground cover within the transition zones from the newly Developed Facility to the existing Mixed Hardwood Forest and Old Field

[16] The proposed entrance, originating off of an existing access road, is ±465' at its nearest distance to VP1).

(ROW) habitats to the east and south will be re-vegetated with New England Showy Wildflower Mix[17]. As there are no physical barriers to amphibian migration proposed[18], it is expected that migration across the Project Area can still occur unimpeded.

Potential short-term impacts to the herpetofauna associated with the VP1 habitat (e.g., migrating individuals entering the Project Area during construction) will be minimized by proper installation and maintenance of sedimentation and erosion controls in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*. Implementation of those BMPs, combined with the implementation of the Wetland and Vernal Pool Protection Plan during construction, will provide adequate measures to avoid/minimize short-term impacts to herpetofauna.

[17] See Section 3.83 for more information regarding the New England Showy Wildflower Mix.
[18] The proposed chain link fence surrounding the arrays will be raised 6 inches to accommodate migration.

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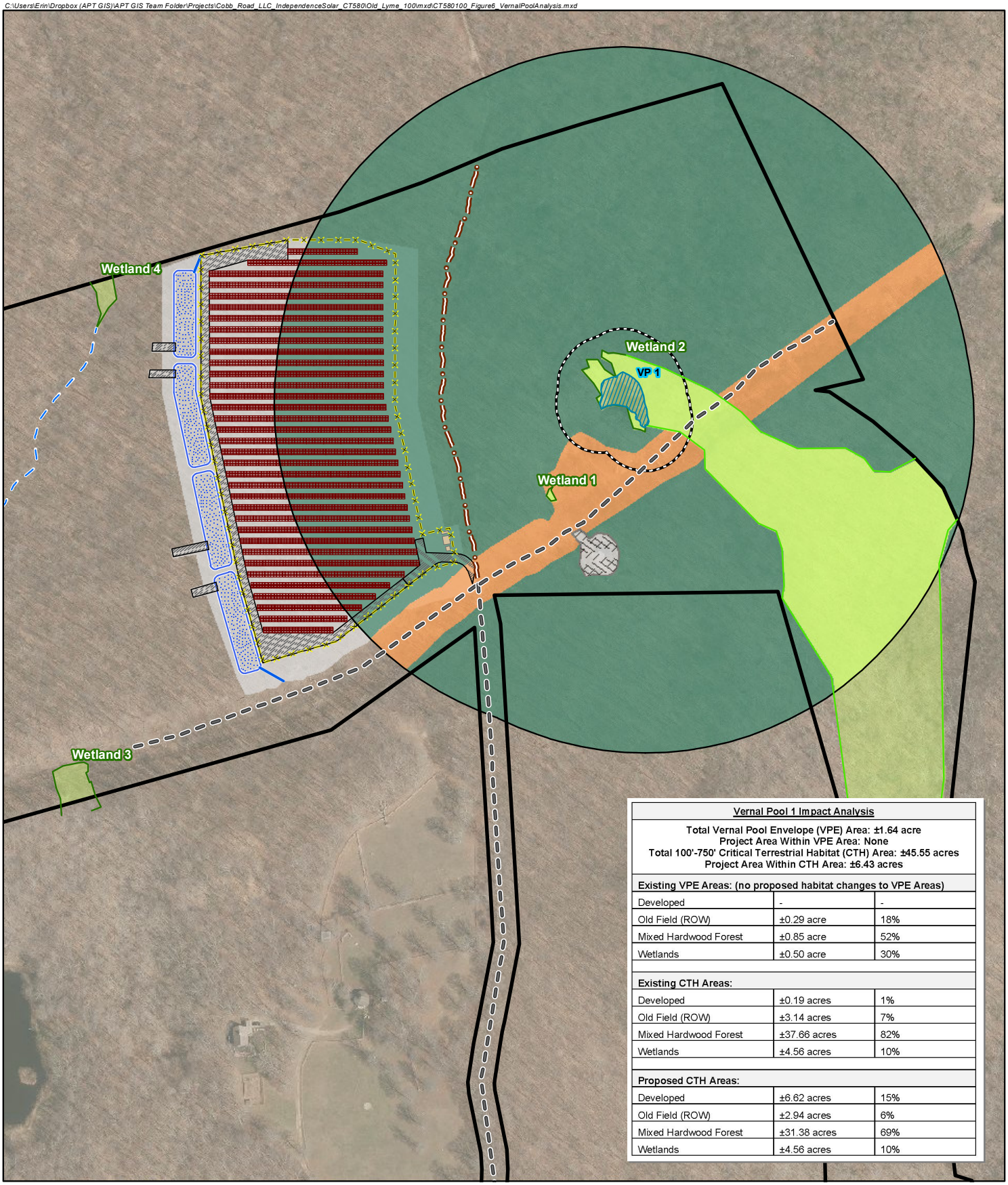

Vernal Pool 1 Impact Analysis		
Total Vernal Pool Envelope (VPE) Area: ±1.64 acre Project Area Within VPE Area: None Total 100'-750' Critical Terrestrial Habitat (CTH) Area: ±45.55 acres Project Area Within CTH Area: ±6.43 acres		
Existing VPE Areas: (no proposed habitat changes to VPE Areas)		
Developed	-	-
Old Field (ROW)	±0.29 acre	18%
Mixed Hardwood Forest	±0.85 acre	52%
Wetlands	±0.50 acre	30%
Existing CTH Areas:		
Developed	±0.19 acres	1%
Old Field (ROW)	±3.14 acres	7%
Mixed Hardwood Forest	±37.66 acres	82%
Wetlands	±4.56 acres	10%
Proposed CTH Areas:		
Developed	±6.62 acres	15%
Old Field (ROW)	±2.94 acres	6%
Mixed Hardwood Forest	±31.38 acres	69%
Wetlands	±4.56 acres	10%

Legend

- Site
- Gravel Access Road
- Dirt/Grass Trail
- Delineated Wetland Boundary
- Approx. Wetland Boundary
- Wetland Area
- Vernal Pool
- Existing Drainage Swale
- Project Area
- Perimeter Fence
- Solar Panels
- Proposed Swale
- Concrete Pad
- Gravel
- Stormwater Basin
- 100' Vernal Pool Envelope (VPE)
- 100'-750' Critical Terrestrial Habitat (CTH)

Critical Terrestrial Habitat

- Developed
- Mixed Hardwood Forest
- Old Field (ROW)
- Wetland

N W E S

300 150 0 300 Feet

Figure 6
Vernal Pool Analysis Map

Proposed Solar Facility
20-1 Short Hills Road
Old Lyme, CT

Cobb Road, LLC

Map Notes:
Base Map Source: CTECO 2016 Aerial Photograph
Map Scale: 1 inch =300 feet
Map Date: September 2019

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3.8 Vegetation and Wildlife

3.8.1 Core Forest Determination

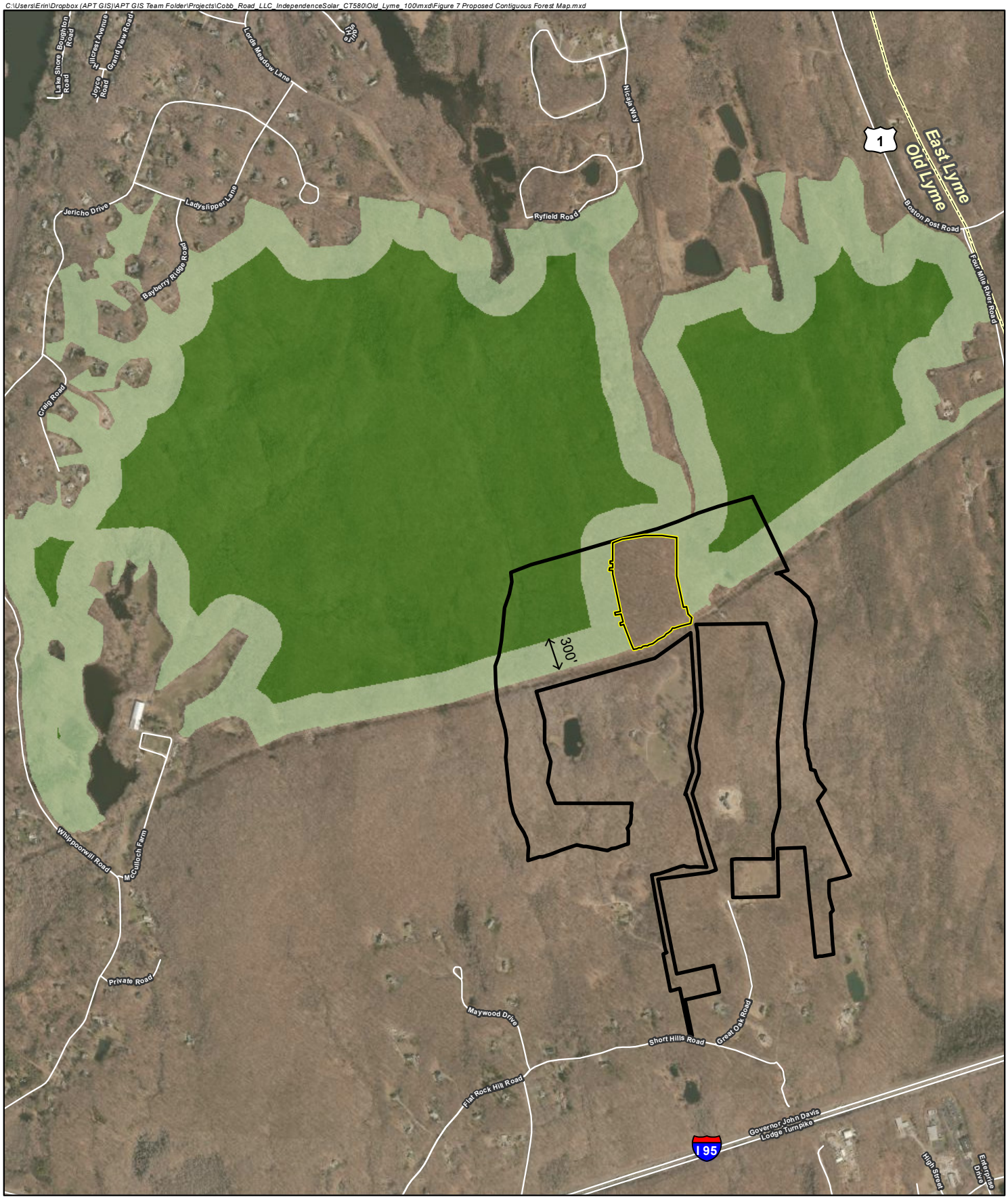
As described in Section 2.4, the Project Area falls primarily within a large contiguous forest block totaling approximately 709 acres. Currently there is an interior, core forest area comprising ±421 acres (59%) and ±288 acres (41%) of edge forest associated with this block.

The Project will require approximately twelve (12) acres of tree clearing within a Mixed Hardwood Forest. Of these ±twelve (12) acres, approximately eight (8) acres are part of a core forest block and approximately four (4) acres are edge forest. In addition to the removal of this small forest component, development of the Facility will convert approximately 10 acres of interior core forest to edge forest. Table 3, below, summarizes the anticipated effects the Project will have, as it relates to the proposed tree clearing on contiguous forest.

Table 3: Forest Interior Habitat Impacts

Total Forest Lost	±12 acres
Core Forest	±8 acres
Edge Forest	±4 acres
Total Conversion – Core Forest to Edge Forest	±10 acres

From a landscape perspective, looking at the entirety of the forest block, the resulting development will reduce the overall contiguous forest block to ±697 acres (with the loss of approximately twelve (12) acres), which represents only ±1.7% of the forest block. Additionally, it is anticipated that the development will reduce the current core forest from ±421 acres to ±403 acres, due to the combined loss of approximately eight (8) acres of core forest and the conversion of approximately ten (10) acres to edge forest. However, this represents only ±1.9% of the core forest. The Facility's location in the southern portion of the contiguous forest block assists in minimizing habitat loss. As a result of the Facility's location at the periphery of the forest block, and considering the relatively small area of forest block reduction, the Project is not anticipated to adversely impact forest interior species. See Figure 3, *Existing Contiguous Forest Map*, and Figure 7, *Proposed Contiguous Forest Map*, for a graphic comparison of pre- and post-development effects on core and edge forest.



Legend

- Site
- Project Area
- Municipal Boundary
- Proposed Forest Block (+/-697 Acres)
- Type
  - Core Forest (+/-403 Acres)
  - Edge Forest (+/-294 Acres)

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1,200 600 0 1,200 Feet

Figure 7
Proposed Contiguous Forest Map

Proposed Solar Facility
20-1 Short Hills Road
Old Lyme, CT

Cobb Road, LLC

Map Notes:
Base Map Source: CTECO 2016 Aerial Photograph
Map Scale: 1 inch = 1,200 feet
Map Date: September 2019

ALL-POINTS TECHNOLOGY CORPORATION

3.8.2 Wildlife

The avian breeding season surveys[19] confirmed that the Site's forested areas are used by several forest-interior GCN songbirds. Several singing male forest-interior GCN songbirds were spotted within the Project area. Therefore, the assumption can be made that the Project area likely includes territory used by nesting pairs during the 2019 breeding season and nests may be located within the Project Area. Although the Project is not anticipated to result in a significant adverse impact to forest-interior songbirds, a conservative approach to avoiding or minimizing direct impacts to nesting birds during construction would be to institute a seasonal timing restriction (e.g., no tree removal activities from approximately April 1st to August 31st).

Presently, there are no available assessment methodologies for evaluating impacts to breeding birds based on the acreage of lost habitat available in Connecticut or the northeast region. In addition, neither the applicable regulators nor the conservation community has offered any specific guidance on quantifying the severity of forest loss on birds. However, based on the breeding bird survey, the maximum number of singing male GNC songbirds heard within the Project Area on any given area was seven (7).

Conservatively, it could be assumed that each singing male songbird represents a successful nest for the 2019 season. Therefore, the Project could result in the loss of core forest habitat for the relatively small number of nesting pairs. An additional ±ten (10) acres of core forest adjacent to the Project Area will be converted to edge forest. This has the potential to diminish the value of that portion of forest for forest-interior birds, as it may result in increased predation, increased brood parasitism, or habitat degradation. It is also recognized that due to the forest's location within the coastal zone (approximately 3.5 miles north of Long Island Sound), the forest may also provide migratory stopover habitat for birds traveling north-south along the Atlantic Coast Flyway. As such, the proposed development may result in a slight diminishment in migratory habitat value for forest-interior songbirds. Lastly, the habitat for resident birds (e.g., the American Robin) may also be affected.

The primary factor minimizing the severity of potential impacts to forest birds is that ±41% of the forest within the Project Area proper is currently edge forest. In addition, the Eversource ROW that lies immediately to the south serves as a significant habitat fragmentation feature. This results in edge forest dominating the general Project Area. As such, because the Project is sited

[19] Avian surveys were conducted on May 9, 23, 30 and June 7, 2019 between the hours of 6:00am and 9:00am.

within and adjacent to edge forest, the severity of the habitat loss (as well as the conversion to edge forest) will be minimal when compared to a project sited entirely within the interior of a core forest block. It should be noted that songbirds that prefer forest edge habitat could benefit from the Project.

3.8.3 Habitat Enhancement Measures

Once the perimeter fence has been installed, the strip of land between the perimeter fence and the newly-created forest edge will need to remain clear of mature trees to prevent shading of the solar arrays. In order to minimize the impacts to wildlife habitat post-construction, Cobb Road is proposing to create a wildflower meadow totaling ±1.23 acres by planting a habitat-specific blend of grasses and wildflowers (New England Showy Wildflower Mix) along the southern and eastern sides of the Facility up to the Project Areas limits of disturbance. The planting areas will create additional early-successional habitat contiguous with the Eversource ROW along the southern portions of the Project Area, while along the eastern portion manipulated areas would be transitioned to Old Field habitat, thereby creating a "soft" transitional ecotone that can provide nesting habitat for species favoring such ecotones, as well as stopover habitat for migratory birds and pollinators. The meadow will be mowed once annually and the resulting habitat will be of far greater value than that provided by a typical cool-season lawn planting.

3.9 Rare Species

As previously introduced, a review of the most recent CTDEEP NDDB mapping revealed that there are no Threatened or Endangered species, species of Special Concern or critical habitats present on, or proximate to, the Site (The nearest buffer area is located approximately 0.86 mile to the east of the Site). As such, based upon both CTDEEP NDDB and the CT Siting Council screening criteria, consultation with the CTDEEP NDDB regarding this Project is not required. Therefore, the Project is not anticipated to have an adverse effect on rare species. A graphic showing the nearest NDDB buffer area to the Project is included in Appendix B*, NDDB Overview Map.*

3.10 Northern Long-eared Bat

The Project will result in the removal of a number of trees with greater than three (3) inches DBH.[20] Since the Project may potentially impact NLEB habitat, a determination of compliance with Sections 7 and 10 of the ESA is required. The *Northern long-eared bat areas of concern in*

[20] Suitable NLEB roost habitat includes trees (live, dying, dead, or snag) with a diameter a DBH of three (3) inches or greater.

Connecticut to assist with Federal Endangered Species Act Compliance map (March 6, 2019) was reviewed to determine the locations of any known maternity roost trees or hibernaculum. This map revealed that there are currently no known NLEB maternity roost trees in Connecticut. The nearest NLEB habitat resource to the Project Area is located in North Branford ±24 miles to the west of the Site.

APT submitted the USFWS's Northern Long Eared Bat final 4(d) rule Streamlined Consultation Form on June 20, 2019 under the consultation framework that allows federal agencies to rely upon the USFWS January 5, 2016, intra-Service Programmatic Biological Opinion ("BO") on the Final 4(d) Rule for the NLEB for section 7(a)(2) compliance. If the USFWS does not respond within thirty (30) days from submittal of this form (July 22, 2019), one may presume that USFWS determination is informed by the best available information and that Cobb Road, LLC's project responsibilities under 7(a)(2) with respect to the NLEB are fulfilled through the USFWS' BO. No response was received from USFWS. Therefore, the proposed Project is not likely to result in an adverse effect to NLEB.

Consistent with USFWS's recommendations, Cobb Road, LLC would consider implementing the following voluntary measures for NLEB conservation.

- Conducting tree removal activities outside of the NLEB pup season (June 1-July 31[21]) to minimize impacts to pups at roosts not yet identified;
- Avoiding the use of herbicides and pesticides; and
- Minimizing exterior lighting.

A full review of the Endangered Species Act Compliance Determination is provided in Appendix G, *USFWS & NDDB Compliance Statement.*

3.11 Water Quality

The Facility will be unstaffed and no potable water uses or sanitary discharges are planned. No liquid fuels are associated with the operations of the Project. Once operative, the stormwater generated by the proposed development will be properly handled and treated in accordance with the 2004 *Connecticut Stormwater Quality Manual*. Therefore, upon its completion the Project will have no adverse environmental effect on wetlands, watercourses or other water resources.

[21] These measures would be extended from April 1st to August 31st to promote protection of nesting GCN songbirds as well.

The proposed post-development drainage characteristics of the Site will change minimally. At most, it is anticipated that, within the Project Area, there will be an increase in the time of concentration due to the tree removal activities and the establishment of grasses. To compensate for the increase in stormwater runoff resulting from the increased time of concentration, a series of grass-lined stormwater infiltration basins with overflow weirs are proposed along the western portion of the Project Area. The Project has also been designed to meet the CTDEEP's *Appendix I, Stormwater Management at Solar Array Construction Projects*.

To safeguard water resources from potential impacts during construction, Cobb Road is committed to implementing protective measures in the form of a Stormwater Pollution Control Plan ("SWPCP") to be finalized and submitted to the Council, pending approval by CTDEEP Stormwater Management. The SWPCP will include monitoring of established sedimentation and erosion controls that will be installed and maintained in accordance with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control* and the CTDEEP *Stormwater Management at Solar Farm Construction Projects*, dated September 8, 2017. Cobb Road will also apply for a *General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities* from CTDEEP. Therefore, with the incorporation of the proposed protective measures, stormwater runoff from the Project development will not result in an adverse impact to water quality associated with nearby surface water bodies.

3.12 Air Quality

Due to the nature of the proposed Project as a solar energy generating facility, no air emissions will be generated during operations and, therefore, an air permit will not be required.

Temporary, potential, construction-related mobile source emissions will include those associated with construction vehicles and equipment. Any potential air quality impacts related to construction activities can be considered *de minimis*. Such emissions will, nonetheless, be mitigated using available measures, including, *inter alia*, limiting idling times of equipment; proper maintenance of all vehicles and equipment; and, watering/spraying to minimize dust and particulate releases. In addition, all on-site and off-road equipment will meet the latest standards for diesel emissions, as prescribed by the United States Environmental Protection Agency ("USEPA") and will consider reducing exhaust emissions by utilizing effective controls.

3.13 Historic and Archaeological Resources

No properties or historic standing structures listed on or eligible for listing on the National or State Registers of Historic Places are located on or proximate to the Site. Therefore, it is APT's opinion that the Project will not have an effect on historic properties.

Similarly, results of Heritage Consultants' Phase 1B Cultural Resources Assessment and Reconnaissance Survey concluded that no excavated areas were identified as eligible for listing on the National Register of Historic Places and no additional archaeological examination of the Project Area is recommended prior to construction of the proposed Project.

Heritage provided a summary of these results to the SHPO in which they concurred with the conclusion that no significant cultural resources occur in the Project Area and agreed that no additional investigations are warranted nor historic properties will be affected. A copy of the SHPO's September 30, 2019 Phase 1B Cultural Resources Assessment and Reconnaissance Survey Response letter has been included in Appendix C.

3.14 Geology and Soils

Once vegetative clearing activities are completed, minimal grading is required for construction of the Project. The majority of the proposed grading activities will occur within the western portion of the Project Area, just beyond the proposed fence line, for the installation of the stormwater controls. All exposed soils resulting from construction activities will be properly and promptly treated in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* and the CTDEEP *Stormwater Management at Solar Farm Construction Projects*, dated September 8, 2017.

3.15 Farmland Soils

No soils defined as prime, unique, or farmlands of statewide or local importance will be impacted from the Project.

3.16 Floodplain Areas

The Project Area is located in an area designated as Zone X, which is defined as an area of minimal flooding, typically above the 500-year flood level. As such, no special considerations or precautions relative to flooding are required for the Project.

3.17 Scenic and Recreational Areas

No state designated scenic roads or areas will be physically or visually impacted by development of the Project.

3.18 Noise

Construction noise is exempted under the Connecticut regulations for the control of noise, RCSA 22a-69-1.8(h), as well as within the Town of Old Lyme Noise Control Ordinance.[22] During construction of the Facility, the temporary increase in noise would likely raise localized ambient sound levels immediately surrounding the Project Area. Standard types of construction equipment would be used for the Project. In general, the highest noise level from this type of equipment (e.g., backhoe, bulldozer, crane, trucks, etc.) is approximately 88 dBA at the source.

Once operational, noise from the Project will be minimal and meet applicable noise standards. The only Project-related equipment that generates noise would be the inverter fans and transformer. Based on information provided by specified equipment manufacturers, the selected inverters and transformer for the proposed Facility will typically generate approximately 56 dBA and 61 dBA, respectively[23]. The closest property line relative to the nearest proposed noise generating equipment (transformer) is approximately 138 feet to the southeast. Sound reduces with distance and sound studies indicate that a 3 dBA increase in sound level is barely noticeable to the human ear. In fact, you have to raise a sound level by 5 dBA before most listeners report a noticeable or significant change. Further, it takes a 10dBA increase before the average listener hears double the sound.[24] Therefore, it is anticipated that noise levels from the Project-related equipment will be below 55 dBA at the property lines. The Town of Old Lyme Noise Standards for Daytime Residential Noise District Receptors (Article IV § 94-14 C [1]) is 55 dBA.

While the inverters are inactive at night the transformer is not. Due to the proposed separation distance and information associated with the aforementioned sound studies, noise levels at nearby property lines and/or residences will not change from the conditions as they currently exist.

[22] Noise generated by construction activity shall be exempted between the hours of 7:00 a.m. to one hour after sundown, Monday through Saturday (Town of Old Lyme Noise Control Ordinance, Article I, §95-3.M).
[23] Inverter noise levels are measured at a distance of three (3) meters away while transformer noise levels are taken from beside the unit itself.
[24] ABD Engineering and Design, "Perception Vs. Reality: What Our Ears Hear"; December 12, 2008.

Please refer to the *Inverter and Transformer Product Information Sheet* provided in Appendix H for more information regarding the Project's anticipated noise.

3.19 Lighting

No exterior lighting is planned for the Facility. There will be some small lighting fixtures within the equipment to aide in maintenance.

3.20 Visibility

The Facility will consist of a total of 7,704 non-reflective solar panels and will not exceed a height of approximately ten (10) feet above ground. The proposed electrical interconnection to the existing electrical distribution lines located within the Eversource ROW will require the installation of five (5) new utility poles. No utility poles will be located within the Facility and the new utility poles will be similar to those used on local roadways.

In general, year-round visibility of the proposed Facility will be minimal and confined to the areas immediately surrounding the development. Limited seasonal views, when the leaves are off of the deciduous trees, could extend to abutting properties immediately south of the ROW[25]. Seasonal views beyond the Facility could extend upwards to approximately 550 to 650 feet in all directions, primarily through existing mature vegetative screening. The combination of the proposed Facility's low height, remote location and the presence of mature vegetation serves to minimize the extent of the Projects overall visibility from most locations off of the Site. Photo-simulations and a Viewshed Analysis Map for the Project is provided in Appendix I.

[25] The nearest residence is located approximately 750 feet to the south of the Project Area. See Figure 2, *Existing Conditions Map* for additional detail.

4 Conclusion

As demonstrated in this Environmental Assessment, the Project will comply with the CTDEEP air and water quality standards. Further, it will not have an undue adverse effect on the existing environment and ecology; nor will it affect the scenic, historic and recreational resources in the vicinity of the Project. Once operative, the Facility will be unstaffed and generate minimal traffic.

The Project is proposed on a remote Site, and has been situated in such a manner to minimize impacts to natural resources. Designing the Facility in a more east-to-west configuration would assist in further minimizing the small loss of core forest habitat by placing the entire length of the Facility adjacent to the Eversource ROW. However, aligning the Facility in this manner would require more substantial grading due to steeper existing Site topography to the west, and would encroach upon Wetlands 3, 4 and 5, thus increasing potential impacts. When considering aligning the arrays in a similar manner but moving them in a more easterly direction, the Project Area would then encroach upon the vernal pool CTE associated with VP1in Wetland 2. Therefore, the location as proposed effectively balances disturbances to forested and wetland habitats, while taking into account earthwork and stormwater management considerations.

Although impacts have been minimized to the greatest extent feasible, the Project will likely result in the removal of approximately twelve (12) acres of forested habitat that may support nesting songbirds and potentially, the NLEB. To promote protection of these species during the critical breeding and pup season, Cobb Road would consider implementing a timing restriction on tree clearing; that is, limiting this work to the months of September through March.

Overall, the Project's design minimizes the creation of impervious surfaces; and, with the creation of several stormwater infiltration basins along the western portion of the Project Area, is adequately designed to handle stormwater runoff. Some site manipulation (cuts/fills) and regrading will be required to allow for stormwater infiltration basin development but overall, the majority of the Project Area will use existing grades for the installation of the solar arrays. To safeguard resources from potential impacts during construction and in accordance with the CTDEEP's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities,* a SWPCP will be developed and implemented. The SWPCP will include monitoring of construction activities and the establishment of sedimentation and erosion controls that will be installed and maintained throughout construction in accordance with the 2002

Connecticut Guidelines for Soil Erosion and Sediment Control, and, to the extent practical the CTDEEP *Stormwater Management at Solar Farm Construction Projects*, dated September 8, 2017.

APPENDIX A

Wetlands Inspection Report

WETLAND INSPECTION

June 24, 2019 **APT Project No.: CT580100**

Prepared For: Cobb Road, LLC
(affiliate of Independence Solar)
9 Novelty Lane – Unit 9B
Essex, CT 06426
Attn: James Schwartz

Site Name: Old Lyme Solar Facility

Site Address: 20-1 Short Hills Road, Old Lyme, Connecticut

Date(s) of Investigation: 3/21/2019

Field Conditions: **Weather:** cloudy**,** mid 40's
Soil Moisture: dry to moist

Wetland/Watercourse Delineation Methodology*:

☒Connecticut Inland Wetlands and Watercourses
☐Connecticut Tidal Wetlands
☐Massachusetts Wetlands
☒U.S. Army Corps of Engineers

Municipal Upland Review Area/Buffer Zone:
Wetlands: 100 feet
Watercourses: 100 feet

The wetlands inspection was performed by†:

Dean Gustafson, Senior Wetland Scientist

Enclosures: Wetland Delineation Field Forms & Wetland Inspection Map

This report is provided as a brief summary of findings from APT's wetland investigation of the referenced Study Area that consists of proposed development activities and areas generally within 200 feet.‡ If applicable, APT is available to provide a more comprehensive wetland impact analysis upon receipt of site plans depicting the proposed development activities and surveyed location of identified wetland and watercourse resources.

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* *Wetlands and watercourses were delineated in accordance with applicable local, state and federal statutes, regulations and guidance.*

† *All established wetlands boundary lines are subject to change until officially adopted by local, state, or federal regulatory agencies.*

‡ *APT has relied upon the accuracy of information provided by Cobb Road, LLC regarding proposed solar facility lease area and access road/utility easement locations for identifying wetlands and watercourses within the study area.*

Attachments

- Wetland Delineation Field Forms
- Wetland Inspection Map

Wetland Delineation Field Form

Wetland I.D.:	Wetland 1	
Flag #'s:	WF 1-01 to 1-06	
Flag Location Method:	Site Sketch ☒	GPS (sub-meter) located ☒

WETLAND HYDROLOGY:

NONTIDAL ☒

Intermittently Flooded ☐	Artificially Flooded ☐	Permanently Flooded ☐
Semipermanently Flooded ☐	Seasonally Flooded ☐	Temporarily Flooded ☐
Permanently Saturated ☐	Seasonally Saturated – seepage ☒	Seasonally Saturated - perched ☐
Comments: Wetland 1 consists of a small isolated borrow pit wetland that was historically excavated in uplands.		

TIDAL ☐

Subtidal ☐	Regularly Flooded ☐	Irregularly Flooded ☐
Irregularly Flooded ☐		
Comments: None		

WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☐	Palustrine ☒
Lacustrine ☐	Marine ☐	
Comments: None		

CLASS:

Emergent ☐	Scrub-shrub ☒	Forested ☐
Open Water ☐	Disturbed ☒	Wet Meadow ☐
Comments: None		

WATERCOURSE TYPE:

Perennial ☐	Intermittent ☐	Tidal ☐
Watercourse Name: None		
Comments: None		

Wetland Delineation Field Form (Cont.)

SPECIAL AQUATIC HABITAT:

Vernal Pool Yes ☐ No ☒ Potential ☐	Other ☐
Vernal Pool Habitat Type: None	
Comments: None	

SOILS:

Are field identified soils consistent with NRCS mapped soils?	Yes ☐	No ☒
If no, describe field identified soils: wetland soils classified as 'Aquent' a recently formed disturbed wetland soil.		

DOMINANT PLANTS:

Tussock Sedge (Carex stricta)	Rushes (Juncus sp.)
Broadleaf meadowsweet (Spirea latifolia)	Multiflora Rose* (Rosa multiflora)

* denotes Connecticut Invasive Species Council invasive plant species

GENERAL COMMENTS:

All-Points Technology Corp., P.C. ("APT") understands that Cobb Road, LLC (an affiliate of Independence Solar) proposes a large scale commercial solar facility in the northwest corner of a ±120.23-acre residential parcel that is primarily undeveloped and forested. An Eversource electrical transmission line right-of-way ("ROW") traverses east to west through the northern portion of the subject property. The proposed solar facility would be located immediately north of the Eversource ROW. Areas generally within 200 feet of the proposed solar facility were investigated for wetland and watercourse resources. No wetlands or watercourses were identified within the proposed solar facility work activities. A total of five (5) wetland areas were identified in proximity to the proposed solar facility. Of those five wetlands, four were delineated; the approximate wetland boundary was field identified for Wetland 5 since it is located greater than 500 feet from the proposed solar facility.

Wetland 1, located ±220 feet east of the proposed solar facility, is a very small (±400 sf) isolated anthropogenic (man-made) feature that formed when a dug borrow pit intercepted the seasonal high groundwater table. As a result, this dug pit now sustains seasonal wetland hydrology and supports a predominance of hydrophytes (wetland plants).

Due to the distance separating the proposed solar facility from Wetland 1 and considering its small, isolated and anthropogenic nature, the proposed project would not result in a likely adverse impact to this wetland feature. This preliminary assessment is based on the assumption that erosion and sedimentation controls would be designed, installed and maintained during construction in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control and stormwater would be properly treated in accordance with the 2004 Connecticut Stormwater Quality Manual. This statement is based on APT's current understanding of the proposed development, which did not include a review of final project site plans. Upon receipt of final site plans, APT will review specifics of the facility layout and determine if the wetland impact analysis statement should be modified and/or if additional wetland protection measures should be implemented.

Wetland Delineation Field Form

Wetland I.D.:	Wetland 2	
Flag #'s:	WF 2-01 to 2-26	
Flag Location Method:	Site Sketch ☒	GPS (sub-meter) located ☒

WETLAND HYDROLOGY:

NONTIDAL ☒

Intermittently Flooded ☐	Artificially Flooded ☐	Permanently Flooded ☒
Semipermanently Flooded ☐	Seasonally Flooded ☐	Temporarily Flooded ☐
Permanently Saturated ☐	Seasonally Saturated – seepage ☒	Seasonally Saturated - perched ☐
Comments: Wetland 2 consists of a headwater forested wetland within an embedded man-made pond.		

TIDAL ☐

Subtidal ☐	Regularly Flooded ☐	Irregularly Flooded ☐
Irregularly Flooded ☐		
Comments: None		

WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☐	Palustrine ☒
Lacustrine ☐	Marine ☐	
Comments: None		

CLASS:

Emergent ☐	Scrub-shrub ☒	Forested ☒
Open Water ☒	Disturbed ☒	Wet Meadow ☐
Comments: None		

WATERCOURSE TYPE:

Perennial ☐	Intermittent ☐	Tidal ☐
Watercourse Name: None		
Comments: None		

Wetland Delineation Field Form (Cont.)

SPECIAL AQUATIC HABITAT:

Vernal Pool Yes ☒ No ☐ Potential ☐	Other ☐
Vernal Pool Habitat Type: anthropogenic (man-made)	
Comments: wood frog and spotted salamander identified	

SOILS:

Are field identified soils consistent with NRCS mapped soils?	Yes ☒	No ☐
If no, describe field identified soils		

DOMINANT PLANTS:

Highbush Blueberry (Vaccinium corymbosum)	Sweet Pepperbush (Clethera alnifolia)
Winterberry (Ilex verticillata)	Red Maple (Acer rubrum)
Swamp White Oak (Quercus bicolor)	Green Ash (Fraxinus pennsylvanica)
Mountain Laurel (Kalmia latifolia)	Tupelo (Nysssa sylvatica)

* denotes Connecticut Invasive Species Council invasive plant species

GENERAL COMMENTS:

All-Points Technology Corp., P.C. ("APT") understands that Cobb Road, LLC (an affiliate of Independence Solar) proposes a large scale commercial solar facility in the northwest corner of a ±120.23-acre residential parcel that is primarily undeveloped and forested. An Eversource electrical transmission line right-of-way ("ROW") traverses east to west through the northern portion of the subject property. The proposed solar facility would be located immediately north of the Eversource ROW. Areas generally within 200 feet of the proposed solar facility were investigated for wetland and watercourse resources. No wetlands or watercourses were identified within the proposed solar facility work activities. A total of five (5) wetland areas were identified in proximity to the proposed solar facility. Of those five wetlands, four were delineated; the approximate wetland boundary was field identified for Wetland 5 since it is located greater than 500 feet from the proposed solar facility.

Wetland 2, located ±420 feet east of the proposed solar facility, is a headwater wetland system that drains to the east. A man-made pond was dug by the property owner approximately 20 years ago within this wetland. Wood frog and numerous spotted salamander egg masses were identified within this pond, which apparently does not contain any fish. The nearest proposed development activity to the vernal pool is ±465 feet to the west, well beyond the Vernal Pool Envelope ("VPE"; 0'-100' from the vernal pool edge). However, the proposed solar facility would be located within the outer limits of the Critical Terrestrial Habitat vernal pool conservation zone ("CTH"; 100'-750' from the vernal pool edge). APT is currently performing a vernal pool survey with the results of that investigation, an assessment of potential project impacts and mitigation to be provided under separate cover.

The proposed solar facility is not anticipated to result in an adverse impact to Wetland 2 due to the distance separating the proposed work activities and considering the proposed solar facility's topography pitches to the west away from this wetland. This preliminary assessment is based on the assumption that erosion and sedimentation controls would be designed, installed and maintained during construction in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control and stormwater would be properly treated in accordance with the 2004 Connecticut Stormwater Quality Manual. This statement is based on APT's current understanding of the proposed development, which did not include a review of final project site plans. Upon receipt of final site plans, APT will review specifics of the facility layout and determine if the wetland impact analysis statement should be modified and/or if additional wetland protection measures should be implemented.

Wetland Delineation Field Form

Wetland I.D.:	Wetland 3	
Flag #'s:	WF 3-01 to 3-10	
Flag Location Method:	Site Sketch ☒	GPS (sub-meter) located ☒

WETLAND HYDROLOGY:

NONTIDAL ☒

Intermittently Flooded ☐	Artificially Flooded ☐	Permanently Flooded ☐
Semipermanently Flooded ☐	Seasonally Flooded ☐	Temporarily Flooded ☐
Permanently Saturated ☐	Seasonally Saturated – seepage ☒	Seasonally Saturated - perched ☐
Comments: Wetland 3 is a hillside seep that extends into Eversource ROW just east of pole #76.		

TIDAL ☐

Subtidal ☐	Regularly Flooded ☐	Irregularly Flooded ☐
Irregularly Flooded ☐		
Comments: None		

WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☐	Palustrine ☒
Lacustrine ☐	Marine ☐	
Comments: None		

CLASS:

Emergent ☐	Scrub-shrub ☒	Forested ☒
Open Water ☐	Disturbed ☐	Wet Meadow ☐
Comments: None		

WATERCOURSE TYPE:

Perennial ☐	Intermittent ☐	Tidal ☐
Watercourse Name: None		
Comments: None		

Wetland Delineation Field Form (Cont.)

SPECIAL AQUATIC HABITAT:

Vernal Pool Yes ☐ No ☒ Potential ☐	Other ☐
Vernal Pool Habitat Type: None	
Comments: None	

SOILS:

Are field identified soils consistent with NRCS mapped soils?	Yes ☒	No ☐
If no, describe field identified soils		

DOMINANT PLANTS:

Red Maple (Acer rubrum)	Swamp White Oak (Quercus bicolor)
Multiflora Rose* (Rosa multiflora)	Soft Rush (Juncus effuses)
Green Bulrush (Scirpus atrovirens)	Sensitive Fern (Onoclea sensibilis)
Highbush Blueberry (Vaccinium corymbosum)	Black Gum (Nyssa sylvatica)
Brambles (Rubus spp.)	Sedge (sp.)

* denotes Connecticut Invasive Species Council invasive plant species

GENERAL COMMENTS:

All-Points Technology Corp., P.C. ("APT") understands that Cobb Road, LLC (an affiliate of Independence Solar) proposes a large scale commercial solar facility in the northwest corner of a ±120.23-acre residential parcel that is primarily undeveloped and forested. An Eversource electrical transmission line right-of-way ("ROW") traverses east to west through the northern portion of the subject property. The proposed solar facility would be located immediately north of the Eversource ROW. Areas generally within 200 feet of the proposed solar facility were investigated for wetland and watercourse resources. No wetlands or watercourses were identified within the proposed solar facility work activities. A total of five (5) wetland areas were identified in proximity to the proposed solar facility. Of those five wetlands, four were delineated; the approximate wetland boundary was field identified for Wetland 5 since it is located greater than 500 feet from the proposed solar facility.

Wetland 3, located ±400 feet southwest of the proposed solar facility, is a hillside seep wetland that extends northward into the Eversource ROW. This wetland system extends further south beyond the study area and eventually drains west into a larger riparian forested wetland system that is associated with an unnamed perennial stream, identified as Wetland 5.

The proposed solar facility is not anticipated to result in an adverse impact to Wetland 3 due to the distance separating the proposed work activities. This preliminary assessment is based on the assumption that erosion and sedimentation controls would be designed, installed and maintained during construction in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control and stormwater would be properly treated in accordance with the 2004 Connecticut Stormwater Quality Manual. This statement is based on APT's current understanding of the proposed development, which did not include a review of final project site plans. Upon receipt of final site plans, APT will review specifics of the facility layout and determine if the wetland impact analysis statement should be modified and/or if additional wetland protection measures should be implemented.

Wetland Delineation Field Form

Wetland I.D.:	Wetland 4	
Flag #'s:	WF 4-01 to 4-08	
Flag Location Method:	Site Sketch ☒	GPS (sub-meter) located ☒

WETLAND HYDROLOGY:

NONTIDAL ☒

Intermittently Flooded ☐	Artificially Flooded ☐	Permanently Flooded ☐
Semipermanently Flooded ☐	Seasonally Flooded ☐	Temporarily Flooded ☐
Permanently Saturated ☐	Seasonally Saturated – seepage ☒	Seasonally Saturated - perched ☐
Comments: Wetland 4 is a small, isolated, shallow depressional wetland.		

TIDAL ☐

Subtidal ☐	Regularly Flooded ☐	Irregularly Flooded ☐
Irregularly Flooded ☐		
Comments: None		

WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☐	Palustrine ☒
Lacustrine ☐	Marine ☐	
Comments: None		

CLASS:

Emergent ☐	Scrub-shrub ☐	Forested ☒
Open Water ☐	Disturbed ☐	Wet Meadow ☐
Comments: None		

WATERCOURSE TYPE:

Perennial ☐	Intermittent ☐	Tidal ☐
Watercourse Name: None		
Comments: None		

Wetland Delineation Field Form (Cont.)

SPECIAL AQUATIC HABITAT:

Vernal Pool Yes ☐ No ☒ Potential ☐	Other ☐
Vernal Pool Habitat Type: None	
Comments: Although this is a depressional type wetland, maximum inundation is 1-2" with typical wetland hydrology consisting of saturated soils near the surface.	

SOILS:

Are field identified soils consistent with NRCS mapped soils?	Yes ☒	No ☐
If no, describe field identified soils		

DOMINANT PLANTS:

Red Maple (Acer rubrum)	Winterberry (Ilex verticillata)
Yellow Birch (Betula alleghaniensis)	

* denotes Connecticut Invasive Species Council invasive plant species

GENERAL COMMENTS:

All-Points Technology Corp., P.C. ("APT") understands that Cobb Road, LLC (an affiliate of Independence Solar) proposes a large scale commercial solar facility in the northwest corner of a ±120.23-acre residential parcel that is primarily undeveloped and forested. An Eversource electrical transmission line right-of-way ("ROW") traverses east to west through the northern portion of the subject property. The proposed solar facility would be located immediately north of the Eversource ROW. Areas generally within 200 feet of the proposed solar facility were investigated for wetland and watercourse resources. No wetlands or watercourses were identified within the proposed solar facility work activities. A total of five (5) wetland areas were identified in proximity to the proposed solar facility. Of those five wetlands, four were delineated; the approximate wetland boundary was field identified for Wetland 5 since it is located greater than 500 feet from the proposed solar facility.

Wetland 4, located ±103 feet west of the proposed solar facility, is a shallow depressional wetland that extends northward onto the adjoining property. A topographic swale extends south/southwest from the southern end of Wetland 4, eventually making its way to Wetland 5. However, there is no defined bank and channel within this topographic swale feature and there is no evidence of any surface flow from Wetland 4 into this feature. Therefore, it does not satisfy the Connecticut Inland Wetlands and Watercourses Act definition as an intermittent watercourse and is therefore not a jurisdictional resource.

The proposed solar facility is not anticipated to result in an adverse impact to Wetland 4 provided erosion and sedimentation controls are designed, installed and maintained during construction in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control and stormwater would be properly treated in accordance with the 2004 Connecticut Stormwater Quality Manual. This statement is based on APT's current understanding of the proposed development, which did not include a review of final project site plans. Upon receipt of final site plans, APT will review specifics of the facility layout and determine if the wetland impact analysis statement should be modified and/or if additional wetland protection measures should be implemented.

Wetland Delineation Field Form

Wetland I.D.:	Wetland 5	
Flag #'s:	No flags; approximate wetland boundary field located due to distance from study area	
Flag Location Method:	Site Sketch ☒	GPS (sub-meter) located ☒

WETLAND HYDROLOGY:

NONTIDAL ☒

Intermittently Flooded ☐	Artificially Flooded ☐	Permanently Flooded ☐
Semipermanently Flooded ☐	Seasonally Flooded ☐	Temporarily Flooded ☐
Permanently Saturated ☐	Seasonally Saturated – seepage ☒	Seasonally Saturated - perched ☐
Comments: Wetland 5 is bordering on a perennial stream.		

TIDAL ☐

Subtidal ☐	Regularly Flooded ☐	Irregularly Flooded ☐
Irregularly Flooded ☐		
Comments: None		

WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☐	Palustrine ☒
Lacustrine ☐	Marine ☐	
Comments: None		

CLASS:

Emergent ☐	Scrub-shrub ☐	Forested ☒
Open Water ☐	Disturbed ☐	Wet Meadow ☐
Comments: None		

WATERCOURSE TYPE:

Perennial ☒	Intermittent ☐	Tidal ☐
Watercourse Name: Unnamed		
Comments: Stream is 8 to 10 feet wide and 12 inches deep at bank full condition; sand and cobble bottom; clear moderate flows.		

Wetland Delineation Field Form (Cont.)

SPECIAL AQUATIC HABITAT:

Vernal Pool Yes ☐ No ☒ Potential ☐	Other ☐
Vernal Pool Habitat Type: None	
Comments: None	

SOILS:

Are field identified soils consistent with NRCS mapped soils?	Yes ☒	No ☐
If no, describe field identified soils		

DOMINANT PLANTS:

Red Maple (Acer rubrum)	Highbush Blueberry (Vaccinium corymbosum)
Skunk Cabbage (Symplocarpus foetidus)	Yellow Birch (Betula alleghaniensis)
Sweet Pepperbush (Clethera alnifolia)	Winterberry (Ilex verticillata)

* denotes Connecticut Invasive Species Council invasive plant species

GENERAL COMMENTS:

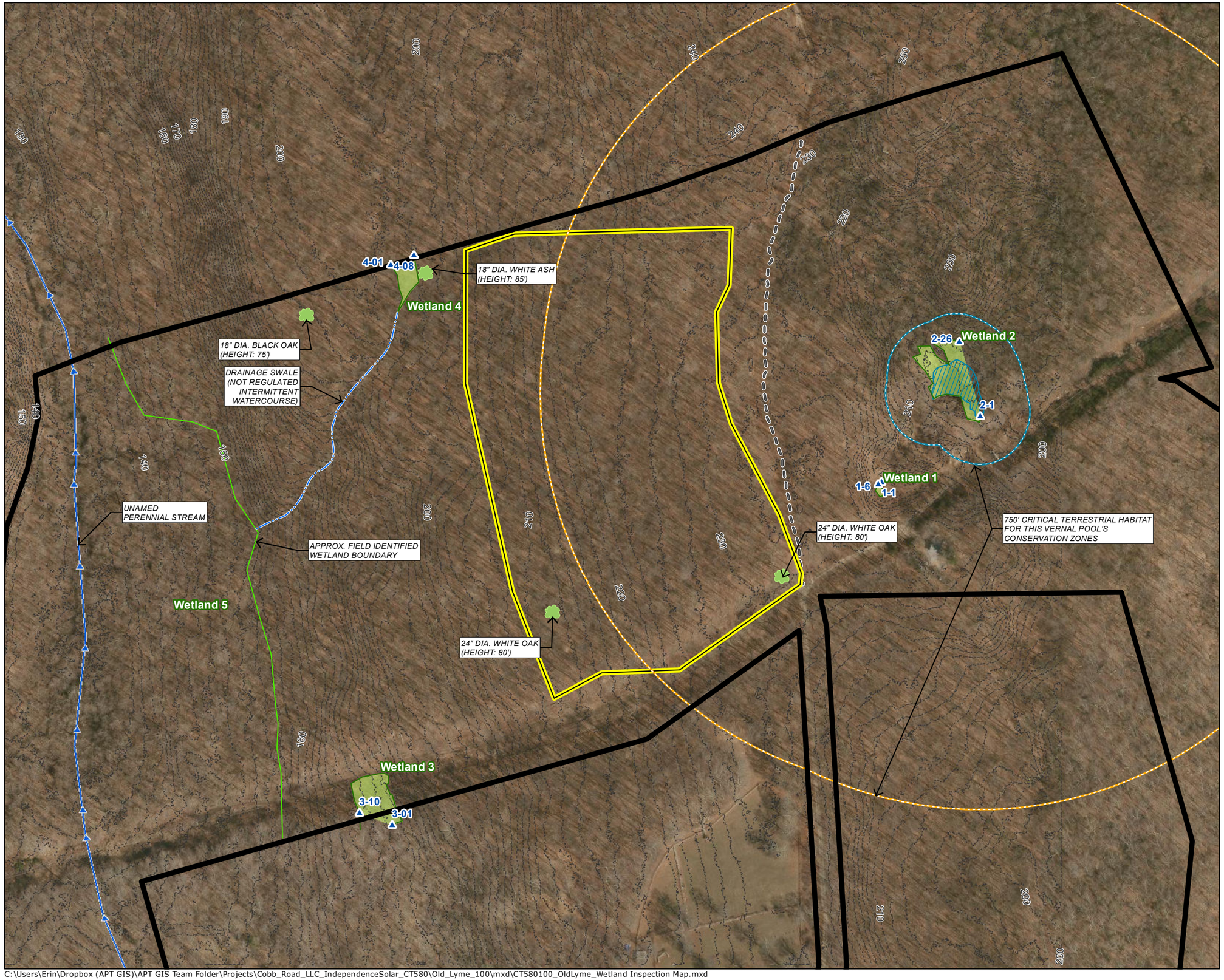
All-Points Technology Corp., P.C. ("APT") understands that Cobb Road, LLC (an affiliate of Independence Solar) proposes a large scale commercial solar facility in the northwest corner of a ±120.23-acre residential parcel that is primarily undeveloped and forested. An Eversource electrical transmission line right-of-way ("ROW") traverses east to west through the northern portion of the subject property. The proposed solar facility would be located immediately north of the Eversource ROW. Areas generally within 200 feet of the proposed solar facility were investigated for wetland and watercourse resources. No wetlands or watercourses were identified within the proposed solar facility work activities. A total of five (5) wetland areas were identified in proximity to the proposed solar facility. Of those five wetlands, four were delineated; the approximate wetland boundary was field identified for Wetland 5 since it is located greater than 500 feet from the proposed solar facility.

Wetland 5, located over 500 feet west of the proposed solar facility, is a large forested wetland system with an interior perennial watercourse that flows north. Bordering forested wetlands are characterized by hillside seep systems that provide base flow to the perennial stream.

The proposed solar facility is not anticipated to result in an adverse impact to Wetland 5 due to the significant separating distance, provided erosion and sedimentation controls are designed, installed and maintained during construction in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sedimentation Control and stormwater would be properly treated in accordance with the 2004 Connecticut Stormwater Quality Manual. This statement is based on APT's current understanding of the proposed development, which did not include a review of final project site plans. Upon receipt of final site plans, APT will review specifics of the facility layout and determine if the wetland impact analysis statement should be modified and/or if additional wetland protection measures should be implemented.

Wetland Inspection Map
Short Hills Road
Old Lyme, Connecticut

Cobb Road, LLC



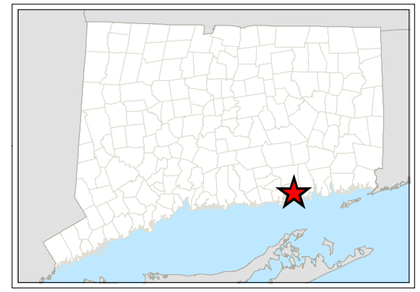
Legend

- Site
- Project Location
- Wetland Flag
- Delineated Wetland Boundary
- DelineatedWetlandArea
- Approx. Wetland Boundary
- Vernal Pool
- 100' Vernal Pool Envelope
- 750' Critical Terrestrial Habitat
- Gravel Access Road
- Tree

N
W E
S

200 100 0 200 Feet

1 in = 200 ft



ALL-POINTS TECHNOLOGY CORPORATION

Map Sources:

Ortho Base Map: CT ECO 2016 Aerial Imagery

Elevation contours derived from 2016 LiDAR data provided by CTECO

Wetlands field delineated by: Dean Gustafson, Professional Soil Scientist, APT. Date: 03/21/19.

Map Date: June 2019

C:\Users\Erin\Dropbox (APT GIS)\APT GIS Team Folder\Projects\Cobb_Road_LLC_IndependenceSolar_CT580\Old_Lyme_100\mxd\CT580100_OldLyme_Wetland Inspection Map.mxd

APPENDIX B

CTDEEP NDDB Overview Map

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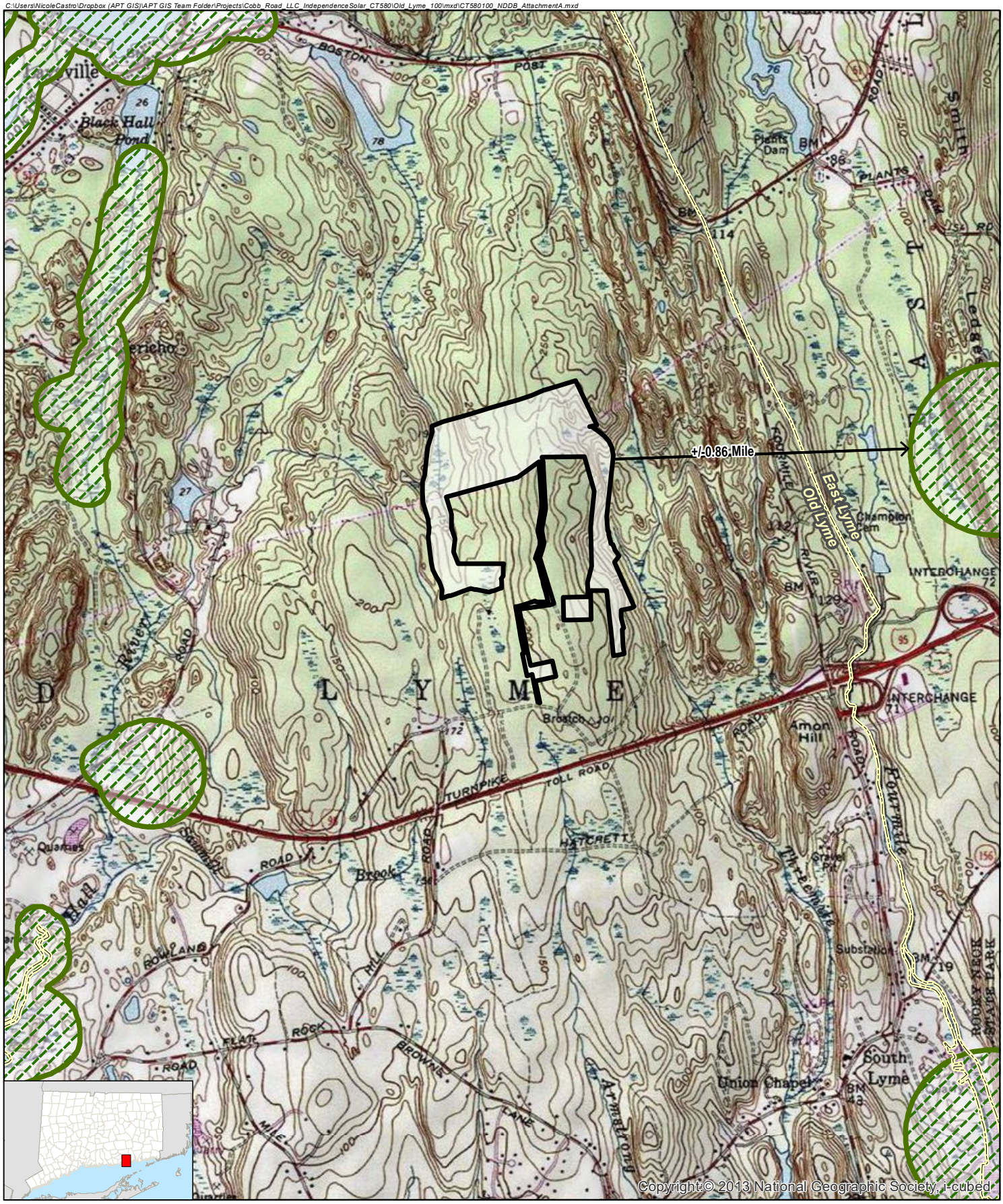

Legend

- Site
- Natural Diversity Database (NDDB June 2019)
- Municipal Boundary

N
W E
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2,000 1,000 0 2,000
Feet

NDDB
Attachment A: Overview Map

Proposed Solar Facility
20-1 Short Hills Road
Old Lyme, CT

Cobb Road, LLC

Map Notes:
Base Map Source: USGS 7.5 Minute Topographic Quadrangle Maps: Old Lyme (1976), CT
Map Scale: 1 inch =2,000 feet
Map Date: August 2019

ALL-POINTS TECHNOLOGY CORPORATION

APPENDIX C

SHPO Correspondence and Phase 1A/1B Cultural Resources Assessment and Reconnaissance Survey Reports

MAY 2019

PHASE IA CULTURAL RESOURCES ASSESSMENT SURVEY OF THE PROPOSED COBB ROAD, LLC SOLAR PROJECT IN OLD LYME, CONNECTICUT

PREPARED FOR:

ALL-POINTS TECHNOLOGY CORPORATION
3 SADDLEBROOK DRIVE
KILLINGWORTH, CONNECTICUT 06419

PREPARED BY:

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NEWINGTON, CONNECTICUT 06131

ABSTRACT

This report presents the results of a Phase IA cultural resources assessment survey for a proposed solar facility in Old Lyme, Connecticut. The project parcel associated with the proposed facility encompasses approximately 11.7 ac of land and will be accessed from Short Hills Road. 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 historic maps and aerial imagery depicting the project parcel to identify potential historic resources and/or areas of past disturbance; 4) pedestrian survey and photo-documentation of the project parcel to determine their archaeological sensitivity; and 5) preparation of the current Phase IA cultural resources assessment survey report. The results of the survey indicate that 7 acres of land in the eastern and central portions of the project parcel possess low slopes and apparently undisturbed soil deposits; thus, this acreage has been deemed to represent a moderate/high sensitivity area for containing intact archaeological deposits. The remaining 4.7 acres of the project parcel have been disturbed, contain moderate to steep slopes, and/or are characterized by soils that are not typically associated with either prehistoric or historic period occupation or use. This portion of the project parcel was determined to possess a no/low archaeological sensitivity.

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LIST OF FIGURES

CHAPTER I
INTRODUCTION

This report presents the results of a Phase IA cultural resources assessment survey for a proposed Cobb Road, LLC solar facility in Old Lyme, Connecticut (Figure 1). All-Points Technology Corporation (All-Points) requested that Heritage Consultants, LLC (Heritage) complete the assessment survey as part of the planning process for the proposed solar facility, which will occupy approximately 11.7 acres of land. The proposed development area is hereafter referred to as the project parcel. The project parcel is situated in the northern portion of a large area of land located at 20-1 Short Hills Road. The project parcel is surrounded by forested areas on all sides. Heritage completed this investigation on behalf of All-Points in June of 2019. 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 parcel on which the solar facility is planned is located at 20-1 Short Hills Road in Old Lyme, Connecticut and encompasses approximately 120.23 acres of land (Figure 1). The proposed project will consist of one solar photovoltaic electric generating facility with a capacity of **±3 MW DC** occupying approximately 11.71 acres including all disturbances. The Facility will be located north of the existing electric distribution easement and west of the existing forest road. 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 parcel; 3) a review of readily available historic maps and aerial imagery depicting the project parcel in order to identify potential historic resources and/or areas of past disturbance; 4) pedestrian survey and photo-documentation of the project parcel in order to determine their archaeological sensitivity; and 5) preparation of the current Phase IA cultural resources assessment survey report.

Project Results and Management Recommendations Overview

The review of historic maps and aerial images of the project parcel, files maintained by the CT-SHPO, as well as pedestrian survey of the development area, resulted in the identification of two previously identified archaeological sites in the vicinity of the project parcel (Sites 105-25 and 105-26). Both sites consist of prehistoric rock shelters and their presence demonstrates archaeological resources exist in the region containing the project parcel. These two resources are discussed further in Chapter V of this document.

In addition to the cultural resources discussed above, Heritage combined data from the historic map and aerial image analysis, and the pedestrian survey to stratify the project parcel into zones of no/low and/or moderate/high archaeological sensitivity. Upon completion of the above-referenced analysis and pedestrian survey, it was determined that the 7 ac of land within the project parcel contained low slopes and well-drained soils in proximity to wetlands to the west and Threemile River to the east. As a result, it was determined that this 7 ac area may contain intact archaeological deposits. The remaining 4.7 ac

contained steep slopes and were considered to possess a no/low sensitivity for containing intact archaeological deposit.

Project Personnel

Key personnel for this project included Mr. David R. George, M.A., R.P.A, who served as Principal Investigator for this effort; he was assisted by Mr. Antonio Medina, B.A., and Ms. Jess Jay, B.A., who completed the field work portion of the project and who assisted with report preparation. Dr. Kristen Keegan completed this historic background research of the project and contributed to the final report, while Mr. Stephen Anderson completed all GIS tasks associated with the project. Finally, Ms. Elizabeth compiled the report and the associated figures.

Organization of the Report

The natural setting of the region encompassing the project parcel is presented in Chapter II; it includes a brief overview of the geology, hydrology, and soils, of the project region. The prehistory of the project region is outlined briefly in Chapter III. The history of the region encompassing the project region and project parcel is chronicled in Chapter IV, while a discussion of previous archaeological investigations in the vicinity of the project parcel is presented in Chapter V. The methods used to complete this investigation are discussed in Chapter VI. Finally, the results of this investigation and management recommendations for the project parcel and the identified cultural resources are presented in Chapter VII.

CHAPTER II
NATURAL SETTING

Introduction

This chapter provides a brief overview of the natural setting of the region containing the project parcel. Previous archaeological research has documented that a few specific environmental factors can be associated with both prehistoric and historic period site selection. These include general ecological conditions, as well as types of fresh water sources and soils present. The remainder of this section provides a brief overview of the ecology, hydrological resources, and soils present within the project parcel, access roads, 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 very 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: Eastern Coastal ecoregion. A brief 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 parcel.

<u>Eastern Coastal Ecoregion</u>

The Eastern Coastal ecoregion region is characterized by level to rolling topography that varies from sea level to 122 m (400 ft) above mean sea level; topographic relief reaches its maximum in this ecoregion where substantial rock outcrops occur (Dowhan and Craig 1976). The bedrock of the ecoregion is composed of metamorphic and igneous gneisses, schists, and granites dating from the Paleozoic Period (Bell 1985; Dowhan and Craig 1976:40). Soils in this ecoregion are developed on glacial till in the uplands, on local deposits of stratified sand, gravel and silt in the valleys, and on coastal and tidal deposits on the shores and estuaries (Dowhan and Craig 1976).

Hydrology in the Vicinity of the Project Parcel

The project parcel is situated within a region that contains to several sources of freshwater, including the Threemile River, Sawmill Brook, Armstrong Brook, and Black Hall River, as well as unnamed streams, ponds, and wetlands. These freshwater sources may have served as resource extraction areas for Native

American and historic 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 Parcel

Soil formation is the direct result of the interaction of a number of variables, including climate, vegetation, parent material, time, and organisms present (Gerrard 1981). Once archaeological deposits are buried within the soil, they are subject to a number of diagenic 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 such as those that are present in within the current project parcel. In contrast, acidic soils enhance the preservation of charred plant remains.

A review of the soils within the project parcel is presented below. The project parcel is characterized by the presence of eight major soil types. The most ubiquitous soil types found within the region and which cover the project parcel include Paxton/Montauk and Charlton/Chatfield (Figure 2). A review of these soils shows that they consist of well drained sandy loams; they are the types of soils that are typically correlated with prehistoric and historic use and occupation. Descriptive profiles for each soil type are presented below; they were gathered from the National Resources Conservation Service.

<u>Paxton and Montauk Soils:</u>

A typical profile associated with Paxton/Montauk soils is as follows **Ap** -- 0 to 8 inches; dark brown (10YR 3/3) fine sandy loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many fine roots; 5 percent gravel; strongly acid; abrupt smooth boundary; **Bw1** – 8 to 16 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; 5 percent gravel; few earthworm casts; strongly acid; gradual wavy boundary; **Bw2** – 16 to 26 inches; olive brown (2.5Y 4/4) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 10 percent gravel; strongly acid; clear wavy boundary; **Cd** – 26 to 66 inches; olive (5Y 5/3) gravelly fine sandy loam; medium plate-like divisions; massive; very firm, brittle; 25 percent gravel; many dark coatings on plates; strongly acid.

<u>Charlton and Chatfield Soils:</u>

A typical profile associated with Charlton/Chatfield 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 Cobb Road, LLC solar facility is common throughout the Eastern Coastal ecoregion. Streams and rivers of this area empty either into the Black Hall or Threemile Rivers, which in turn, drains into the Long Island Sound. Further, the landscape in general is dominated by sandy loamy soil types with some wetlands soils intermixed. In addition, low slopes dominate the region. Thus, in general, the project region was well suited to Native American occupation throughout the prehistoric era. As a result, archaeological sites have been documented in the larger project region, and additional prehistoric cultural deposits may be expected within the undisturbed portions of the proposed project parcel. This portion of Old Lyme was also used throughout the historic era, as evidenced by the presence of numerous historic residences and agricultural fields throughout the region; thus, archaeological deposits dating from the last 350 years or so may also be expected near or within the proposed project parcel.

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 located 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 parcel.

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 located 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 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

located 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.

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

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 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

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 the majority 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 parcel, 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
HISTORIC OVERVIEW

As Chapter I of this report indicates, the development area consists of a parcel of land situated near the eastern boundary of the town of Old Lyme in New London County, Connecticut. Old Lyme (known as South Lyme until 1857) was formerly part of the town of Lyme, which itself was part of the seventeenth-century colony and town of Saybrook. Despite its location near the mouth of the Connecticut River, the town remained a relatively quiet agricultural area through most of its history, and even in the early twenty-first century retained a comparatively small population and a very rural appearance in much of its territory. The remainder of this chapter presents an overview of the history of Old Lyme, including a discussion of the project parcel itself.

Native American History

The Native American history of this part of Connecticut is poorly documented. Some historians believe it was part of the territory of the Western Nehantic tribe, which extended from the Connecticut River eastward to the Niantic River; the post-Contact community in East Lyme was also known as the Niantics. Historians have been vague about how their territory came to be part of the Connecticut colony. A statement in the 1665 division agreement between Saybrook and Lyme simply stated that "the Indians at Nehanick have the land agreed upon by the covenants made betwixt the inhabitants of Saybrook and them," which adds little to the understanding of the matter (quoted in Deitrick 1965:3). Examination of seventeenth-century records strongly suggests that the colony considered it part of the territory it and its allies conquered during the Pequot War. This interpretation is further supported by the way the colony government accepted the claim of a man named Joshua, a son of the wartime Mohegan leader and a colonial ally, to be the Niantics' leader in succeeding decades. As a result, it was reported that at some point in the seventeenth century the community was given a reservation, "stretching from the Niantic River four miles [6.4 km] westward, and running north from the seacoast as far as the bounds of those townships" (De Forest 1852:382), yet also that in 1672 the legislature gave "Joshua sachem of Niantick" and his men a plot of land of unstated size north of the Eight Mile River in the present Lyme (Public Records of the Colony of Connecticut II:174). De Forest referred to this as a 300-acre (121 ha) reservation for the tribe. In 1734 the legislature confirmed the "Nahantack" community's ownership of 300 acres (121 ha) on Niantic Bay, which is clearly a different location and arguably unrelated to Joshua's parcel, despite De Forest's conflation of the two (Public Records of the Colony of Connecticut VII:524).

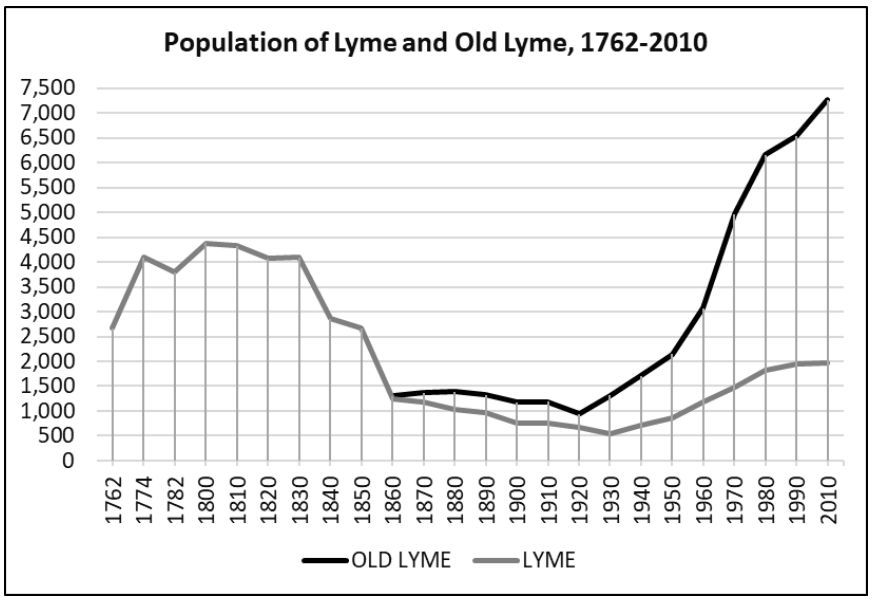
Regardless of how and when they lost their original territory, in 1734, about 30 Native American families still lived in Lyme. Around that time, renewed efforts at converting them to Christianity eventually met with some success. Their disputes with the neighboring colonists, who continually encroached on the reservation, continued for decades. As of 1761, 85 people lived on the reservation, and in 1774 there were 104 Native Americans present there. By 1783, however, only 16 families remained on the land. During the early nineteenth century, many others moved away, either to Brothertown in New York or to other native enclaves. In the 1850s, the community still owned 240 acres (97 ha) of land, as well as some bank stock and money loaned out at interest, but had only 10 recognized members (De Forest 1852). In 1867, when only three members of the community survived, the reservation land (located at the shore, at Crescent Beach in East Lyme) was sold at auction by the community's overseer, and the proceeds

divided among the three survivors in 1868 (Chendali 1989). At that time, the area had been in the separate town of East Lyme since 1836.

Colonial Era History of Old Lyme (to 1790)

The founding of Saybrook in 1635 occurred as a result of the so-called "Warwick Patent," a grant of land thought at the time to have been made between 1629 and 1632 by the Council for New England. This was a corporation that had been established by the British government in 1620, which was headed by the Earl of Warwick by 1628; hence the name of the patent. The corporation's remit was for "the planting, ruling, and governing of New England in America" (Crofut 1937:20). Pursuant to this now-lost grant, and at the orders of John Winthrop, Jr., a fort was erected on the west bank of the Connecticut River, displacing the Dutch trading post that was already there. The Dutch presence was part of an effort by them to lay claim to the Connecticut River region; they also established a fort upstream, where the British later founded Hartford. A small British settlement grew up in under the leadership of George Fenwick, which was considered to be an independent colony until 1644. In that year, Fenwick transferred to Connecticut all his rights to the Saybrook lands, although the historical record remains unclear on exactly what rights and what lands were involved. Thereafter, Saybrook was considered a town in the Connecticut colony. In 1665, the part of Saybrook lying east of the Connecticut River was set off as a new town, at which time the "East Saybrook" settlers claimed to have enough land to support thirty families; in 1667, the General Court gave the new settlement the name Lyme. The doubtful nature of Saybrook's claims was probably one cause of subsequent border disputes between Lyme and neighboring towns, including Saybrook itself (Crofut 1937).

The earliest European settlement occurred in the south part of Lyme (the present Old Lyme) (Marshall 1922). The first of these colonists was a man named Matthew Griswold, who moved to the east side of Saybrook in 1645, to a locality known as Black Hall, near the mouth of the Connecticut River. The first minister was Moses Noyes, who served the area from 1666 to 1729 (Roberts 1906). As in most early towns, the population of Lyme grew rapidly, reaching 2,665 residents in 1762 and 4,088 residents in 1774, with a slight decline to 3,792 residents as of 1782 (see the population chart below; Keegan 2012).



The 1790 population numbers are not available for New London County towns. In addition to natural population growth and farming, Lyme developed small coastal villages with fishing fleets and shipping efforts that took part in both the colonies' internal coasting trade and the trade with the West Indies, especially of barrel staves (Deitrick 1965). During the Revolutionary War, one of the town's leaders was John MacCurdy (an Irish immigrant), who was involved in the publication of articles and pamphlets opposed to the Stamp Act. Another local leader was General Samuel Holden Parsons, who resigned his newly acquired post as King's Attorney in 1774, and in 1775 participated in the capture of Ticonderoga. He served in various capacities and at many engagements until the end of the war, after which he moved his law practice to Middletown (Roberts 1906). The town meeting voted in 1774 to oppose the British actions against Boston, and in 1775 and 1776 the town provided soldiers to help guard the coast and also sent some to Boston (Crofut 1937).

Early National Period and Industrialization Period History of Old Lyme (1790-1930)

Between 1800 and 1860, the population of the town of Lyme appeared to decline, first slightly and then precipitously. In fact, these changes were due primarily to its loss of territory and resident population to three other towns: Salem in 1819, East Lyme in 1839, and then the creation of South Lyme (the present Old Lyme) in 1855. As of 1860, Lyme and Old Lyme had roughly equal populations, 1,246 residents for Lyme and 1,304 residents for Old Lyme (see the population chart above; Keegan 2012). Because both towns were primarily agrarian, their populations continued to decline through 1930, and 1920, respectively. As the population chart above shows, however, Old Lyme retained its slight population advantage through 1920, when it 946 residents to Lyme's 674 residents. Beginning with the 1930 census, when Old Lyme reported 1,313 residents, it began a growth trend that its sister town could not match (Keegan 2012). The reasons for its slightly larger population probably had to do with its coastal villages and, as will be discussed below, railroad access. A map of the Lyme's First Society, roughly equivalent to Old Lyme, was compiled in 1815. It appears to show two classes of roads, one major and one minor; a minor road passed not far to the east of the project area. It also appears that the region of the town where the project area lay was called "Jericho" (Figure 3; Warren 1815). Compared with other regions on the map, especially the coastal areas, and the Post Road (which lies to the north of the project area), Jericho was not densely populated. There was no indication on this map that any cultural resources lay within 152 m (500 ft) of the project parcel.

In 1819, the town of Lyme (still including both Lyme and Old Lyme) had 24 school districts and three Congregational parishes, along with two Baptist, one Methodist, and one Separatist church; three libraries and 12 retail stores completed the town's institutions. Lyme was described as having a mixed agricultural economy, focused on dairy products and corn, and also with lines in supposed medicinal plants such as ginseng. There were harbors at the mouths of the Connecticut River, the Lieutenant River, and the Eight Mile River; the riverine shad fishery was also an important economic factor, along with the shellfish and blackfish fisheries in Long Island Sound. The coasting trade was also mentioned. In addition, the document noted that the town had some factories, including two woolen textile mills, a paper mill, two hat factories, a wool carding machine, three tanneries, and 11 sawmills and eight grist mills. The factories, however, could "claim only a very subordinate rank" (Pease and Niles 1819:160).

During America's early years, one of the State of Connecticut's primary concerns was to improve transportation routes and hence commerce. The method used was to incorporate private companies that would improve existing roads or build new ones, and in exchange be given the right to charge tolls of the people using them. One of these companies, incorporated in 1807, was the New London and Lyme Turnpike, which passed through the northern part of the current town of Old Lyme and ended at the Connecticut River ferry landing. The western part of the road became free of tolls in 1849. Between

1824 and 1834, the Connecticut River Steamboat Company also kept a wharf at Calf Island, which travelers reached via stagecoaches that followed the turnpike until a turn-off for the wharf (Wood 1919). In 1833, a map of New London County and Windham Count portrayed the southern part of Lyme as having three coastal villages, identified as South Lyme, Black Hall, and Four Mile. The two woolen mills were still shown, and were located on a tributary of the Lieutenant River, which flowed into the Connecticut River. The town's agricultural processing mills, schools, churches, and main roads were also noted on the map. The inland section where the project area is located, however, was shown as hilly and labeled "Short Hills" (Figure 4; Lester 1833). This is, of course, consistent with modern topographic portrayals of the area.

In the late 1830s, Lyme's coast was notable for its wide tracts of salt marsh and many rivers entering the Sound, while the northern part was stony and hilly. Its main village was identified as Lyme, and located a short distance to the east of the Connecticut River. At that time, it had four post offices (found at Lyme, Hamburg, North Lyme, and East Lyme), and three textile factories (one cotton and two woolen). There were also four Congregational churches and two Baptist churches. The account also noted that "[n]ear the mouth of the Four mile river, several distinct ridges commence, which range northwardly, and become more elevated as they extend into the interior" (Barber 1837:330). As the mouth of the Four Mile River is to the southeast of the project area, this description applies to it. In fact, an 1838 U.S. Coastal Survey map gives a very clear picture of the project area landscape at that time shows the rugged landscape in and around the project area, broken only by the marshy surrounds of a brook to the east. To the south and southwest of the project area, the map noted the presence of agricultural field complexes and several buildings. All of these cultural features were well over 152 m (500 ft) from the project area (Figure 5; USCS 1838). The 1854 map of New London County showed the population clusters at Lyme (unlabeled), called the Four Mile River village South Lyme, and added a village in the northeast corner of the First Society that it labeled Laysville. The only noticeable evidence of industrial activity in southern Lyme was the presence of Lay's Factory at, unsurprisingly, Laysville. The map also showed the New Haven and New London Railroad crossing through the coastal section of Lyme, and ending at the Connecticut River. In the vicinity of the project parcel, the cartographer depicted multiple hills. There were also several buildings marked in areas away from the marked roads, including one to the south of the project parcel that was labeled with the name Miss P. Denison (Figure 6; Walling 1854). The location of the building suggests an association with the area of cleared fields shown in the USCS map from 1838. The only female P. Denison reported in the 1850 federal census was Polly Denison, age 64, who claimed to own only $100 in real estate; she lived with Anna Chappel, age 74, who owned $200 in real estate (United States Census 1850a). That there was only short-term occupation of this building is suggested by the facts that Polly Denison does not appear in the 1860 federal census, and that the 1868 map of the town of Old Lyme omits the house entirely.

In addition, across the town, the villages of South Lyme, Old Lyme, and Laysville were labeled. The satinet factory in the latter place was noted, the only clear evidence of industrial activity that can easily be found on the map. The railroad had become the Shore Line Railroad, and both the ferry and the steamboat landing were noted at the Connecticut River (Figure 7; Beers 1868). The federal census of industry for this time listed only six industrial firms in the entire town of Lyme. Two of these were water-powered woolen textile mills that each employed seven men and five or six women (for a total of 12 and 13 workers in each); the largest employer at that time was a quarry that employed 14 men. There was also a shoemaker who employed four men to make 1,500 pairs of boots and shoes, a carriage and wagon maker who employed three men, and a boat builder who also employed three men (United States Census 1850b). It is not clear where these factories were, though there were very unlikely to be near the project area.

As the historic maps show, the New Haven & New London Railroad had been built by ca., 1850; it hugged the shoreline through Old Lyme. Initially, the railroad's cars and engines were ferried across the Connecticut River between Old Lyme and Old Saybrook. In the 1860s, Charles Dickens took this train route and reported unfavorably on how well the train cars were secured during such crossings. In 1864, the section of the road between New Haven and New London was reorganized as the Shore Line Railway, and in 1870 the company built a massive drawbridge over the Connecticut River (Turner and Jacobus 1989). The line remained in operation during the early twenty-first century. Although the railroad did not lead to any significant industrialization in Old Lyme, it did make the town accessible for a new economic activity, summer tourism. During the late nineteenth and early twentieth centuries, the notion of leisure time and vacations became more popular among the middle class and even the lower classes; as a result, the population of summer visitors in cooler seaside towns like Old Lyme and its neighbors continued to increase from the 1860s forward. Initially the residential facilities were mainly hotels and boarding houses, but over time more and more people were financially capable of buying or at least renting private summer cottages along the shore. Many summer colonies, as they were called, sprang up close to railroad depots, while steamboat lines provided an alternative mode of transport to seaside destinations. Recreational pastimes of all kinds were catered to, but some developments were formally or informally restricted to specific groups – native-born Americans, Irish immigrants, and so on. Others, such as Pine Grove in the Niantic section of East Lyme, were developed with a specific religious group in mind; another example of this was the Baptist Seaside Resort established in 1884 at Crescent Beach, also in Niantic (Herzan 1997).

Modern Period History of the Town of Lyme (1930-Present)

In 1932, the State of Connecticut reported the principal industry of Old Lyme as simply agriculture, but the entry also mentions four train stops and post offices, as well as a steamboat service during the summer season (Connecticut 1932). The rail and steamboat services suggest the continued importance of the summer tourism trade, although the report does not mention it specifically. As was noted above, 1930 was the first year that Old Lyme's census returns found a notable increase of population in the town. Although the increase was only 367 persons, it was the beginning of a long-term trend. By 1950, Old Lyme's population had more than doubled to 2,141 residents, and continued to grow at varying rates through 2010, when the town reported a population of 7,267 residents (see the population chart above; Keegan 2012). The 1934 aerial photograph shows, however, that this growth was not occurring near the project area. It contained and was surrounded by woods, with the only discernible cultural feature nearby being a utility transmission right-of-way to the south. Even further to the south, there was little or no sign of the hilltop agricultural fields that the 1838 map suggested were once present. Indeed, only remnants of agricultural fields appeared in the areas to the south. To the north was only more forest (Figure 8; Fairchild 1934).

A 1941 topographic map, however, shows an unimproved road passing just to the east of the project parcel, on a north-south route between Flat Rock Hill Road to the south and Route 1 to the north. In addition, a side road ran to a building that, on that same map, stood within 152 m (500 ft) of the edge of the project parcel. These were the only cultural features in the vicinity as of 1941; the map omitted the utility line currently located adjacent to the project parcel (Figure 9; USGS 1941). This utility line, partly reconfigured, was clearly visible in the 1951 aerial photograph, while the unimproved road and building were not visible. The project parcel was otherwise still wooded, and to the south, the limited-access highway that later was called Interstate 95 had been built (Figure 10; USDA 1951). Officially, the Connecticut Turnpike did not open until 1958, but this section was undeniably present in the 1951 aerial photograph, albeit with no access ramps in the area. The renaming of the highway came a later, with the organization of the interstate highway system (Oglesby 2014). In the 1957 aerial photograph, which was

taken when the trees were not in leaf, parts of the unimproved road could be seen; however, here were no significant changes in or around the project area (USGS 1957). According to the 1958 topographic map, the unimproved road became no more than a track after it passed north of utility corridor, and supposedly the building previously mentioned was still there. It also makes clear something important to the development of the project area's vicinity: only one road from south of the interstate still crossed it to the north side. Also, interstate access ramps had been built to the southeast, mostly in the town of East Lyme (Figure 11; USGS 1958).

Old Lyme's late twentieth-century and early twenty-first century population growth is best explained by the shift to suburban residence, which caused people to move out of cities and into less crowded areas. Places that were closer to cities became more densely suburbanized more rapidly. Further away from cities, in places like Old Lyme, the growth came later and was not as large overall. A population of just over 7,000 residents is not large by the standards of Connecticut suburbs; for example, East Lyme, the next town to the east, was closer to the city of New London and in 2010 had 19,159 residents (Keegan 2012). As of 2016, Old Lyme's four manufacturing firms employed a total of 21 people; local and regional government was the single largest employer (436 workers), with education clearly being the largest subgroup. In all, according to the survey, Old Lyme only had 298 firms and 2,595 jobs, while there were over 3,700 workers in the town. Clearly at least some of these workers would have to commute out of town (CERC 2018). Much of the town's land remained undeveloped, and a substantial portion of that was too wet, or too steep and rocky, to be developable. The town's residents also relied on septic systems and well water except in a few limited areas, another constraint on the extent and density of development. The main goal of Old Lyme's planning policies was to limit growth in order to preserve its small-town character, which depended on its natural, cultural, and historic resources. Apparently, much of the population growth of the later twentieth century occurred because of the conversion of older summer homes to year-round use, rather than all-new developments (Old Lyme 2010). The character of the landscape around the project parcel suggests that further development will be slow to occur, if it occurs at all.

No new or different cultural features appeared in the vicinity of the project area in the 1961, 1965, and/or 1970 aerial photographs (USGS 1961; CT DEP 1965; USGS 1970). In the 1974 aerial photograph, however, an artificial pond with beach areas had been constructed to the southwest of the project parcel. Although it was over 152 m (500 ft) from the project area, the configuration of the pond suggests that it was part of a summer camp, or similar institution, of unknown extent. In addition, to the west in East Lyme, another pond and associated housing development had been built by 1974 (Figure 12; CT DEP 1974). In the 1975 aerial photograph, unimproved roads were visible leading to the pond and to a building near it, all outside the project parcel. Within 152 m (500 ft) of the project parcel, however, what appears to be the building first seen in the 1941 topographic map appears to be visible (Figure 13; CT DEP 1975). By 1980, another building had been added to the area to the south of the project parcel, with a cleared area around it, but there was still no change within or immediately adjacent to the project parcel itself (CT DEP 1980). In the 1986 aerial photograph, the cleared area around the buildings to the south had been expanded to just within 152 m (500 ft) of the project parcel (Figure 14; CT DEP 1986). In 1996, 10 years later, there was no significant change within or immediately adjacent to the project parcel, although a zone of landscape disturbance had extended to an area somewhat to the north of it (Figure 15; CT DEP 1996). The 2016 aerial photograph, however, again shows no change in the immediate area of the project parcel (Figure 16; Capitol Region 2016). Examining a larger portion of the latter image, it becomes clear that the project parcel is in the midst of a large forested area. Although a modest amount of large-lot housing had been constructed between the project parcel and Interstate 95, other areas a little further away had much more of this activity.

Conclusions

The documentary record indicates that it is unlikely that the proposed work will impact any significant historical resources. Although past agricultural use of the project parcel is possible, and past use for timbering purposes is likely, remnants of such use (such as stone walls or old roads) probably is not historically significant.

CHAPTER V
PREVIOUS INVESTIGATIONS

Introduction

This chapter presents an overview of previous archaeological research completed within the vicinity of the project parcel in Old Lyme, 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 parcel are taken into consideration. Specifically, this chapter reviews previously identified archaeological sites, National/State Register of Historic Places properties, and inventoried historic standing structures situated in the project region (Figures 17 and 18). The discussions presented below are based on information currently on file at the Connecticut State Historic Preservation Office in Hartford, Connecticut. In addition, the electronic site files maintained by Heritage also were examined during the course of 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, National/State Register of Historic Places Properties/District, and Inventoried Historic Standing Structure in the Vicinity of the Project Parcel

A review of data currently on file at the Connecticut State Historic Preservation Office, as well as the electronic site files maintained by Heritage failed to identify any National or State Register of Historic Places Properties situated within 1.6 km (1 mi) of the project parcel (Figure 18). However, this review did reveal that two archaeological sites have been previously identified within 1.6 km (1 mi) of the project parcel. They are Sites 105-25 and 105-26, and they are described below (Figure 17).

Site 105-25

Site 105-25 is the 3 Mile River Rockshelter #1 site, also known Bludee Rock, is located along Four Mile River Road in Old Lyme, Connecticut and approximately 990 meters (3,248 feet) to the east of the project parcel. The site consists of a rockshelter that was investigated by PAST, Inc., (PAST) in 1983 to a 10-centimeter (3.9-inch) depth; it also was recorded by Kevin McBride that same year. PAST excavators recovered European flint, kaolin pipe fragments, lithic debitage, a quartz cobble assemblage, a Levanna projectile point, and unidentified bone fragments. A charcoal sample was collected but not radiocarbon dated at the time the site form was recorded. PAST determined that the site was a long-term seasonal hunting camp occupied during the Late Archaic and Contact Periods based on temporally diagnostic artifacts recovered. Site 105-25 has not been assessed applying the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]), and it will not be impacted by the proposed project.

Site 105-26

Site 105-26 is 3 Mile River Rockshelter #2; it is located approximately 120 meters (394 feet) to the northeast of Site 105-25. The site was undisturbed when it was recorded by Kevin McBride of PAST in September 1983. Testing was conducted within the site in 1983, which resulted in the collection of a single untyped projectile point and a flint assemblage. The projectile point was described as a possible

Laurentian point and the flint assemblage possibly dated to the Middle or Late Woodland Period. The date of Site 105-26 could not be determined definitively; however, the site form describes it as a special purpose site for hunting. Site 105-26 has not been assessed applying the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]), and it will not be impacted by the proposed project.

Summary and Interpretations

The review of previously identified cultural resources in the vicinity of the proposed project parcel indicates that the larger project region contains prehistoric Native American deposits. Archaeological sites occupied within the study region likely date from the prehistoric era (ca., 12,500 to 350 B.P). This suggests that additional archaeological sites may situated within the project parcel.

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 project parcel in Old Lyme, 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 historic maps, topographic quadrangles, and aerial imagery depicting the project parcel in order to identify potential historic resources and/or areas of past disturbance; and 4) pedestrian survey and photo-documentation of the project parcel 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 identify assess the archaeological sensitivity of the project parcel, as well as to visually examine the development area 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 project parcel. The methods used to complete this investigation were designed to provide coverage of all portions of the project parcel. 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 historic maps depicting the proposed project parcel; an examination of USGS 7.5' series topographic quadrangles; an examination aerial images dating from 1934 through 2016; 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 project parcel, and to provide a natural and cultural context for the project region. This information then was used to develop the archaeological context of the project parcel, and to assess its sensitivity with respect to the potential for producing intact cultural resources.

Background research materials, including historic 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 project parcel.

Field Methodology and Data Synthesis

Heritage also performed fieldwork for the Phase IA cultural resources assessment survey of the project parcel associated with the solar project in Old Lyme, Connecticut. This included pedestrian survey, photo-documentation, and mapping of the areas containing the proposed development area. 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 parcel in Old Lyme, 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 historic maps and aerial imagery depicting the project parcel in order to identify potential historic resources and/or areas of past disturbance; 4) pedestrian survey and photo-documentation of the project items in order to determine their archaeological sensitivity; and 5) preparation of the current Phase IA cultural resources assessment survey report.

Results of Phase IA survey

The project parcel measures approximately 300 m (984 ft) in length from north to south by 113 m (371 ft) in width from east to west. At the time of survey, it was characterized by forest (Figures 1 and 20). This development area is situated at elevations ranging from approximately 64 m (210 ft) NGVD in the west to 71.6 m (235 ft) NGVD in the east, and it contains a total of 11.8 acres of land. The predominant soil type located throughout the project parcel is Paxton/Montauk fine sandy loam, which is found on slopes of 3 to 8 percent. As discussed in Chapter II of this report, this soil type is well-drained and contains small to medium sized stones throughout. The project parcel lies directly adjacent to an existing powerline corridor, which will presumably serve as the interconnect for the proposed solar facility (Figures 1 and 24).

Heritage personnel conducted pedestrian survey of the project parcel on June 8, 2019. During pedestrian survey a stone wall running from north to south through the center of the project parcel was identified; it began approximately 15 m (39.2 ft) to the north of Eversource Pole 74 in the south and extended to the northern boundary of the project parcel (Figure 22). The portion of the proposed project parcel located to the east of this stone wall was characterized as a moderate/high sensitivity area for containing intact archaeological deposits, as it contained level areas and well drained soils with few signs of obvious disturbance (Figures 20 and 21). To the west of the stone wall, the project parcel was characterized as having no/low sensitivity due to steeply sloping terrain and poorly drained soils marked by ferns (Figures 22 and 23).

Overall Sensitivity of the Proposed Project Parcel

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 historic maps, aerial images, and data regarding previously identified archaeological sites, National and State Register of Historic Places properties, and inventoried historic standing structure to stratify the project items into zones of no/low and/or moderate/high archaeological sensitivity. In general, historic 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 parcel 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 historic period archaeological deposits is based not only the above-defined landscape features but also on the presence or absence of previously identified historic period archaeological resources as identified during previous archaeological surveys, recorded on historic 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 historic period archaeological site, a National or State Register of Historic Places district/individually listed property, or an area that contains known historic period buildings 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 historic period archaeological sensitivity.

The combined review of historic maps, aerial images, land deeds, and pedestrian survey indicates that the project parcel contains low slopes and well drained soils within an approximately 7 ac area situated in proximity to wetlands and Threemile River to the east. Soils found throughout this part of the project parcel are attributed to the Paxton and Montauk series, which consists of sandy loam that generally extends to ca., 65 cm (26 in) below surface. In addition, this area has been relatively undisturbed over the years. Based on the landscape type, proximity to freshwater, and the presence of well-drained sandy loamy soils, this portion of the project parcel appears to retain a moderate/high sensitivity for yielding archaeological deposits. The western one-third of the project parcel contains steeply sloping areas and soils that contain significant amounts of water on a year-round basis, as seen by the presence of ferns throughout the area. This area encompassed 4.1 ac of land and retains a no/low archaeological sensitivity.

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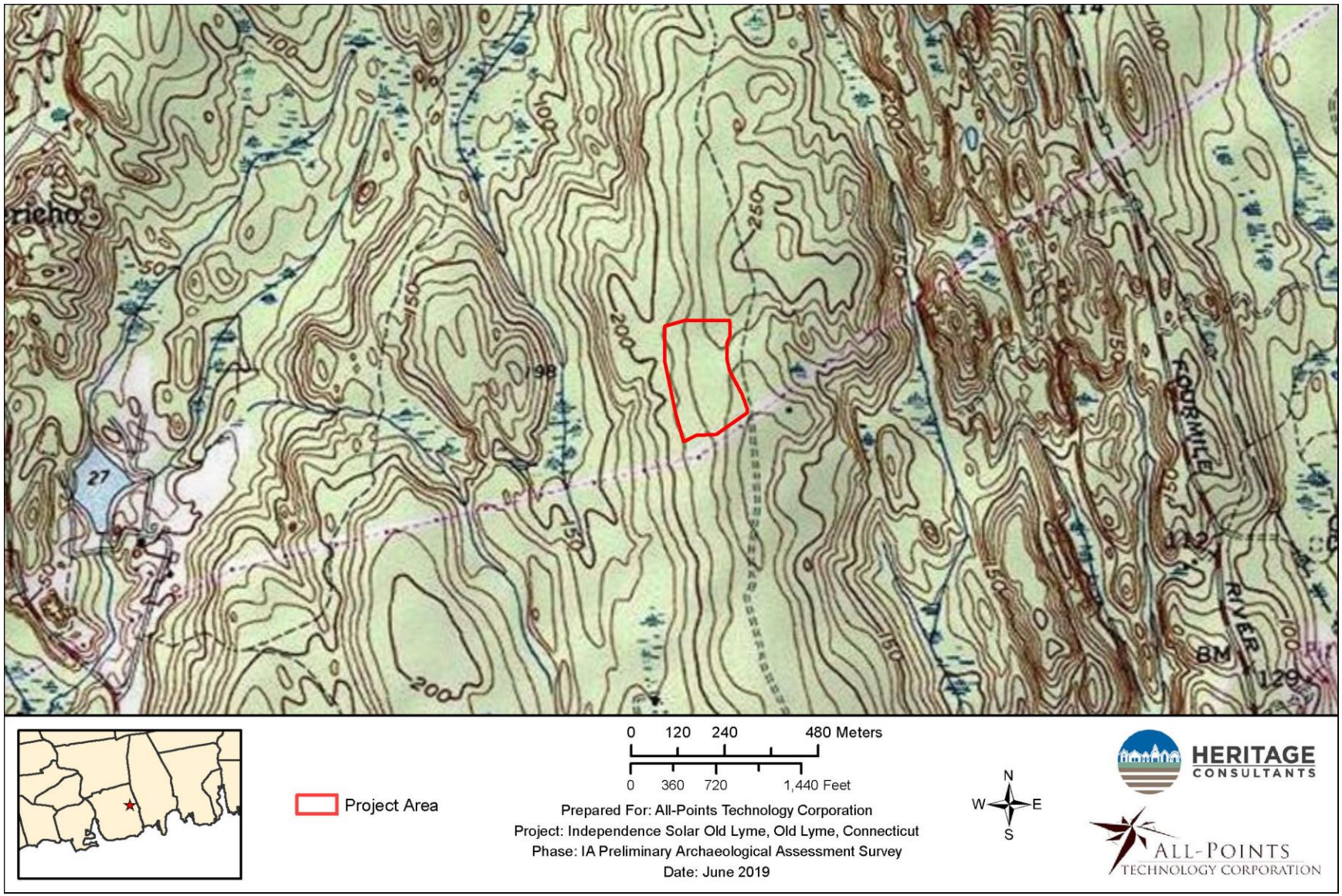

Figure 1. Excerpt from a USGS 7.5' series topographic quadrangle image showing the location of the project parcel in Old Lyme, Connecticut.

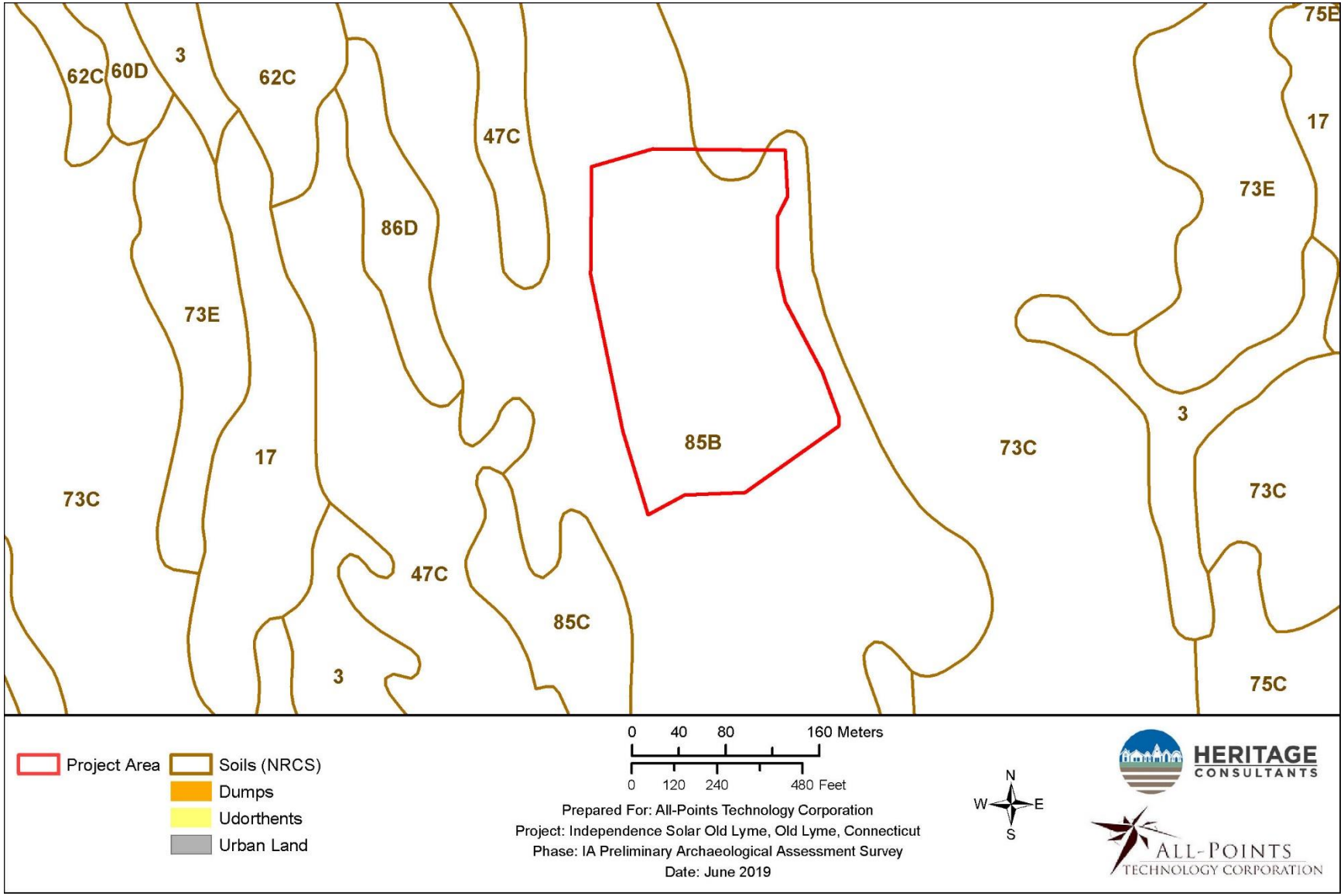

Figure 2. Map of soils located in the vicinity of the project parcel in Old Lyme, Connecticut.

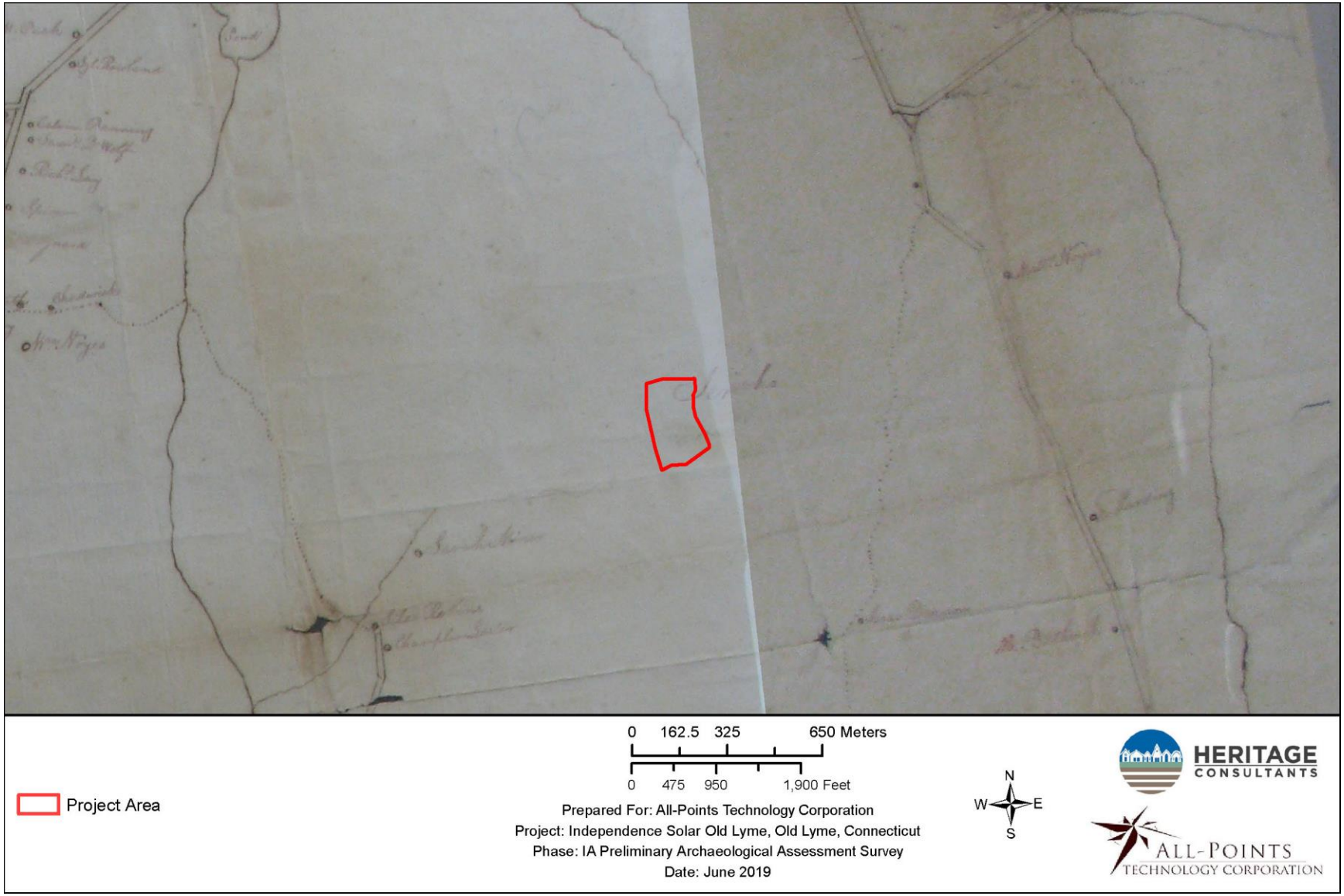

Figure 3. Excerpt from an 1815 historic map showing the location of the project parcel in Old Lyme, Connecticut.

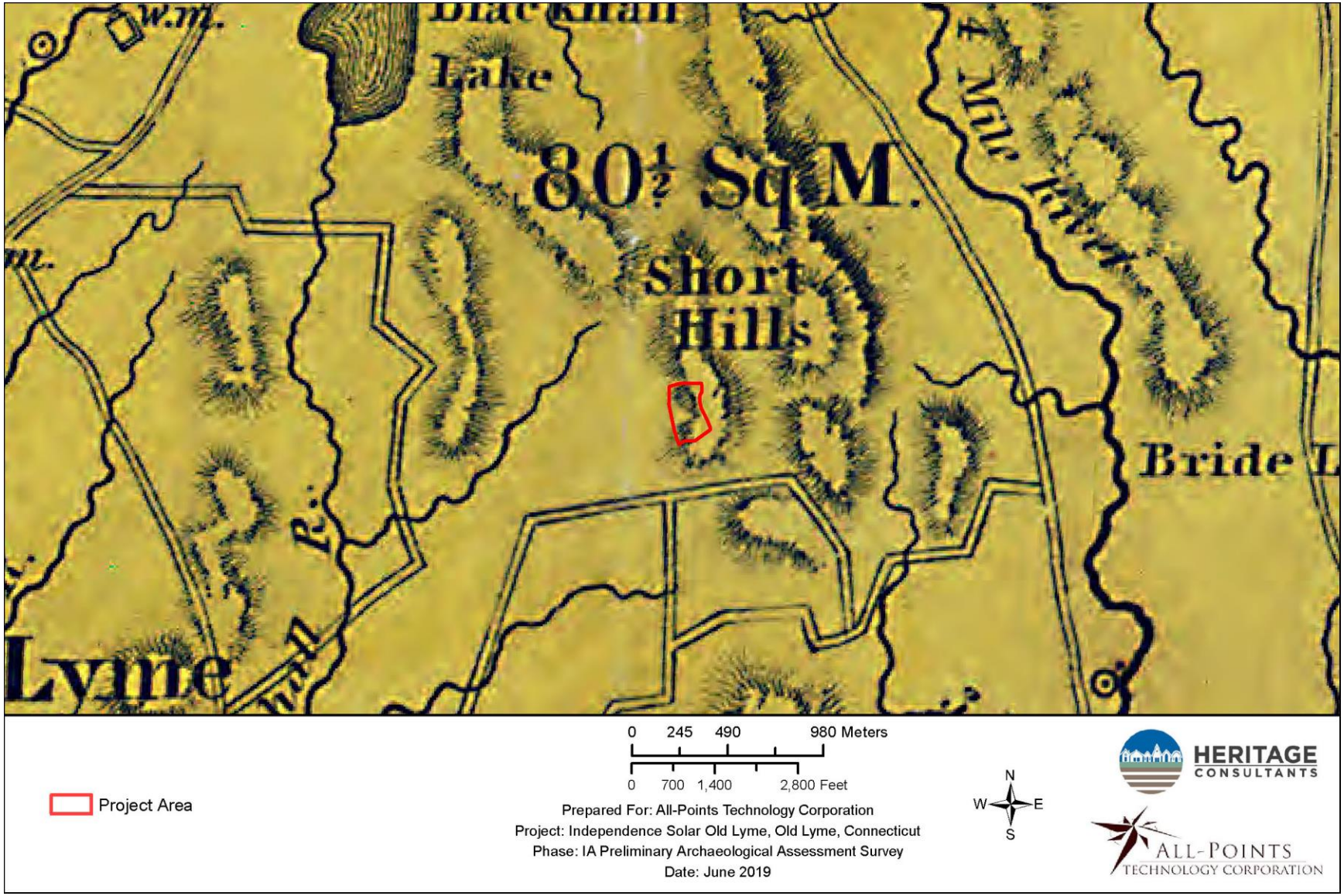

Figure 4. Excerpt from an 1833 historic map showing the location of the project parcel in Old Lyme, Connecticut.

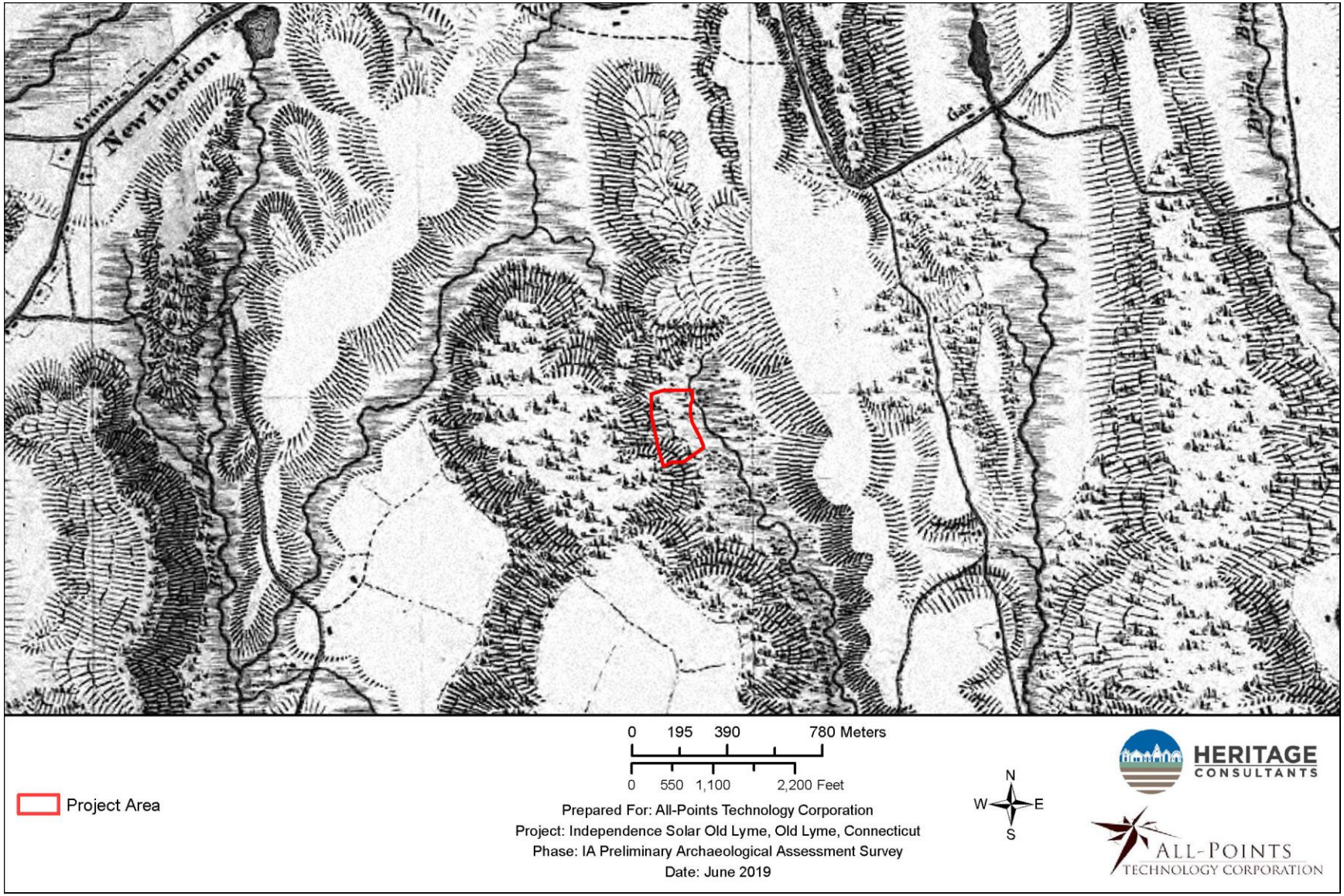

Figure 5. Excerpt from an 1838 historic map showing the location of the project parcel in Old Lyme, Connecticut.

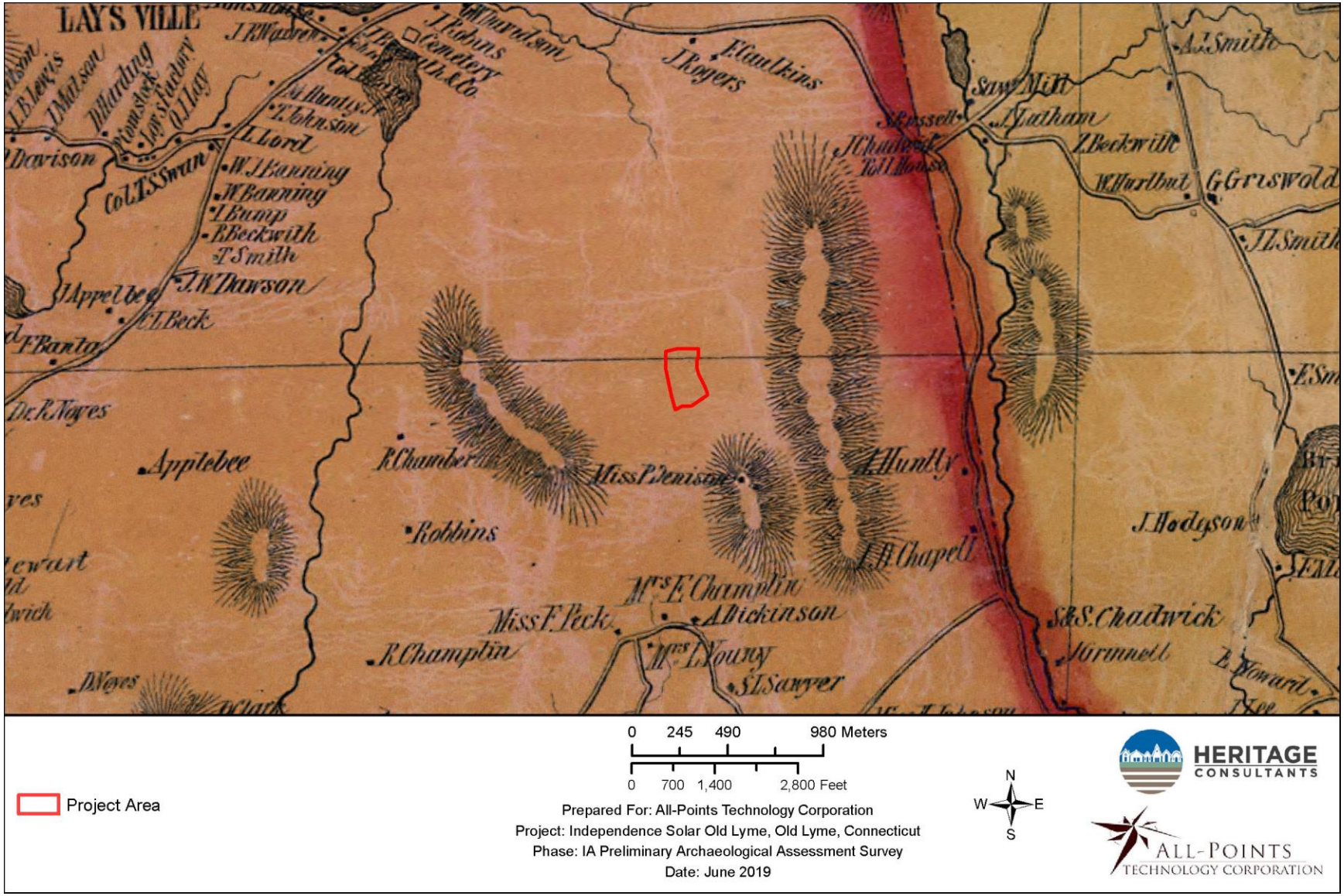

Figure 6. Excerpt from an 1854 historic map showing the location of the project parcel in Old Lyme, Connecticut.

Figure 7. Excerpt from an 1868 historic map showing the location of the project parcel in Old Lyme, Connecticut.

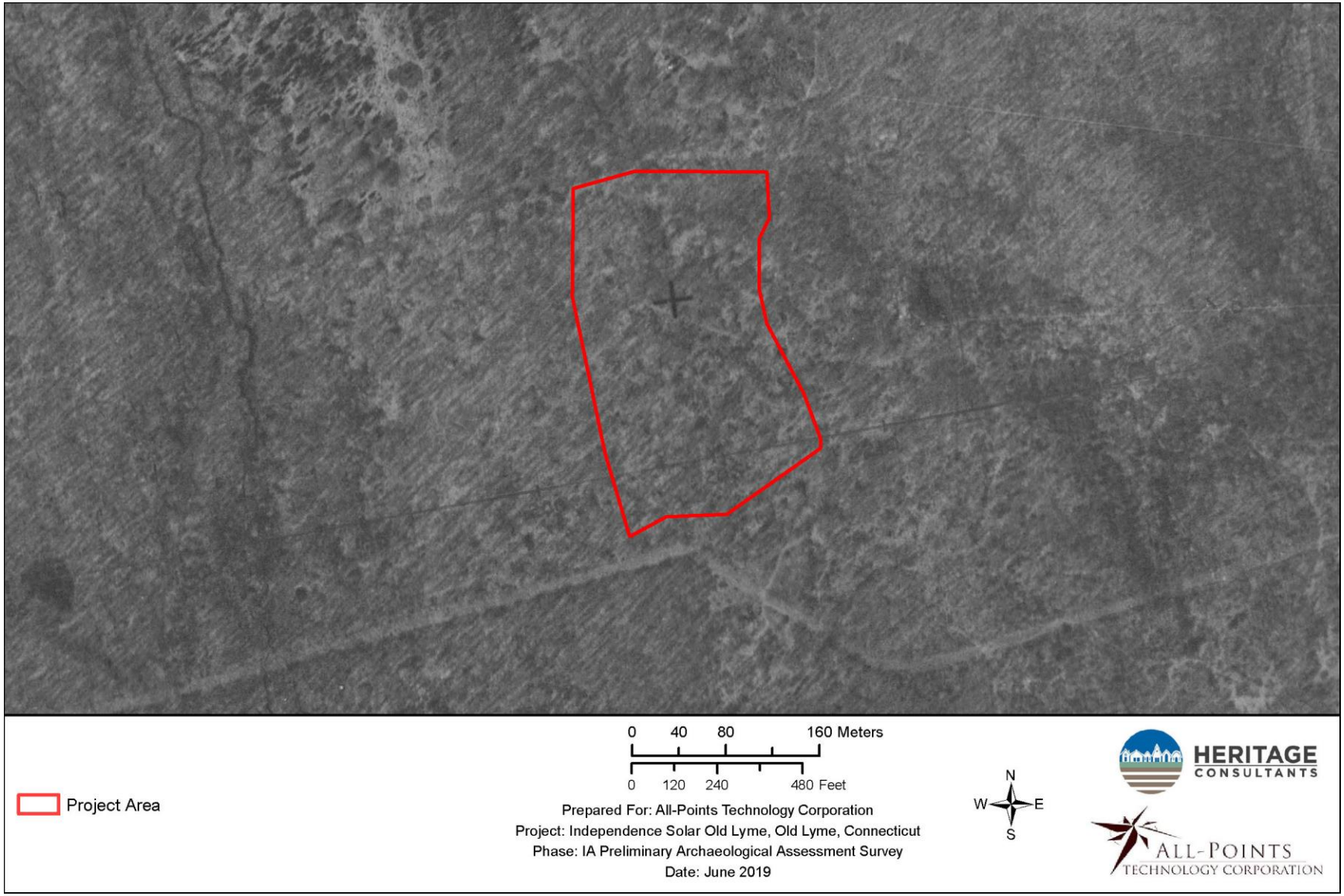

Figure 8. Excerpt from a 1934 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

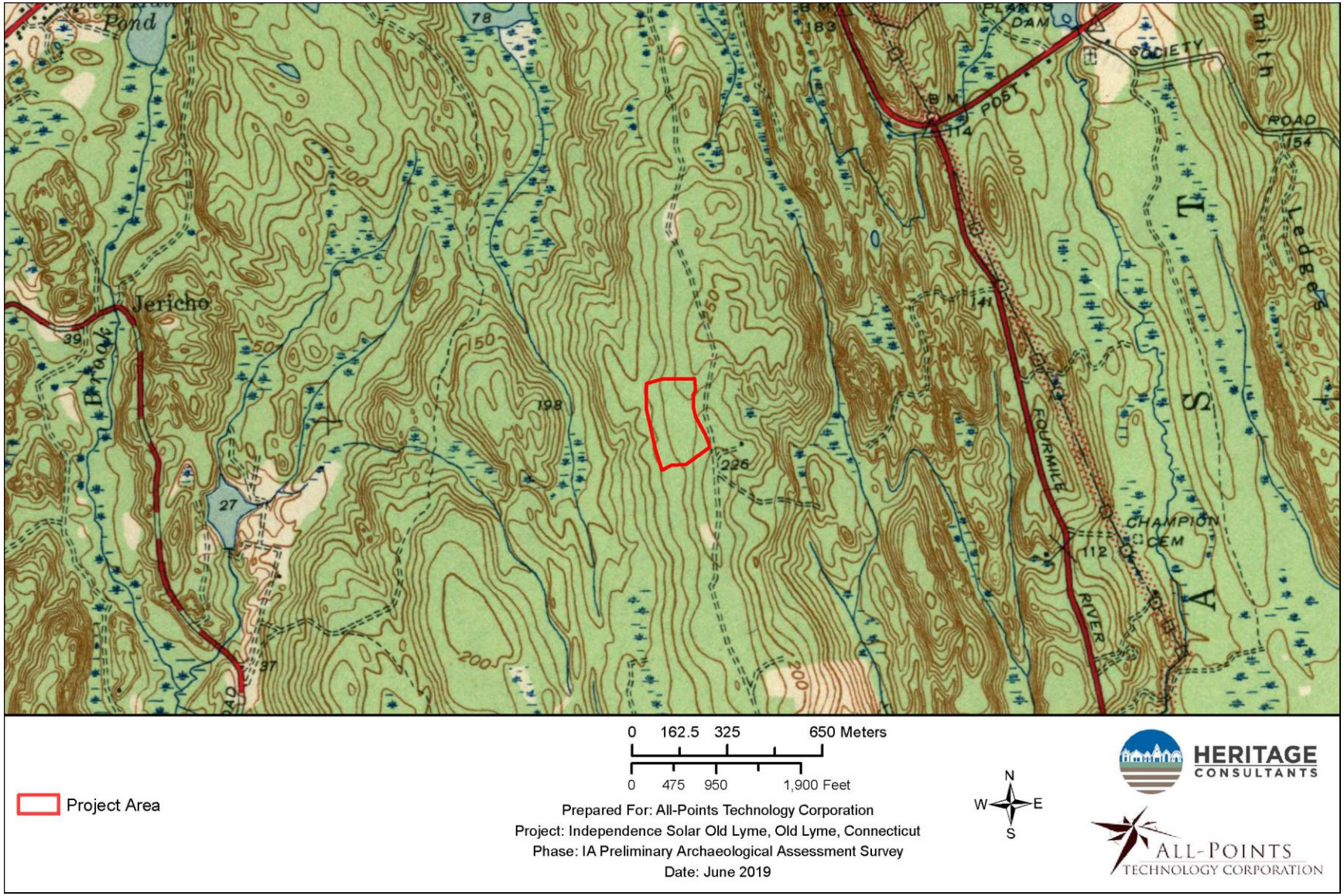

Figure 9. Excerpt from a 1941 USDA topographic quadrangle image showing the location of the project parcel in Old Lyme, Connecticut.

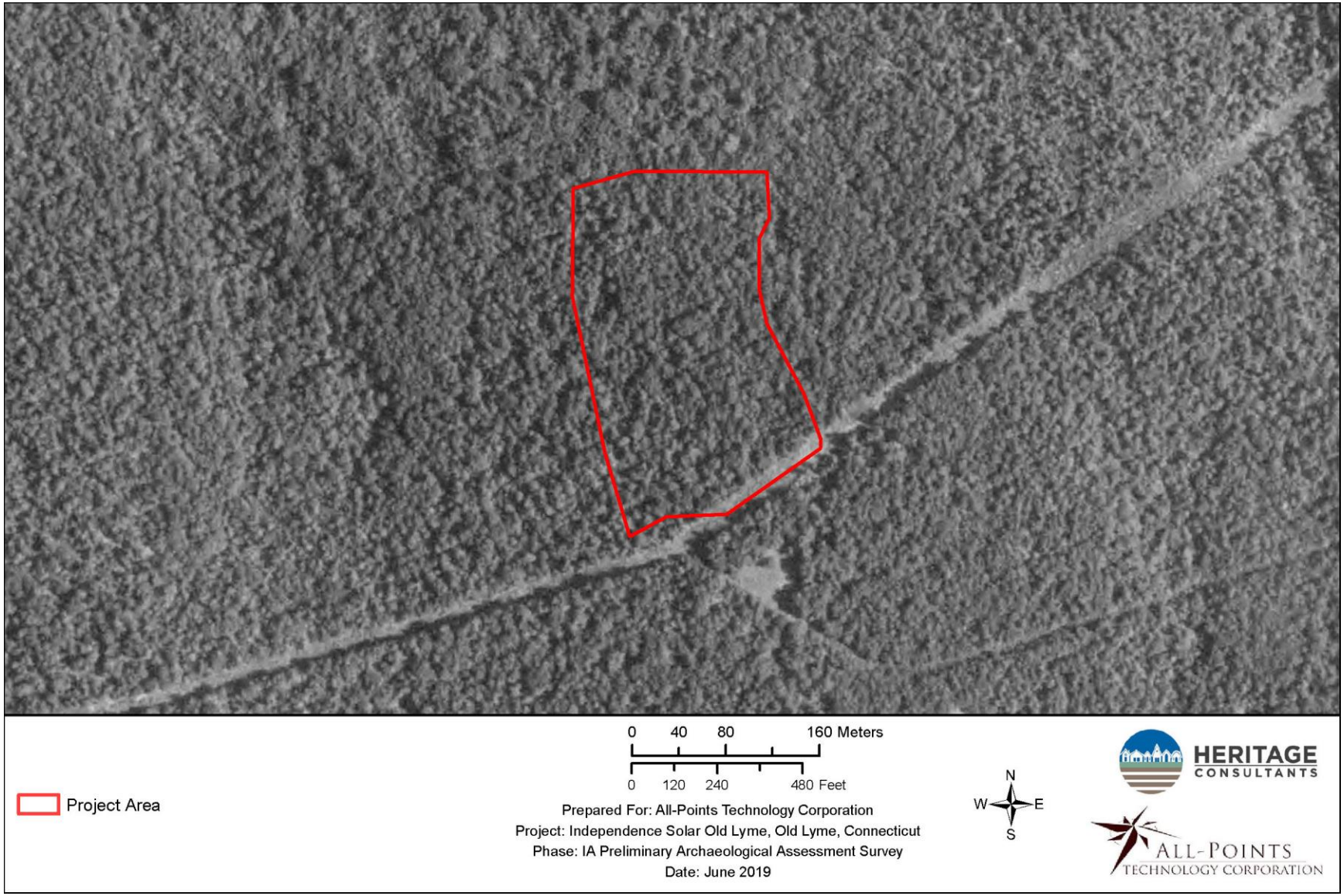

Figure 10. Excerpt from a 1951 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

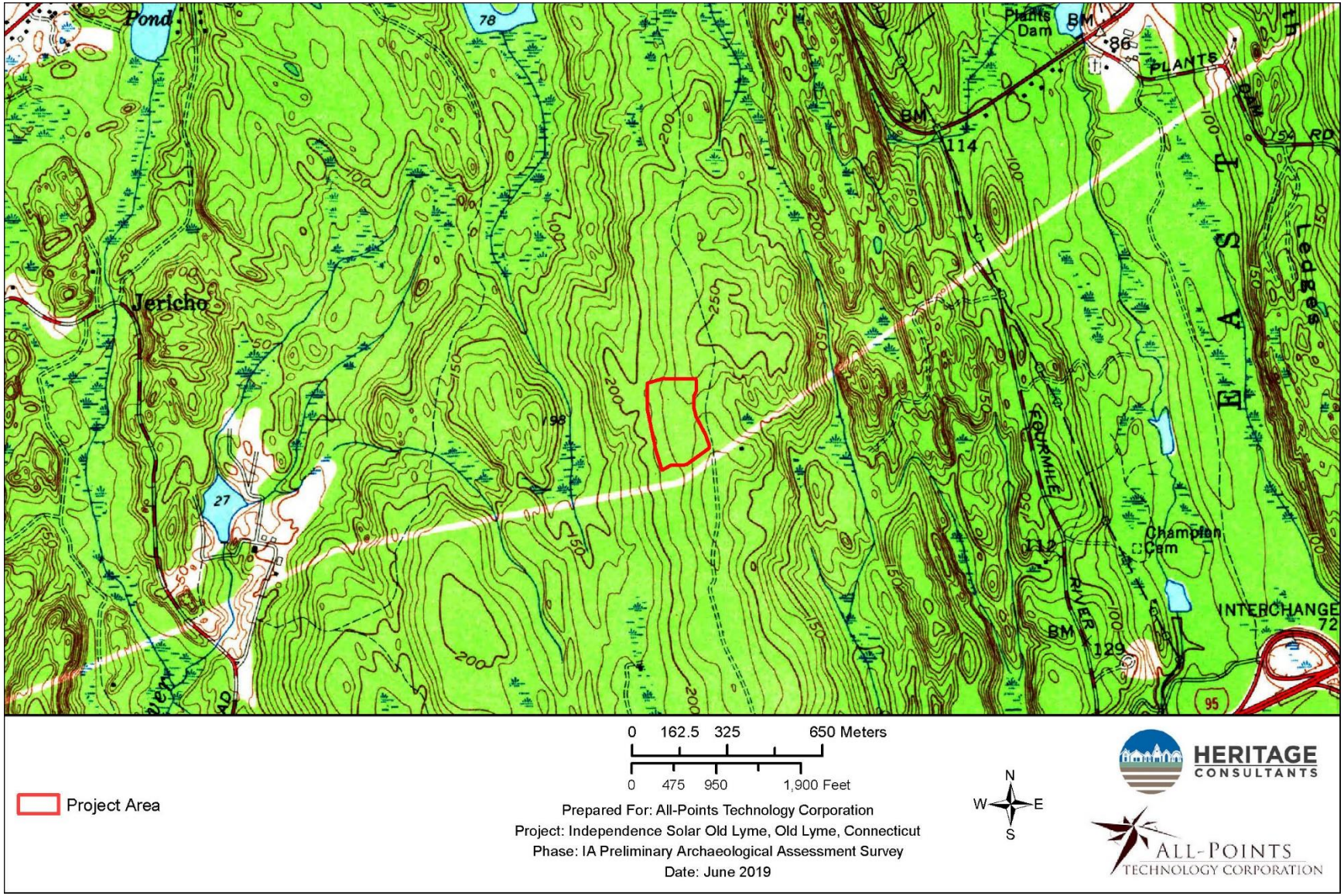

Figure 11. Excerpt from a 1958 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

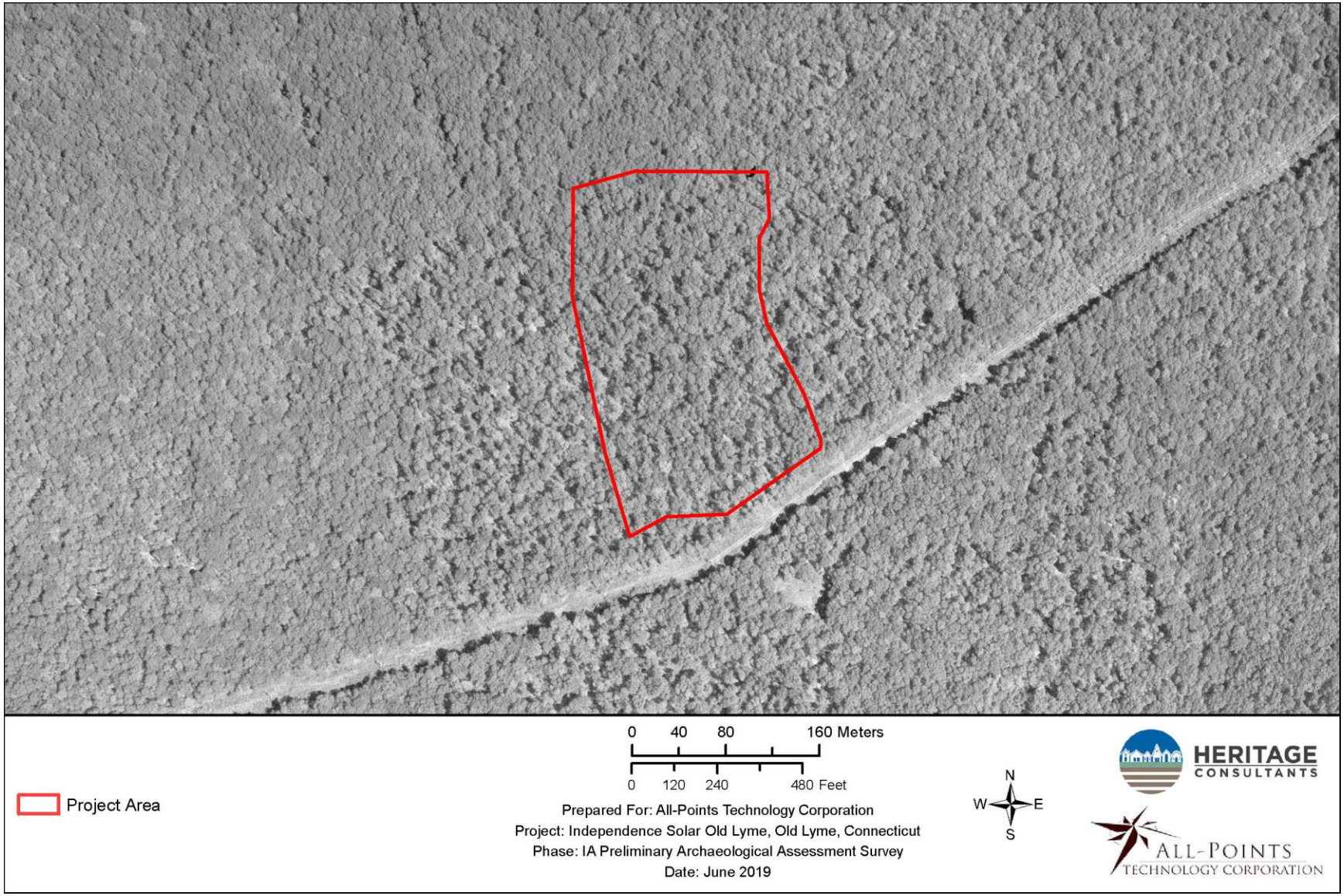

Figure 12. Excerpt from a 1974 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

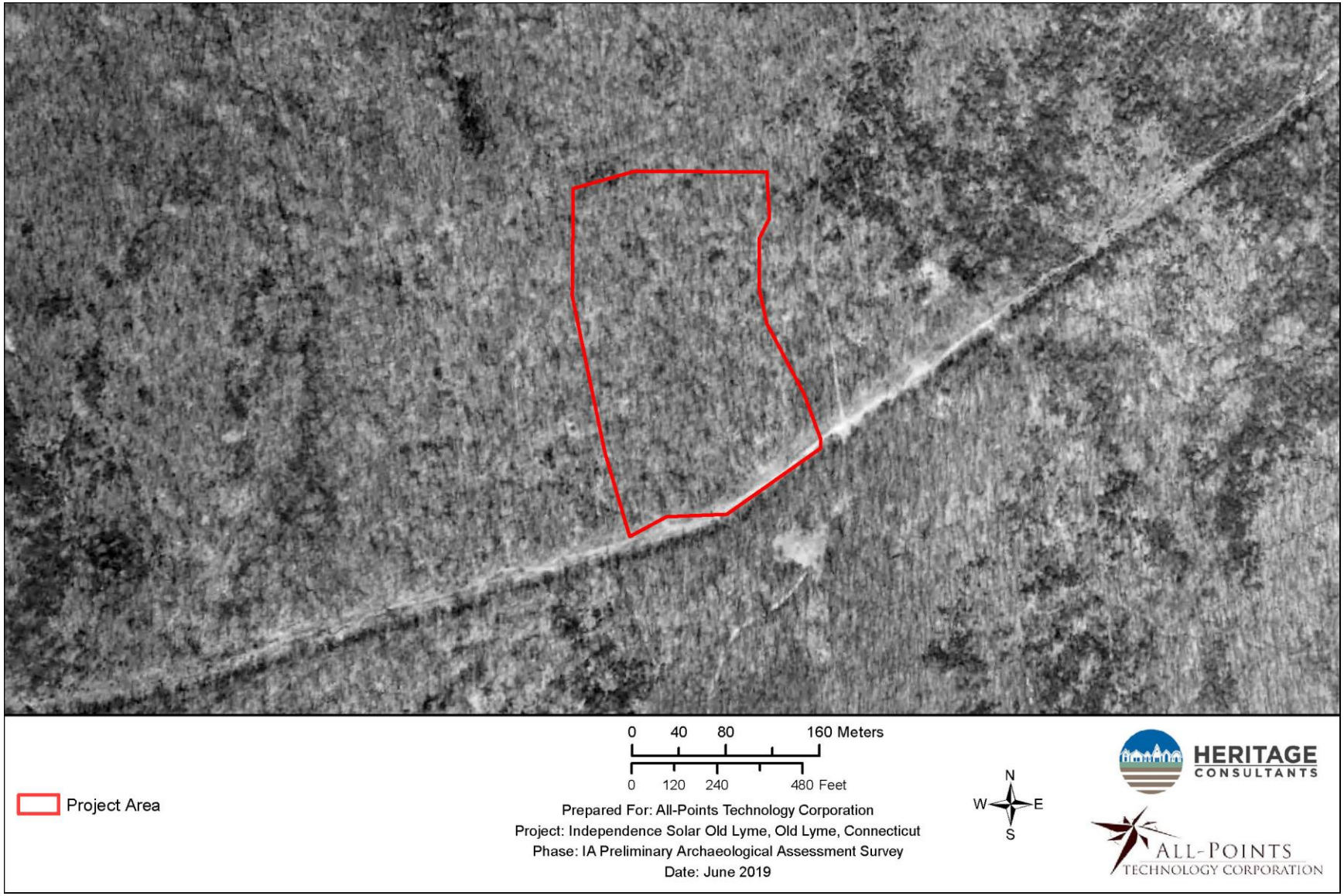

Figure 13. Excerpt from a 1975 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

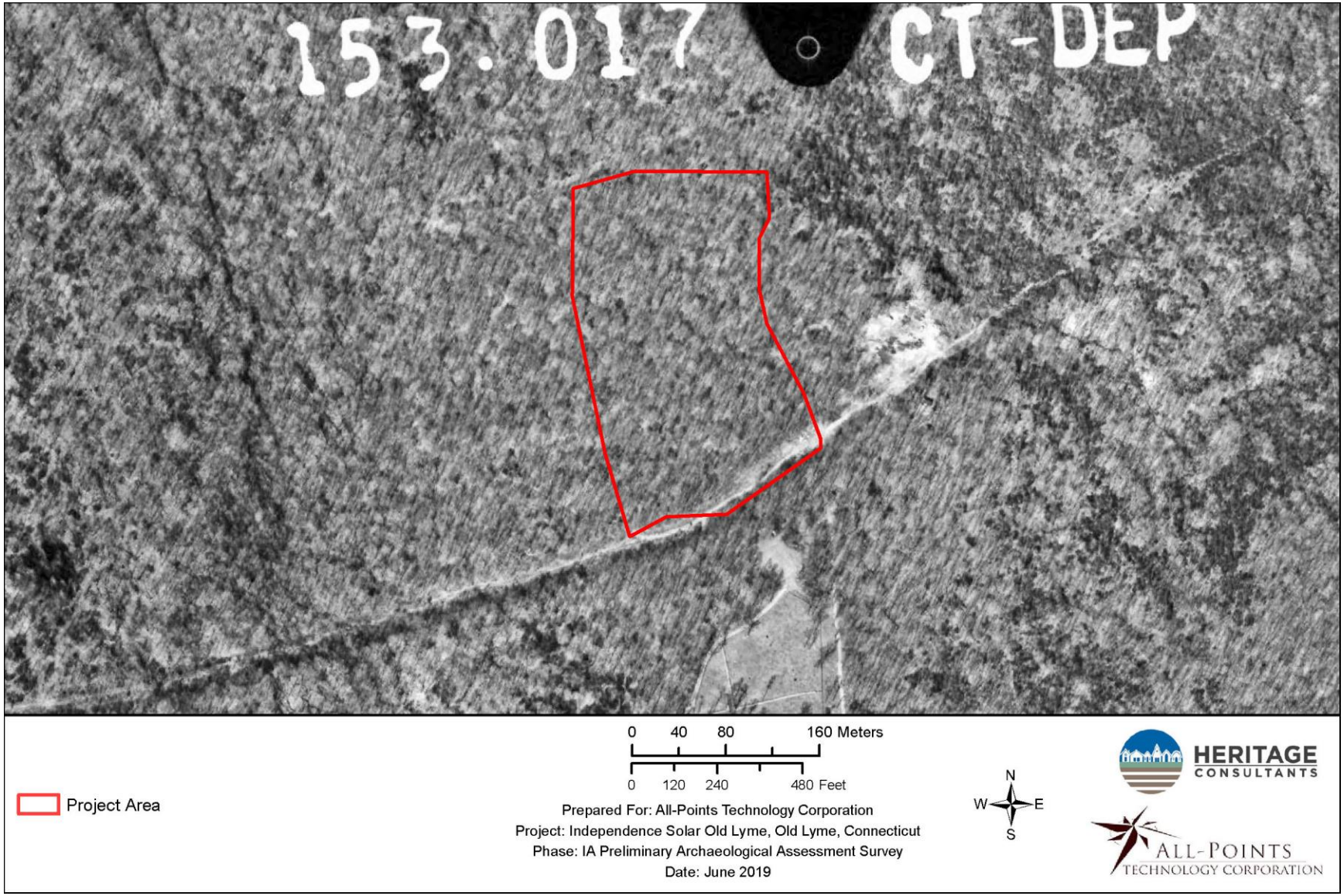

Figure 14. Excerpt from a 1986 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

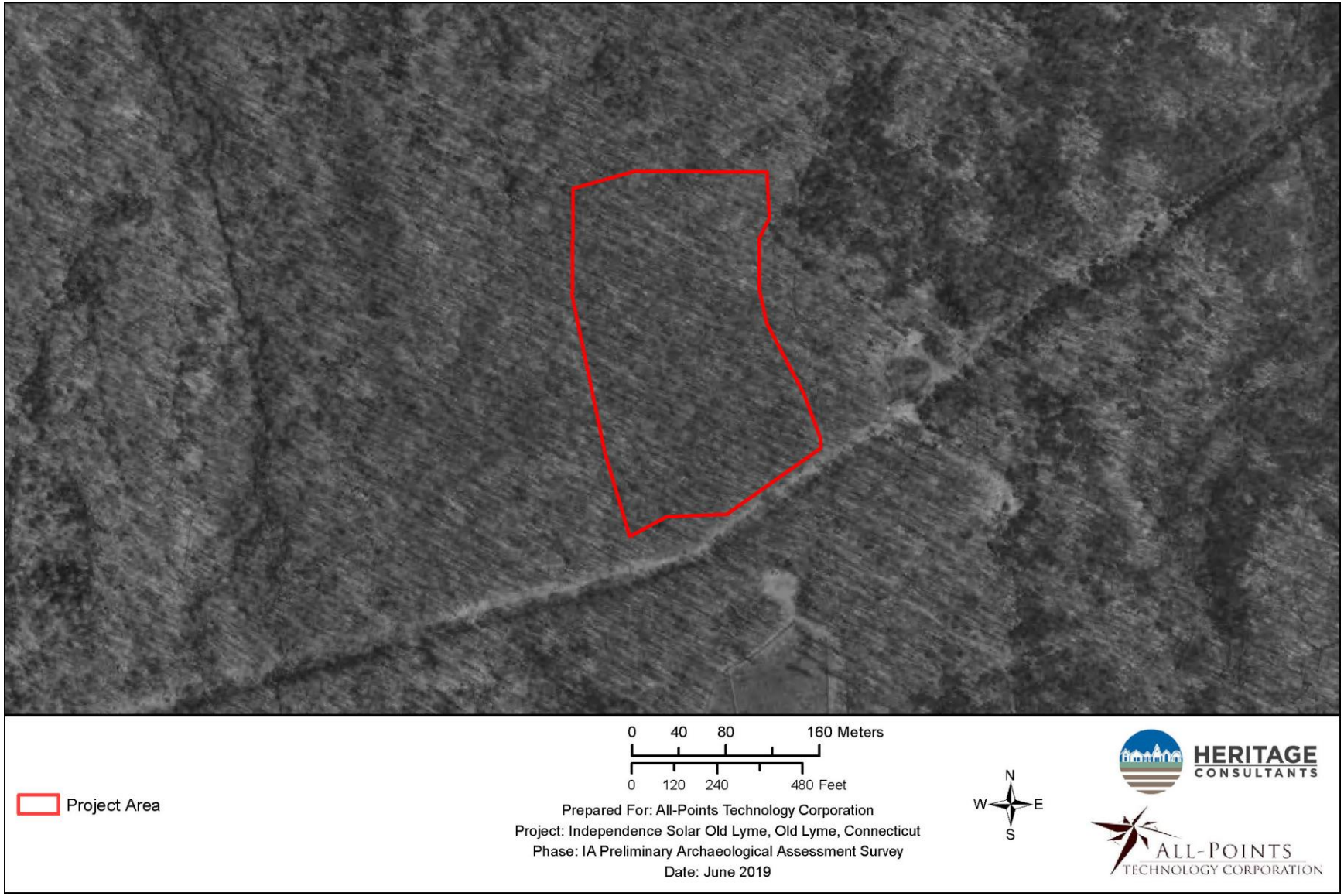

Figure 15. Excerpt from a 1996 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

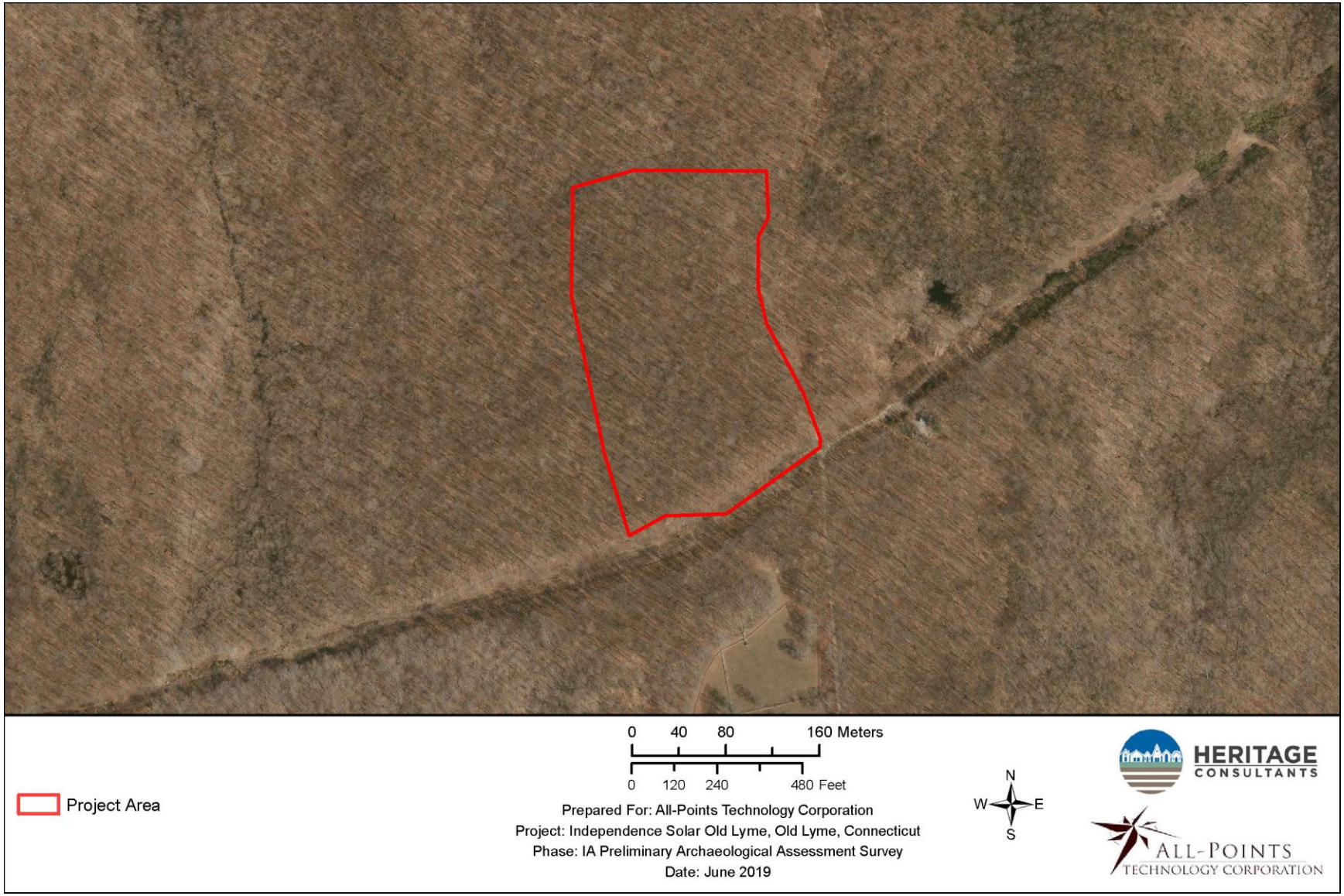

Figure 16. Excerpt from a 2016 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

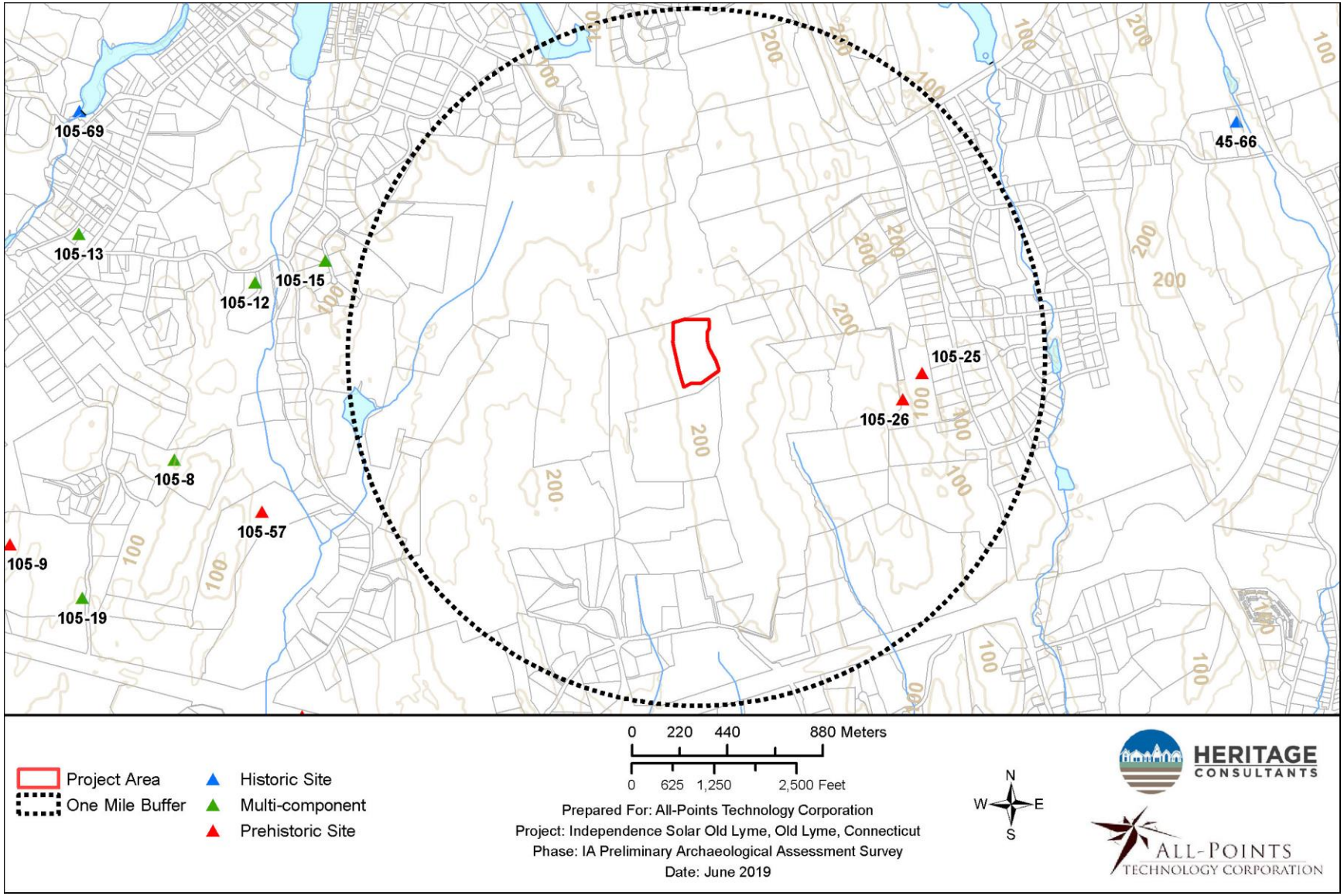

Figure 17. Digital map showing the location of previously identified archaeological sites in the vicinity of the project parcel in Old Lyme, Connecticut.

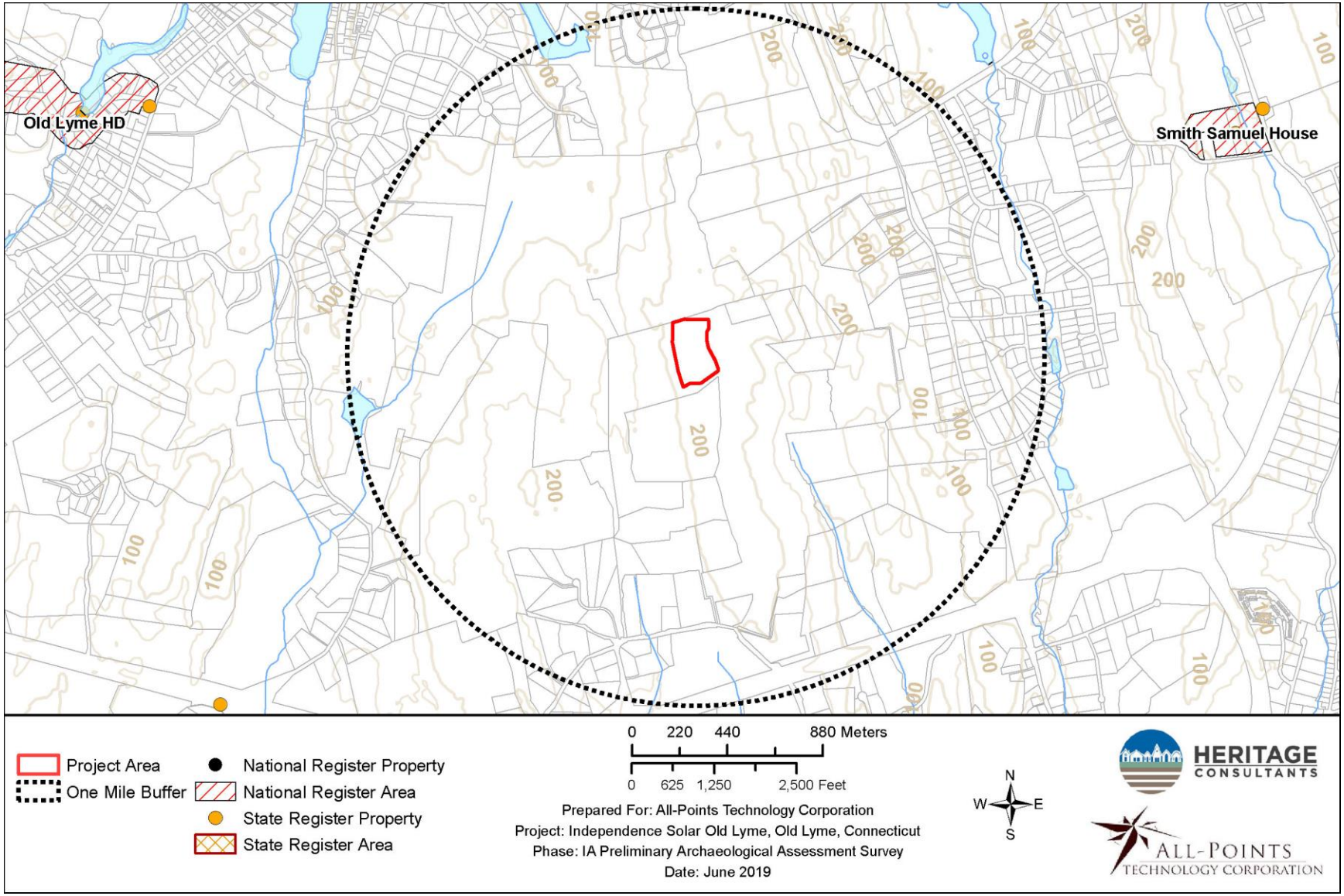

Figure 18. Digital map depicting the locations of previously identified National/State Register of Historic Places properties and inventoried Historic Standing Structures in the vicinity of the project parcel in Old Lyme, Connecticut.

Figure 19. Digital map depicting the project parcel in Old Lyme, Connecticut stratified into areas of archaeological sensitivity.

Figure 20. Overview photo of the northeastern portion of the project parcel facing southwest.

Figure 21. Overview photo of the southeastern portion of the project parcel facing northwest.

Figure 22. Overview of central portion of the project parcel, looking west from the stone wall (note sloping terrain).

Figure 23. Overview photo of the western portion of the project parcel facing northeast (note ferns and poorly drained soils).

Figure 24. Photo on southern border of project parcel facing west toward distribution line.

Connecticut

Department of Economic and Community Development

State Historic Preservation Office

July 2, 2019

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

Subject: Phase IA Cultural Resources Assessment Survey
Proposed Cobb Road, LLC Solar Project
Short Hills Road
Old Lyme, Connecticut
ENV-20-0009

Dear Mr. George:

The State Historic Preservation Office (SHPO) has reviewed the archeological survey report prepared by Heritage Consultants, LLC (Heritage), dated May 2019. The proposed activities are under the jurisdiction of the Connecticut Siting Council and are subject to review by this office pursuant to the Connecticut Environmental Policy Act (CEPA). The proposed facility is located within a 11.7 acre study area, consisting primarily of forest surrounded by wooded land, with access from an existing forest road to the east.

The proposed facility includes one solar photovoltaic (PV) electric generating facility with a capacity of 3 MW, that occupy the majority if the study area. The reconnaissance survey consisted of a contextual overview of the area's prehistory, history, and natural setting, literature to identify previously completed cultural resource surveys and recorded sites, review of historic maps, pedestrian survey of the study area, and preparation of a current archaeological assessment report.

The Phase IA assessment survey identified that the majority of the study area will be impacted by the proposed facility. A pedestrian survey revealed that the project parcel is divided by a stone wall running north to south, and that the portion of the project parcel to the east of the wall (approximately 7 acres) is characterized as having well drained soils and few indicators of prior disturbance, as well as being in close proximity to the freshwater source of the Threemile River. This type of setting retains a moderate to high degree to contain intact archaeological deposits. Additionally, two previously identified archaeological sites (Site 105-25 and Site 105-26) are located within 1 mile of the project area. By contrast, the portion of the project parcel located west of the stone wall (approximately 4.1 acres) is characterized by steep slopes and poorly drained soils.

We therefore recommend that a Phase IB professional cultural resources assessment and reconnaissance survey that includes subsurface testing techniques be completed in areas identified as having moderate to high archaeological sensitivity and will be impacted by the proposed solar project prior to construction. All work should be in compliance with our *Environmental Review Primer for Connecticut's Archaeological Resources* and no construction or other project-related ground disturbance should be initiated until SHPO has had an opportunity to review and comment upon the requested survey.

This office appreciates the opportunity to review and comment upon this project. 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,

Mary B. Dunne

Mary B. Dunne
State Historic Preservation Officer

AUGUST 2019

PHASE IB CULTURAL RESOURCES RECONNAISSANCE SURVEY OF THE PROPOSED COBB SOLAR PROJECT IN OLD LYME, CONNECTICUT

PREPARED FOR:

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ABSTRACT

This report presents the results of a Phase IB cultural resources reconnaissance survey for the proposed solar facility in Old Lyme, Connecticut. During fieldwork, a total 135 of 141 (96 percent) planned survey shovel tests were excavated along 10 north to south trending survey transects positioned throughout the moderate/high sensitivity portions of the proposed project area. This resulted in the identification of a single prehistoric cultural resources locus that was designated as Locus 1. The prehistoric artifacts recovered from Locus 1 (n=27) are indicative of a very short term use of the landscape within the project parcel, perhaps as a task-specific or temporary camp. They indicate that stone tool manufacturing and/or maintenance occurred on the site; however, since the recovered artifacts assemblage is typical of most prehistoric periods and no temporally diagnostic artifacts were recovered were during Phase IB survey, the archaeological deposits within Locus 1 were deemed to not possess research potential. Thus, Locus 1 was assessed as not significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional archaeological examination of Locus 1 is recommended prior to construction.

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CHAPTER I
INTRODUCTION

This report presents the results of a Phase IB cultural resources reconnaissance survey for the proposed solar facility in Old Lyme, Connecticut (Figure 1). All-Points Technology Corporation (All-Points) requested that Heritage Consultants, LLC (Heritage) complete the reconnaissance survey as part of the planning process for the proposed solar facility, which will occupy approximately 12.72 acres of land. The project parcel is situated in the northern portion of a large area of land located at 20-1 Short Hills Road. It is surrounded by forested areas on all sides. Heritage completed this investigation on behalf of All-Points in late July and early August of 2019. 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 project will consist of a ±1.95-megawatt AC (3.0 MW DC) solar facility constructed at the project parcel. The solar facility will interconnect with an existing powerline corridor that extends from east to west along the southern edge of the project parcel. The current Phase IB cultural resources reconnaissance survey was completed utilizing pedestrian survey, systematic shovel testing, detailed mapping, and photo-documentation of all moderate/high sensitivity areas. During survey, Heritage conducted the systematic excavation of shovel tests along parallel survey transects throughout the moderate/high sensitivity portions of the project area. The shovel tests were situated at 15 m (49.2 ft) intervals along parallel survey transects spaced 15 m (49.2 ft) apart. Each shovel test measured 50 x 50 cm (19.7 x 19.7 in) 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 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 using Munsell Soil Color Charts and standard soils nomenclature. Each shovel test was backfilled immediately upon completion of the archeological recordation process.

Project Results and Management Recommendations Overview

The current Phase IB survey effort consisted of pedestrian survey, subsurface testing, and mapping of the moderate/high sensitivity portion of the proposed project parcel. A total of 135 of 141 (96 percent) planned survey shovel tests were excavated along 10 north to south tending survey transects distributed throughout the moderate/high sensitivity areas associated with proposed solar facility. Of these, 10 shovel tests yielded cultural material dating from the prehistoric area. Phase IB delineation shovel tests were then excavated at 7.5 m (24.6 ft) intervals in the cardinal directions around each positive survey shovel tests, resulting in the excavation of 36 of 36 (100 percent) planned "delineation" shovel tests, of which four shovel tests yielded additional cultural material originating from the prehistoric use of the local landscape. The area of artifact-bearing shovel tests was designated as Locus 1.

The Locus 1 area yielded 27 artifacts from A and B-Horizon (plow zone and subsoil) contexts; these consisted of non-temporally diagnostic quartz and quartzite stone tool chipping debris. The prehistoric artifacts recovered from Locus 1 are indicative of a very short term use of the landscape within the

project parcel, perhaps as a task-specific or temporary camp. The recovered artifacts indicate that stone tool manufacturing and/or maintenance occurred on the site; however, since the recovered artifact assemblage is typical of most prehistoric periods and no temporally diagnostic artifacts were recovered were during Phase IB survey, the archaeological deposits within Locus 1 do not possess research potential. Thus, Locus 1 was assessed as not significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional archaeological examination of Locus 1 is recommended prior to construction.

Project Personnel

Key personnel for this project included Mr. David R. George, M.A., R.P.A, who served as Principal Investigator for this effort; he was assisted by Mr. Antonio Medina, B.A., and Ms. Jess Jay, B.A., who completed the field work portion of the project and who assisted with report preparation. Dr. Kristen Keegan completed this historic background research of the project and contributed to the final report, while Mr. Stephen Anderson completed all GIS tasks associated with the project. Finally, Ms. Elizabeth completed the laboratory analysis under the supervision of Mr. George.

Organization of the Report

The natural setting of the region encompassing the project parcel is presented in Chapter II; it includes a brief overview of the geology, hydrology, and soils, of the project region. The prehistory of the project region is outlined briefly in Chapter III. The history of the region encompassing the project region and project parcel is chronicled in Chapter IV, while a discussion of previous archaeological investigations in the vicinity of the project parcel is presented in Chapter V. The methods used to complete this investigation are discussed in Chapter VI. Finally, the results of this investigation and management recommendations for the project parcel and the identified cultural resources are presented in Chapter VII.

CHAPTER II
NATURAL SETTING

Introduction

This chapter provides a brief overview of the natural setting of the region containing the project parcel. Previous archaeological research has documented that a few specific environmental factors can be associated with both prehistoric and historic period site selection. These include general ecological conditions, as well as types of fresh water sources and soils present. The remainder of this section provides a brief overview of the ecology, hydrological resources, and soils present within the project parcel, access roads, 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 very 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: Eastern Coastal ecoregion. A brief 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 parcel.

<u>Eastern Coastal Ecoregion</u>

The Eastern Coastal ecoregion region is characterized by level to rolling topography that varies from sea level to 122 m (400 ft) above mean sea level; topographic relief reaches its maximum in this ecoregion where substantial rock outcrops occur (Dowhan and Craig 1976). The bedrock of the ecoregion is composed of metamorphic and igneous gneisses, schists, and granites dating from the Paleozoic Period (Bell 1985; Dowhan and Craig 1976:40). Soils in this ecoregion are developed on glacial till in the uplands, on local deposits of stratified sand, gravel and silt in the valleys, and on coastal and tidal deposits on the shores and estuaries (Dowhan and Craig 1976).

Hydrology in the Vicinity of the Project Parcel

The project parcel is situated within a region that contains to several sources of freshwater, including the Threemile River, Sawmill Brook, Armstrong Brook, and Black Hall River, as well as unnamed streams, ponds, and wetlands. These freshwater sources may have served as resource extraction areas for Native

American and historic 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 Parcel

Soil formation is the direct result of the interaction of a number of variables, including climate, vegetation, parent material, time, and organisms present (Gerrard 1981). Once archaeological deposits are buried within the soil, they are subject to a number of diagenic 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 such as those that are present in within the current project parcel. In contrast, acidic soils enhance the preservation of charred plant remains.

A review of the soils within the project parcel is presented below. The project parcel is characterized by the presence of eight major soil types. The most ubiquitous soil types found within the region and which cover the project parcel include Paxton/Montauk and Charlton/Chatfield (Figure 2). A review of these soils shows that they consist of well drained sandy loams; they are the types of soils that are typically correlated with prehistoric and historic use and occupation. Descriptive profiles for each soil type are presented below; they were gathered from the National Resources Conservation Service.

<u>Paxton and Montauk Soils:</u>

A typical profile associated with Paxton/Montauk soils is as follows **Ap** -- 0 to 8 inches; dark brown (10YR 3/3) fine sandy loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many fine roots; 5 percent gravel; strongly acid; abrupt smooth boundary; **Bw1** – 8 to 16 inches; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; 5 percent gravel; few earthworm casts; strongly acid; gradual wavy boundary; **Bw2** – 16 to 26 inches; olive brown (2.5Y 4/4) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 10 percent gravel; strongly acid; clear wavy boundary; **Cd** – 26 to 66 inches; olive (5Y 5/3) gravelly fine sandy loam; medium plate-like divisions; massive; very firm, brittle; 25 percent gravel; many dark coatings on plates; strongly acid.

<u>Charlton and Chatfield Soils:</u>

A typical profile associated with Charlton/Chatfield 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 Cobb Solar Project is common throughout the Eastern Coastal ecoregion. Streams and rivers of this area empty either into the Black Hall or Threemile Rivers, which in turn, drains into the Long Island Sound. Further, the landscape in general is dominated by sandy loamy soil types with some wetlands soils intermixed. In addition, low slopes dominate the region. Thus, in general, the project region was well suited to Native American occupation throughout the prehistoric era. As a result, archaeological sites have been documented in the larger project region, and additional prehistoric cultural deposits may be expected within the undisturbed portions of the proposed project parcel. This portion of Lyme was also used throughout the historic era, as evidenced by the presence of numerous historic residences and agricultural fields throughout the region; thus, archaeological deposits dating from the last 350 years or so may also be expected near or within the proposed project parcel.

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 located 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 parcel.

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 located 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).

<u>Early Archaic Period (10,000 to 8,000 B.P.)</u>

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 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.

<u>Middle Archaic Period (8,000 to 6,000 B.P.)</u>

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

located 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.

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

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 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

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 the majority 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 parcel, 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
HISTORIC OVERVIEW

As Chapter I of this report indicates, the development area consists of a parcel of land situated near the eastern boundary of the town of Old Lyme in New London County, Connecticut. Old Lyme (known as South Lyme until 1857) was formerly part of the town of Lyme, which itself was part of the seventeenth-century colony and town of Saybrook. Despite its location near the mouth of the Connecticut River, the town remained a relatively quiet agricultural area through most of its history, and even in the early twenty-first century retained a comparatively small population and a very rural appearance in much of its territory. The remainder of this chapter presents an overview of the history of Old Lyme, including a discussion of the project parcel itself.

Native American History

The Native American history of this part of Connecticut is poorly documented. Some historians believe it was part of the territory of the Western Nehantic tribe, which extended from the Connecticut River eastward to the Niantic River; the post-Contact community in East Lyme was also known as the Niantics. Historians have been vague about how their territory came to be part of the Connecticut colony. A statement in the 1665 division agreement between Saybrook and Lyme simply stated that "the Indians at Nehanick have the land agreed upon by the covenants made betwixt the inhabitants of Saybrook and them," which adds little to the understanding of the matter (quoted in Deitrick 1965:3). Examination of seventeenth-century records strongly suggests that the colony considered it part of the territory it and its allies conquered during the Pequot War. This interpretation is further supported by the way the colony government accepted the claim of a man named Joshua, a son of the wartime Mohegan leader and a colonial ally, to be the Niantics' leader in succeeding decades. As a result, it was reported that at some point in the seventeenth century the community was given a reservation, "stretching from the Niantic River four miles [6.4 km] westward, and running north from the seacoast as far as the bounds of those townships" (De Forest 1852:382), yet also that in 1672 the legislature gave "Joshua sachem of Niantick" and his men a plot of land of unstated size north of the Eight Mile River in the present Lyme (Public Records of the Colony of Connecticut II:174). De Forest referred to this as a 300-acre (121 ha) reservation for the tribe. In 1734 the legislature confirmed the "Nahantack" community's ownership of 300 acres (121 ha) on Niantic Bay, which is clearly a different location and arguably unrelated to Joshua's parcel, despite De Forest's conflation of the two (Public Records of the Colony of Connecticut VII:524).

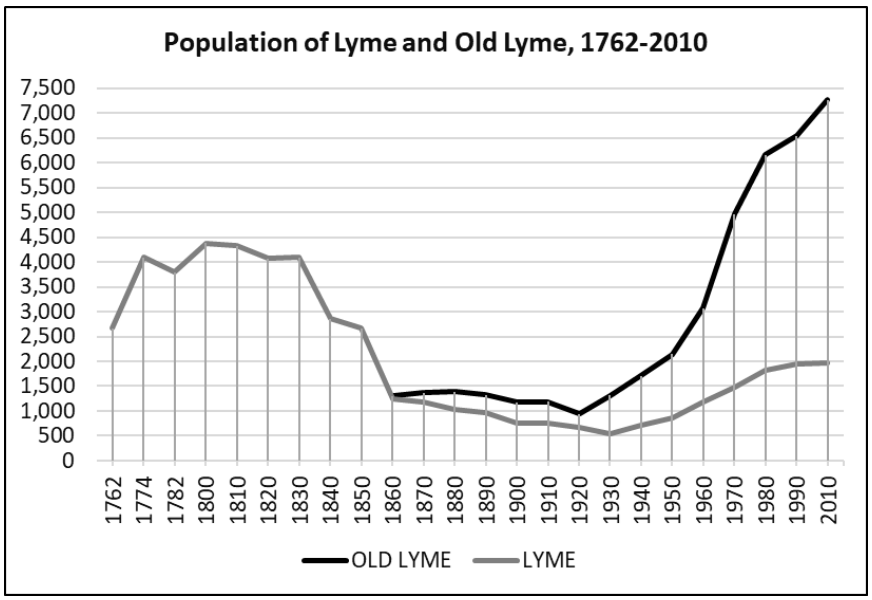
Regardless of how and when they lost their original territory, in 1734, about 30 Native American families still lived in Lyme. Around that time, renewed efforts at converting them to Christianity eventually met with some success. Their disputes with the neighboring colonists, who continually encroached on the reservation, continued for decades. As of 1761, 85 people lived on the reservation, and in 1774 there were 104 Native Americans present there. By 1783, however, only 16 families remained on the land. During the early nineteenth century, many others moved away, either to Brothertown in New York or to other native enclaves. In the 1850s, the community still owned 240 acres (97 ha) of land, as well as some bank stock and money loaned out at interest, but had only 10 recognized members (De Forest 1852). In 1867, when only three members of the community survived, the reservation land (located at the shore, at Crescent Beach in East Lyme) was sold at auction by the community's overseer, and the proceeds

divided among the three survivors in 1868 (Chendali 1989). At that time, the area had been in the separate town of East Lyme since 1836.

Colonial Era History of Old Lyme (to 1790)

The founding of Saybrook in 1635 occurred as a result of the so-called "Warwick Patent," a grant of land thought at the time to have been made between 1629 and 1632 by the Council for New England. This was a corporation that had been established by the British government in 1620, which was headed by the Earl of Warwick by 1628; hence the name of the patent. The corporation's remit was for "the planting, ruling, and governing of New England in America" (Crofut 1937:20). Pursuant to this now-lost grant, and at the orders of John Winthrop, Jr., a fort was erected on the west bank of the Connecticut River, displacing the Dutch trading post that was already there. The Dutch presence was part of an effort by them to lay claim to the Connecticut River region; they also established a fort upstream, where the British later founded Hartford. A small British settlement grew up in under the leadership of George Fenwick, which was considered to be an independent colony until 1644. In that year, Fenwick transferred to Connecticut all his rights to the Saybrook lands, although the historical record remains unclear on exactly what rights and what lands were involved. Thereafter, Saybrook was considered a town in the Connecticut colony. In 1665, the part of Saybrook lying east of the Connecticut River was set off as a new town, at which time the "East Saybrook" settlers claimed to have enough land to support thirty families; in 1667, the General Court gave the new settlement the name Lyme. The doubtful nature of Saybrook's claims was probably one cause of subsequent border disputes between Lyme and neighboring towns, including Saybrook itself (Crofut 1937).

The earliest European settlement occurred in the south part of Lyme (the present Old Lyme) (Marshall 1922). The first of these colonists was a man named Matthew Griswold, who moved to the east side of Saybrook in 1645, to a locality known as Black Hall, near the mouth of the Connecticut River. The first minister was Moses Noyes, who served the area from 1666 to 1729 (Roberts 1906). As in most early towns, the population of Lyme grew rapidly, reaching 2,665 residents in 1762 and 4,088 residents in 1774, with a slight decline to 3,792 residents as of 1782 (see the population chart below; Keegan 2012).



The 1790 population numbers are not available for New London County towns. In addition to natural population growth and farming, Lyme developed small coastal villages with fishing fleets and shipping efforts that took part in both the colonies' internal coasting trade and the trade with the West Indies, especially of barrel staves (Deitrick 1965). During the Revolutionary War, one of the town's leaders was John MacCurdy (an Irish immigrant), who was involved in the publication of articles and pamphlets opposed to the Stamp Act. Another local leader was General Samuel Holden Parsons, who resigned his newly acquired post as King's Attorney in 1774, and in 1775 participated in the capture of Ticonderoga. He served in various capacities and at many engagements until the end of the war, after which he moved his law practice to Middletown (Roberts 1906). The town meeting voted in 1774 to oppose the British actions against Boston, and in 1775 and 1776 the town provided soldiers to help guard the coast and also sent some to Boston (Crofut 1937).

Early National Period and Industrialization Period History of Old Lyme (1790-1930)

Between 1800 and 1860, the population of the town of Lyme appeared to decline, first slightly and then precipitously. In fact, these changes were due primarily to its loss of territory and resident population to three other towns: Salem in 1819, East Lyme in 1839, and then the creation of South Lyme (the present Old Lyme) in 1855. As of 1860, Lyme and Old Lyme had roughly equal populations, 1,246 residents for Lyme and 1,304 residents for Old Lyme (see the population chart above; Keegan 2012). Because both towns were primarily agrarian, their populations continued to decline through 1930, and 1920, respectively. As the population chart above shows, however, Old Lyme retained its slight population advantage through 1920, when it 946 residents to Lyme's 674 residents. Beginning with the 1930 census, when Old Lyme reported 1,313 residents, it began a growth trend that its sister town could not match (Keegan 2012). The reasons for its slightly larger population probably had to do with its coastal villages and, as will be discussed below, railroad access. A map of the Lyme's First Society, roughly equivalent to Old Lyme, was compiled in 1815. It appears to show two classes of roads, one major and one minor; a minor road passed not far to the east of the project area. It also appears that the region of the town where the project area lay was called "Jericho" (Figure 3; Warren 1815). Compared with other regions on the map, especially the coastal areas, and the Post Road (which lies to the north of the project area), Jericho was not densely populated. There was no indication on this map that any cultural resources lay within 152 m (500 ft) of the project parcel.

In 1819, the town of Lyme (still including both Lyme and Old Lyme) had 24 school districts and three Congregational parishes, along with two Baptist, one Methodist, and one Separatist church; three libraries and 12 retail stores completed the town's institutions. Lyme was described as having a mixed agricultural economy, focused on dairy products and corn, and also with lines in supposed medicinal plants such as ginseng. There were harbors at the mouths of the Connecticut River, the Lieutenant River, and the Eight Mile River; the riverine shad fishery was also an important economic factor, along with the shellfish and blackfish fisheries in Long Island Sound. The coasting trade was also mentioned. In addition, the document noted that the town had some factories, including two woolen textile mills, a paper mill, two hat factories, a wool carding machine, three tanneries, and 11 sawmills and eight grist mills. The factories, however, could "claim only a very subordinate rank" (Pease and Niles 1819:160).

During America's early years, one of the State of Connecticut's primary concerns was to improve transportation routes and hence commerce. The method used was to incorporate private companies that would improve existing roads or build new ones, and in exchange be given the right to charge tolls of the people using them. One of these companies, incorporated in 1807, was the New London and Lyme Turnpike, which passed through the northern part of the current town of Old Lyme and ended at the Connecticut River ferry landing. The western part of the road became free of tolls in 1849. Between

1824 and 1834, the Connecticut River Steamboat Company also kept a wharf at Calf Island, which travelers reached via stagecoaches that followed the turnpike until a turn-off for the wharf (Wood 1919). In 1833, a map of New London County and Windham Count portrayed the southern part of Lyme as having three coastal villages, identified as South Lyme, Black Hall, and Four Mile. The two woolen mills were still shown, and were located on a tributary of the Lieutenant River, which flowed into the Connecticut River. The town's agricultural processing mills, schools, churches, and main roads were also noted on the map. The inland section where the project area is located, however, was shown as hilly and labeled "Short Hills" (Figure 4; Lester 1833). This is, of course, consistent with modern topographic portrayals of the area.

In the late 1830s, Lyme's coast was notable for its wide tracts of salt marsh and many rivers entering the Sound, while the northern part was stony and hilly. Its main village was identified as Lyme, and located a short distance to the east of the Connecticut River. At that time, it had four post offices (found at Lyme, Hamburg, North Lyme, and East Lyme), and three textile factories (one cotton and two woolen). There were also four Congregational churches and two Baptist churches. The account also noted that "[n]ear the mouth of the Four mile river, several distinct ridges commence, which range northwardly, and become more elevated as they extend into the interior" (Barber 1837:330). As the mouth of the Four Mile River is to the southeast of the project area, this description applies to it. In fact, an 1838 U.S. Coastal Survey map gives a very clear picture of the project area landscape at that time shows the rugged landscape in and around the project area, broken only by the marshy surrounds of a brook to the east. To the south and southwest of the project area, the map noted the presence of agricultural field complexes and several buildings. All of these cultural features were well over 152 m (500 ft) from the project area (Figure 5; USCS 1838). The 1854 map of New London County showed the population clusters at Lyme (unlabeled), called the Four Mile River village South Lyme, and added a village in the northeast corner of the First Society that it labeled Laysville. The only noticeable evidence of industrial activity in southern Lyme was the presence of Lay's Factory at, unsurprisingly, Laysville. The map also showed the New Haven and New London Railroad crossing through the coastal section of Lyme, and ending at the Connecticut River. In the vicinity of the project parcel, the cartographer depicted multiple hills. There were also several buildings marked in areas away from the marked roads, including one to the south of the project parcel that was labeled with the name Miss P. Denison (Figure 6; Walling 1854). The location of the building suggests an association with the area of cleared fields shown in the USCS map from 1838. The only female P. Denison reported in the 1850 federal census was Polly Denison, age 64, who claimed to own only $100 in real estate; she lived with Anna Chappel, age 74, who owned $200 in real estate (United States Census 1850a). That there was only short-term occupation of this building is suggested by the facts that Polly Denison does not appear in the 1860 federal census, and that the 1868 map of the town of Old Lyme omits the house entirely.

In addition, across the town, the villages of South Lyme, Old Lyme, and Laysville were labeled. The satinet factory in the latter place was noted, the only clear evidence of industrial activity that can easily be found on the map. The railroad had become the Shore Line Railroad, and both the ferry and the steamboat landing were noted at the Connecticut River (Figure 7; Beers 1868). The federal census of industry for this time listed only six industrial firms in the entire town of Lyme. Two of these were water-powered woolen textile mills that each employed seven men and five or six women (for a total of 12 and 13 workers in each); the largest employer at that time was a quarry that employed 14 men. There was also a shoemaker who employed four men to make 1,500 pairs of boots and shoes, a carriage and wagon maker who employed three men, and a boat builder who also employed three men (United States Census 1850b). It is not clear where these factories were, though there were very unlikely to be near the project area.

As the historic maps show, the New Haven & New London Railroad had been built by ca., 1850; it hugged the shoreline through Old Lyme. Initially, the railroad's cars and engines were ferried across the Connecticut River between Old Lyme and Old Saybrook. In the 1860s, Charles Dickens took this train route and reported unfavorably on how well the train cars were secured during such crossings. In 1864, the section of the road between New Haven and New London was reorganized as the Shore Line Railway, and in 1870 the company built a massive drawbridge over the Connecticut River (Turner and Jacobus 1989). The line remained in operation during the early twenty-first century. Although the railroad did not lead to any significant industrialization in Old Lyme, it did make the town accessible for a new economic activity, summer tourism. During the late nineteenth and early twentieth centuries, the notion of leisure time and vacations became more popular among the middle class and even the lower classes; as a result, the population of summer visitors in cooler seaside towns like Old Lyme and its neighbors continued to increase from the 1860s forward. Initially the residential facilities were mainly hotels and boarding houses, but over time more and more people were financially capable of buying or at least renting private summer cottages along the shore. Many summer colonies, as they were called, sprang up close to railroad depots, while steamboat lines provided an alternative mode of transport to seaside destinations. Recreational pastimes of all kinds were catered to, but some developments were formally or informally restricted to specific groups – native-born Americans, Irish immigrants, and so on. Others, such as Pine Grove in the Niantic section of East Lyme, were developed with a specific religious group in mind; another example of this was the Baptist Seaside Resort established in 1884 at Crescent Beach, also in Niantic (Herzan 1997).

Modern Period History of the Town of Lyme (1930-Present)

In 1932, the State of Connecticut reported the principal industry of Old Lyme as simply agriculture, but the entry also mentions four train stops and post offices, as well as a steamboat service during the summer season (Connecticut 1932). The rail and steamboat services suggest the continued importance of the summer tourism trade, although the report does not mention it specifically. As was noted above, 1930 was the first year that Old Lyme's census returns found a notable increase of population in the town. Although the increase was only 367 persons, it was the beginning of a long-term trend. By 1950, Old Lyme's population had more than doubled to 2,141 residents, and continued to grow at varying rates through 2010, when the town reported a population of 7,267 residents (see the population chart above; Keegan 2012). The 1934 aerial photograph shows, however, that this growth was not occurring near the project area. It contained and was surrounded by woods, with the only discernible cultural feature nearby being a utility transmission right-of-way to the south. Even further to the south, there was little or no sign of the hilltop agricultural fields that the 1838 map suggested were once present. Indeed, only remnants of agricultural fields appeared in the areas to the south. To the north was only more forest (Figure 8; Fairchild 1934).

A 1941 topographic map, however, shows an unimproved road passing just to the east of the project parcel, on a north-south route between Flat Rock Hill Road to the south and Route 1 to the north. In addition, a side road ran to a building that, on that same map, stood within 152 m (500 ft) of the edge of the project parcel. These were the only cultural features in the vicinity as of 1941; the map omitted the utility line currently located adjacent to the project parcel (Figure 9; USGS 1941). This utility line, partly reconfigured, was clearly visible in the 1951 aerial photograph, while the unimproved road and building were not visible. The project parcel was otherwise still wooded, and to the south, the limited-access highway that later was called Interstate 95 had been built (Figure 10; USDA 1951). Officially, the Connecticut Turnpike did not open until 1958, but this section was undeniably present in the 1951 aerial photograph, albeit with no access ramps in the area. The renaming of the highway came a later, with the organization of the interstate highway system (Oglesby 2014). In the 1957 aerial photograph, which was

taken when the trees were not in leaf, parts of the unimproved road could be seen; however, here were no significant changes in or around the project area (USGS 1957). According to the 1958 topographic map, the unimproved road became no more than a track after it passed north of utility corridor, and supposedly the building previously mentioned was still there. It also makes clear something important to the development of the project area's vicinity: only one road from south of the interstate still crossed it to the north side. Also, interstate access ramps had been built to the southeast, mostly in the town of East Lyme (Figure 11; USGS 1958).

Old Lyme's late twentieth-century and early twenty-first century population growth is best explained by the shift to suburban residence, which caused people to move out of cities and into less crowded areas. Places that were closer to cities became more densely suburbanized more rapidly. Further away from cities, in places like Old Lyme, the growth came later and was not as large overall. A population of just over 7,000 residents is not large by the standards of Connecticut suburbs; for example, East Lyme, the next town to the east, was closer to the city of New London and in 2010 had 19,159 residents (Keegan 2012). As of 2016, Old Lyme's four manufacturing firms employed a total of 21 people; local and regional government was the single largest employer (436 workers), with education clearly being the largest subgroup. In all, according to the survey, Old Lyme only had 298 firms and 2,595 jobs, while there were over 3,700 workers in the town. Clearly at least some of these workers would have to commute out of town (CERC 2018). Much of the town's land remained undeveloped, and a substantial portion of that was too wet, or too steep and rocky, to be developable. The town's residents also relied on septic systems and well water except in a few limited areas, another constraint on the extent and density of development. The main goal of Old Lyme's planning policies was to limit growth in order to preserve its small-town character, which depended on its natural, cultural, and historic resources. Apparently, much of the population growth of the later twentieth century occurred because of the conversion of older summer homes to year-round use, rather than all-new developments (Old Lyme 2010). The character of the landscape around the project parcel suggests that further development will be slow to occur, if it occurs at all.

No new or different cultural features appeared in the vicinity of the project area in the 1961, 1965, and/or 1970 aerial photographs (USGS 1961; CT DEP 1965; USGS 1970). In the 1974 aerial photograph, however, an artificial pond with beach areas had been constructed to the southwest of the project parcel. Although it was over 152 m (500 ft) from the project area, the configuration of the pond suggests that it was part of a summer camp, or similar institution, of unknown extent. In addition, to the west in East Lyme, another pond and associated housing development had been built by 1974 (Figure 12; CT DEP 1974). In the 1975 aerial photograph, unimproved roads were visible leading to the pond and to a building near it, all outside the project parcel. Within 152 m (500 ft) of the project parcel, however, what appears to be the building first seen in the 1941 topographic map appears to be visible (Figure 13; CT DEP 1975). By 1980, another building had been added to the area to the south of the project parcel, with a cleared area around it, but there was still no change within or immediately adjacent to the project parcel itself (CT DEP 1980). In the 1986 aerial photograph, the cleared area around the buildings to the south had been expanded to just within 152 m (500 ft) of the project parcel (Figure 14; CT DEP 1986). In 1996, 10 years later, there was no significant change within or immediately adjacent to the project parcel, although a zone of landscape disturbance had extended to an area somewhat to the north of it (Figure 15; CT DEP 1996). The 2016 aerial photograph, however, again shows no change in the immediate area of the project parcel (Figure 16; Capitol Region 2016). Examining a larger portion of the latter image, it becomes clear that the project parcel is in the midst of a large forested area. Although a modest amount of large-lot housing had been constructed between the project parcel and Interstate 95, other areas a little further away had much more of this activity.

Conclusions

The documentary record indicates that it is unlikely that the proposed work will impact any significant historical resources. Although past agricultural use of the project parcel is possible, and past use for timbering purposes is likely, remnants of such use (such as stone walls or old roads) probably is not historically significant.

CHAPTER V
PREVIOUS INVESTIGATIONS

Introduction

This chapter presents an overview of previous archaeological research completed within the vicinity of the project parcel in Old Lyme, 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 parcel are taken into consideration. Specifically, this chapter reviews previously identified archaeological sites, National/State Register of Historic Places properties, and inventoried historic standing structures situated in the project region (Figures 17 and 18). The discussions presented below are based on information currently on file at the Connecticut State Historic Preservation Office in Hartford, Connecticut. In addition, the electronic site files maintained by Heritage also were examined during the course of 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, National/State Register of Historic Places Properties/District, and Inventoried Historic Standing Structure in the Vicinity of the Project Parcel

A review of data currently on file at the Connecticut State Historic Preservation Office, as well as the electronic site files maintained by Heritage failed to identify any National or State Register of Historic Places Properties situated within 1.6 km (1 mi) of the project parcel (Figure 18). However, this review did reveal that two archaeological sites have been previously identified within 1.6 km (1 mi) of the project parcel. They are Sites 105-25 and 105-26, and they are described below (Figure 17).

Site 105-25

Site 105-25 is the 3 Mile River Rockshelter #1 site, also known Bludee Rock, is located along Four Mile River Road in Old Lyme, Connecticut and approximately 990 meters (3,248 feet) to the east of the project parcel (Figure 17). The site consists of a rockshelter that was investigated by PAST, Inc., (PAST) in 1983 to a 10-centimeter (3.9-inch) depth; it also was recorded by Kevin McBride that same year. PAST excavators recovered European flint, kaolin pipe fragments, lithic debitage, a quartz cobble assemblage, a Levanna projectile point, and unidentified bone fragments. A charcoal sample was collected but not radiocarbon dated at the time the site form was recorded. PAST determined that the site was a long-term seasonal hunting camp occupied during the Late Archaic and Contact Periods based on temporally diagnostic artifacts recovered. Site 105-25 has not been assessed applying the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]), and it will not be impacted by the proposed project.

Site 105-26

Site 105-26 is 3 Mile River Rockshelter #2; it is located approximately 120 meters (394 feet) to the northeast of Site 105-25 (Figure 17). The site was undisturbed when it was recorded by Kevin McBride of PAST in September 1983. Testing was conducted within the site in 1983, which resulted in the collection of a single untyped projectile point and a flint assemblage. The projectile point was described as a

possible Laurentian point and the flint assemblage possibly dated to the Middle or Late Woodland Period. The date of Site 105-26 could not be determined definitively; however, the site form describes it as a special purpose site for hunting. Site 105-26 has not been assessed applying the qualities of significance as defined by the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]), and it will not be impacted by the proposed project.

Summary and Interpretations

The review of previously identified cultural resources in the vicinity of the proposed project parcel indicates that the larger project region contains prehistoric Native American deposits. Archaeological sites occupied within the study region likely date from the prehistoric era (ca., 12,500 to 350 B.P). This suggests that additional archaeological sites may situated within the project parcel.

CHAPTER VI
METHODS

Introduction

This chapter describes the research design and field methodology used to complete the current Phase IB cultural resources reconnaissance survey of the moderate/high sensitivity areas associated with the proposed solar facility in Lyme, 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 historic cultural resources located within the proposed project area. Fieldwork for the project was comprehensive in nature and project planning considered the distribution of previously recorded archaeological sites in the region containing 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 within the project parcel. This undertaking entailed pedestrian survey, systematic subsurface testing, detailed mapping, and photo-documentation.

Field Methodology

Following the completion of all background research, the moderate/high sensitivity areas identified during a previously completed Phase IA cultural resources assessment survey were subjected to a Phase IB cultural resources reconnaissance survey utilizing pedestrian survey, photo-documentation, mapping, 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 pedestrian survey portion of this investigation included visual reconnaissance of the moderate/high sensitivity areas scheduled for impacts by the proposed solar project. The field methodology also included subsurface testing of the moderate/high sensitivity areas, during which shovel tests were excavated at 15 m (49.2 ft) intervals along parallel survey transects spaced 15 m (49.2 ft) apart.

During 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. Finally, each shovel test was backfilled immediately upon completion of the archaeological recordation process.

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:

Connecticut State Archaeologist
Office of Connecticut State Archaeology

Box U-1023
University of Connecticut
Storrs, Connecticut 06269

CHAPTER VII

RESULTS OF THE INVESTIGATION & MANAGEMENT RECOMMENDATIONS

Introduction

This chapter presents the results of the Phase IB cultural resources reconnaissance survey of the moderate/high archaeologically sensitive areas associated with the proposed solar facility at 20-1 Short Hills Road in Lyme, Connecticut. 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 region encompassing the project parcel; 3) a review of readily available historic maps and aerial imagery depicting the project items in order to identify potential historic resources and/or areas of past disturbance; 4) pedestrian survey and photo-documentation of the project parcel; and 5) subsurface examination of the moderate/high archaeologically sensitive areas identified during the previously completed Phase IA cultural resources assessment survey (Heritage Consultants, LLC 2019).

As seen in Figure 1, the proposed solar facility parcel, which will occupy approximately 12.72 acres of land, is situated in the northern portion of a larger area of land located at 20-1 Short Hills Road. It is surrounded by forested areas on all sides. This moderate/high sensitivity portion of the project parcel is situated at elevations ranging 64 m (210 ft) NGVD in the west to 71.6 m (235 ft) NGVD in the east and the predominant soil type located throughout the project parcel is Paxton/Montauk fine sandy loam, which is found on slopes of 0 to 8 percent. As discussed in Chapter II of this report, this soil type is well-drained and contains small to medium sized stones throughout. The project parcel lies directly adjacent to an existing powerline corridor, which will serve as the interconnect for the proposed solar facility.

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

The current Phase IB survey effort consisted of pedestrian survey, subsurface testing, and mapping of the moderate/high sensitivity portion of the proposed project parcel. The Phase IB cultural resources reconnaissance survey resulted in the excavation of 135 of 141 (96 percent) planned survey shovel tests excavated along 10 north to south trending survey transects (Figure 19). Of the excavated shovel tests, 10 yielded cultural material dating from the prehistoric area. Phase IB delineation shovel tests were subsequently excavated at 7.5 m (24.6 ft) intervals in the cardinal directions around each positive survey shovel test. This "delineation" testing resulted in the excavation of 36 of 36 (100 percent) additional planned shovel tests, of which four yielded additional cultural material originating from the prehistoric use of the local landscape.

A typical shovel test excavated within the project area areas exhibited four soil strata in profile and reached to a maximum excavated depth of 86 cmbs (34.4 inbs). Stratum I, which consisted of a plowzone, reached from 0 to 20 cmbs (8 inbs) and was classified as a layer of brown (10YR 4/3) silty fine sand. Stratum I was underlain by Stratum II, the B1-Horizon, which was described as a subsoil deposit of strong brown (7.5R 4/6) silty medium sand that extended from 20 to 60 cmbs (8 to 24 inbs). Stratum II, the B2-Horizon, ranged in depth from 60 to 70 cmbs (24 to 28 inbs) and was classified as a deposit of yellowish brown (10YR 6/6) silty medium sand. Finally, the glacially derived C-Horizon consisted of a

layer of light yellowish brown (2.5Y 6/4) silty coarse sand with oxidized areas throughout; it was excavated to a terminal dept of 86 cmbs (34.4 inbs). The Phase IB cultural resources survey of the moderate/high sensitivity portion of the project parcel resulted in the identification, examination, and recordation of a single non-site cultural resources loci that that was designated as Locus 1. This cultural resources locus is described below.

Locus 1

The Locus 1 area, which measured approximately 65 x 175 m (19.8 x 53.3 ft) in size, was identified in the central and southern portions of the project parcel. This locus was identified within what was a forested area at the time of survey (Figures 19 through 21). As described above, cultural material associated with this locus was recovered from 10 Phase IB survey shovel tests and four delineation shovel tests (Figure 19). These shovel tests yielded cultural material representative of a prehistoric period use of the property. A typical positive shovel test situated within the Locus 1 area was excavated to depth of 68 cmbs (27.2 inbs) and it exhibited three soil strata in profile. Stratum I, the plow zone (Ap-Horizon), extended from 0 to 27 cmbs (0 to 10.8 inbs) and was classified as a layer of brown (10YR 4/3) silty fine sand. It was underlain by Stratum II, a subsoil deposit (B-Horizon) of yellowish brown (10YR 5/4) silty medium sand that ranged in depth from 27 to 57 cmbs (10.8 to 22.8 inbs). Finally, Stratum III represented the glacially derived C-Horizon, which was classified as a layer of light olive brown (2.5Y 5/3) oxidized silty medium sand that extended to a maximum excavated depth of 68 cmbs (27.2 inbs).

The cultural material collected from the Locus 1 area was confined to prehistoric lithic stone tool manufacturing debris, and it was recovered from both the A and B-Horizons (plow zone and subsoil). The artifacts collected from the A-Horizon, a disturbed soil deposit, included 15 quartz secondary thinning flakes, 1 quartz primary reduction flake (with cortex), 1 piece of quartz shatter, and a single quartzite secondary thinning flake. In addition, the subsoil deposit (B-Horizon), which was undisturbed, yielded 4 quartz secondary thinning flakes, 3 pieces of quartz shatter, and 2 quartzite secondary thinning flakes. Aside from this material, no temporally diagnostic artifacts or evidence of cultural features was recovered from the Locus 1 area. Thus, the archaeological deposits could not be dated as to prehistoric time period or assigned to a specific cultural affiliation.

Table 1. Cultural material recovered from Locus 1

Locus	Strat	Material	Type	Subtype	Total
1	A	lithic	quartz	flake	15
				primary flake	1
				shatter	1
			quartzite	flake	1
	A Total				**18**
	B	lithic	quartz	flake	4
				shatter	3
			quartzite	flake	2
	B Total				**9**
Grand Total					**27**

The prehistoric artifacts recovered from Locus 1 are indicative of a very short term use of the landscape within the project parcel, perhaps as a task-specific or temporary camp. The recovered artifacts indicate that stone tool manufacturing and/or maintenance occurred on the site; however, since the recovered

artifacts assemblage is typical of most prehistoric periods and no temporally diagnostic artifacts were recovered were during Phase IB survey, the archaeological deposits within Locus 1 were deemed to not possess research potential. Thus, Locus 1 was assessed as not significant applying the National Register of Historic Places criteria for evaluation (36 CFR 60.4 [a-d]). No additional archaeological examination of Locus 1 is recommended prior to construction.

Management Recommendations

As mentioned above, none of the archaeological deposits identified within the Locus 1 do not retain research potential or the qualities of significance as defined by the National Register of Historic Places (36 CFR 60.4 [a-d]). Thus, no additional testing of Locus 1, or the remainder of the project parcel, is recommended prior to construction of the proposed solar In sum, no impacts to significant cultural resources are anticipated by construction of the proposed solar facility in Lyme, Connecticut.

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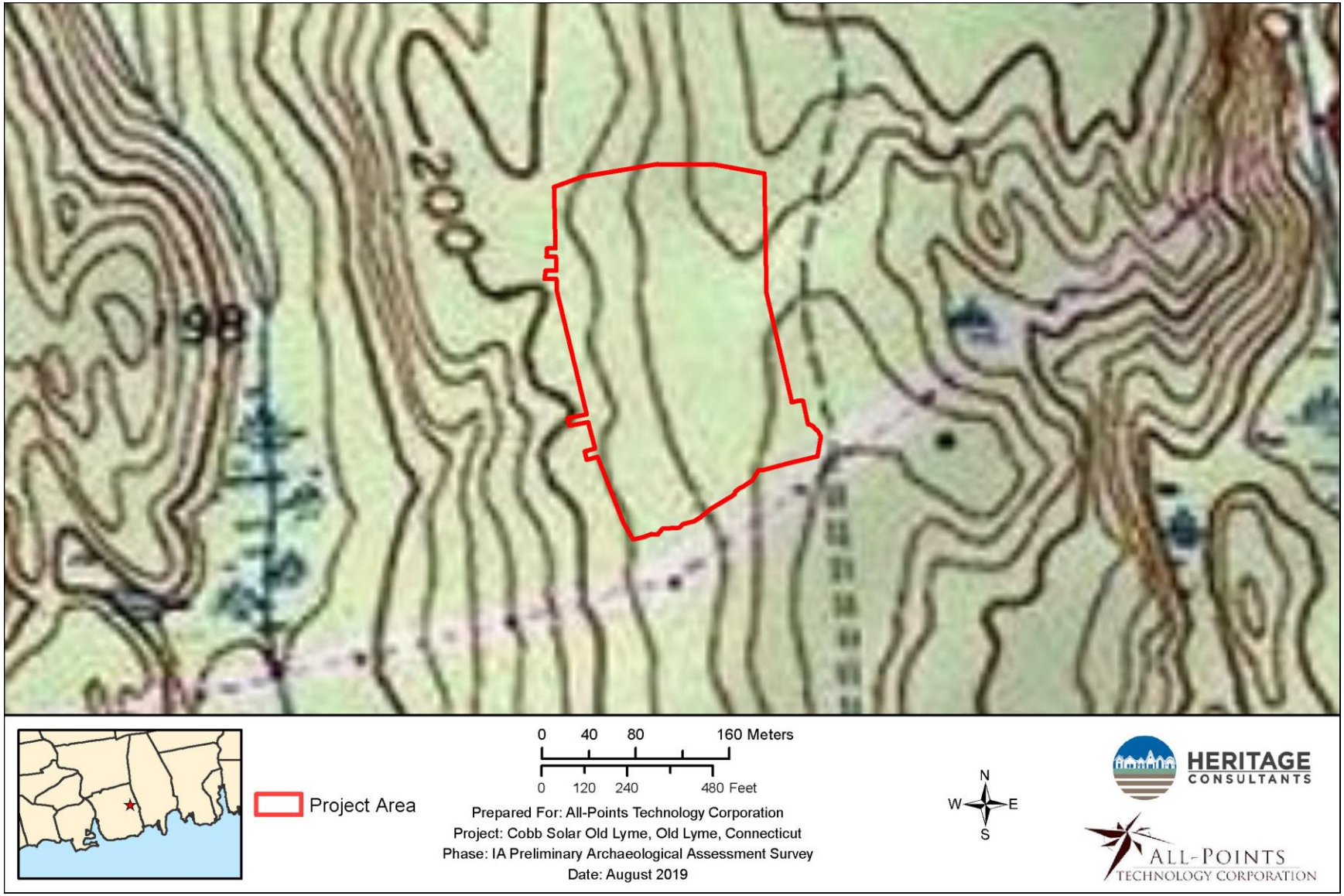


Figure 1. Excerpt from a USGS 7.5' series topographic quadrangle image showing the location of the project parcel in Old Lyme, Connecticut.

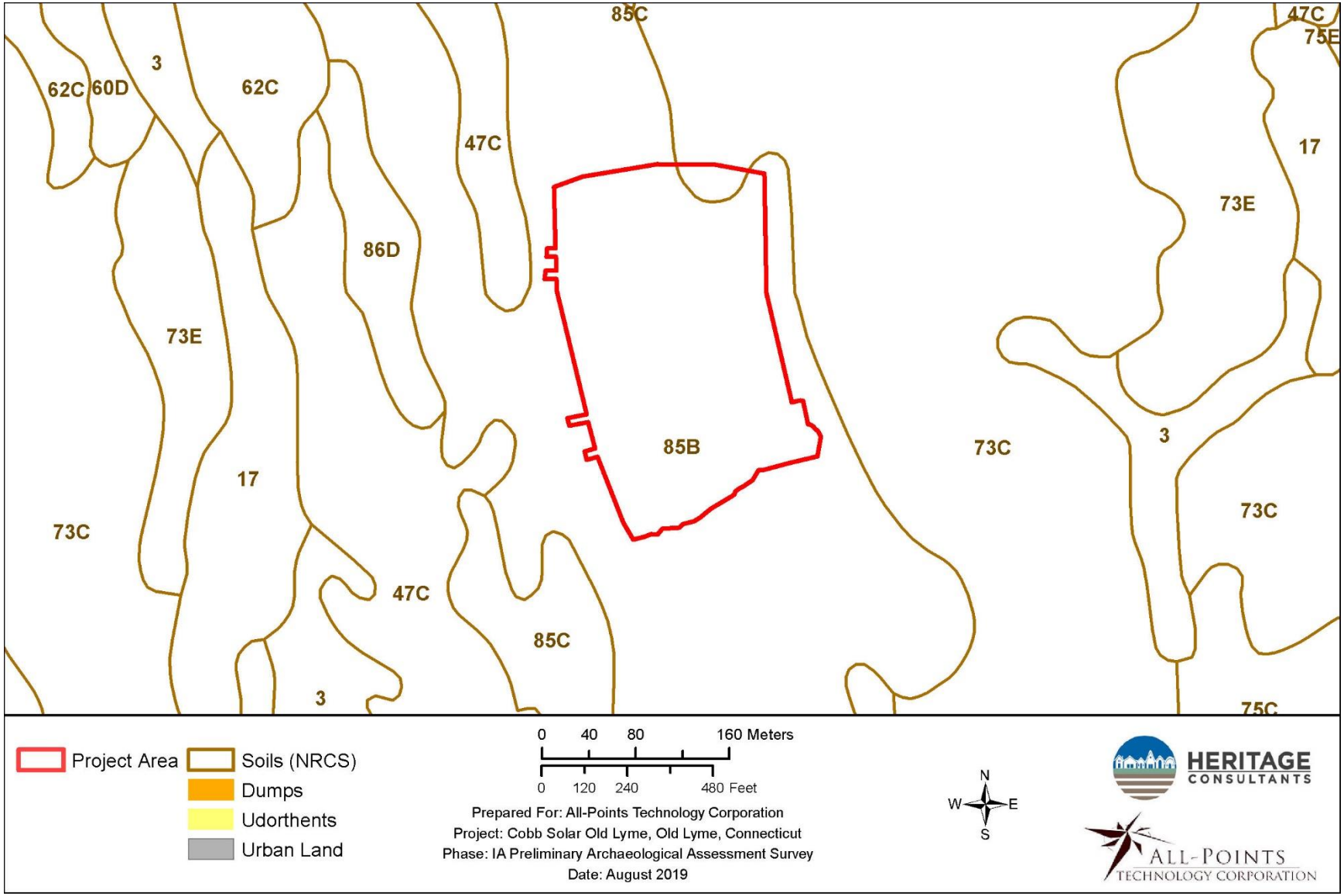


Figure 2. Map of soils located in the vicinity of the project parcel in Old Lyme, Connecticut.

Figure 3. Excerpt from an 1815 historic map showing the location of the project parcel in Old Lyme, Connecticut.

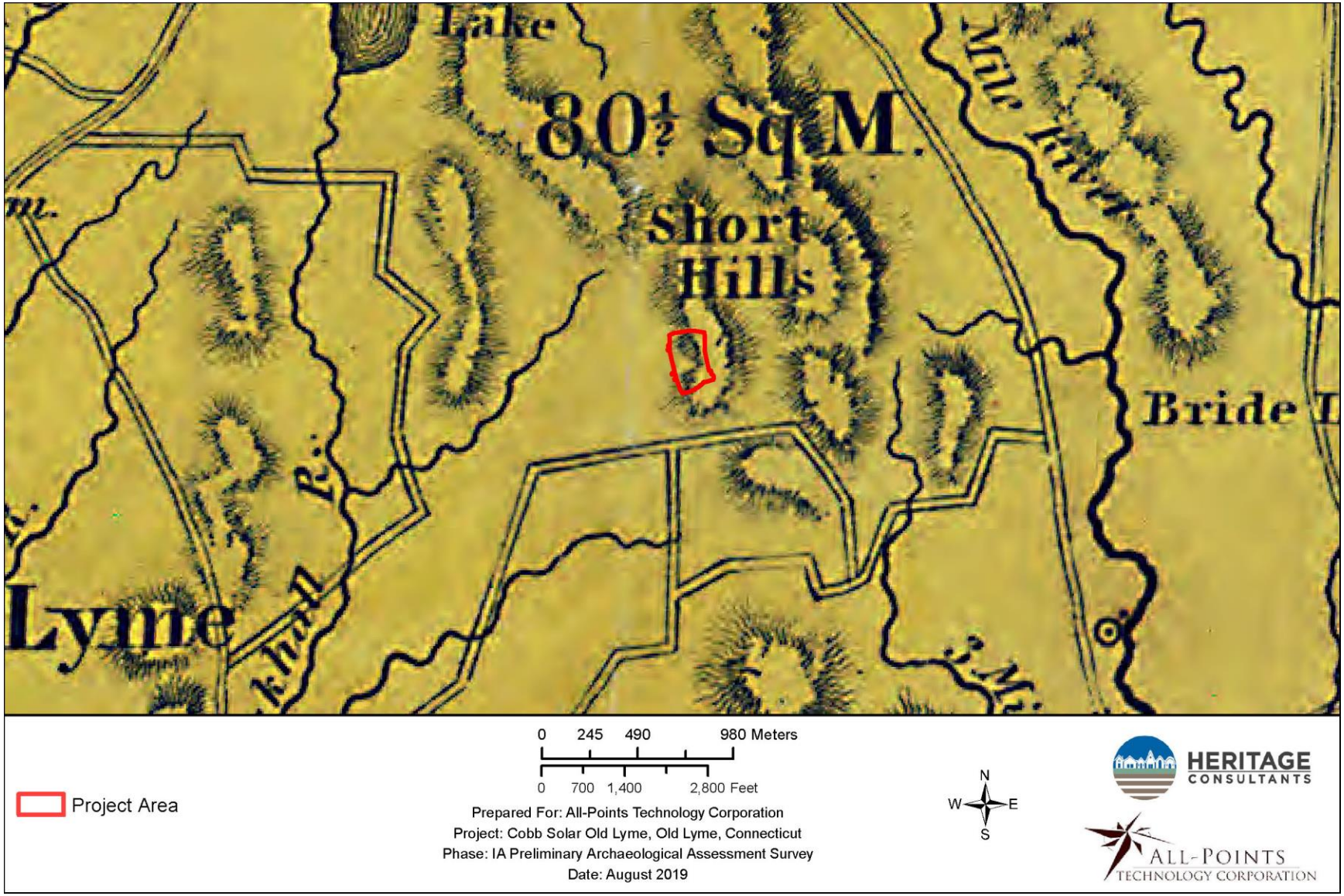


Figure 4. Excerpt from an 1833 historic map showing the location of the project parcel in Old Lyme, Connecticut.

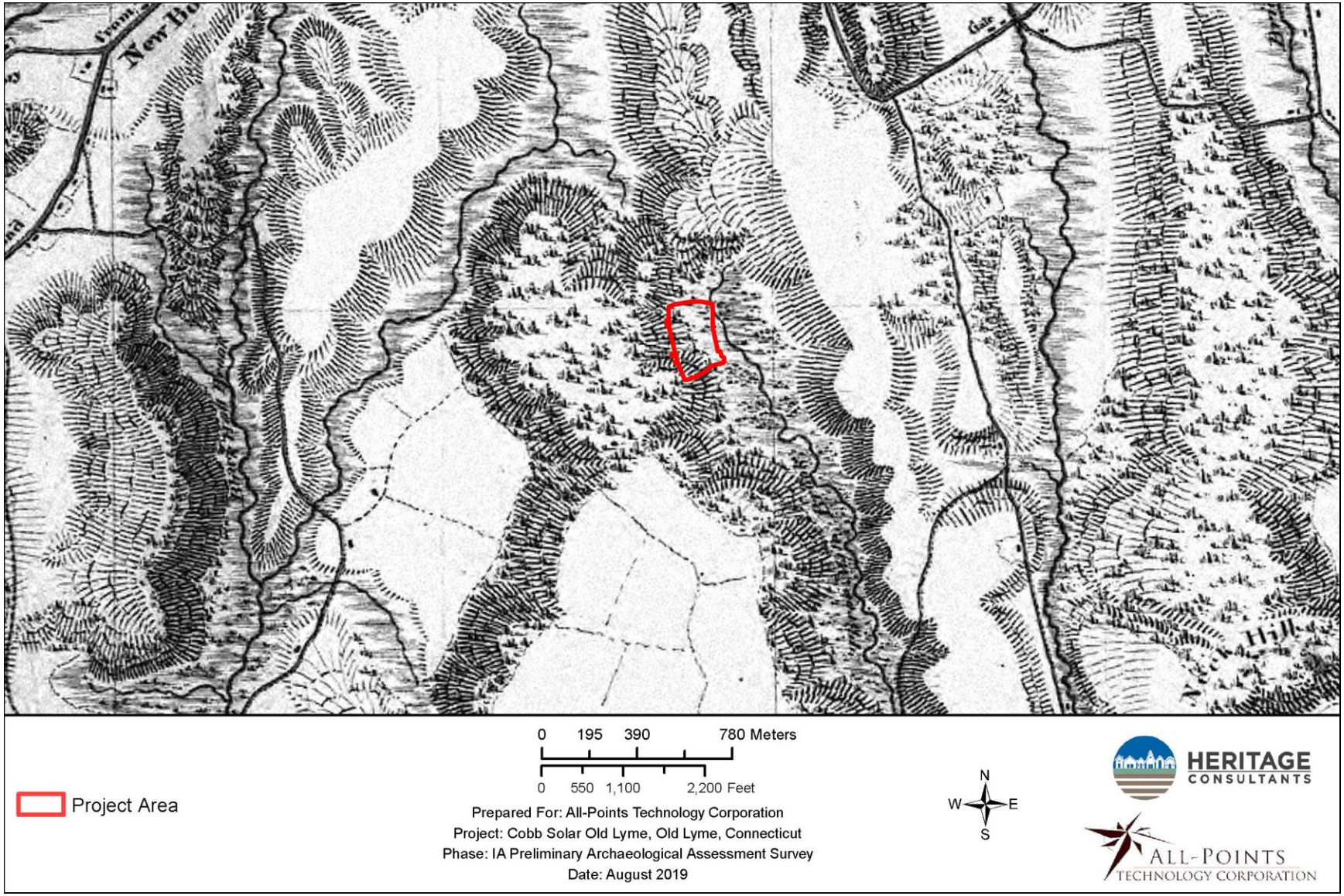


Figure 5. Excerpt from an 1838 historic map showing the location of the project parcel in Old Lyme, Connecticut.

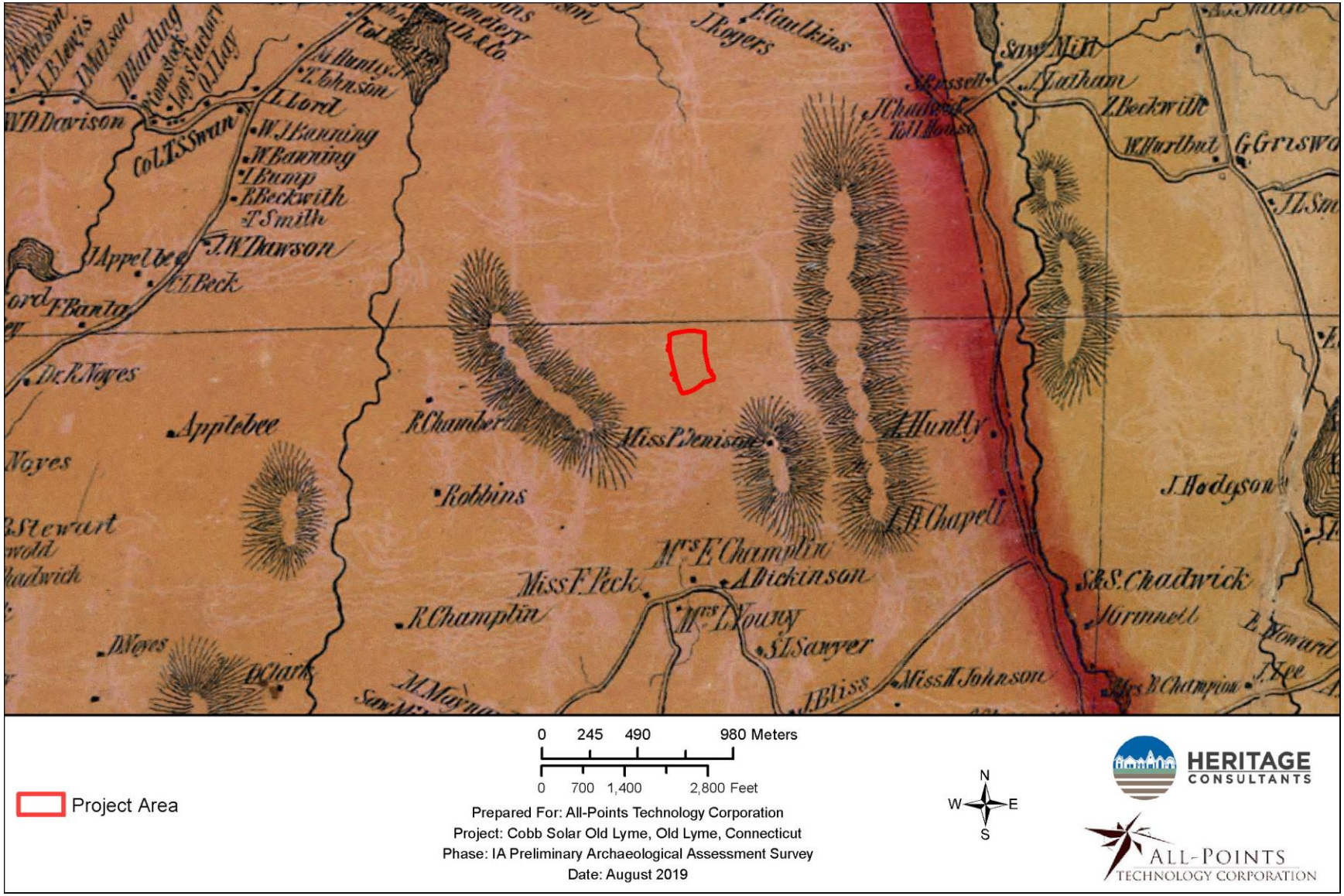


Figure 6. Excerpt from an 1854 historic map showing the location of the project parcel in Old Lyme, Connecticut.

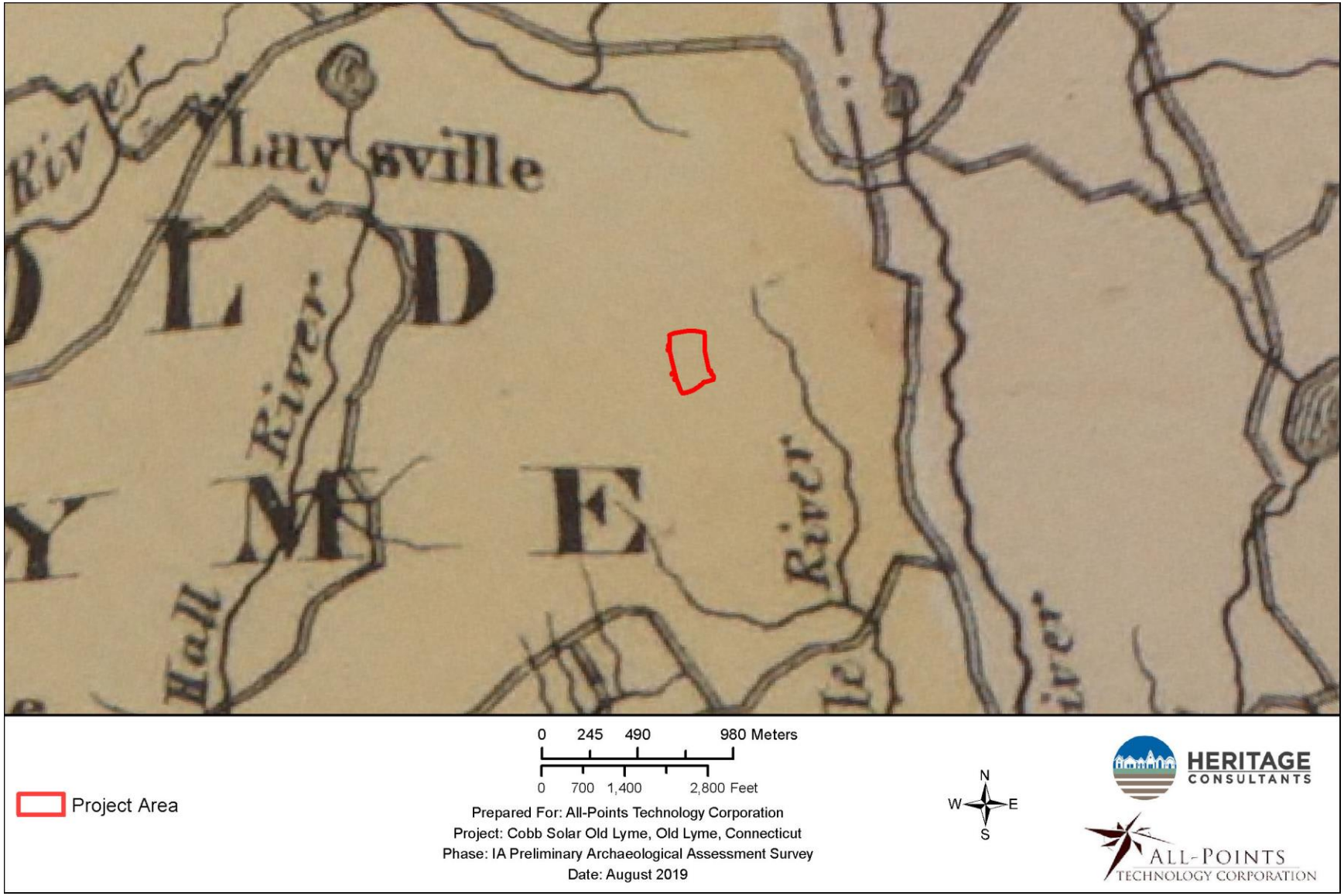


Figure 7. Excerpt from an 1868 historic map showing the location of the project parcel in Old Lyme, Connecticut.

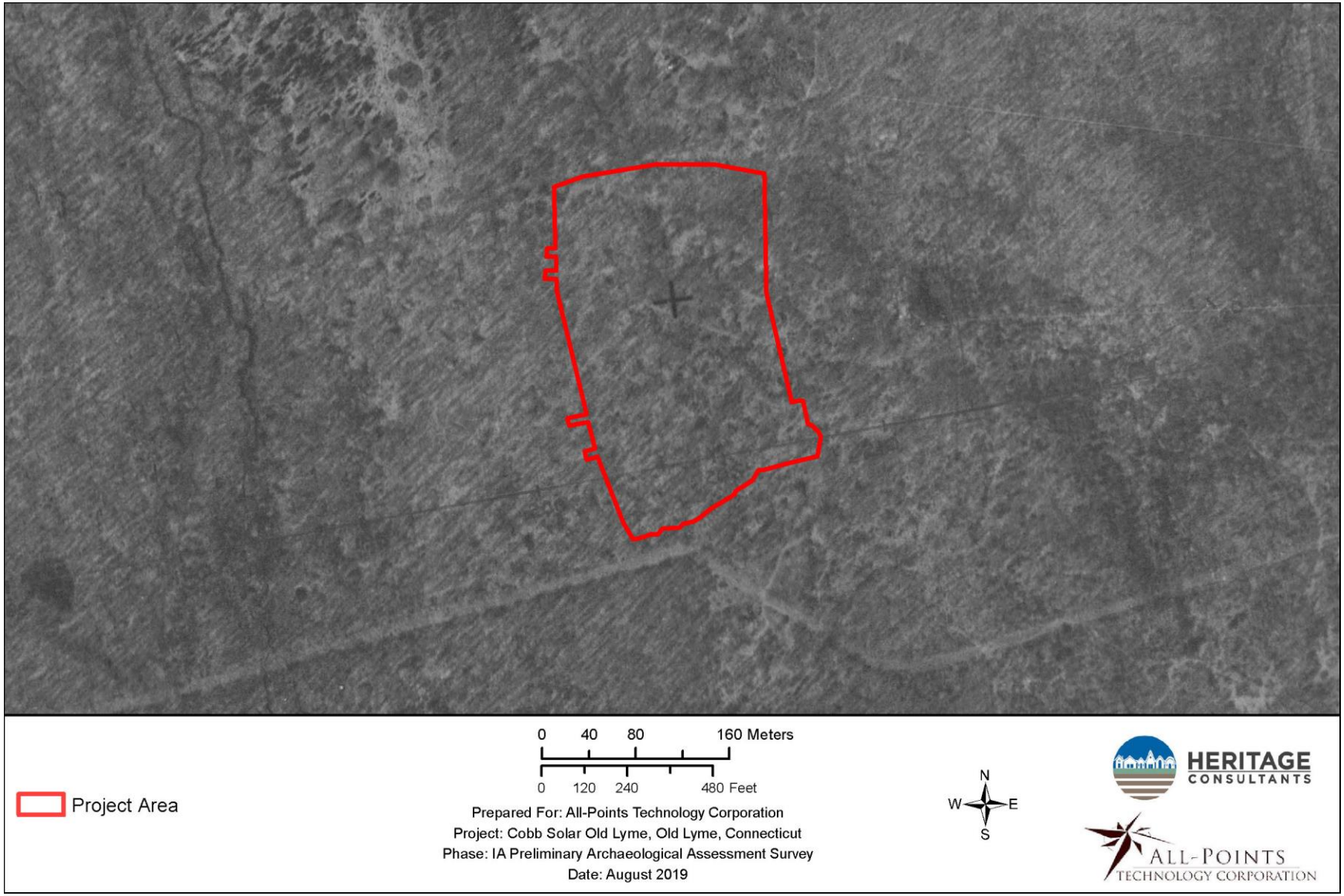


Figure 8. Excerpt from a 1934 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

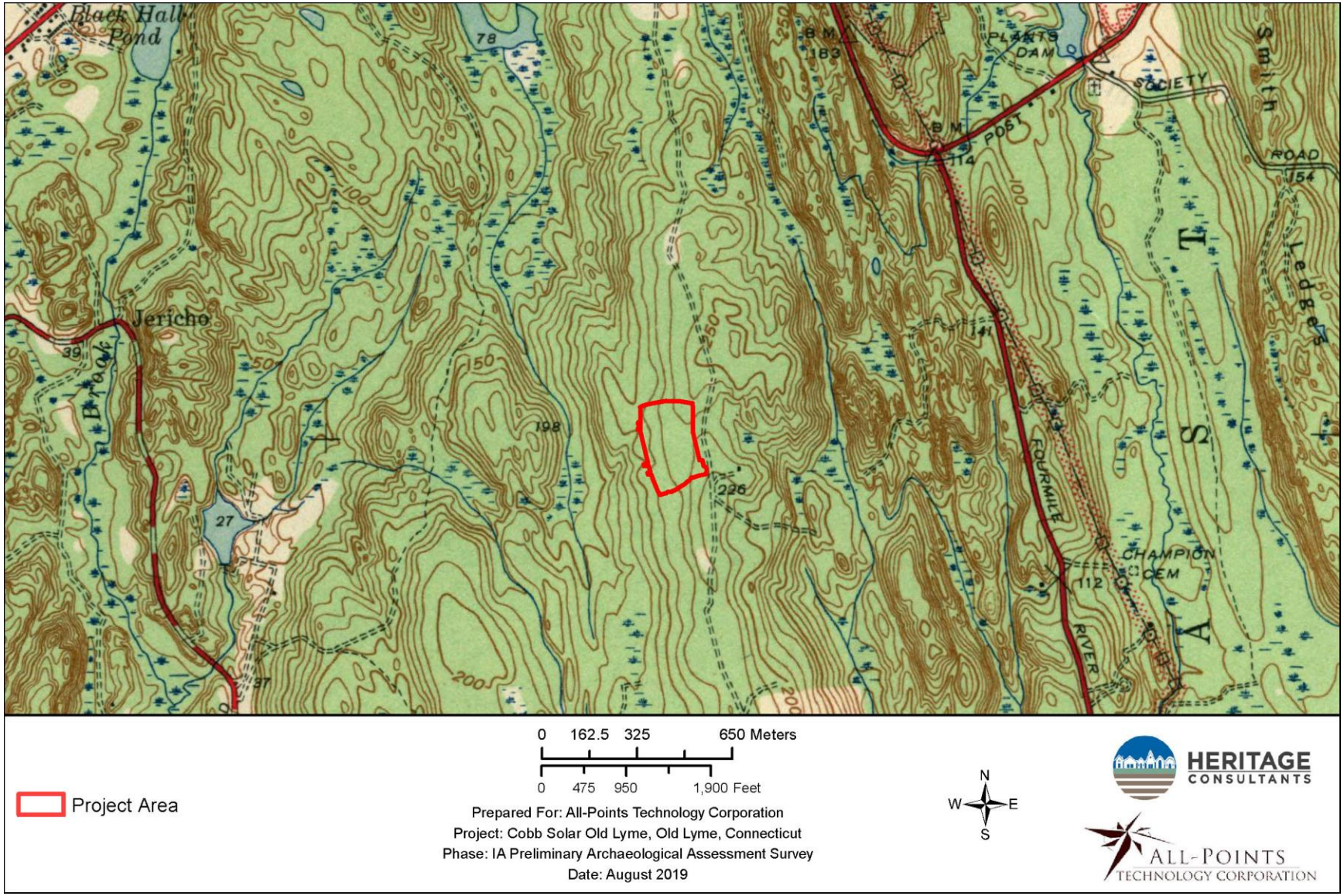


Figure 9. Excerpt from a 1941 USDA topographic quadrangle image showing the location of the project parcel in Old Lyme, Connecticut.

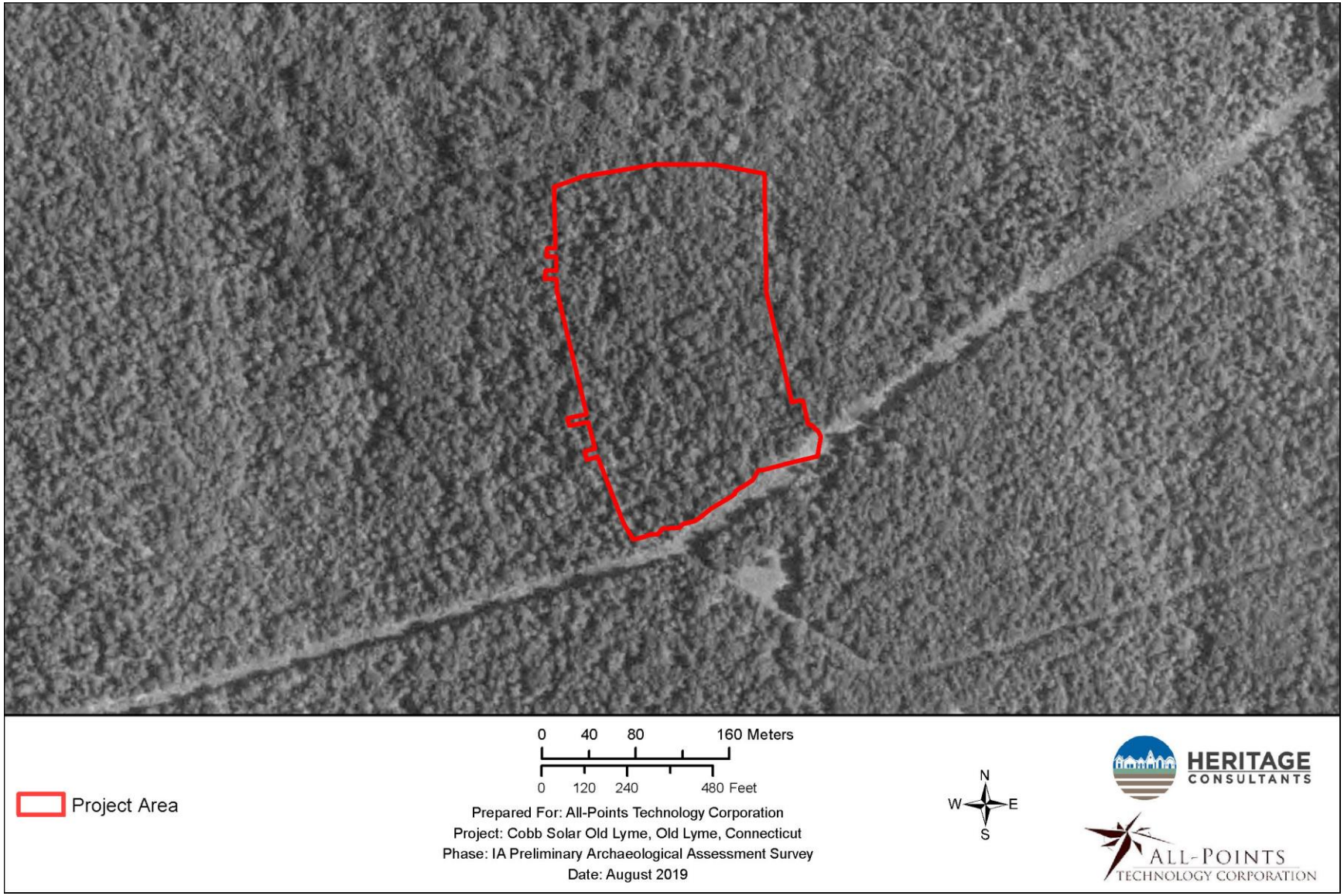


Figure 10. Excerpt from a 1951 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

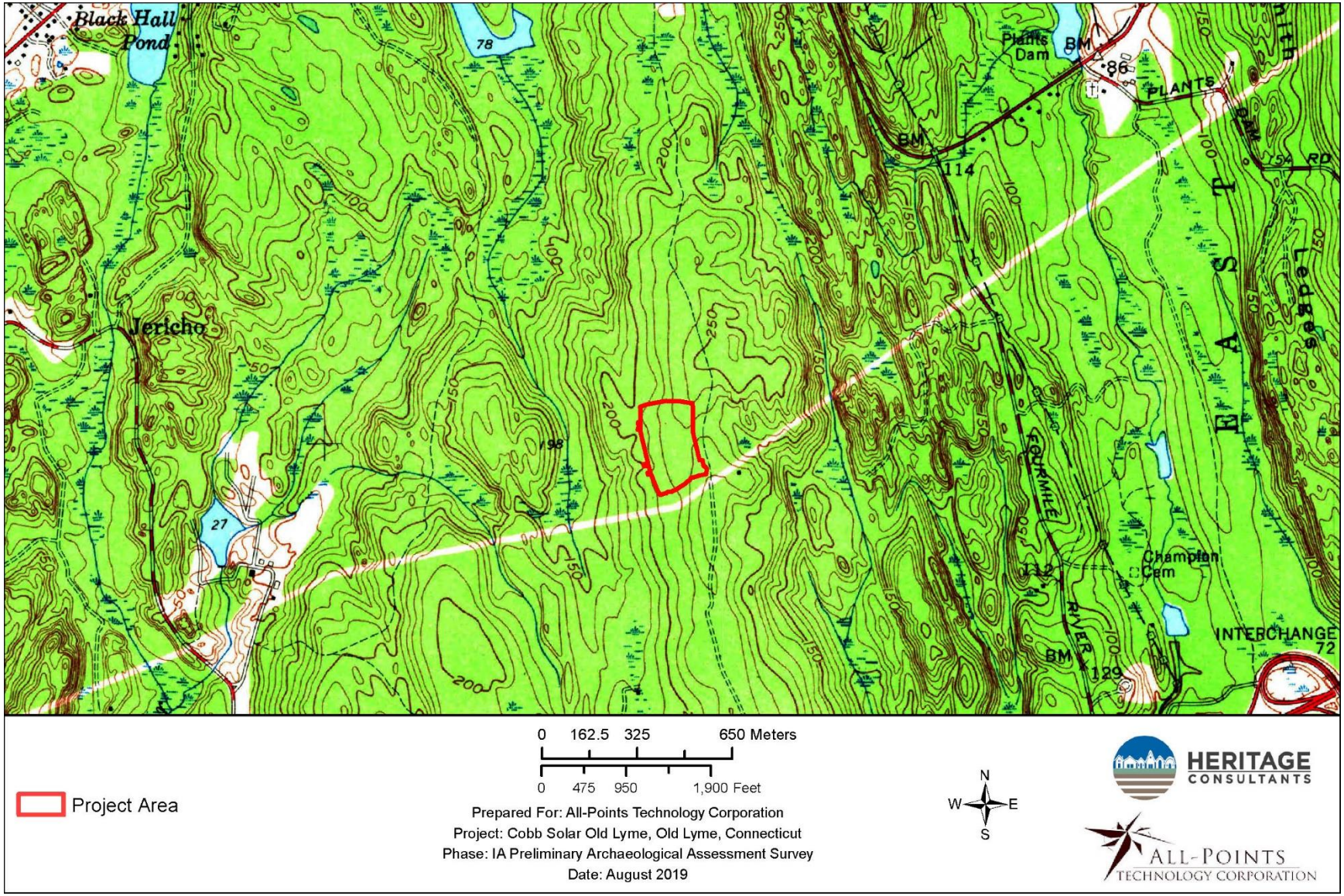


Figure 11. Excerpt from a 1958 topographic map showing the location of the project parcel in Old Lyme, Connecticut.

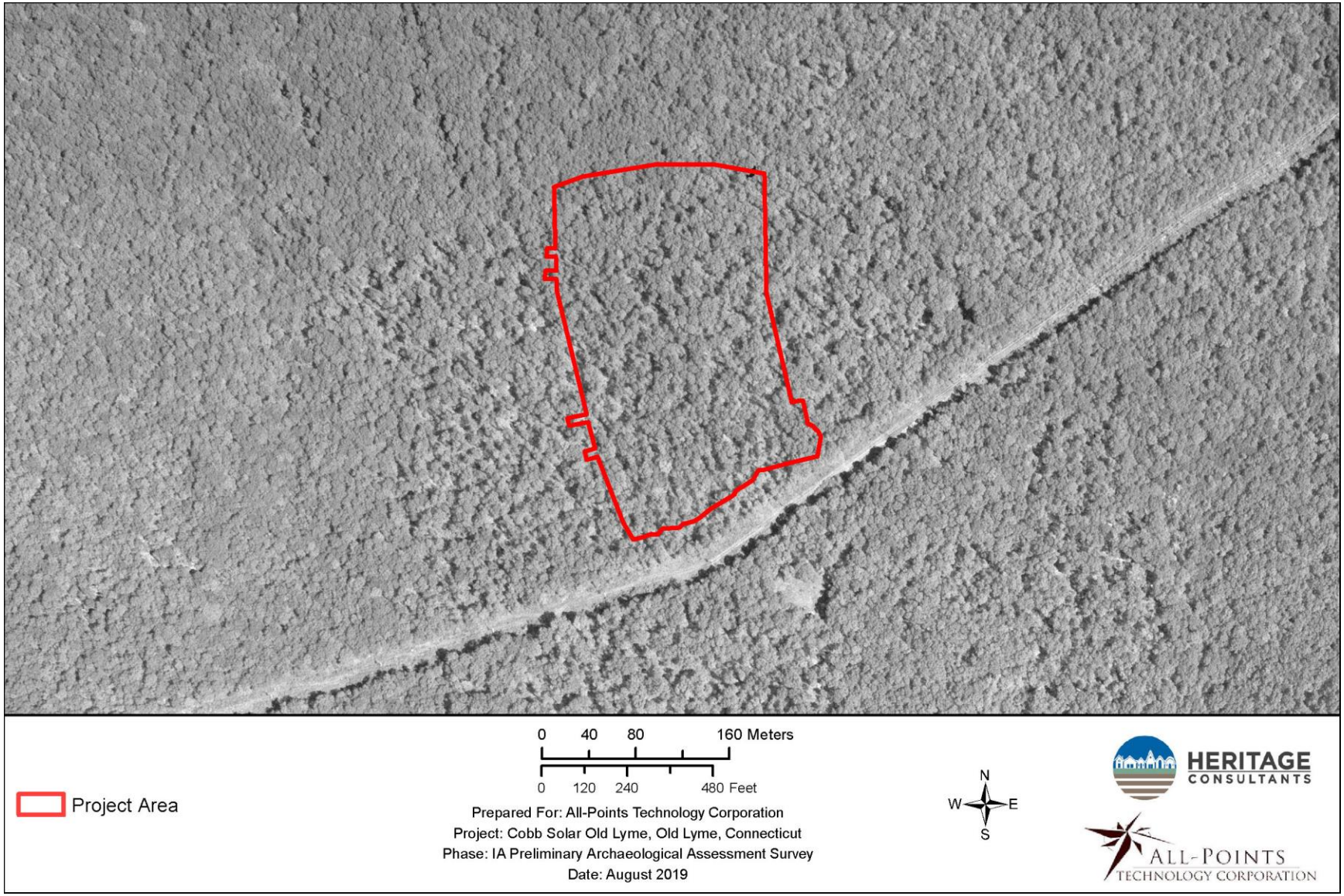


Figure 12. Excerpt from a 1974 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

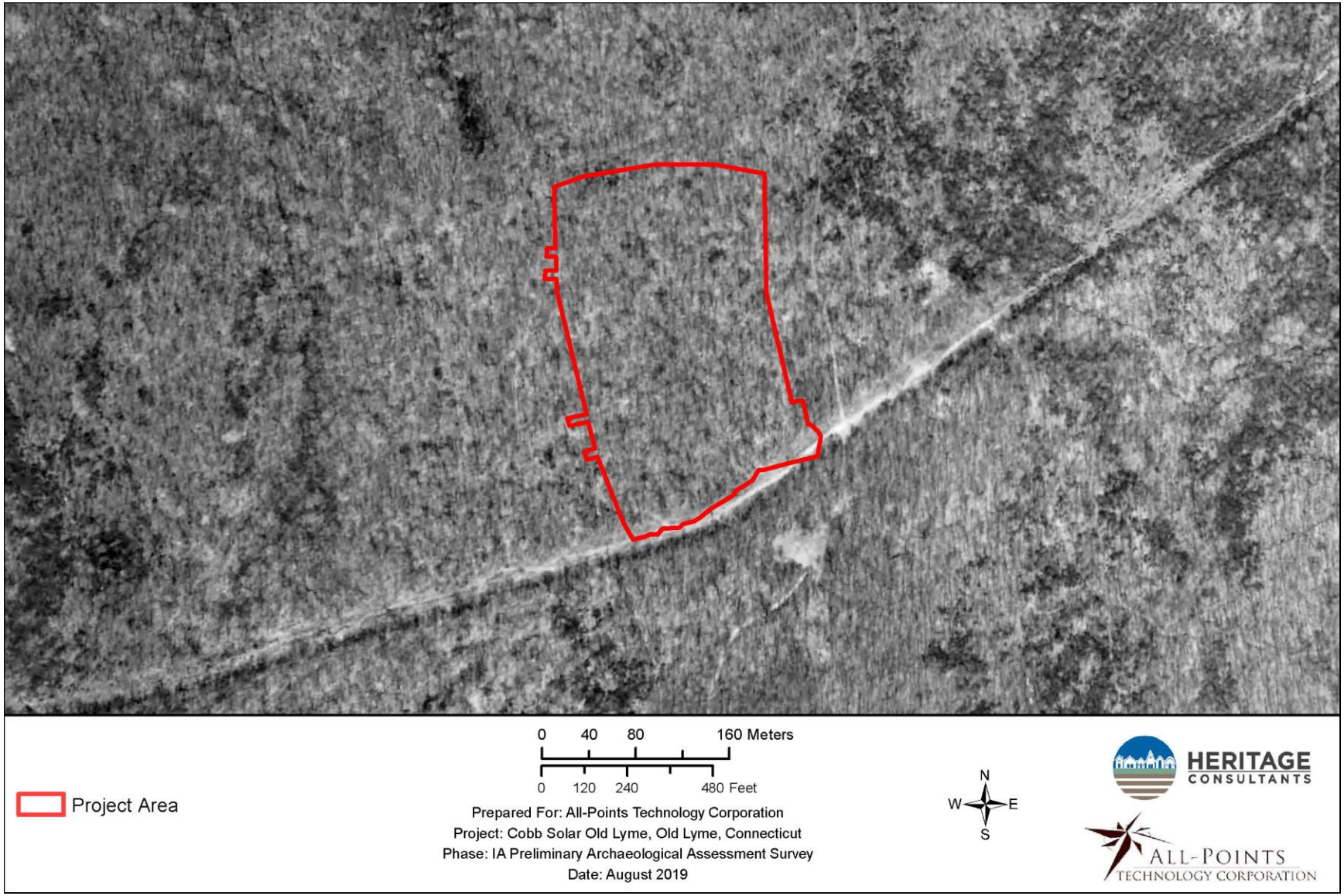


Figure 13. Excerpt from a 1975 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

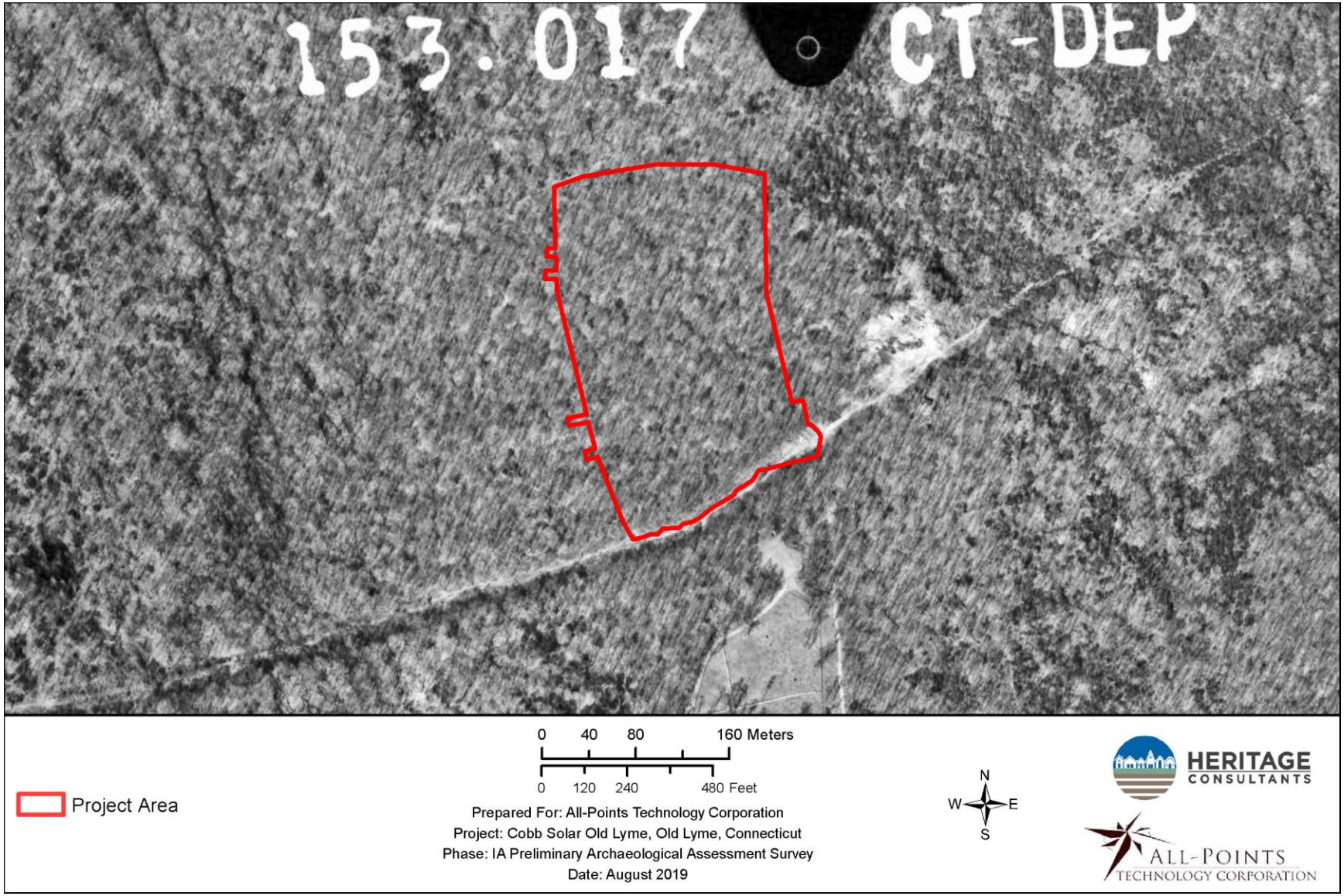


Figure 14. Excerpt from a 1986 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

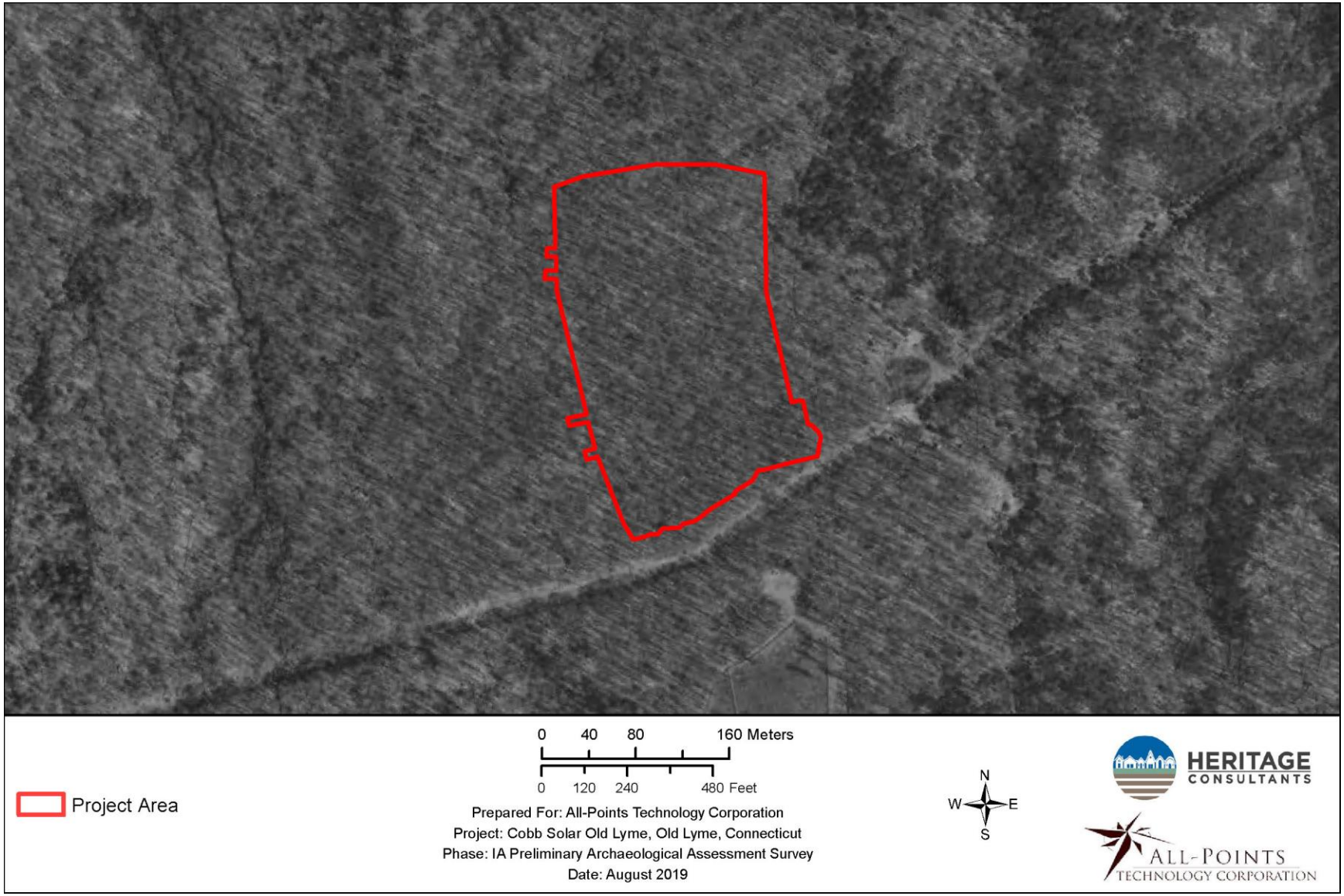


Figure 15. Excerpt from a 1996 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

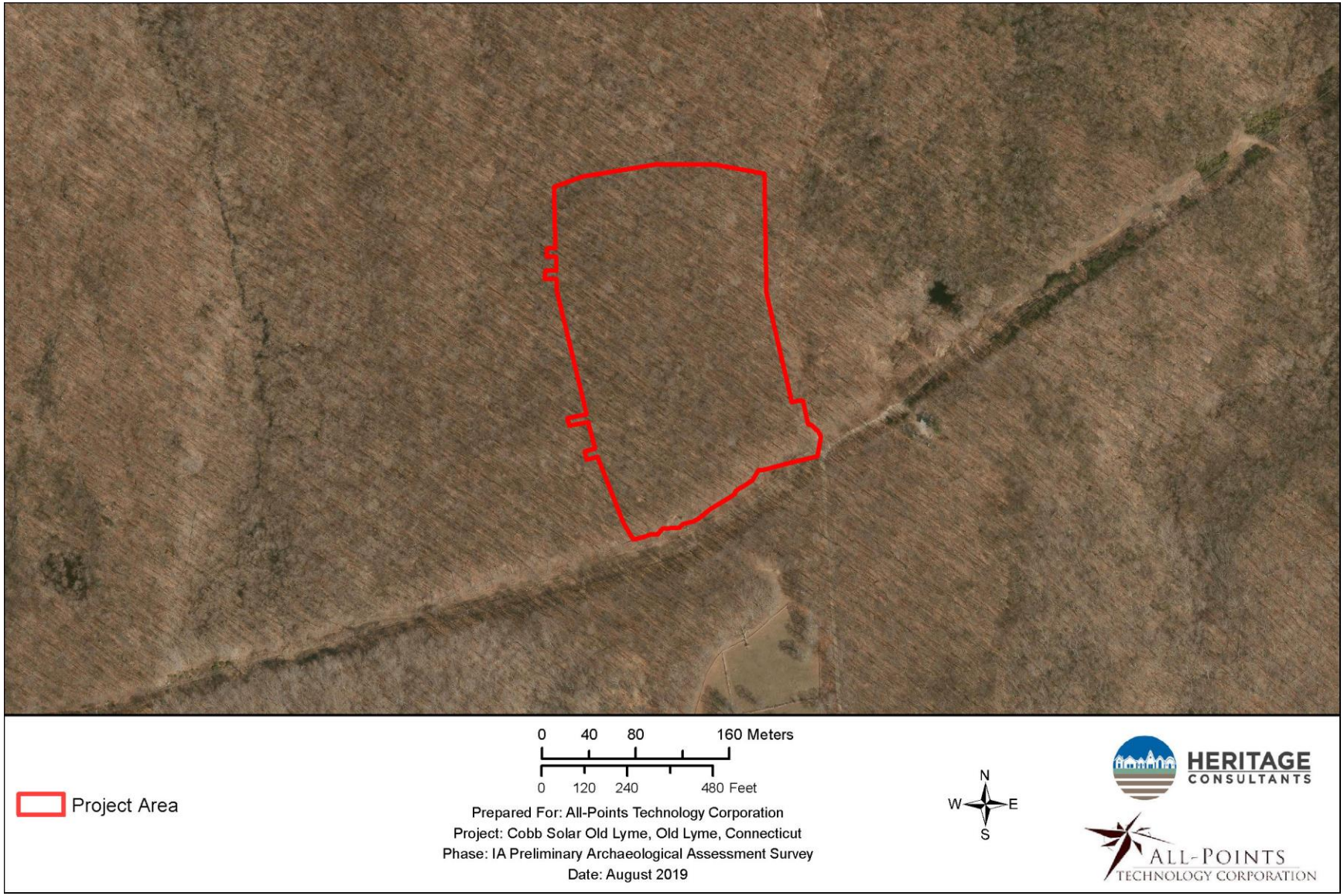


Figure 16. Excerpt from a 2016 aerial photograph showing the location of the project parcel in Old Lyme, Connecticut.

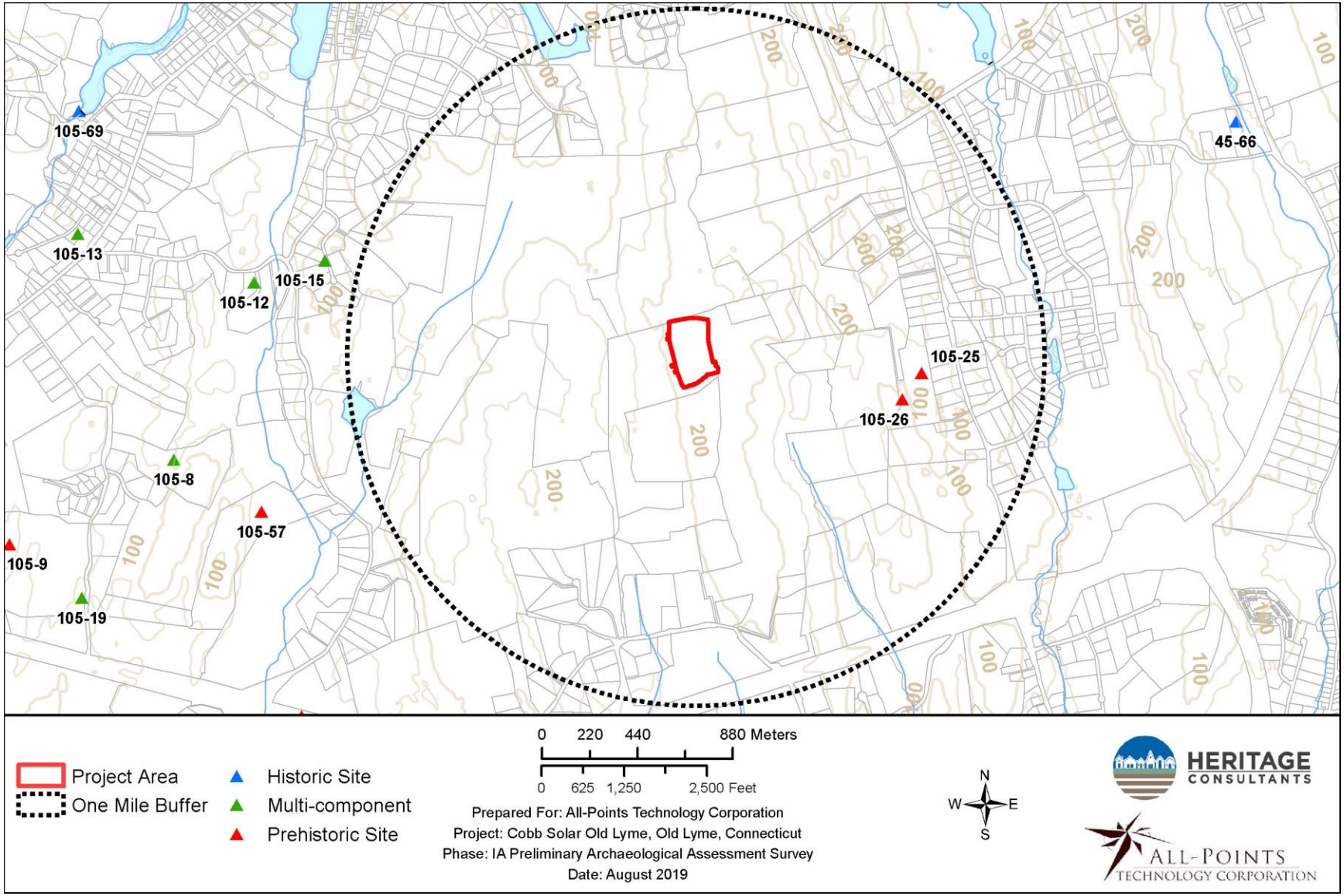


Figure 17. Digital map showing the location of previously identified archaeological sites in the vicinity of the project parcel in Old Lyme, Connecticut.

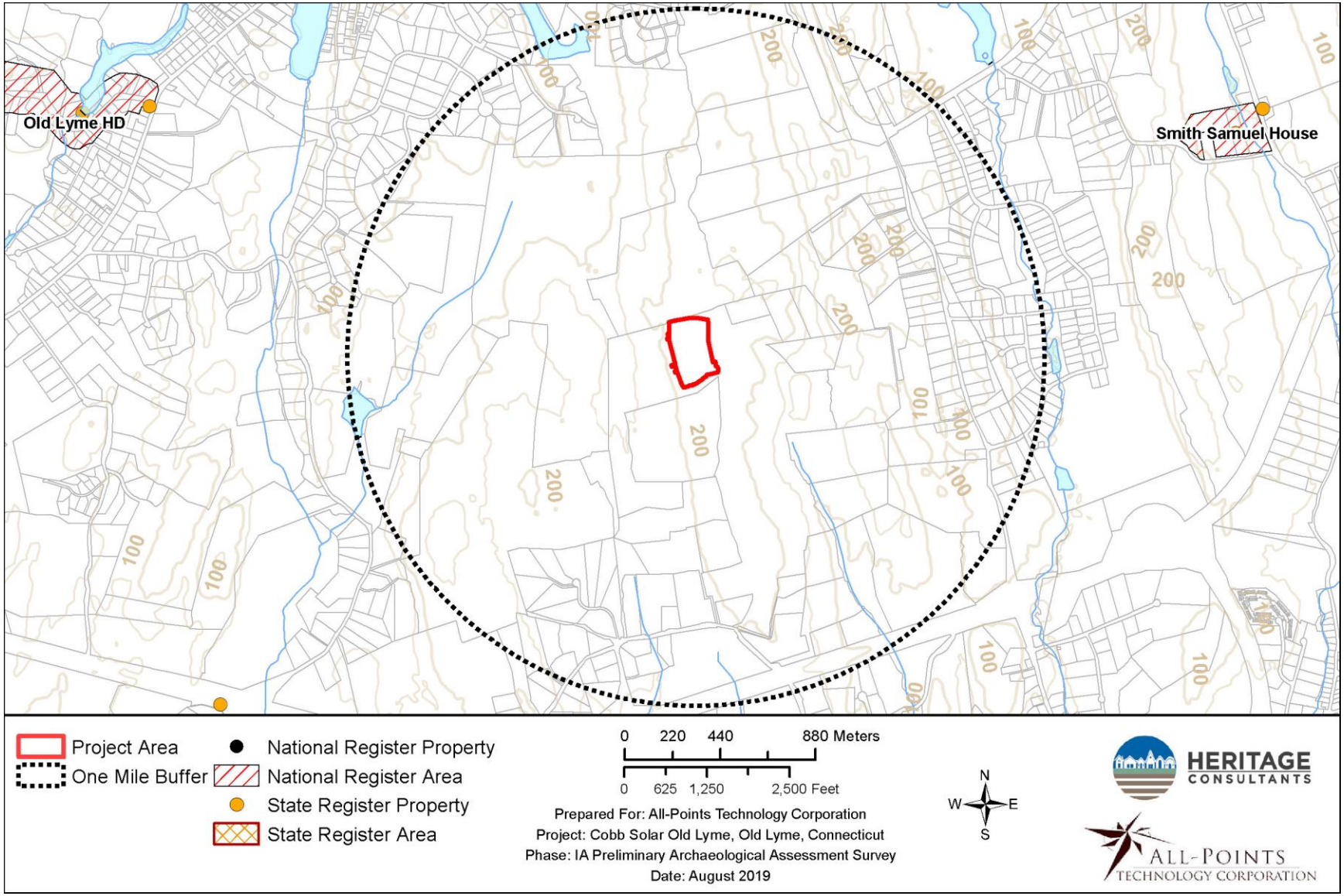


Figure 18. Digital map depicting the locations of previously identified National/State Register of Historic Places properties and inventoried Historic Standing Structures in the vicinity of the project parcel in Old Lyme, Connecticut.

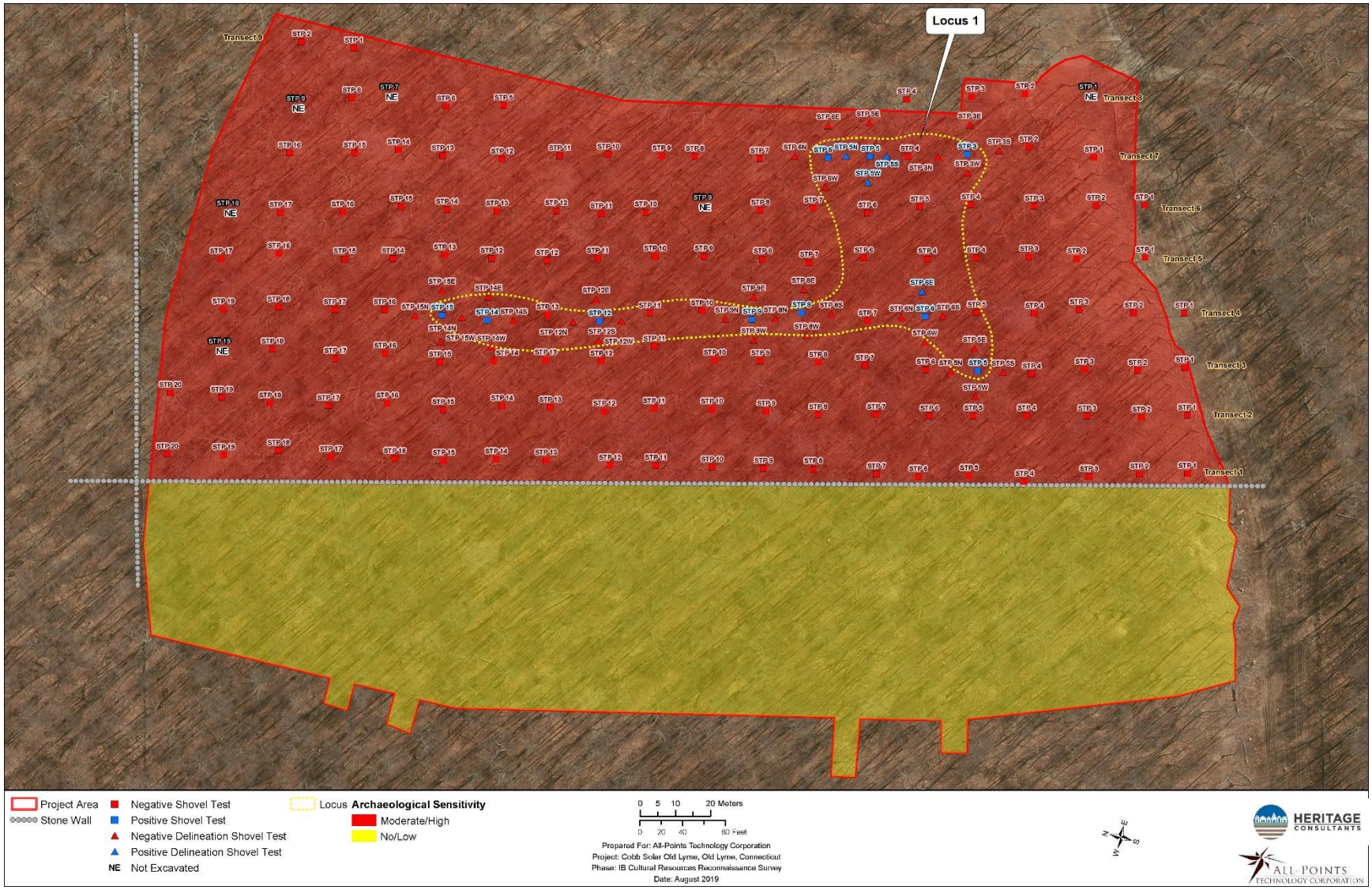


Figure 19. Digital map depicting the project parcel in Old Lyme, Connecticut, areas of archaeological sensitivity, stone walls, shovel test locations and the Locus 1 boundaries.

Figure 20. Overview photo of the Locus 1 area facing southwest.

Figure 21. Overview photo of the Locus 1 area facing northeast.

Connecticut

Department of Economic and Community Development

State Historic Preservation Office

September 30, 2019

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

Subject: Phase IB Cultural Resources Reconnaissance Survey
Proposed Cobb Road, LLC Solar Project
Short Hills Road
Old Lyme, Connecticut
ENV-20-0009

Dear Mr. George:

The State Historic Preservation Office (SHPO) has reviewed the archeological survey report prepared by Heritage Consultants, LLC (Heritage), dated August 2019. The proposed activities are under the jurisdiction of the Connecticut Siting Council and are subject to review by this office pursuant to the Connecticut Environmental Policy Act (CEPA). The proposed facility is located within an 12.3 acre study area, consisting primarily of forest surrounded by wooded land, with access from an existing forest road to the east. The submitted report is well-written, comprehensive, and meets the standards set forth in the *Environmental Review Primer for Connecticut's Archaeological Resources*.

Phase IB of the reconnaissance survey consisted of subsurface testing of areas deemed to have moderate to high archaeological sensitivity, and that would be subject to ground disturbing impacts as part of the proposed undertaking. A total of 135 of 141 planned shovel tests were excavated successfully throughout the proposed work area, 10 of which yielded cultural material, resulting an additional 36 delineation shovel tests being excavated.

One cultural resource locus was identified during the survey: Locus 1. Locus 1 yielded a scatter of prehistoric lithic artifacts (27), including 19 quartz secondary thinning flakes, and 3 pieces of quartz shatter. All artifacts recovered are indicative of a short term, task-specific occupation site, likely stone tool manufacturing. As the materials recovered are typical of most prehistoric periods and no other temporally diagnostic material or features were identified, Locus 1 lacks research potential and is therefore not eligible for listing on the National Register of Historic Places. Thus, no additional archaeological work is recommended, and no historic properties will be affected by the proposed activities. However, please be advised that if construction plans change to include previously uninvestigated/undisturbed areas, SHPO should be contacted for additional consultation.

Connecticut

Department of Economic and Community Development

State Historic Preservation Office

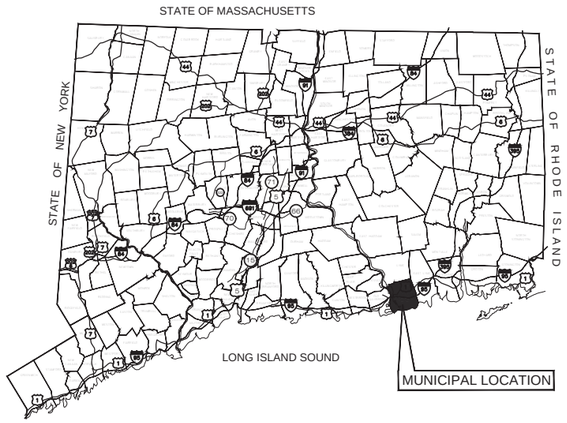
This office appreciates the opportunity to review and comment upon this project. These comments are provided in accordance with the Connecticut Environmental Policy Act. For additional information, please contact Marena Wisniewski, Environmental Reviewer, at (860) 500-2357 or marena.wisniewski@ct.gov.

Sincerely,

Mary B. Dunne
State Historic Preservation Officer

APPENDIX D

Project Plans



COBB ROAD LLC

"POWER LINES SOLAR"

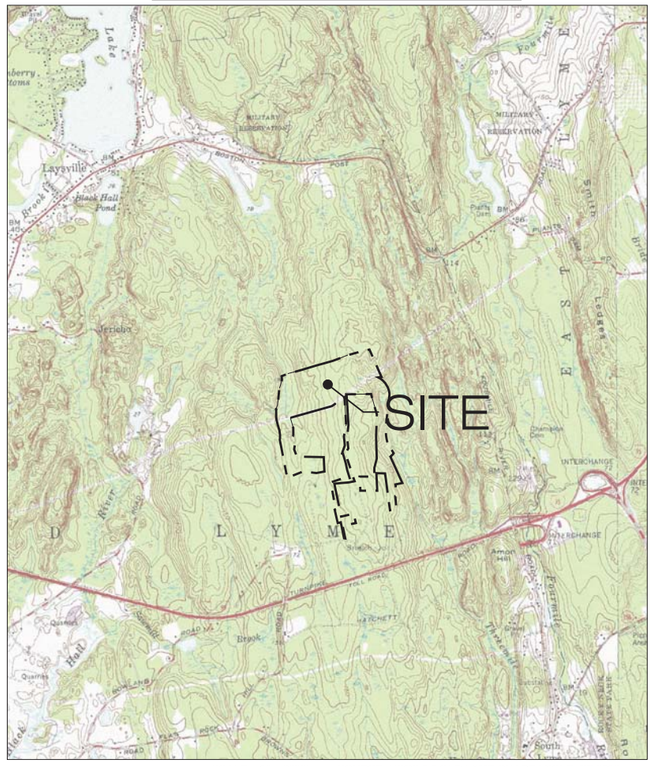
20-1 SHORT HILLS RD
OLD LYME, CT 06371

LIST OF DRAWINGS

SITE INFORMATION

SITE NAME:	"POWER LINES SOLAR" 20-1 SHORT HILLS RD
LOCATION:	OLD LYME, CT 06371
SITE TYPE/DESCRIPTION:	ADD (1) GROUND MOUNTED SOLAR PANEL ARRAY W/ ASSOCIATED EQUIPMENT.
PROPERTY OWNER:	HOWARD S. TOOKER 20-1 SHORT HILLS RD OLD LYME, CT 06371
APPLICANT:	COBB ROAD LLC 9 NOVELTY LANE, UNIT 9B ESSEX, CT 06426
ENGINEER CONTACT:	BRADLEY J. PARSONS, P.E. (860) 663-1697 x208
LATITUDE:	42°19'59.26" N
LONGITUDE:	72°16'37.00" W
ELEVATION:	231'± AMSL
MBLU:	MAP 24, LOT 13
ZONE:	RU-80 (RESIDENTIAL DISTRICT)
EXISTING LAND USE:	SINGLE FAMILY RESIDENTIAL & AGRICULTURAL
PROPOSED LAND USE:	COMMUNICATIONS, TRANSPORTATION AND PUBLIC UTILITY USES - LARGE SCALE GROUND MOUNTED SOLAR PHOTOVOLTAIC INSTALLATIONS
TOTAL SITE ACREAGE:	120.23± AC.
TOTAL DISTURBED AREA:	12.72± AC.
TOTAL CLEARING AREA:	12.33± AC.
APPROX. VOLUME OF CUT:	2,876± CY
APPROX. VOLUME OF FILL:	2,266± CY
APPROX. NET VOLUME:	610± CY OF CUT

USGS TOPOGRAPHIC MAP



SCALE : 1" = 2000'± SOURCE: USGS 7.5 OLD LYME QUADRANGLE, CT 2012

COBB ROAD LLC

9 NOVELTY LANE, UNIT 9B
ESSEX, CT 06426

ALL-POINTS TECHNOLOGY CORPORATION
3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
WWW.ALLPOINTSTECH.COM

CSC PERMITTING

NO	DATE	REVISION
0	10/02/19	FOR REVIEW: BJP
1		
2		
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4		
5		
6		

NOT FOR CONSTRUCTION

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

OWNER: HOWARD S. TOOKER
ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

POWER LINES SOLAR

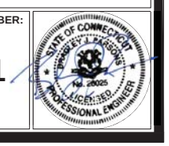
SITE ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

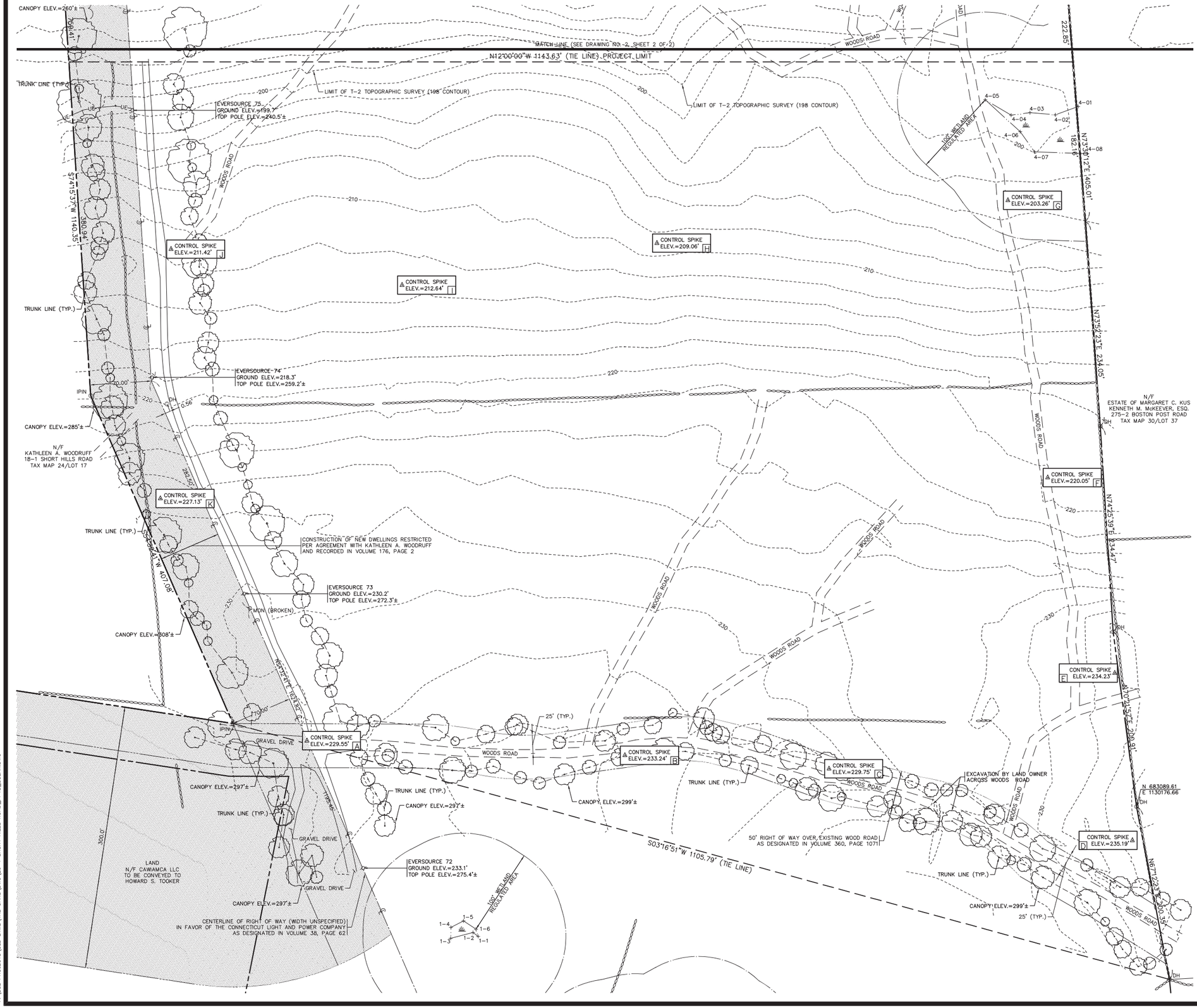
APT FILING NUMBER: CT580100

DRAWN BY: JT
DATE: 10/02/19
CHECKED BY: BJP

SHEET TITLE:
TITLE SHEET & INDEX

SHEET NUMBER:
T-1





GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

FOR CONTROL POINT DATA (SEE DRAWING NO. 2, SHEET 2 OF 2)

NORTH (PER RM #2 A.)

LEGEND

EXISTING	PROPOSED	
		PROPERTY/HIGHWAY LINE
IPIN/IPIPE/DH		IRON PIN/IRON PIPE/DRILL HOLE
MON		CONCRETE MONUMENT
△		CONTROL POINT
A		CONTROL POINT DESIGNATION
		STONE WALL
		TIE LINE
		CENTER LINE
		EASEMENT LINE
50		CONTOUR
50x0		SPOT ELEVATION
		WOODS ROAD/TRAIL
WF 1		INLAND WETLANDS/FLAG NO.
		MARSH/WETLAND
		WETLAND REGULATED AREA
		STREAM
		TREE LINE
		TREE
		TREE TRUNK LINE

NOTES:

1. THIS SURVEY AND MAP HAVE BEEN PREPARED IN ACCORDANCE WITH THE REGULATIONS OF CONNECTICUT STATE AGENCIES, SECTIONS 20-300B-1 THROUGH 20-300B-20, THE MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON JUNE 21, 1996 AND AMENDED OCTOBER 26, 2018.
   A. THE HORIZONTAL ACCURACY CONFORMS TO CLASS A-2, AND THE TOPOGRAPHIC ACCURACY CONFORMS TO CLASS T-2.
   B. THE BOUNDARY DETERMINATION CATEGORY IS A DEPENDANT RESURVEY OF THE MAP REFERENCED IN NOTE #2.A.
   C. THE TYPE OF SURVEY IS A PARTIAL PROPERTY SURVEY. THIS MAP IS INTENDED TO DEPICT OR NOTE THE LOCATION OF EXISTING PROPERTY LINES, LINES OF OCCUPATION, EASEMENTS, ENCROACHMENTS, BUILDINGS AND OTHER SITE IMPROVEMENTS.
2. REFERENCE IS HEREBY MADE TO THE FOLLOWING MAPS ENTITLED:
   A. "LOT LINE MODIFICATION PLAN EXISTING CONDITIONS LAND NOW OR FORMERLY HOWARD S. TOOKER LAND NOW OR FORMERLY CAWIAMCA LLC GREAT OAK ROAD OLD LYME CONNECTICUT" BY: BENNETT & SMILAS ASSOCIATES, INC.; SCALE: 1"=100; SHEETS: 1-3 OF 3; DATED: FEB. 19, 2019 AND REVISED LAST: 04/10/19.
3. BEARINGS AND COORDINATES SHOWN HEREON ARE BASED UPON THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND WERE OBTAINED BY GLOBAL POSITIONING SYSTEM (GPS) OBSERVATIONS, BY: URS CORPORATION ON APRIL 26, 2005.
4. ELEVATIONS SHOWN HEREON ARE BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) AND WERE OBTAINED BY GLOBAL POSITIONING SYSTEM (GPS) OBSERVATIONS, BY: URS CORPORATION ON APRIL 26, 2005.
5. CONTOURS SHOWN WITHIN THE PROJECT AREA ARE BASED UPON A FIELD SURVEY BY BENNETT & SMILAS ASSOCIATES, INC. ON APRIL 15-19, 2019. CONTOURS OUTSIDE OF THE PROJECT AREA ARE BASED UPON AERIAL TOPOGRAPHIC MAPPING PROVIDED BY EAST COAST MAPPING, ECM., AND DATED JUNE 6, 2005.
6. THE CURRENT PROPERTY OWNER OF RECORD IS HOWARD S. TOOKER OF 20-1 SHORT HILLS ROAD OLD LYME, CONNECTICUT AS DESIGNATED IN VOLUME 108, PAGE 135 IN THE TOWN OF OLD LYME CLERKS OFFICE.
7. PROPERTY LOCATED AT 20-1 SHORT HILLS ROAD, IS SHOWN ON TAX MAP 24, LOT 13 IN THE TOWN OF OLD LYME ASSESSOR'S OFFICE.
8. THIS PROPERTY IS ZONED RU-80, RESIDENTIAL DISTRICT. THE MINIMUM LOT AREA IS 80,000 SQUARE FEET AND THE MINIMUM SETBACK REQUIREMENTS ARE GENERALLY: FRONT: 50 FEET, SIDE: 35 FEET, AND REAR: 35 FEET.
9. THE TOTAL AREA OF THIS PROPERTY AT 20-1 SHORT HILLS ROAD IS 5,237,098 SQUARE FEET (120.227 ACRES)
10. PROPERTY LOCATED AT 20-1 SHORT HILLS ROAD IS SUBJECT TO THE FOLLOWING EASEMENTS AND RESTRICTIONS:
    A. 50' RIGHT OF WAY OVER EXISTING WOODS ROAD AS DESIGNATED IN VOLUME 360, PAGE 1071 IN THE TOWN OF OLD LYME CLERKS OFFICE.
    B. CONSTRUCTION OF DWELLINGS RESTRICTED PER AGREEMENT WITH KATHLEEN A. WOODRUFF AS DESIGNATED IN VOLUME 176, PAGE 2 IN THE TOWN OF OLD LYME CLERSKS OFFICE.
    C. RIGHT OF WAY IN FAVOR OF THE CONNECTICUT LIGHT AND POWER COMPANY AS DESIGNATED IN VOLUME 38, PAGE 62 IN THE TOWN OF OLD LYME CLERKS OFFICE.
11. INLAND WETLAND LIMITS SHOWN HEREON WERE DELINEATED BY DEAN GUSTAFSON, SENIOR WETLAND SCIENTIST, ALL-POINTS TECHNOLOGY CORPORATION, P.C. ON MARCH 21, 2019 AND FIELD LOCATED BY ALL-POINTS TECHNOLOGY CORPORATION, P.C. ON MARCH 21, 2019. (WETLAND FLAGS 1-1 THRU 1-6, 3-01 THRU 3-10, AND 4-01 THRU 4-08).
12. REMAINING INLAND WETLAND LIMITS SHOWN HEREON WERE DELINEATED BY HARVEY LUCE, CERTIFIED PROFESSIONAL SOIL SCIENTIST & SOIL CLASSIFIER IN JUNE THROUGH AUGUST OF 2005 AND IN JUNE 2007. WETLANDS WERE FIELD LOCATED BY BENNETT & SMILAS ASSOCIATES, INC. IN JULY THROUGH AUGUST OF 2005 AND IN JUNE 2007.
13. THE LOCATION OF UNDERGROUND UTILITIES DEPICTED HEREON ARE BASED ON FIELD LOCATIONS, MAPPING, INFORMATION PROVIDED BY OTHERS AND OTHER SOURCES. THEIR TRUE LOCATION MAY VARY FROM THOSE INDICATED AND ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN. IF APPLICABLE, UTILIZE THE "CALL BEFORE YOU DIG" NUMBER (1-800-922-4455) TO VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES.

BENNETT & SMILAS ASSOCIATES, INC.
415 KILLINGWORTH ROAD, P.O. BOX 241
HIGGANUM, CONNECTICUT 06441
PHONE (860) 345-4553 FAX (860) 345-3858

TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

MICHAEL J. BENNETT R.L.S. #10831

SEAL

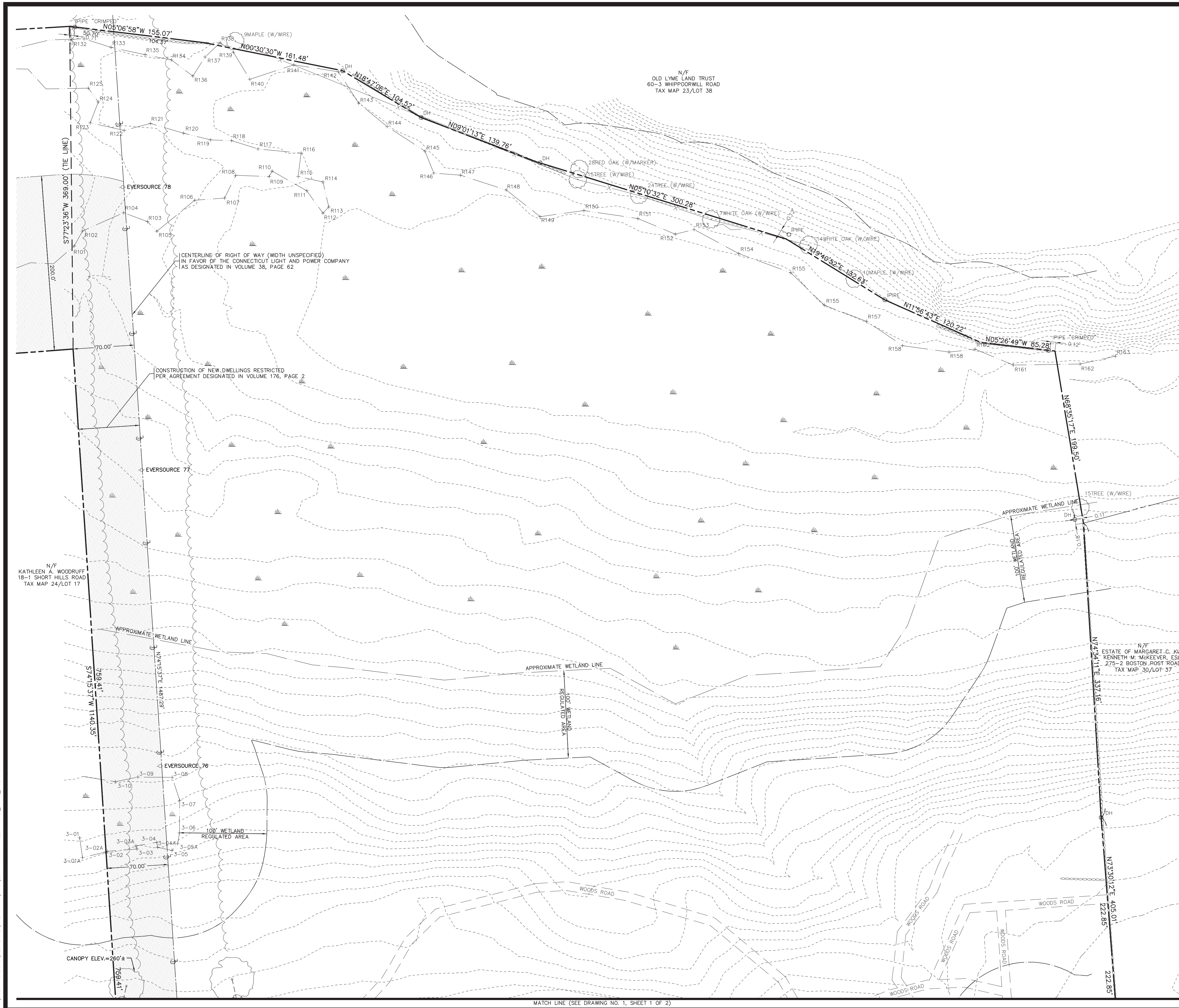
THE ORIGINAL SEAL OF THIS SURVEYOR APPEARS HERE FOR THIS MAP TO BE VALID

MICHAEL J. BENNETT, L.S. No.10831

TITLE:
PARTIAL PROPERTY & TOPOGRAPHIC SURVEY
LAND NOW OR FORMERLY HOWARD S. TOOKER
20-1 SHORT HILLS ROAD OLD LYME, CONNECTICUT

DATE: MAY 19, 2019
SCALE: 1"=50'
SHEET: 1 OF 2
DWG. NO.: 1

F:\BSE PROJECTS\OLD LYME\THE OAKS\DWG\20-1 SHORT HILLS ROAD_PPTS_SOLAR.DWG



GRAPHIC SCALE

(IN FEET)
1 inch = 50 ft.
FOR NOTES (SEE DRAWING NO. 1, SHEET 1 OF 2)

LEGEND

EXISTING	PROPOSED	
		PROPERTY/HIGHWAY LINE
IPIN/IPIPE/DH		IRON PIN/IRON PIPE/DRILL HOLE
MON		CONCRETE MONUMENT
		CONTROL POINT
A		CONTROL POINT DESIGNATION
		STONE WALL
		TIE LINE
		CENTER LINE
		EASEMENT LINE
50		CONTOUR
50x0		SPOT ELEVATION
		WOODS ROAD/TRAIL
WF 1		INLAND WETLANDS/FLAG NO.
		MARSH/WETLAND
		WETLAND REGULATED AREA
		STREAM
		TREE LINE
		TREE
		TREE TRUNK LINE

CONTROL POINTS

CONTROL POINT	DESCRIPTION	NORTHING	EASTING	ELEVATION
A	SPIKE	682149.89	1130299.66	229.55
B	SPIKE	682507.56	1130240.65	233.24
C	SPIKE	682738.20	1130207.28	229.75
D	SPIKE	683093.12	1130215.25	235.19
E	SPIKE	683033.84	1130033.03	234.23
F	SPIKE	682912.83	1129831.16	220.05
G	SPIKE	682802.84	1129531.67	203.26
H	SPIKE	682422.00	1129662.40	209.06
I	SPIKE	682147.96	1129769.59	212.64
J	SPIKE	681882.09	1129784.15	211.42
K	SPIKE	681929.23	1130064.54	227.13

BENNETT & SMILAS ASSOCIATES, INC.
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HIGGANUM, CONNECTICUT 06441
PHONE (860) 345-4653 FAX (860) 345-9858

TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

MICHAEL J. BENNETT R.L.S. #10831

SEAL

THE ORIGINAL SEAL OF THE SURVEYOR MUST BE AFFIXED HERE FOR THIS MAP TO BE VALID

MICHAEL J. BENNETT, L.S. No.10831

TITLE:
PARTIAL PROPERTY & TOPOGRAPHIC SURVEY
LAND NOW OR FORMERLY
HOWARD S. TOOKER
20-1 SHORT HILLS ROAD
OLD LYME, CONNECTICUT

DATE: MAY 19, 2019
SCALE: 1"=50'
SHEET: 2 OF 2
DWG. NO.: 2

F:\BSE PROJECTS\OLD LYME\THE OAKS\DWG\20-1 SHORT HILLS ROAD_PPTS_SOLAR.DWG

1 OP-1 **OVERALL LOCUS MAP**
SCALE : 1" = 250'-0"

250 0 125 250 500
(IN FEET) 1 inch = 250 ft.

COBB ROAD LLC

9 NOVELTY LANE, UNIT 9B
ESSEX, CT 06426

ALL-POINTS TECHNOLOGY CORPORATION
3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
WWW.ALLPOINTSTECH.COM

CSC PERMITTING

NO	DATE	REVISION
0	10/02/19	FOR REVIEW: BJP
1		
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3		
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NOT FOR CONSTRUCTION

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

OWNER: HOWARD S. TOOKER
ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

POWER LINES SOLAR

SITE ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

APT FILING NUMBER: CT580100

DRAWN BY: JT
DATE: 10/02/19
CHECKED BY: BJP

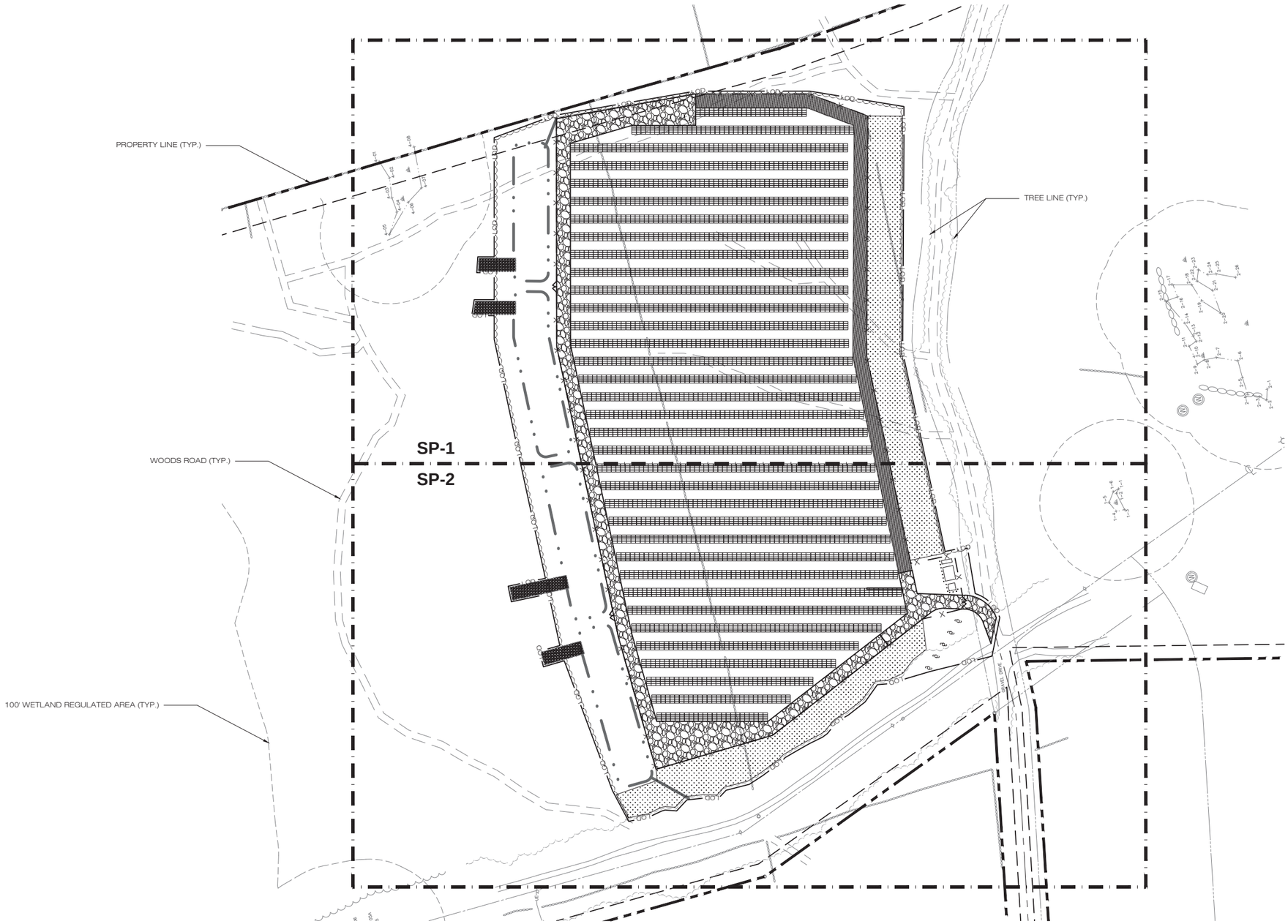
SHEET TITLE:

OVERALL LOCUS MAP

SHEET NUMBER:

OP-1

STATE OF CONNECTICUT · BRADLEY J. PARSONS · No. 28025 · LICENSED PROFESSIONAL ENGINEER



1 SP-0 **OVERALL SITE PLAN**
SCALE : 1" = 80'-0"

80 0 40 80 160
(IN FEET) 1 inch = 80 ft.

COBB ROAD LLC

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ESSEX, CT 06426

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NO	DATE	REVISION
0	10/02/19	FOR REVIEW: BJP
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NOT FOR CONSTRUCTION

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

OWNER: HOWARD S. TOOKER
ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

POWER LINES SOLAR

SITE ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

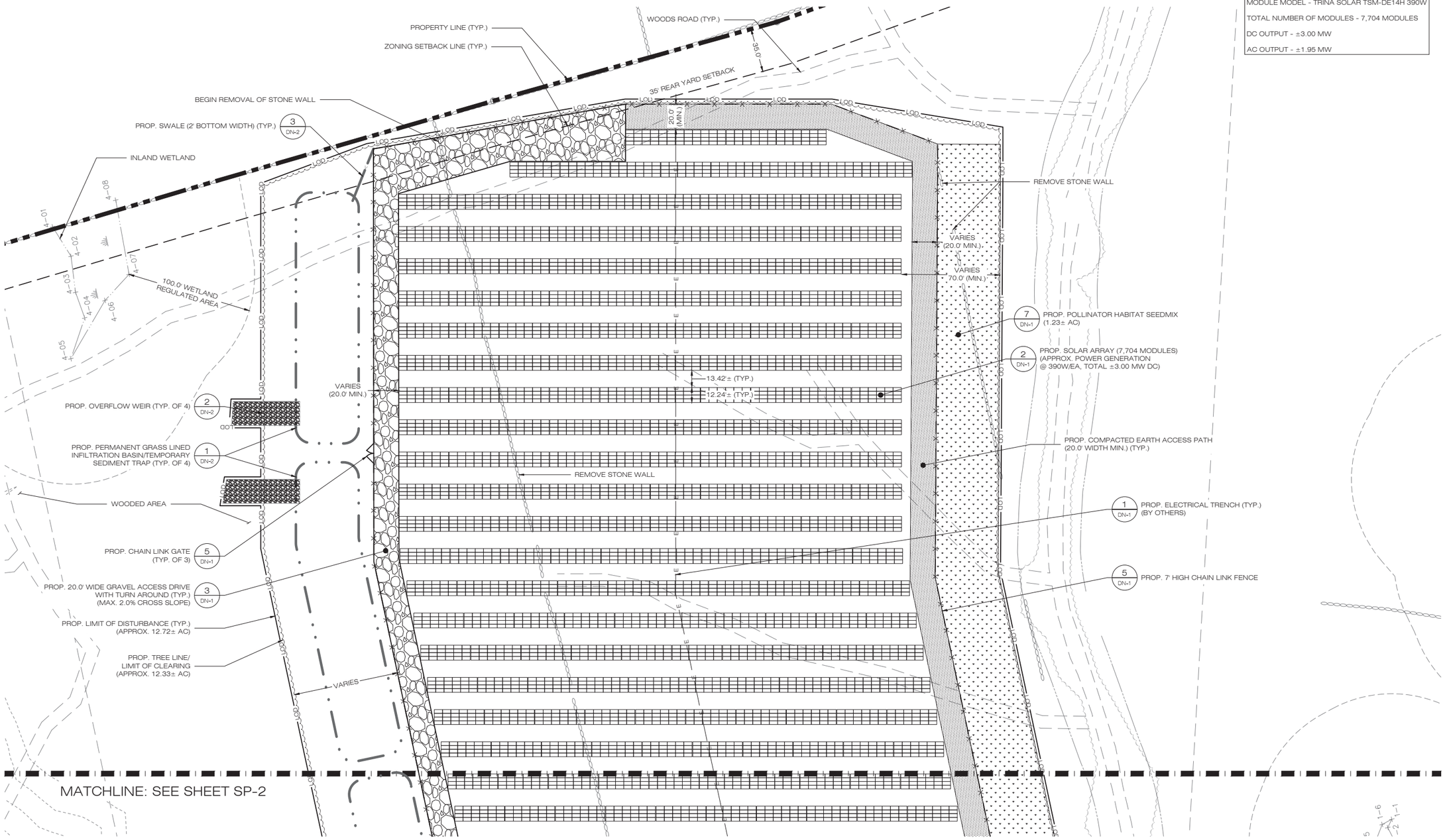
APT FILING NUMBER: CT580100

DRAWN BY: JT
DATE: 10/02/19 CHECKED BY: BJP

SHEET TITLE:
OVERALL SITE PLAN

SHEET NUMBER:
SP-0

STATE OF CONNECTICUT BRADLEY J. PARSONS No. 28025 LICENSED PROFESSIONAL ENGINEER



SOLAR FACILITY SYSTEM INFORMATION:

PROP. TILT - 25 DEGREES

INTER-ROW SPACING - 13.42± FEET

MODULE STRINGING - 18 MODULES PER STRING

MODULE MODEL - TRINA SOLAR TSM-DE14H 390W

TOTAL NUMBER OF MODULES - 7,704 MODULES

DC OUTPUT - ±3.00 MW

AC OUTPUT - ±1.95 MW

1 SP-1 **SITE & UTILITY PLAN**
SCALE : 1" = 40'-0"

40 0 20 40 80
(IN FEET) 1 inch = 40 ft.

COBB ROAD LLC

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DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
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ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

OWNER: HOWARD S. TOOKER
ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

POWER LINES SOLAR

SITE ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

APT FILING NUMBER: CT580100

DRAWN BY: JT

DATE: 10/02/19 CHECKED BY: BJP

SHEET TITLE:

SITE & UTILITY PLAN

SHEET NUMBER:

SP-1

STATE OF CONNECTICUT BRADLEY J. PARSONS No. 28025 LICENSED PROFESSIONAL ENGINEER

SOLAR FACILITY SYSTEM INFORMATION:

PROP. TILT - 25 DEGREES

INTER-ROW SPACING - 13.42± FEET

MODULE STRINGING - 18 MODULES PER STRING

MODULE MODEL - TRINA SOLAR TSM-DE14H 390W

TOTAL NUMBER OF MODULES - 7,704 MODULES

DC OUTPUT - ±3.00 MW

AC OUTPUT - ±1.95 MW

1 DN-1 PROP. ELECTRICAL TRENCH (TYP.) (BY OTHERS)

5 DN-1 PROP. 7' HIGH CHAIN LINK FENCE

PROP. COMPACTED EARTH ACCESS PATH (20.0' WIDTH MIN., MAX 2% CROSS SLOPE) (TYP.)

MATCHLINE: SEE SHEET SP-1

PROP. INVERTERS (TYP. OF 12, RACK MOUNTED) (BY OTHERS)

INLAND WETLAND

4 DN-1 PROP. 15' X 5' CONC. SWITCHGEAR PAD

8 DN-1 PROP. BOLLARD (TYP. OF 14, 5' O.C.)

4 DN-1 PROP. 15' X 20' CONC. EQUIPMENT PAD

4 DN-1 PROP. 10' X 10' CONC. TRANSFORMER PAD

100.0' WETLAND REGULATED AREA

PROP. 20.0' WIDE GRAVEL ACCESS DRIVE WITH TURN AROUND (TYP.) (MAX. 2.0% CROSS SLOPE) 3 DN-1

VARIES

VARIES 70.0' (MIN.)

13.42± (TYP.)

12.24± (TYP.)

REMOVE STONE WALL

PROP. SOLAR ARRAY (7,704 MODULES) (APPROX. POWER GENERATION @ 390W/EA, TOTAL ±3.00 MW DC) 2 DN-1

VARIES (20.0' MIN.)

3 DN-1 PROP. 20.0' WIDE GRAVEL ACCESS DRIVE WITH TURN AROUND (TYP.) (TO BE TIED INTO EXIST. GRAVEL DRIVE)

5 DN-1 6 DN-1 PROP. CHAIN LINK GATE (TYP. OF 3) W/ SITE IDENTIFICATION SIGN AND KNOX PADLOCK MODEL 3770

PROP. OVERFLOW WEIR (TYP. OF 4) 2 DN-2

PROP. PERMANENT GRASS LINED INFILTRATION BASIN/TEMPORARY SEDIMENT TRAP (TYP. OF 4) 1 DN-2

EXIST. WALL TO BE REMOVED

PROP. CHAIN LINK GATE (TYP. OF 3) 5 DN-1

WOODED AREA

PROP. LIMIT OF DISTURBANCE (TYP.) (APPROX. ±12.72 AC)

PROP. TREE LINE/ LIMIT OF CLEARING (APPROX. ±12.33 AC)

VARIES

PROP. SWALE (2' BOTTOM WIDTH) (TYP.) 3 DN-2

PROP. POLLINATOR HABITAT SEEDMIX (1.23± AC) 7 DN-1

PROP. UTILITY POLE #5 CUSTOMER GOAB/RISER (BY OTHERS)

PROP. UTILITY POLE #4 CUSTOMER RECLOSER (BY OTHERS)

PROP. UTILITY POLE #3 UTILITY PRIMARY METER (BY OTHERS)

PROP. UTILITY POLE #2 UTILITY RECLOSER (BY OTHERS)

PROP. UTILITY POLE #1 UTILITY GOAB (BY OTHERS)

PROP. INTERCONNECTION TO EXISTING POLE EVERSOURCE 73 (BY OTHERS)

GRAVEL DRIVE

20' SIDE YARD SETBACK

20' SIDE YARD SETBACK

20' SIDE YARD SETBACK

ZONING SETBACK LINE (TYP.)

PROPERTY LINE (TYP.)

1 SP-2 **SITE & UTILITY PLAN**

SCALE : 1" = 40'-0"

40 0 20 40 80

(IN FEET) 1 inch = 40 ft.

COBB ROAD LLC

9 NOVELTY LANE, UNIT 9B
ESSEX, CT 06426

ALL-POINTS TECHNOLOGY CORPORATION

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KILLINGWORTH, CT 06419 FAX: (860)-663-0935
WWW.ALLPOINTSTECH.COM

CSC PERMITTING

NO	DATE	REVISION
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NOT FOR CONSTRUCTION

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

OWNER: HOWARD S. TOOKER
ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

POWER LINES SOLAR

SITE ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

APT FILING NUMBER: CT580100

DRAWN BY: JT

DATE: 10/02/19 CHECKED BY: BJP

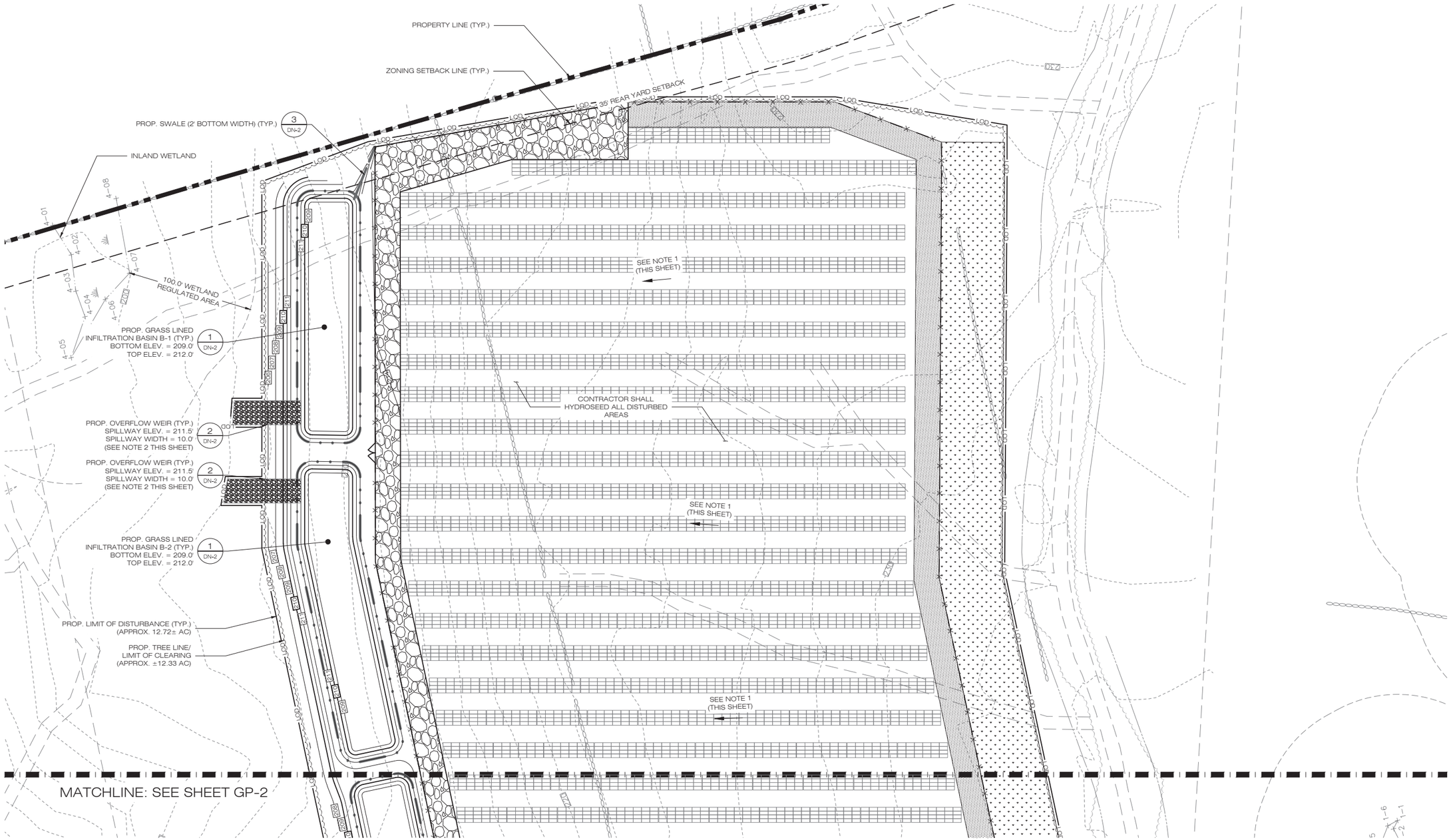
SHEET TITLE:

SITE & UTILITY PLAN

SHEET NUMBER:

SP-2

STATE OF CONNECTICUT BRADLEY J. PARSONS No. 28025 LICENSED PROFESSIONAL ENGINEER



1 GP-1 **GRADING & DRAINAGE PLAN**
SCALE : 1" = 40'-0"

40 0 20 40 80
(IN FEET) 1 inch = 40 ft.

NOTES:
1. GRADE/SHAPE AREA EAST OF COMPACTED EARTH ACCESS PATH TO SOLAR ARRAY AREA.
2. CONTRACTOR SHALL REPLACE TEMPORARY SEDIMENT TRAP OUTLET WITH RIP-RAP OVERFLOW WEIR UPON THE SITE OR DRAINAGE AREA BEING DEEMED STABILIZED PER THE SWPCP.

COBB ROAD LLC

9 NOVELTY LANE, UNIT 9B
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CSC PERMITTING

NO	DATE	REVISION
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DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

OWNER: HOWARD S. TOOKER
ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

POWER LINES SOLAR

SITE ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

APT FILING NUMBER: CT580100

DRAWN BY: JT
DATE: 10/02/19
CHECKED BY: BJP

SHEET TITLE:

GRADING & DRAINAGE PLAN

SHEET NUMBER:

GP-1

STATE OF CONNECTICUT BRADLEY J. PARSONS No. 25025 LICENSED PROFESSIONAL ENGINEER

MATCHLINE: SEE SHEET GP-1

PROP. GRASS LINED INFILTRATION BASIN B-3 (TYP.)
BOTTOM ELEV. = 208.0'
TOP ELEV. = 211.0'
1 DN-2

PROP. OVERFLOW WEIR (TYP.)
SPILLWAY ELEV. = 210.5'
SPILLWAY WIDTH = 10.0'
(SEE NOTE 2 THIS SHEET)
2 DN-2

PROP. OVERFLOW WEIR (TYP.)
SPILLWAY ELEV. = 210.5'
SPILLWAY WIDTH = 10.0'
(SEE NOTE 2 THIS SHEET)
2 DN-2

PROP. GRASS LINED INFILTRATION BASIN B-4 (TYP.)
BOTTOM ELEV. = 208.0'
TOP ELEV. = 211.0'
1 DN-2

PROP. LIMIT OF DISTURBANCE (TYP.)
(APPROX. 12.72± AC)

PROP. TREE LINE/
LIMIT OF CLEARING
(APPROX. ±12.33 AC)

PROP. HARD PACKED ACCESS PATH
(20.0' WIDTH MIN.) (TYP.)

PROP. SWALE (2' BOTTOM WIDTH) (TYP.)
3 DN-2

SEE NOTE 1 (THIS SHEET)

CONTRACTOR SHALL HYDROSEED ALL DISTURBED AREAS

SEE NOTE 1 (THIS SHEET)

INLAND WETLAND

100.0' WETLAND REGULATED AREA

LOD

VARIES

20' SIDE YARD SETBACK

20' SIDE YARD SETBACK

20' SIDE YARD SETBACK

GRAVEL DRIVE

ZONING SETBACK LINE (TYP.)

PROPERTY LINE (TYP.)

1 GP-2 **GRADING & DRAINAGE PLAN**
SCALE : 1" = 40'-0"

40 0 20 40 80
(IN FEET) 1 inch = 40 ft.

NOTES:
1. GRADE/SHAPE AREA EAST OF COMPACTED EARTH ACCESS PATH TO SOLAR ARRAY AREA.
2. CONTRACTOR SHALL REPLACE TEMPORARY SEDIMENT TRAP OUTLET WITH RIP-RAP OVERFLOW WEIR UPON THE SITE OR DRAINAGE AREA BEING DEEMED STABILIZED PER THE SWPCP.

COBB ROAD LLC

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CSC PERMITTING

NO	DATE	REVISION
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NOT FOR CONSTRUCTION

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

OWNER: HOWARD S. TOOKER
ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

POWER LINES SOLAR

SITE ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

APT FILING NUMBER: CT580100

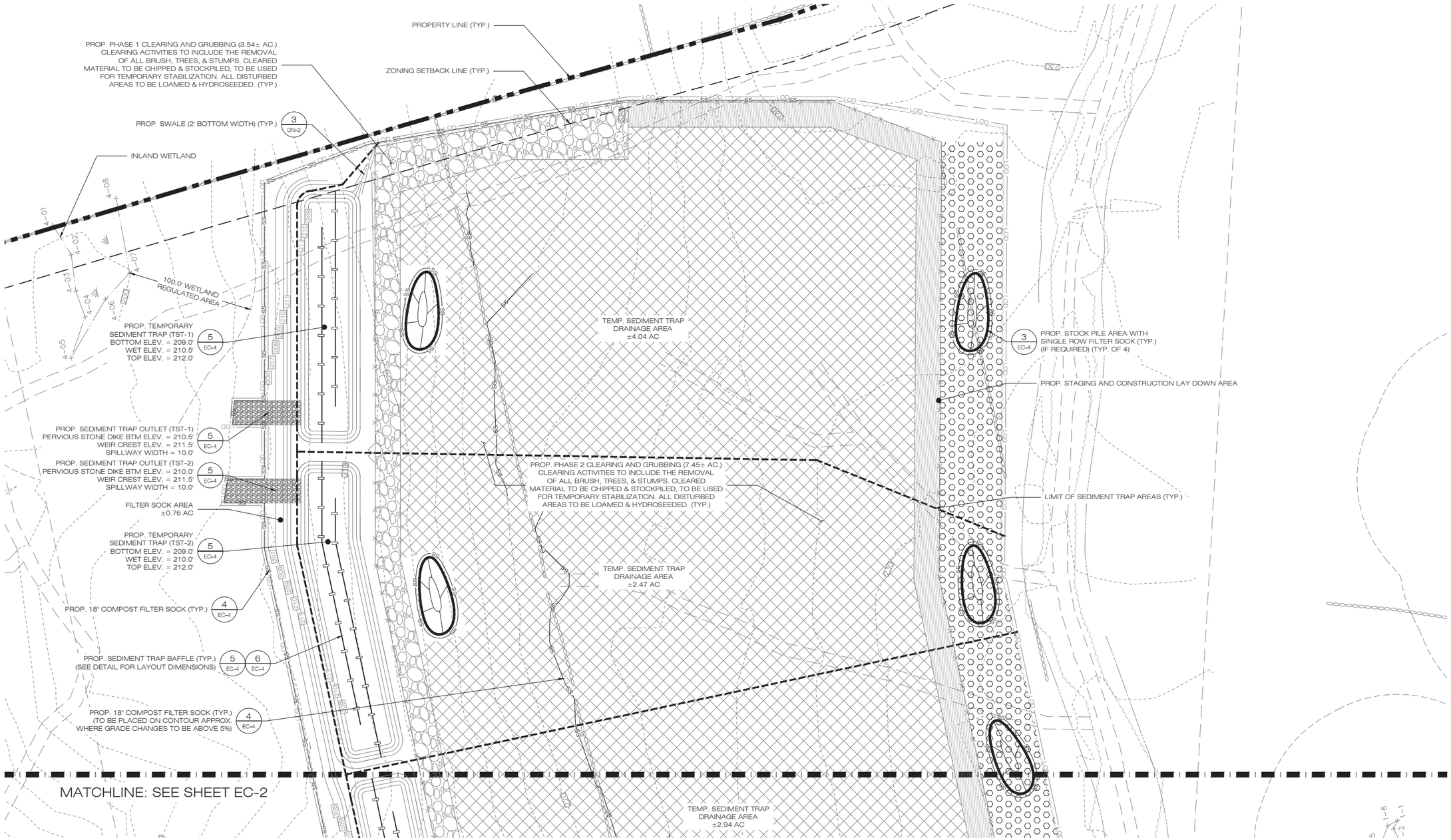
DRAWN BY: JT

DATE: 10/02/19 CHECKED BY: BJP

SHEET TITLE:
GRADING & DRAINAGE PLAN

SHEET NUMBER:
GP-2

STATE OF CONNECTICUT BRADLEY J. PARSONS No. 28025 LICENSED PROFESSIONAL ENGINEER



1 EC-1 **SEDIMENTATION & EROSION CONTROL PLAN**
SCALE : 1" = 40'-0"

40 0 20 40 80
(IN FEET) 1 inch = 40 ft.

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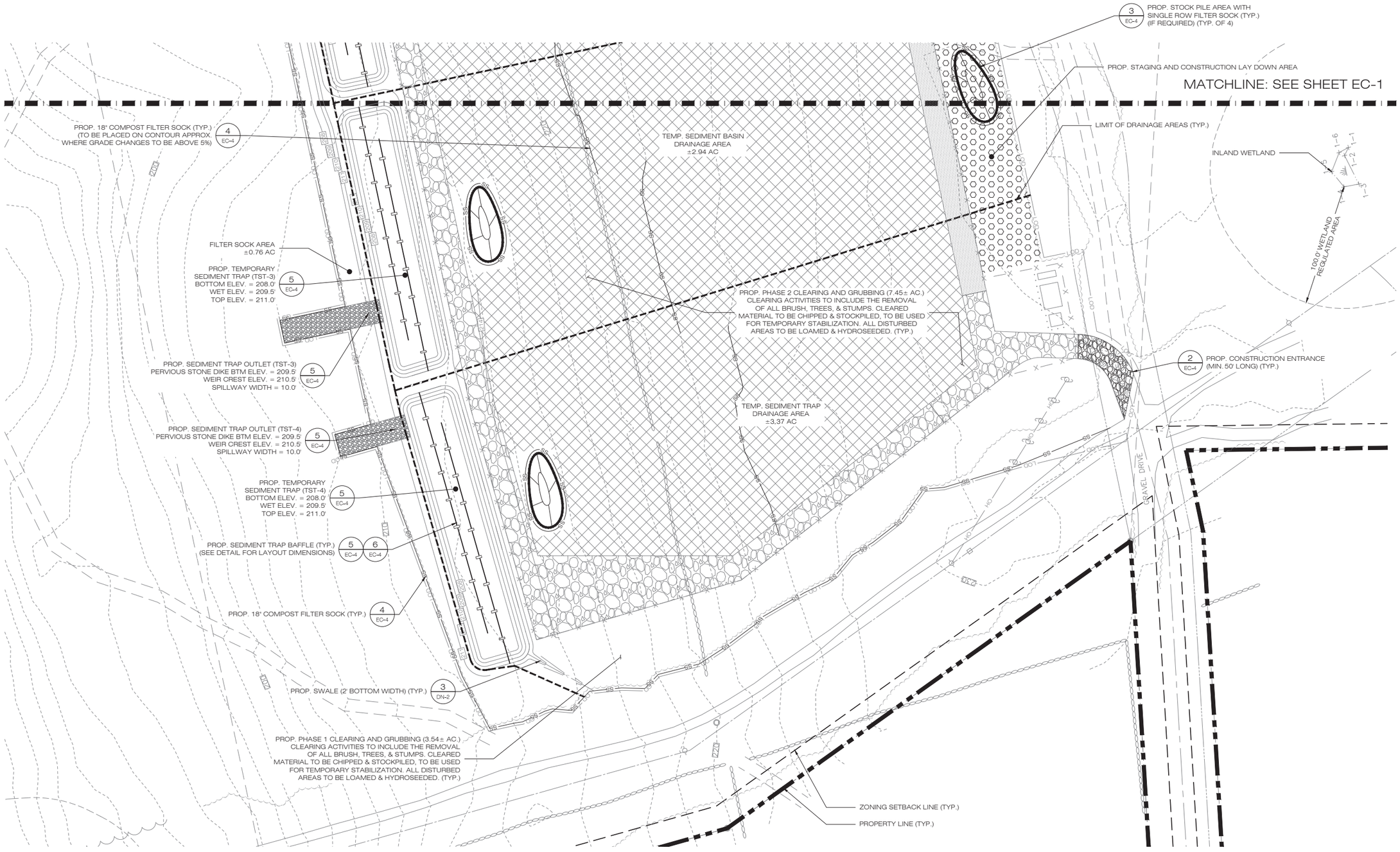
SHEET TITLE:
SEDIMENTATION & EROSION CONTROL PLAN

SHEET NUMBER:
EC-1

STATE OF CONNECTICUT BRADLEY J. PARSONS No. 28025 LICENSED PROFESSIONAL ENGINEER



1 EC-1 **SEDIMENTATION & EROSION CONTROL PLAN**
SCALE : 1" = 40'-0"

40 0 20 40 80
(IN FEET) 1 inch = 40 ft.

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DRAWN BY: JT
DATE: 10/02/19
CHECKED BY: BJP

SHEET TITLE:
SEDIMENTATION & EROSION CONTROL PLAN

SHEET NUMBER:
EC-2

STATE OF CONNECTICUT BRADLEY J. PARSONS No. 28025 LICENSED PROFESSIONAL ENGINEER

EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROL PLAN NOTES

1. THE CONTRACTOR SHALL CONSTRUCT ALL SEDIMENT AND EROSION CONTROLS IN ACCORDANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, LATEST EDITION, IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND AS DIRECTED BY THE TOWN OF PERMITTEE AND/OR SWPCP MONITOR. ALL PERIMETER SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF CLEARING AND GRUBBING AND DEMOLITION OPERATIONS.

2. THESE DRAWINGS ARE ONLY INTENDED TO DESCRIBE THE SEDIMENT AND EROSION CONTROL MEASURES FOR THIS SITE. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE EROSION & SEDIMENT CONTROL PLAN ARE SHOWN IN A GENERAL SIZE AND LOCATION ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL EROSION CONTROL MEASURES ARE CONFIGURED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION OF SOILS AND PREVENT THE TRANSPORT OF SEDIMENTS AND OTHER POLLUTANTS TO STORM DRAINAGE SYSTEMS AND/OR WATERCOURSES. ACTUAL SITE CONDITIONS OR SEASONAL AND CLIMATIC CONDITIONS MAY WARRANT ADDITIONAL CONTROLS OR CONFIGURATIONS, AS REQUIRED, AND AS DIRECTED BY THE PERMITTEE AND/OR SWPCP MONITOR. SEE SEDIMENT AND EROSION CONTROL DETAILS AND SUGGESTED CONSTRUCTION SEQUENCE FOR MORE INFORMATION. REFER TO SITE PLAN FOR GENERAL INFORMATION AND OTHER CONTRACT PLANS FOR APPROPRIATE INFORMATION.

3. A BOND OR LETTER OF CREDIT MAY BE REQUIRED TO BE POSTED WITH THE GOVERNING AUTHORITY FOR THE EROSION CONTROL INSTALLATION AND MAINTENANCE.

4. THE CONTRACTOR SHALL APPLY THE MINIMUM EROSION & SEDIMENT CONTROL MEASURES SHOWN ON THE PLAN IN CONJUNCTION WITH CONSTRUCTION SEQUENCING, SUCH THAT ALL ACTIVE WORK ZONES ARE PROTECTED. ADDITIONAL AND/OR ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES MAY BE INSTALLED DURING THE CONSTRUCTION PERIOD IF FOUND NECESSARY BY THE CONTRACTOR, OWNER, SITE ENGINEER, MUNICIPAL OFFICIALS, OR ANY GOVERNING AGENCY. THE CONTRACTOR SHALL CONTACT THE OWNER AND APPROPRIATE GOVERNING AGENCIES FOR APPROVAL IF ALTERNATIVE CONTROLS OTHER THAN THOSE SHOWN ON THE PLANS ARE PROPOSED BY THE CONTRACTOR.

5. THE CONTRACTOR SHALL TAKE EXTREME CARE DURING CONSTRUCTION SO AS NOT TO DISTURB UNPROTECTED WETLAND AREAS OR INSTALLED SEDIMENTATION AND EROSION CONTROL MEASURES. THE CONTRACTOR SHALL INSPECT ALL SEDIMENT AND EROSION CONTROLS WEEKLY AND WITHIN 24 HOURS OF A STORM WITH A RAINFALL AMOUNT OF 0.25 INCHES OR GREATER TO VERIFY THAT THE CONTROLS ARE OPERATING PROPERLY AND MAKE REPAIRS AS NECESSARY IN A TIMELY MANOR.

6. THE CONTRACTOR SHALL KEEP A SUPPLY OF EROSION CONTROL MATERIAL (SILT FENCE, COMPOST FILTER SOCK, EROSION CONTROL BLANKET, ETC.) ON-SITE FOR PERIODIC MAINTENANCE AND EMERGENCY REPAIRS.

7. ALL FILL MATERIAL PLACED ADJACENT TO ANY WETLAND AREA SHALL BE GOOD QUALITY, WITH LESS THAN 5% FINES PASSING THROUGH A #200 SIEVE (BANK RUN), SHALL BE PLACED IN MAXIMUM ONE FOOT LIFTS, AND SHALL BE COMPACTED TO 95% MAX. DRY DENSITY MODIFIED PROCTOR OR AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

8. PROTECT EXISTING TREES THAT ARE TO BE SAVED BY FENCING, ORANGE SAFETY FENCE, CONSTRUCTION TAPE, OR EQUIVALENT FENCING/TAPE. ANY LIMB TRIMMING SHOULD BE DONE AFTER CONSULTATION WITH AN ARBORIST AND BEFORE CONSTRUCTION BEGINS IN THAT AREA; FENCING SHALL BE MAINTAINED AND REPAIRED DURING CONSTRUCTION.

9. CONSTRUCTION ENTRANCES (ANTI-TRACKING PADS) SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR CONSTRUCTION ACTIVITY AND SHALL BE MAINTAINED THROUGHOUT THE DURATION OF ALL CONSTRUCTION IF REQUIRED. THE LOCATION OF THE TRACKING PADS MAY CHANGE AS VARIOUS PHASES OF CONSTRUCTION ARE COMPLETED. CONTRACTOR SHALL ENSURE THAT ALL VEHICLES EXITING THE SITE ARE PASSING OVER THE ANTI-TRACKING PADS PRIOR TO EXISTING.

10. ALL CONSTRUCTION SHALL BE CONTAINED WITHIN THE LIMIT OF DISTURBANCE, WHICH SHALL BE MARKED WITH SILT FENCE, SAFETY FENCE, HAY BALES, RIBBONS, OR OTHER MEANS PRIOR TO CLEARING. CONSTRUCTION ACTIVITY SHALL REMAIN ON THE UPHILL SIDE OF THE SEDIMENT BARRIER UNLESS WORK IS SPECIFICALLY CALLED FOR ON THE DOWNHILL SIDE OF THE BARRIER.

11. NO CUT OR FILL SLOPES SHALL EXCEED 2:1 EXCEPT WHERE STABILIZED BY ROCK FACED EMBANKMENTS OR EROSION CONTROL BLANKETS. ALL SLOPES SHALL BE SEEDED AND BANKS WILL BE STABILIZED IMMEDIATELY UPON COMPLETION OF FINAL GRADING UNTIL TURF IS ESTABLISHED.

12. DIRECT ALL DEWATERING PUMP DISCHARGE TO A SEDIMENT CONTROL DEVICE THE GUIDELINES WITHIN THE APPROVED LIMIT OF DISTURBANCE IF REQUIRED. DISCHARGE TO STORM DRAINS OR SURFACE WATERS FROM SEDIMENT CONTROLS SHALL BE CLEAR AND APPROVED BY THE PERMITTEE OR MUNICIPALITY.

13. THE CONTRACTOR SHALL MAINTAIN A CLEAN CONSTRUCTION SITE AND SHALL NOT ALLOW THE ACCUMULATION OF RUBBISH OR CONSTRUCTION DEBRIS ON THE SITE. PROPER SANITARY DEVICES SHALL BE MAINTAINED ON-SITE AT ALL TIMES AND SECURED APPROPRIATELY. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID THE SPILLAGE OF FUEL OR OTHER POLLUTANTS ON THE CONSTRUCTION SITE AND SHALL ADHERE TO ALL APPLICABLE POLICIES AND REGULATIONS RELATED TO SPILL PREVENTION AND RESPONSE/CONTAINMENT.

14. MINIMIZE LAND DISTURBANCES. DISTURBED AREAS WITH TEMPORARY MIX AS SOON AS PRACTICABLE (2 WEEK MAXIMUM UNSTABILIZED PERIOD) USING PERENNIAL RYEGRASS AT 40 LBS PER ACRE. MULCH ALL CUT AND FILL SLOPES AND SWALES WITH LOOSE HAY AT A RATE OF 2 TONS PER ACRE. IF NECESSARY, REPLACE LOOSE HAY ON SLOPES WITH EROSION CONTROL BLANKETS OR JUTE CLOTH. MODERATELY GRADED AREAS, ISLANDS, AND TEMPORARY CONSTRUCTION STAGING AREAS MAY BE HYDROSEEDED WITH TACKIFIER.

15. SWEEP AFFECTED PORTIONS OF OFF SITE ROADS ONE OR MORE TIMES A DAY (OR LESS FREQUENTLY IF TRACKING IS NOT A PROBLEM) DURING CONSTRUCTION. FOR DUST CONTROL, PERIODICALLY MOISTEN EXPOSED SOIL SURFACES WITH WATER ON UNPAVED TRAVELWAYS TO KEEP THE TRAVELWAYS DAMP. CALCIUM CHLORIDE MAY ALSO BE APPLIED TO ACCESS ROADS. DUMP TRUCK LOADS EXITING THE SITE SHALL BE COVERED.

16. TURF ESTABLISHMENT SHALL BE PERFORMED OVER ALL DISTURBED SOIL, UNLESS THE AREA IS UNDER ACTIVE CONSTRUCTION, IT IS COVERED IN STONE OR SCHEDULED FOR PAVING WITHIN 30 DAYS. TEMPORARY SEEDING OR NON-LIVING SOIL PROTECTION OF ALL EXPOSED SOILS AND SLOPES SHALL BE INITIATED WITHIN THE FIRST 7 DAYS OF SUSPENDING WORK IN AREAS TO BE LEFT LONGER THAN 30 DAYS.

17. MAINTAIN ALL PERMANENT AND TEMPORARY SEDIMENT CONTROL DEVICES IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD. UPON COMPLETION OF WORK SWEEP CONCRETE PADS, CLEAN THE STORMWATER MANAGEMENT SYSTEMS AND REMOVE ALL TEMPORARY SEDIMENT CONTROLS ONCE THE SITE IS FULLY STABILIZED AND APPROVAL HAS BEEN RECEIVED FROM PERMITTEE OR THE MUNICIPALITY.

18. TURF ESTABLISHMENT SHALL BE COMPLETED VIA HYDROSEEDING WITH A TACKIFIER. SEEDING MIXTURES SHALL BE NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX (SEE SITE DETAILS SHEET DN-1), OR APPROVED EQUAL BY OWNER.

SEDIMENT & EROSION CONTROL NARRATIVE

1. THE PROJECT INVOLVES THE CONSTRUCTION OF A GROUND MOUNTED SOLAR PANEL FACILITY WITH ASSOCIATED EQUIPMENT, INCLUDING THE CLEARING, GRUBBING AND GRADING OF APPROXIMATELY 12.72± ACRES OF EXISTING LOT.

THE PROPOSED PROJECT INVOLVES THE FOLLOWING CONSTRUCTION:

A. CLEARING, GRUBBING, AND GRADING OF EXISTING LOT.
B. CONSTRUCTION OF 7,704 GROUND MOUNTED SOLAR PANELS AND ASSOCIATED EQUIPMENT.
B. THE STABILIZATION OF DISTURBED AREAS WITH PERMANENT GRASS TREATMENTS.

2. FOR THIS PROJECT, THERE ARE APPROXIMATELY 12.72± ACRES OF THE SITE BEING DISTURBED WITH NEGLIGIBLE INCREASE IN THE IMPERVIOUS AREA OF THE SITE, AS ALL ACCESS THROUGH THE SITE WILL BE GRAVEL OR COMPACTED EARTH. IMPERVIOUS AREAS ARE LIMITED TO THE CONCRETE PADS FOR ELECTRICAL EQUIPMENT.

3. THE PROJECT SITE, AS MAPPED IN THE SOIL SURVEY OF THE STATE OF CONNECTICUT (NRCS, VERSION 18, DEC 6, 2018), CONTAINS TYPE 73C (HYDROLOGIC SOIL GROUP B) AND 85B (HYDROLOGIC SOIL GROUP C) SOILS. A GEOTECHNICAL ENGINEERING REPORT HAS NOT BEEN COMPLETED.

4. IT IS ANTICIPATED THAT CONSTRUCTION WILL BE COMPLETED IN APPROXIMATELY 6-8 MONTHS.

5. REFER TO THE CONSTRUCTION SEQUENCING AND EROSION AND SEDIMENTATION NOTES FOR INFORMATION REGARDING SEQUENCING OF MAJOR OPERATIONS IN THE ON-SITE CONSTRUCTION PHASES.

6. STORMWATER MANAGEMENT DESIGN CRITERIA UTILIZES THE APPLICABLE SECTIONS OF THE 2004 CONNECTICUT STORMWATER QUALITY MANUAL AND THE TOWN OF OLD LYME STANDARDS, TO THE EXTENT POSSIBLE AND PRACTICABLE FOR THIS PROJECT ON THIS SITE. EROSION AND SEDIMENTATION MEASURES ARE BASED UPON ENGINEERING PRACTICE, JUDGEMENT AND THE APPLICABLE SECTIONS OF THE CONNECTICUT EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, LATEST EDITION.

7. DETAILS FOR THE TYPICAL STORMWATER MANAGEMENT AND EROSION AND SEDIMENTATION MEASURES ARE SHOWN ON THE PLAN SHEETS OR PROVIDED AS SEPARATE SUPPORT DOCUMENTATION FOR REVIEW IN THIS PLAN.

8. CONSERVATION PRACTICES TO BE USED DURING CONSTRUCTION AREA:
   A. STAGED CONSTRUCTION;
   B. MINIMIZE THE DISTURBED AREAS TO THE EXTENT PRACTICABLE DURING CONSTRUCTION;
   C. STABILIZE DISTURBED AREAS AS SOON AS POSSIBLE WITH TEMPORARY OR PERMANENT MEASURES;
   D. MINIMIZE IMPERVIOUS AREAS;
   E. UTILIZE APPROPRIATE CONSTRUCTION EROSION AND SEDIMENTATION MEASURES.

9. THE FOLLOWING SEPARATE DOCUMENTS ARE TO BE CONSIDERED A PART OF THE EROSION AND SEDIMENTATION PLAN:
   A. STORMWATER MANAGEMENT MEMO FOR EXISTING AND PROPOSED PEAK FLOWS.

CONSTRUCTION SEQUENCE

THE FOLLOWING SEQUENCE OF CONSTRUCTION ACTIVITIES IS PROJECTED BASED UPON ENGINEERING JUDGEMENT AND BEST MANAGEMENT PRACTICES. THE CONTRACTOR SHALL NOT ALTER THE CONSTRUCTION SEQUENCE WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER AND CT DEEP. ANY PROPOSED CHANGES TO THE CONSTRUCTION SEQUENCE SHALL BE SUBMITTED TO THE ENGINEER IN WRITING FOR REVIEW PRIOR TO THE START OF CONSTRUCTION.

PRE-CONSTRUCTION

1. CONTACT THE APPLICANT, ENGINEER, CT DEEP, AND REPRESENTATIVES TO SCHEDULE A PRE-CONSTRUCTION MEETING AT LEAST 5 DAYS PRIOR TO THE START OF CONSTRUCTION. PHYSICALLY FLAG THE LIMITS OF CLEARING IN THE FIELD AS NECESSARY TO FACILITATE THE PRE-CONSTRUCTION MEETING.
2. CONDUCT A PRE-CONSTRUCTION MEETING TO DISCUSS THE PROP. WORK AND EROSION AND SEDIMENTATION CONTROL MEASURES. THE MEETING SHOULD BE ATTENDED BY THE APPLICANT, THE APPLICANT REPRESENTATIVE(S), CT DEEP, THE GENERAL CONTRACTOR, DESIGNATED SUB-CONTRACTORS AND THE PERSON, OR PERSONS, RESPONSIBLE FOR THE IMPLEMENTATION, OPERATION, MONITORING AND MAINTENANCE OF THE EROSION AND SEDIMENTATION MEASURES. THE CONSTRUCTION PROCEDURES FOR THE ENTIRE PROJECT SHALL BE REVIEWED AT THIS MEETING.
3. NOTIFY THE APPLICANT AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO COMMENCEMENT OF ANY DEMOLITION, CONSTRUCTION OR REGULATED ACTIVITY ON THIS PROJECT. NOTIFY CALL BEFORE YOU DIG AT 1-800-922-4455.

PHASE 1

- PERFORM CLEARING OF TREES ON SITE WITH NO GRUBBING, STUMPS TO REMAIN. CLEARING WORK SHALL BE ALLOWED DURING THE WINTER MONTHS ONLY IF THE GROUND IS FROZEN.
- CLEAR AND GRUB AS REQUIRED AND SHOWN ON EC-1 AND EC-2 TO INSTALL THE PERIMETER EROSION SEDIMENTATION CONTROL MEASURES AND CONSTRUCTION ENTRANCE.
- INSTALL PERIMETER SILT SOCK.
- ALL WETLAND AREAS SHALL BE PROTECTED PRIOR TO THE START OF MAJOR CONSTRUCTION.
- INSTALL GRAVEL AND COMPACTED EARTH ACCESS ROADS.
- INSTALL TST-1, TST-2, TST-3, AND TST-4.
- STOCKPILE TOPSOIL FOR REUSE.
- STABILIZE DISTURBED AREAS WITH LOAM AND HYDROSEED WITH TACKIFIER.
- INSTALL TREE PROTECTION IF APPLICABLE.

PHASE 2 (UPON INSTALLATION OF TEMPORARY SEDIMENT TRAPS)

- PERFORM REMAINING GRUBBING AS NECESSARY. REMOVE CUT WOOD AND STOCKPILE FOR FUTURE USE OR REMOVE OFF-SITE. REMOVE AND DISPOSE OF DEMOLITION DEBRIS OFF-SITE IN ACCORDANCE WITH APPLICABLE LAWS.
- STOCKPILE TOPSOIL.
- PERFORM ANY GRADING NECESSARY FOR THE SHAPING OF THE SITE EAST OF THE COMPACTED EARTH ACCESS ROAD.
- LOAM AND HYDROSEED REMAINING DISTURBED AREAS. NO FURTHER CONSTRUCTION CAN PROCEED UNTIL GROUND COVER IS ESTABLISHED.

PHASE 3 (UPON GROUND COVER BEING ESTABLISHED)

- INSTALL ELECTRICAL CONDUIT AND CONCRETE PADS.
- INSTALL RACKING POSTS FOR GROUND MOUNTED SOLAR PANELS
- INSTALL GROUND MOUNTED SOLAR PANELS AND DRIP LINE EDGE AND COMPLETE ELECTRICAL INSTALLATION.
- INSTALL PERIMETER CHAIN LINK FENCE AS SHOWN ON THE PLANS.

PHASE 4

- HYDROSEED ALL REMAINING DISTURBED AREAS.
- HYDROSEED THE POLLINATOR HABITAT.
- AFTER SUBSTANTIAL COMPLETION OF THE INSTALLATION OF THE SOLAR FACILITY AND THE AREAS ABOVE TST'S ARE DEEMED STABILIZED BY THE QUALIFIED INSPECTOR, COMPLETE REMAINING SITE WORK, INCLUDING CLEANING INFILTRATION BASINS, REMOVING BAFFLES, AND REBUILDING OVERFLOW WEIRS WITH IMPERVIOUS CORE.
- INSTALL/REBUILD GRAVEL ACCESS DRIVES.
- FINE GRADE, RAKE, SEED, AND MULCH ALL REMAINING DISTURBED AREAS.
- AFTER THE SITE IS STABILIZED AND WITH THE APPROVAL OF THE PERMITTEE AND QUALIFIED INSPECTOR, REMOVE PERIMETER EROSION AND SEDIMENTATION CONTROLS.
- ISSUE NOTICE OF TERMINATION AND PERFORM PROJECT CLEANUP.

CONSTRUCTION OPERATION AND MAINTENANCE PLAN - BY CONTRACTOR

E&S MEASURE	INSPECTION SCHEDULE	MAINTENANCE REQUIRED
CONSTRUCTION ENTRANCE	DAILY	PLACE ADDITIONAL STONE, EXTEND THE LENGTH OR REMOVE AND REPLACE THE STONE. CLEAN PAVED SURFACES OF TRACKED SEDIMENT.
COMPOST FILTER SOCK	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR/REPLACE WHEN FAILURE OR DETERIORATION IS OBSERVED.
SILT FENCE	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR/REPLACE WHEN FAILURE OR DETERIORATION IS OBSERVED. REMOVE SILT WHEN IT REACHES 1/2 THE HEIGHT OF THE FENCE.
TOPSOIL/BORROW STOCKPILES	DAILY	REPAIR/REPLACE SEDIMENT BARRIERS AS NECESSARY.
TEMPORARY SEDIMENT TRAP (W/ BAFFLES)	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.5"	REMOVE SEDIMENT ONCE IT HAS ACCUMULATED TO ONE HALF OF MINIMUM REQUIRED VOLUME OF THE WET STORAGE, DEWATERING AS NEEDED. RESTORE TRAP TO ORIGINAL DIMENSIONS. REPAIR/REPLACE BAFFLES WHEN FAILURE OR DETERIORATION IS OBSERVED.
TEMPORARY SOIL PROTECTION	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR ERODED OR BARE AREAS IMMEDIATELY. RE.

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APT FILING NUMBER: CT580100

DRAWN BY: JT

DATE: 10/02/19 CHECKED BY: BJP

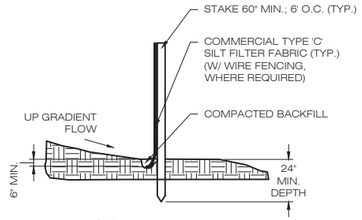
SHEET TITLE:

SEDIMENTATION & EROSION CONTROL PLAN NOTES

SHEET NUMBER:

EC-3

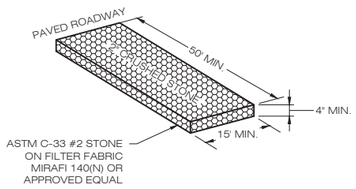
STATE OF CONNECTICUT · BRADLEY J. PARSONS · No. 28025 · LICENSED PROFESSIONAL ENGINEER



NOTE:
SILT FENCE SHALL BE LAPPED ONLY WHEN NECESSARY PER THE MANUFACTURER RECOMMENDATIONS.

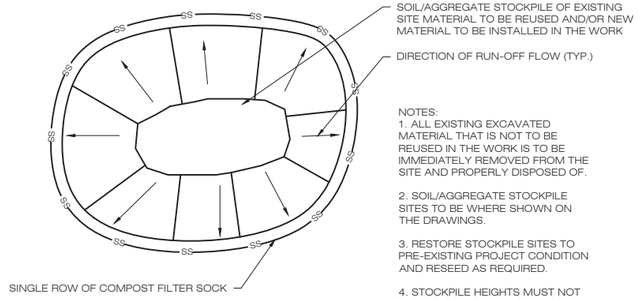
1 EC-4 SILT FENCE DETAIL

SCALE : N.T.S.



CONSTRUCTION ENTRANCE DETAIL

2 EC-4 **SCALE : N.T.S.**



NOTES:
1. ALL EXISTING EXCAVATED MATERIAL THAT IS NOT TO BE REUSED IN THE WORK IS TO BE IMMEDIATELY REMOVED FROM THE SITE AND PROPERLY DISPOSED OF.

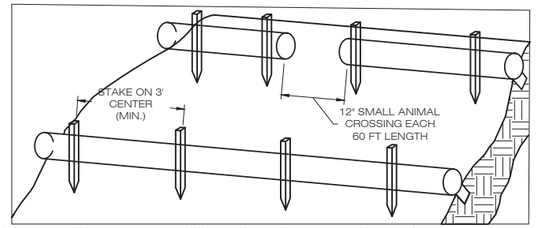
2. SOIL/AGGREGATE STOCKPILE SITES TO BE WHERE SHOWN ON THE DRAWINGS.

3. RESTORE STOCKPILE SITES TO PRE-EXISTING PROJECT CONDITION AND RESEED AS REQUIRED.

4. STOCKPILE HEIGHTS MUST NOT EXCEED 35'. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.

3 EC-4 MATERIALS STOCKPILE DETAIL

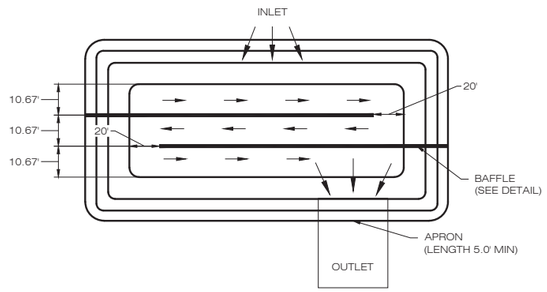
SCALE : N.T.S.



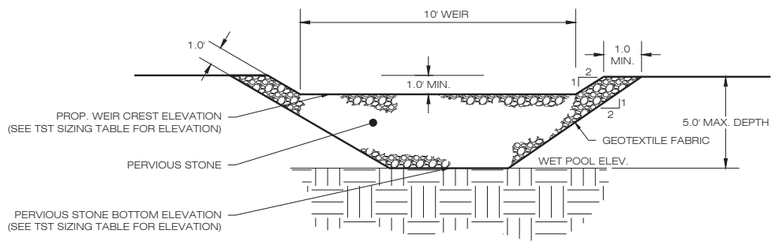
1. BEGIN AT THE LOCATION WHERE THE SOCK IS TO BE INSTALLED BY EXCAVATING A 2-3" (5-7.5 CM) DEEP X 9" (22.9 CM) WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UP SLOPE FROM THE ANCHOR TRENCH.
2. PLACE THE SOCK IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE SOCK ON THE UPHILL SIDE. SOCKS SHALL BE INSTALLED IN 60 FT CONTINUOUS LENGTHS WITH ADJACENT SOCKS TIGHTLY ABUT. EVERY 60 FT THE SOCK ROW SHALL BE SPACED 12 INCHES CLEAR, END TO END, FOR AMPHIBIAN AND REPTILE TRAVEL. THE OPEN SPACES SHALL BE STAGGERED MID LENGTH OF THE NEXT DOWN GRADIENT SOCK.
3. SECURE THE SOCK WITH 18-24" (45.7-61 CM) STAKES EVERY 3-4' (0.9 -1.2 M) AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE SOCK LEAVING AT LEAST 2-3" (5-7.5 CM) OF STAKE EXTENDING ABOVE THE SOCK. STAKES SHOULD BE DRIVEN PERPENDICULAR TO THE SLOPE FACE.

COMPOST FILTER SOCK SEDIMENTATION CONTROL BARRIER

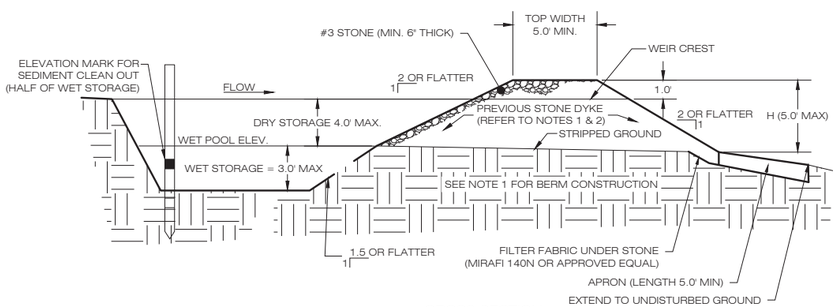
4 EC-4 **SCALE : N.T.S.**



TOP VIEW



OUTLET ELEVATION

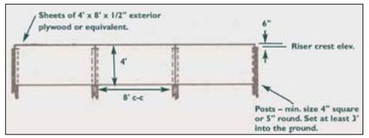


CROSS SECTION

NOTES:
1. CONSTRUCT TEMPORARY SEDIMENT TRAP BERMS AND SIDEWALLS PER THE INFILTRATION BASIN DETAIL.
2. PERVIOUS STONE DIKE SHALL BE CONSTRUCTED OF CT DOT MODIFIED RIP-RAP WITH #3 STONE ON FACE.
3. SEDIMENT TRAP BAFFLES SHALL BE INSTALLED AS SHOWN ON EC-1 AND EC-2.
4. SEE TST SIZING TABLE FOR WET AND DRY STORAGE VOLUMES.

5 EC-4 TEMPORARY SEDIMENT TRAP

SCALE : N.T.S.



6 EC-4 SEDIMENT TRAP BAFFLE

SCALE : N.T.S.

TEMPORARY SEDIMENT TRAP SIZING TABLE

NAME	DRAINAGE AREA (AC)	SEDIMENT VOLUME/ACRE AREA (CY)	REQ. VOLUME (CY)	REQ. WET VOLUME (CY)	PROP. BTM. ELEV. (FT)	PROP. STONE DIKE BTM. ELEV. (FT)	PROP. WEIR CREST ELEV. (FT)	PROP. TOP ELEV. (FT)	WET VOL. PROVIDED (CY)	TOTAL VOL. PROVIDED. (CY)
TST-1	4.02 AC	134 CYD	539.06 CYD	269.53 CYD	209.0'	210.0'	211.5'	212.0'	376.99 CYD	690.47 CYD
TST-2	2.47 AC	134 CYD	331.20 CYD	165.60 CYD	209.0'	210.0'	211.5'	212.0'	290.62 CYD	835.68 CYD
TST-3	2.94 AC	134 CYD	394.23 CYD	197.12 CYD	208.0'	209.5'	210.5'	211.0'	426.59 CYD	779.95 CYD
TST-4	3.33 AC	134 CYD	446.38 CYD	223.19 CYD	208.0'	209.5'	210.5'	211.0'	447.73 CYD	818.07 CYD

COBB ROAD LLC

9 NOVELTY LANE, UNIT 9B
ESSEX, CT 06426

ALL-POINTS TECHNOLOGY CORPORATION

3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
WWW.ALLPOINTSTECH.COM

CSC PERMITTING

NO	DATE	REVISION
0	10/02/19	FOR REVIEW: BJP
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NOT FOR CONSTRUCTION

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

OWNER: HOWARD S. TOOKER
ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

POWER LINES SOLAR

SITE ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

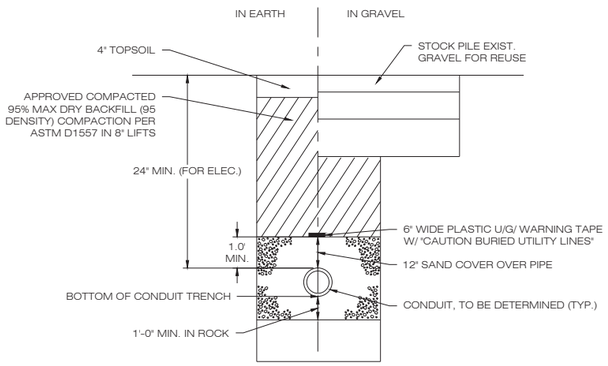
APT FILING NUMBER: CT580100

DRAWN BY: JT
DATE: 10/02/19 CHECKED BY: BJP

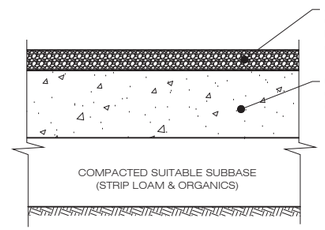
SHEET TITLE:
SEDIMENTATION & EROSION CONTROL PLAN DETAILS

SHEET NUMBER:
EC-4

STATE OF CONNECTICUT BRADLEY J. PARSONS No. 28025 LICENSED PROFESSIONAL ENGINEER

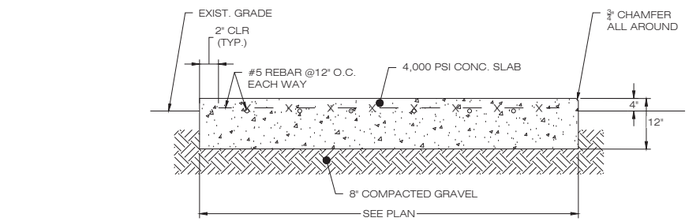


1 DN-1 **ELECTRICAL TRENCH DETAIL**
SCALE : N.T.S.

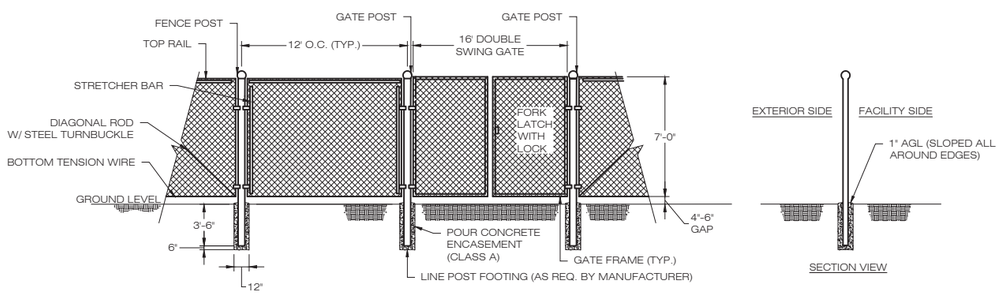


NOTES:
1. SUBBASE MAY CONSIST OF NATIVE MATERIALS IF FOUND ACCEPTABLE BY THE ENGINEER. SUBBASE TO BE COMPACTED TO 95% MAX DRY DENSITY.
2. SUBBASE IS TO BE FREE FROM DEBRIS AND UNSUITABLE MATERIALS.

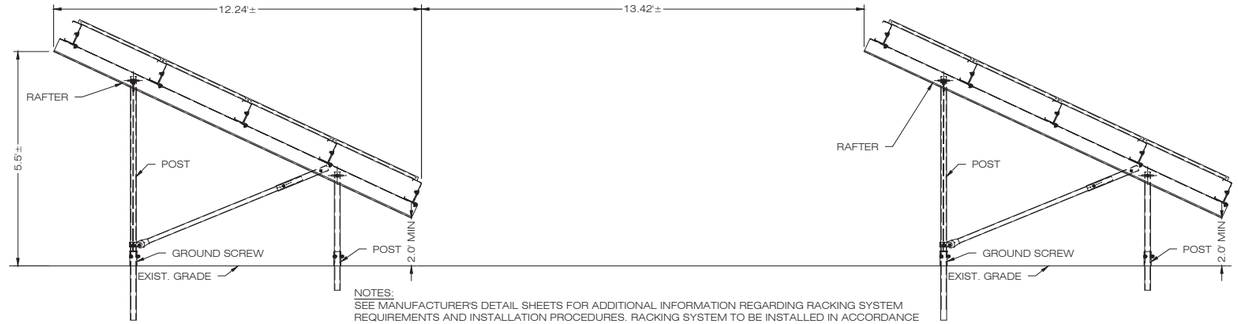
3 DN-1 **GRAVEL ACCESS DRIVE SECTION**
SCALE : N.T.S.



4 DN-1 **CONCRETE EQUIPMENT PAD**
SCALE : N.T.S.



5 DN-1 **CHAIN-LINK FENCE & GATE DETAIL**
SCALE : N.T.S.



NOTES:
SEE MANUFACTURER'S DETAIL SHEETS FOR ADDITIONAL INFORMATION REGARDING RACKING SYSTEM REQUIREMENTS AND INSTALLATION PROCEDURES. RACKING SYSTEM TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

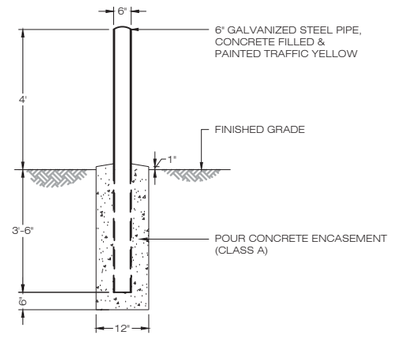
2 DN-1 **TYPICAL POST MOUNTED RACKING SYSTEM**
SCALE : N.T.S.

POWER LINES
SOLAR FACILITY

IN CASE OF EMERGENCY
CALL T.B.D.

NOTES:
EMERGENCY CALL NUMBER TO BE PROVIDED ONCE DETERMINED.

6 DN-1 **NOTIFICATION SIGN DETAIL**
SCALE : N.T.S.



NOTES:
IN PAVED AREAS, HOLD TOP OF FOOTING 6" BELOW FIN. GRADE.

8 DN-1 **BOLLARD DETAIL**
SCALE : N.T.S.

NEW ENGLAND WETLAND PLANTS, INC
820 WEST STREET, AMHERST, MA 01002
PHONE: 413-548-8000 FAX 413-549-4000
EMAIL: INFO@NEWP.COM WEB ADDRESS: WWW.NEWP.COM

New England Showy Wildflower Mix

Botanical Name	Common Name	Indicator
Schizachyrium scoparium	Little Bluestem	FACU
Chamaecrista fasciculata	Partridge Pea	FACU
Sorghastrum nutans	Indian Grass	UPL
Festuca rubra	Red Fescue	FACU
Elymus canadensis	Canada Wild Rye	FACU+
Elymus riparius	Riverbank Wild Rye	FACW
Heliopsis helianthoides	Ox Eye Sunflower	UPL
Coreopsis lanceolata	Lance Leaved Coreopsis	FACU
Rudbeckia hirta	Black Eyed Susan	FACU-
Liatris spicata	Spiked Gayfeather/Marsh Blazing Star	FAC+
Asclepias syriaca	Common Milkweed	FACU-
Vernonia noveboracensis	New York Ironweed	FACW+
Aster novae-angliae (Symphyotrichum novae-anglia	New England Aster	FACW-
Eupatorium purpureum (Eutrochium naculatum)	Purple Joe Pye Weed	FAC
Asclepias tuberosa	Butterfly Milkweed	NI
Solidago juncea	Early Goldenrod	
Eupatorium perfoliatum	Boneset	FACW

PRICE PER LB. $86.00 MIN. QUANITY 1 LBS. **TOTAL:** $86.00 APPLY: 23 LBS/ACRE :1900 sq ft/lb

The New England Showy Wildflower mix includes a selection of native wildflowers and grasses that will mature into a colorful and vibrant native meadow. It is appropriate seed mix for roadsides, commercial landscaping, parks, golf courses, and industrial sites. Always apply on clean bare soil. The mix may be applied by mechanical spreader, or on small sites it can be spread by hand. Lightly rake, or roll to ensure proper seed to soil contact. Best results are obtained with a Spring or late Fall dormant seeding. Late Spring and early Summer seeding will benefit with a light mulching of weed-free straw to conserve moisture. If conditions are drier than usual, watering may be required. Late Fall and Winter dormant seeding require an increase in the seeding rate. Fertilization is not required unless the soils are particularly infertile. Preparation of a clean weed free seed bed is necessary for optimal results.

New England Wetland Plants, Inc. may modify seed mixes at any time depending upon seed availability. The design criteria and ecological function of the mix will remain unchanged. Price is $/bulk pound, FOB warehouse, Plus SH and applicable taxes.

7 DN-1 **POLLINATOR HABITAT MIX**
SCALE : N.T.S.

NEW ENGLAND WETLAND PLANTS, INC
820 WEST STREET, AMHERST, MA 01002
PHONE: 413-548-8000 FAX 413-549-4000
EMAIL: INFO@NEWP.COM WEB ADDRESS: WWW.NEWP.COM

New England Semi-Shade Grass and Forbs Mix

Botanical Name	Common Name	Indicator
Elymus virginicus	Virginia Wild Rye	FACW-
Elymus canadensis	Canada Wild Rye	FACU+
Festuca rubra	Red Fescue	FACU
Chamaecrista fasciculata	Partridge Pea	FACU
Liatris spicata	Spiked Gayfeather/Marsh Blazing Star	FAC+
Onoclea sensibilis	Sensitive Fern	FACW
Aster prenanthoides (Symphyotrichum prenanthoide	Zigzag Aster	FAC
Eupatorium fistulosum (Eutrochium fistulosum)	Hollow-Stem Joe Pye Weed	FACW
Eupatorium perfoliatum	Boneset	FACW
Juncus tenuis	Path Rush	FAC

PRICE PER LB. $87.00 MIN. QUANITY 1 LBS. **TOTAL:** $87.00 APPLY: 30 LBS/ACRE :1450 sq ft/lb

The New England Semi Shade Grass & Forb Mix contains a broad spectrum of native grasses and forbs that will tolerate semi-shade and edge conditions. Always apply on clean bare soil. The mix may be applied by hydrc-seeding, by mechanical spreader, or on small sites it can be spread by hand. Lightly rake, or roll to ensure proper seed to soil contact. Best results are obtained with a Spring seeding. Late Spring and early Summer seeding will benefit with a light mulching of weed-free straw to conserve moisture. If condcions are drier than usual, watering will be required. Late Fall and Winter dormant seeding require an increase in the seeding rate. Fertilization is not required unless the soils are particularly infertile. Preparation of a clean weed free seed bed is necessary for optimal results.

New England Wetland Plants, Inc. may modify seed mixes at any time depending upon seed availability. The design criteria and ecological function of the mix will remain unchanged. Price is $/bulk pound, FOB warehouse, Plus SH and applicable taxes.

8 DN-1 **SEMI-SHADE MIX**
SCALE : N.T.S.

COBB ROAD LLC
9 NOVELTY LANE, UNIT 9B
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ALL-POINTS TECHNOLOGY CORPORATION
3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
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DESIGN PROFESSIONAL OF RECORD
PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

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POWER LINES SOLAR

SITE ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

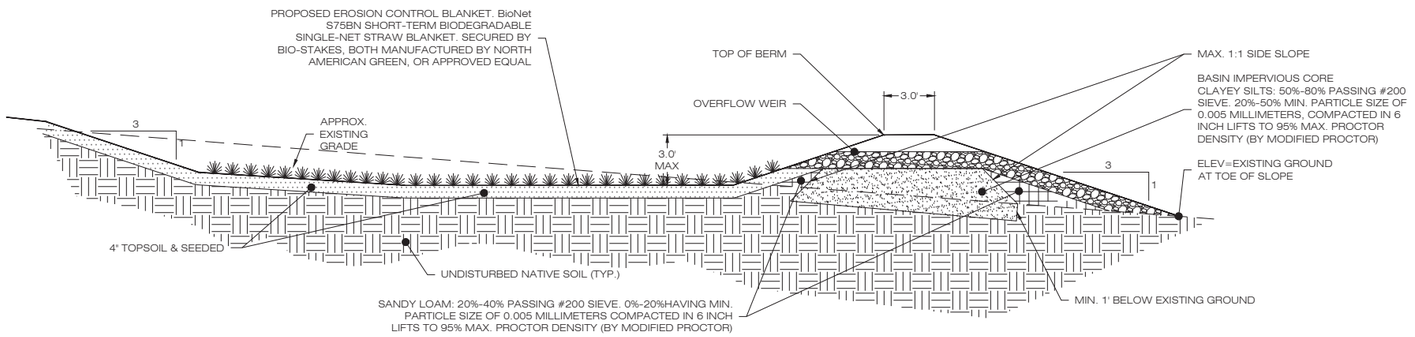
APT FILING NUMBER: CT580100

DRAWN BY: JT
DATE: 10/02/19 CHECKED BY: BJP

SHEET TITLE:
SITE DETAILS

SHEET NUMBER:
DN-1

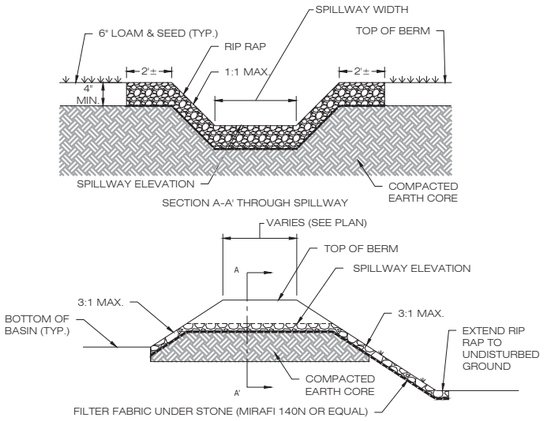
STATE OF CONNECTICUT BRADLEY J. PARSONS No. 28025 LICENSED PROFESSIONAL ENGINEER



NOTES:
- SEED MIX TO BE NEW ENGLAND EROSION CONTROL/ RESTORATION MIX FOR MOIST SITES ON THE BOTTOM OF THE BASIN AND NEW ENGLAND EROSION/RESTORATION MIX FOR DRY SITES ON THE SIDE SLOPES.
- FOR CONVERTING TST TO INFILTRATION BASIN, REMOVE BAFFLES, CLEAN OUT SEDIMENT, RESHAPE AS REQUIRED, RECONSTRUCT OUTLET WEIR INCLUDING ADDITIONAL IMPERVIOUS CORE, AND RESEEDING.

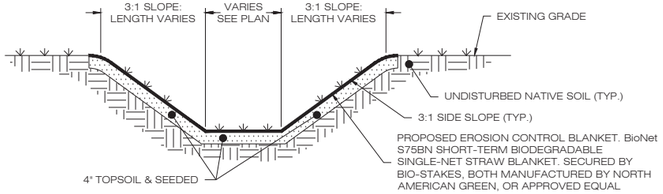
1 DN-2 GRASS LINED INFILTRATION BASIN

SCALE : N.T.S.



2 DN-2 OVERFLOW WEIR DETAIL

SCALE : N.T.S.



NOTES:
SEED MIX TO BE NEW ENGLAND EROSION CONTROL/ RESTORATION MIX FOR MOIST SITES ON THE BOTTOM OF THE BASIN AND NEW ENGLAND EROSION/RESTORATION MIX FOR DRY SITES ON THE SIDE SLOPES.

3 DN-2 GRASS LINED SWALE

SCALE : N.T.S.

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DESIGN PROFESSIONAL OF RECORD

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OWNER: HOWARD S. TOOKER
ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

POWER LINES SOLAR

SITE ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

APT FILING NUMBER: CT580100

DRAWN BY: JT

DATE: 10/02/19

CHECKED BY: BJP

SHEET TITLE:

SITE DETAILS

SHEET NUMBER:

DN-2

GENERAL NOTES

1. ALL CONSTRUCTION SHALL COMPLY WITH PROJECT DEVELOPER STANDARDS, CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS IN THE ABOVE REFERENCED INCREASING HIERARCHY. IF SPECIFICATIONS ARE IN CONFLICT, THE MORE STRINGENT SPECIFICATION SHALL APPLY.
2. IF NO PROJECT CONSTRUCTION SPECIFICATION PACKAGE IS PROVIDED BY THE PROJECT DEVELOPER OR THEIR REPRESENTATIVE, THE CONTRACTOR SHALL COMPLY WITH THE MANUFACTURE, OR CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, AND BE IN ACCORDANCE WITH ALL APPLICABLE OSHA, FEDERAL, STATE AND LOCAL REGULATIONS.
3. THE PROJECT DEVELOPER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY SITING COUNCIL AND STORMWATER PERMITS REQUIRED BY GOVERNMENT AGENCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL TOWN OF OLD LYME CONSTRUCTION PERMITS. THE CONTRACTOR SHALL POST ALL BONDS, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.
4. REFER TO PLANS, DETAILS AND REPORTS PREPARED BY ALL-POINTS TECHNOLOGY CORPORATION FOR ADDITIONAL INFORMATION. THE CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS IN THE FIELD AND CONTACT THE PROJECT DEVELOPER IF THERE ARE ANY QUESTIONS OR CONFLICTS REGARDING THE CONSTRUCTION DOCUMENTS AND/OR FIELD CONDITIONS SO THAT APPROPRIATE REVISIONS CAN BE MADE PRIOR TO BIDDING/CONSTRUCTION. ANY CONFLICT BETWEEN THE DRAWINGS AND SPECIFICATIONS SHALL BE CONFIRMED WITH THE PROJECT DEVELOPERS CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL PRODUCTS, MATERIALS PER PLANS AND SPECIFICATIONS TO THE PROJECT DEVELOPER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OR DELIVERY TO THE SITE. ALLOW A MINIMUM OF 14 WORKING DAYS FOR REVIEW.
6. SHOULD ANY UNKNOWN OR INCORRECTLY LOCATED EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, CONSULT THE PROJECT DEVELOPER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THIS AREA.
7. DO NOT INTERRUPT EXISTING UTILITIES SERVICING FACILITIES OCCUPIED AND USED BY THE PROJECT DEVELOPER OR OTHERS DURING OCCUPIED HOURS, EXCEPT WHEN SUCH INTERRUPTIONS HAVE BEEN AUTHORIZED IN WRITING BY THE PROJECT DEVELOPER AND THE LOCAL MUNICIPALITY. INTERRUPTIONS SHALL ONLY OCCUR AFTER ACCEPTABLE TEMPORARY SERVICE HAS BEEN PROVIDED.
8. THE CONTRACT LIMIT IS THE PROPERTY LINE UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE CONTRACT DRAWINGS.
9. THE CONTRACTOR SHALL ABIDE BY ALL OSHA, FEDERAL, STATE AND LOCAL REGULATIONS WHEN OPERATING CRANES, BOOMS, HOISTS, ETC. IN CLOSE PROXIMITY TO OVERHEAD ELECTRIC LINES. IF CONTRACTOR MUST OPERATE EQUIPMENT CLOSE TO ELECTRIC LINES, CONTACT POWER COMPANY TO MAKE ARRANGEMENTS FOR PROPER SAFEGUARDS. ANY UTILITY COMPANY FEES SHALL BE PAID FOR BY THE CONTRACTOR.
10. THE CONTRACTOR SHALL COMPLY WITH OSHA CFR 29 PART 1926 FOR EXCAVATION TRENCHING AND TRENCH PROTECTION REQUIREMENTS.
11. THE ENGINEER IS NOT RESPONSIBLE FOR SITE SAFETY MEASURES TO BE EMPLOYED DURING CONSTRUCTION. THE ENGINEER HAS NO CONTRACTUAL DUTY TO CONTROL THE SAFEST METHODS OR MEANS OF THE WORK, JOB SITE RESPONSIBILITIES, SUPERVISION OF PERSONNEL OR TO SUPERVISE SAFETY AND DO NOT VOLUNTARILY ASSUME ANY SUCH DUTY OR RESPONSIBILITY.
12. THE CONTRACTOR SHALL RESTORE ANY DRAINAGE STRUCTURE, PIPE, CONDUIT, PAVEMENT, CURBING, SIDEWALKS, LANDSCAPED AREAS OR SIGNAGE DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION OR BETTER, AS APPROVED BY THE PROJECT DEVELOPER OR TOWN OF OLD LYME.
13. THE CONTRACTOR SHALL PROVIDE AS-BUILT RECORDS OF ALL CONSTRUCTION (INCLUDING UNDERGROUND UTILITIES) TO THE PROJECT DEVELOPER AT THE END OF CONSTRUCTION.
14. ALTERNATIVE METHODS AND PRODUCTS, OTHER THAN THOSE SPECIFIED, MAY BE USED IF REVIEWED AND APPROVED BY THE PROJECT DEVELOPER, ENGINEER, AND APPROPRIATE REGULATORY AGENCY PRIOR TO INSTALLATION DURING THE BIDDING/CONSTRUCTION PROCESS.
15. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "DIG SAFE" 72 HOURS BEFORE COMMENCEMENT OF WORK AT "811" AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS.
16. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.

SITE PLAN NOTES

1. THE SURVEY WAS PROVIDED BY BENNETT & SMILAS ASSOCIATES, INC. DATED MAY 19, 2019.
2. THERE ARE INLAND WETLANDS LOCATED ON THE SITE AS INDICATED ON THE PLANS. INLAND WETLAND BOUNDARIES WERE FLAGGED AND LOCATED BY ALL-POINTS TECHNOLOGY CORPORATION, P.C. ON MARCH 21, 2019.
3. THE CONTRACTOR SHALL FOLLOW THE RECOMMENDED SEQUENCE OF CONSTRUCTION NOTES PROVIDED ON THE EROSION CONTROL PLAN OR SUBMIT AN ALTERNATE PLAN FOR APPROVAL BY THE ENGINEER AND/OR PERMITTING AGENCIES PRIOR TO THE START CONSTRUCTION. ALLOW A MINIMUM OF 14 WORKING DAYS FOR REVIEW.
4. PROPER CONSTRUCTION PROCEDURES SHALL BE FOLLOWED ON ALL IMPROVEMENTS WITHIN THIS PARCEL SO AS TO PREVENT THE SILTING OF ANY WATERCOURSE OR BVWS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS. IN ADDITION, THE CONTRACTOR SHALL ADHERE TO "EROSION CONTROL PLAN" CONTAINED HEREIN. THE CONTRACTOR SHALL BE RESPONSIBLE TO POST ALL BONDS AS REQUIRED BY GOVERNMENT AGENCIES WHICH WOULD GUARANTEE THE PROPER IMPLEMENTATION OF THE PLAN.
5. ALL SITE WORK, MATERIALS OF CONSTRUCTION, AND CONSTRUCTION METHODS FOR EARTHWORK AND STORM DRAINAGE WORK, SHALL CONFORM TO THE SPECIFICATIONS AND DETAILS AND APPLICABLE SECTIONS OF THE PROJECT SPECIFICATIONS MANUAL. OTHERWISE THIS WORK SHALL CONFORM TO THE STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION IF THERE IS NO PROJECT SPECIFICATIONS MANUAL. ALL FILL MATERIAL UNDER STRUCTURES AND PAVED AREAS SHALL BE PER THE ABOVE STATED APPLICABLE SPECIFICATIONS, AND SHALL BE PLACED IN ACCORDANCE WITH THE APPLICABLE SPECIFICATIONS UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER. MATERIAL SHALL BE COMPACTED IN 8" LIFTS TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 1557 AT 95% PERCENT OF OPTIMUM MOISTURE CONTENT.
6. ALL DISTURBANCE INCURRED TO PUBLIC, MUNICIPAL, COUNTY, STATE PROPERTY DUE TO CONSTRUCTION SHALL BE RESTORED TO ITS PREVIOUS CONDITION OR BETTER, TO THE SATISFACTION OF THE TOWN OF OLD LYME AND STATE OF CONNECTICUT.
7. IF IMPACTED OR CONTAMINATED SOIL IS ENCOUNTERED BY THE CONTRACTOR, THE CONTRACTOR SHALL SUSPEND EXCAVATION WORK OF IMPACTED SOIL AND NOTIFY THE PROJECT DEVELOPER AND/OR PROJECT DEVELOPER'S ENVIRONMENTAL CONSULTANT PRIOR TO PROCEEDING WITH FURTHER WORK IN THE IMPACTED SOIL LOCATION UNTIL FURTHER INSTRUCTED BY THE PROJECT DEVELOPER AND/OR PROJECT DEVELOPER'S ENVIRONMENTAL CONSULTANT.

UTILITY NOTES

1. CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE TOWN OF OLD LYME AND EVERSOURCE TO SECURE CONSTRUCTION PERMITS AND FOR PAYMENT OF FEES FOR STREET CUTS AND CONNECTIONS TO EXISTING UTILITIES.
2. REFER TO DRAWINGS BY PROJECT DEVELOPER FOR THE ONSITE ELECTRICAL DRAWINGS AND INTERCONNECTION TO EXISTING ELECTRICAL GRID. SITE CONTRACTOR SHALL SUPPLY AND INSTALL PIPE ADAPTERS AS NECESSARY AT BUILDING CONNECTION POINT OR AT EXISTING UTILITY OR PIPE CONNECTION POINT. THESE DETAILS ARE NOT INCLUDED IN THESE PLANS.
3. UTILITY LOCATIONS AND PENETRATIONS ARE SHOWN FOR THE CONTRACTORS INFORMATION AND SHALL BE VERIFIED WITH THE ELECTRICAL ENGINEER AND THE PROJECT DEVELOPER'S CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY THE ELEVATION AND LOCATION OF ALL UTILITIES BY VARIOUS MEANS PRIOR TO BEGINNING ANY EXCAVATION. TEST PITS SHALL BE DUG AT ALL LOCATIONS WHERE PROP. SANITARY SEWERS AND WHERE PROP. STORM PIPING WILL CROSS EXISTING UTILITIES, AND THE HORIZONTAL AND VERTICAL LOCATIONS OF THE UTILITIES SHALL BE DETERMINED. THE CONTRACTOR SHALL CONTACT THE PROJECT DEVELOPER IN THE EVENT OF ANY DISCOVERED OR UNFORESEEN CONFLICTS BETWEEN EXISTING AND PROPOSED SANITARY SEWERS, STORM PIPING AND UTILITIES SO THAT AN APPROPRIATE MODIFICATION MAY BE MADE.
5. UTILITY CONNECTION DESIGN AS REFLECTED ON THE PLAN MAY CHANGE SUBJECT TO UTILITY PROVIDER AND GOVERNING AUTHORITY STAFF REVIEW.
6. THE CONTRACTOR SHALL ENSURE THAT ALL UTILITY PROVIDERS AND GOVERNING AUTHORITY STANDARDS FOR MATERIALS AND CONSTRUCTION METHODS ARE MET. THE CONTRACTOR SHALL PERFORM PROPER COORDINATION WITH THE RESPECTIVE UTILITY PROVIDER.
7. THE CONTRACTOR SHALL ARRANGE FOR AND COORDINATE WITH THE RESPECTIVE UTILITY PROVIDERS FOR SERVICE INSTALLATIONS AND CONNECTIONS. THE CONTRACTOR SHALL COORDINATE WORK TO BE PERFORMED BY THE VARIOUS UTILITY PROVIDERS AND SHALL PAY ALL FEES FOR CONNECTIONS, DISCONNECTIONS, RELOCATIONS, INSPECTIONS, AND DEMOLITION UNLESS OTHERWISE STATED IN THE PROJECT SPECIFICATIONS MANUAL AND/OR GENERAL CONDITIONS OF THE CONTRACT.
8. ALL EXISTING PAVEMENT WHERE UTILITY PIPING IS TO BE INSTALLED SHALL BE SAW CUT. AFTER UTILITY INSTALLATION IS COMPLETED, THE CONTRACTOR SHALL INSTALL TEMPORARY AND/OR PERMANENT PAVEMENT REPAIR AS DETAILED ON THE DRAWINGS OR AS REQUIRED BY THE TOWN OF OLD LYME.
9. ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENTS AND EVEN GRADES USING A PIPE LASER OR OTHER ACCURATE METHOD.
10. RELOCATION OF UTILITY PROVIDER FACILITIES, SUCH AS POLES, SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY PROVIDER.
11. THE CONTRACTOR SHALL COMPACT PIPE BACKFILL IN 8" LIFTS ACCORDING TO THE PIPE BEDDING DETAILS. TRENCH BOTTOM SHALL BE STABLE IN HIGH GROUNDWATER AREAS. A PIPE FOUNDATION SHALL BE USED PER THE TRENCH DETAILS AND IN AREAS OF ROCK EXCAVATION.
12. CONTRACTOR TO PROVIDE STEEL SLEEVES AND ANNULAR SPACE SAND FILL FOR UTILITY PIPE AND CONDUIT CONNECTIONS UNDER FOOTINGS.
13. ALL UTILITY CONSTRUCTION IS SUBJECT TO INSPECTION FOR APPROVAL PRIOR TO BACKFILLING, IN ACCORDANCE WITH THE APPROPRIATE UTILITY PROVIDER REQUIREMENTS.
14. A ONE-FOOT MINIMUM VERTICAL CLEARANCE BETWEEN WATER, GAS, ELECTRICAL, AND TELEPHONE LINES AND STORM PIPING SHALL BE PROVIDED. A SIX-INCH MINIMUM CLEARANCE SHALL BE MAINTAINED BETWEEN STORM PIPING AND SANITARY SEWER. A 6-INCH TO 18-INCH VERTICAL CLEARANCE BETWEEN SANITARY SEWER PIPING AND STORM PIPING SHALL REQUIRE CONCRETE ENCASEMENT OF THE PROP. SANITARY PIPING.
15. THE CONTRACTOR SHALL RESTORE ANY UTILITY STRUCTURE, PIPE, CONDUIT, PAVEMENT, CURBING, SIDEWALKS, DRAINAGE STRUCTURE, SWALE OR LANDSCAPED AREAS DISTURBED DURING CONSTRUCTION, TO THEIR ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE PROJECT DEVELOPER AND TOWN OF OLD LYME.
16. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY, AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE INCLUDING SERVICES. CONTACT "DIG SAFE" AT 811 72 HOURS PRIOR TO CONSTRUCTION AND VERIFY ALL UNDERGROUND AND OVERHEAD UTILITY AND STORM DRAINAGE LOCATIONS. THE CONTRACTOR SHALL EMPLOY THE USE OF A UTILITY LOCATING COMPANY TO PROVIDE SUBSURFACE UTILITY ENGINEERING CONSISTING OF DESIGNATING UTILITIES AND STORM PIPING ON PRIVATE PROPERTY WITHIN THE CONTRACT LIMIT AND CONSISTING OF DESIGNATING AND LOCATING WHERE PROP. UTILITIES AND STORM PIPING CROSS EXISTING UTILITIES AND STORM PIPING WITHIN THE CONTRACT LIMITS.
17. THE CONTRACTOR SHALL ARRANGE AND COORDINATE WITH UTILITY PROVIDERS FOR WORK TO BE PERFORMED BY UTILITY PROVIDERS. THE CONTRACTOR SHALL PAY ALL UTILITY FEES UNLESS OTHERWISE STATED IN THE PROJECT SPECIFICATION MANUAL AND GENERAL CONDITIONS, AND REPAIR PAVEMENTS AS NECESSARY.
18. ELECTRIC DRAWINGS AND REQUIREMENTS ARE NOT INCLUDED AS PART OF THIS DRAWING SET AND SHOULD BE OBTAINED FROM THE PROJECT DEVELOPER.
19. ALTERNATIVE METHODS AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED IF REVIEWED AND APPROVED BY THE PROJECT DEVELOPER, ENGINEER, AND APPROPRIATE REGULATORY AGENCIES PRIOR TO INSTALLATION.
20. THE CONTRACTOR SHALL MAINTAIN ALL FLOWS AND UTILITY CONNECTIONS TO EXISTING BUILDINGS WITHOUT INTERRUPTION UNLESS/UNTIL AUTHORIZED TO DISCONNECT BY THE PROJECT DEVELOPER, TOWN OF OLD LYME, UTILITY PROVIDERS AND GOVERNING AUTHORITIES.

COBB ROAD LLC

9 NOVELTY LANE, UNIT 9B
ESSEX, CT 06426

ALL-POINTS TECHNOLOGY CORPORATION

3 SADDLEBROOK DRIVE PHONE: (860)-663-1697
KILLINGWORTH, CT 06419 FAX: (860)-663-0935
WWW.ALLPOINTSTECH.COM

CSC PERMITTING

NO	DATE	REVISION
0	10/02/19	FOR REVIEW: BJP
1		
2		
3		
4		
5		
6		

NOT FOR CONSTRUCTION

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 3 SADDLEBROOK DRIVE KILLINGWORTH, CT 06419

OWNER: HOWARD S. TOOKER
ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

POWER LINES SOLAR

SITE ADDRESS: 20-1 SHORT HILLS RD OLD LYME, CT 06371

APT FILING NUMBER: CT580100

DRAWN BY: JT

DATE: 10/02/19 CHECKED BY: BJP

SHEET TITLE:

SITE NOTES

SHEET NUMBER:

DN-3

STATE OF CONNECTICUT BRADLEY J. PARSONS No. 20025 LICENSED PROFESSIONAL ENGINEER

APPENDIX E

Construction Schedule and

Work Hours/Days Letter

COBB ROAD, LLC - POWER LINES SOLAR CONSTRUCTION SCHEDULE

20-1 SHORT HILLS ROAD, OLD LYME, CT

Construction Schedule	Est Time	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20
Approvals & Permitting	90 Days																
Equipment Procurement	120 Days																
Construction	330 Days																
Harvest Trees	*90 Days*																
Grub, Grade, Basins, UG Conduits, & Equipment Pad	*90 Days*																
Seeding	*5 Days*																
Grass Growing/Site Stabalization	*60 Days*																
Install Solar Racking, Modules, Inverters, & Switchgear	*60 Days*																
Install Fence	*15 Days*																
Commissioning	*15 Days*																
Utility Approval & Project Close Out	*15 Days*																
Commercial Operation																	

Cobb Road, LLC – Power Lines Solar Project

CONSTRUCTION HOURS/DAYS

The following proposed construction work days and hours will be followed by all contractors for the construction of the Power Lines Solar Project located at 20-1 Short Hills Rd Old Lyme, CT.

- Monday – Saturday: 7 am to 6 pm
- Sunday – 9 am to 5 pm (only when necessary)
- Federal Holidays will be observed

APPENDIX F

Wetland & Vernal Pool

Protection Plan

ENVIRONMENTAL NOTES

Wetland and Vernal Pool Protection Plan

As a result of the proposed development's location in the vicinity of wetlands and vernal pool habitat, the following Best Management Practices ("BMPs") are recommended to avoid unintentional impact to wetland habitats or mortality to vernal pool herpetofauna (i.e., spotted salamander, wood frog, turtles, etc.) during construction activities. This plan includes elements that will protect herpetofauna should construction activities occur during peak amphibian movement periods (early spring breeding [March 1st to May 15th] and late summer dispersal [July 15th to September 15th]) as well as wetlands regardless of the time of year. Complete details of the recommended BMPs are provided below, which will be incorporated into the construction drawings to ensure the Contractor is fully aware of the project's environmentally sensitive setting.

A wetland scientist from All-Points Technology Corp. ("APT") experienced in compliance monitoring of construction activities will serve as the Environmental Monitor for this project to ensure that the following BMPs are implemented properly. The proposed wetland and vernal pool protection program consists of several components including: periodic inspection and maintenance of erosion controls; herpetofauna sweeps; education of all contractors and sub-contractors prior to initiation of work on the site; protective measures; and, reporting. Due to the project's nearly 500-foot buffer from the vernal pool habitat, isolation barriers are not required.

1. **Erosion and Sedimentation Controls**

    a. Plastic netting with large mesh openings (> ¼") used in a variety of erosion control products (i.e., erosion control blankets, fiber rolls [wattles], reinforced silt fence) has been found to entangle wildlife, including reptiles, amphibians, birds and small mammals. No permanent erosion control products or reinforced silt fence will be used on the project. Temporary erosion control products that will be exposed at the ground surface represent a potential for wildlife entanglement will use either erosion control blankets and fiber rolls composed of processed fibers mechanically bound together to form a continuous matrix (netless) or netting with a mesh size <¼" such as that typically used in compost filter socks to avoid/minimize wildlife entanglement.

    b. Installation of erosion and sedimentation controls, required for erosion control compliance, shall be performed by the Contractor following clearing activities and prior to any earthwork. The Environmental Monitor will inspect the work zone area prior to and following erosion control barrier installation to ensure the area is free of herpetofauna and satisfactorily installed.

    c. If a staging area for equipment, vehicles or construction materials is required for this project, such area(s) shall be located outside of any wetland resource Buffer Zone and surrounded by silt fence.

    d. All erosion control measures shall be removed within 30 days of completion of work and permanent stabilization of site soils so that herpetofauna movements between uplands and wetlands are not restricted.

2. Contractor Education:

a. Prior to work on site and initial deployment/mobilization of equipment and materials, the Contractor shall attend an educational session at the pre-construction meeting with the Environmental Monitor. This orientation and educational session will consist of information such as, but not limited to: representative photographs of typical herpetofauna that may be encountered, typical species behavior, and proper procedures to protect such species if they are encountered. The meeting will further emphasize the non-aggressive nature of these species, the absence of need to destroy such animals and the need to follow Protective Measures as described in Section 4 below. The Contractor will designate one of its workers as the "Project Monitor", who will receive more intense training on the identification and proper handling of herpetofauna.

b. The Contractor will designate a member of its crew as the Project Monitor to be responsible for the daily "sweeps" for herpetofauna within the work zone each morning, during any and all transportation of vehicles along the access drive, and for any ground disturbance work. This individual will receive more intense training from the Environmental Monitor on the identification and protection of herpetofauna in order to perform sweeps. Any herpetofauna discovered will be reported to the Environmental Monitor, photographed if possible, and relocated outside the work zone in the general direction the animal was oriented.

c. The Environmental Monitor will also post caution signs throughout the project site and maintain them for the duration of construction to provide notice of the environmentally sensitive nature of the work area, the potential for encountering various amphibians and reptiles and precautions to be taken to avoid injury to or mortality of these animals.

d. The Contractor will be provided with the Environmental Monitor's cell phone and email contact information to immediately report any encounters with herpetofauna.

3. Petroleum Materials Storage and Spill Prevention

a. Certain precautions are necessary to store petroleum materials, refuel and contain and properly clean up any inadvertent fuel or petroleum (i.e., oil, hydraulic fluid, etc.) spill due to the project's location in proximity to sensitive wetland resources.

b. A spill containment kit consisting of a sufficient supply of absorbent pads and absorbent material will be maintained by the Contractor at the construction site throughout the duration of the project. In addition, a waste drum will be kept on site to contain any used absorbent pads/material for proper and timely disposal off site in accordance with applicable local, state and federal laws.

c. The following petroleum and hazardous materials storage and refueling restrictions and spill response procedures will be adhered to by the Contractor.
    i. Petroleum and Hazardous Materials Storage and Refueling
        1. Refueling of vehicles or machinery shall take place on an impervious pad with secondary containment designed to contain fuels.
        2. Any refueling drums/tanks or hazardous materials that must be kept on site shall be stored on an impervious surface utilizing secondary containment a minimum of 100 feet from wetlands or watercourses.

    ii. Initial Spill Response Procedures
        1. Stop operations and shut off equipment.

2. Remove any sources of spark or flame.
3. Contain the source of the spill.
4. Determine the approximate volume of the spill.
5. Identify the location of natural flow paths to prevent the release of the spill to sensitive nearby waterways or wetlands.
6. Ensure that fellow workers are notified of the spill.

iii. Spill Clean Up & Containment

1. Obtain spill response materials from the on-site spill response kit. Place absorbent materials directly on the release area.
2. Limit the spread of the spill by placing absorbent materials around the perimeter of the spill.
3. Isolate and eliminate the spill source.
4. Contact the appropriate local, state and/or federal agencies, as necessary.
5. Contact a disposal company to properly dispose of contaminated materials.

iv. Reporting

1. Complete an incident report.
2. Submit a completed incident report to local, state and federal agencies, as required.

4. Protective Measures

a. A thorough cover search of the construction area will be performed by the Environmental Monitor for herpetofauna prior to and following installation of erosion control measures/silt fencing barriers to remove any species from the work zone prior to the initiation of construction activities. Any herpetofauna discovered would be relocated outside the work zone in the general direction the animal was oriented. Periodic inspections will be performed by the Environmental Monitor throughout the duration of construction.

b. The Contractor's Project Monitor will inspect the work area each morning and escort initial vehicle access into the site each morning along the access drive to visually inspect for any herpetofauna. Any herpetofauna discovered would be relocated outside the work zone in the general direction the animal was oriented.

c. Any herpetofauna requiring relocation out of the work zone will be captured with the use of a net or clean plastic bag that has been moistened with clean water for careful handling and placement out of the work zone in the general direction it was observed heading.

d. Any stormwater management features, ruts or artificial depressions that could hold water created intentionally or unintentionally by site clearing/construction activities will be properly filled in and permanently stabilized with vegetation to avoid the creation of vernal pool "decoy pools" that could intercept amphibians moving toward the vernal pools. Stormwater management features such as level spreaders will be carefully reviewed in the field to ensure that standing water does not endure for more than a 24 hour period to avoid creation of decoy pools and may be subject to field design changes. Any such proposed design changes will be reviewed by the design engineer to ensure stormwater management functions are maintained.

5. Reporting

a. Inspection reports (brief narrative and applicable photos) will be prepared by the Environmental Monitor documenting each inspection and submitted to the Permittee for compliance verification. Any non-compliance observations of erosion control measures or evidence of erosion or sediment release will be immediately reported to the Permittee and its Contractor and included in the reports.

b. Any incidents of release of sediment or other materials into wetland resource areas shall be reported by the Permittee within 24 hours to the Connecticut Siting Council.

c. Any observations of rare species will be reported to the Connecticut Department of Energy and Environmental Protection's Natural Diversity Data Base Program.

d. Following completion of the project, a summary report will be prepared by the Environmental Monitor documenting compliance with the Wetland and Vernal Pool Protection Plan and submitted to the Permittee.

APPENDIX G

USFWS & NDDB

Compliance Statement

USFWS & NDDB Compliance Determination

July 22, 2019

Cobb Road, LLC
9 Novelty Lane – Unit 9B
Essex, CT 06426

APT Project No.: CT580100

Attn: James Schwartz

Re: Proposed Cobb Road, LLC Solar Facility
20-1 Short Hill Road
Old Lyme, Connecticut

Dear Mr. Schwartz,

On behalf of Cobb Road, LLC (affiliate of Independence Solar), All-Points Technology Corporation, P.C. ("APT") performed an evaluation with respect to possible federally- and state-listed, threatened, endangered or special concern species in order to determine if the proposed referenced solar facility ("Facility") would result in a potential adverse effect to listed species.

Cobb Road, LLC proposes the development of a solar Facility in the northwest corner of the subject property just north of an electrical transmission ROW. The location of the proposed Facility would consist of a largely undeveloped forested residential parcel. An existing gravel road would provide access to the proposed Facility from Short Hill Road with the addition of a short gravel access at the Facility.

USFWS The federal consultation was completed in accordance with Sections 7 and 10 of the Endangered Species Act through the U.S. Fish and Wildlife Service's ("USFWS") Information, Planning, and Conservation System ("IPaC"). Based on the results of the IPaC review, one federally-listed[1] threatened species is known to occur in the vicinity of the subject property documented as the northern long-eared bat ("NLEB"; *Myotis septentrionalis*). As a result of this preliminary finding, APT performed an evaluation to determine if the proposed referenced Facility would result in a likely adverse effect to NLEB.

The proposed Facility would be located within a forested area that would result in some forest clearing potentially impacting habitat used by NLEB. Consultation with the Connecticut Department of Energy & Environmental Protection ("CTDEEP") Wildlife Division Natural Diversity Data Base ("NDDB") revealed that the proposed Facility is not within 150 feet of a known occupied maternity roost tree and is not within 0.25 mile of a known NLEB hibernaculum. The nearest NLEB habitat resource to the proposed Facility is located in North Branford ±24 miles to the west.

APT submitted the USFWS's Northern Long Eared Bat final 4(d) rule Streamlined Consultation Form on June 20, 2019 under the consultation framework that allows federal agencies to rely upon the USFWS January 5, 2016, intra-Service Programmatic Biological Opinion ("BO") on the Final 4(d) Rule for the NLEB for section 7(a)(2) compliance. If the USFWS does not respond within 30 days from submittal of this form (July 22, 2019), one may presume that USFWS determination is informed by the best available information and

[1] Listing under the federal Endangered Species Act

that Cobb Road, LLC's project responsibilities under 7(a)(2) with respect to the NLEB are fulfilled through the USFWS' BO. No response was received from USFWS; therefore, the project will have no effect on NLEB.

In addition, Cobb Road, LLC would consider following additional recommended measures for NLEB conservation, noted below, as encouraged in the April 29, 2016 FCC Public Notice[2], as the project schedule allows.

- Conduct tree removal activities outside of the NLEB pup season (June 1-July 31) and active season (April 1-October 31) to minimize impacts to pups at roosts not yet identified.
- Avoid clearing suitable spring staging and fall swarming habitat within a five-mile radius of known or assumed NLEB hibernacula during the staging and swarming seasons (April 1-May 15 and August 15-November 14, respectively). *Not applicable: site is located > 5 miles from the nearest hibernacula.*
- Maintain dead trees (snags) and large trees when possible.
- Use herbicides and pesticides only if unavoidable. If necessary, spot treatment is preferred over aerial application.
- Minimize exterior lighting, opting for down-shielded, motion-sensor security lights instead of constant illumination.

NDDB No known areas of state-listed species are currently depicted on the most recent CTDEEP NDDB Maps in the location of the proposed Cobb Road, LLC development or within a 0.25 mile to the proposed development. Please refer to the enclosed NDDB Map which depicts the nearest NDDB buffer ±0.86 mile east of the subject property. Since the proposed Facility and subject property are not located within a NDDB buffer area, consultation with DEEP is not required in accordance with their review policy[3]. Also, since the NDDB buffer area is located more than a 0.25-mile away, consultation with DEEP is not required in accordance with the Connecticut Siting Council's review policy.

Therefore, the proposed Cobb Road, LLC development is not anticipated to adversely impact any federal or state threatened, endangered or species of special concern.

Sincerely,

Dean Gustafson

Dean Gustafson
Senior Biologist

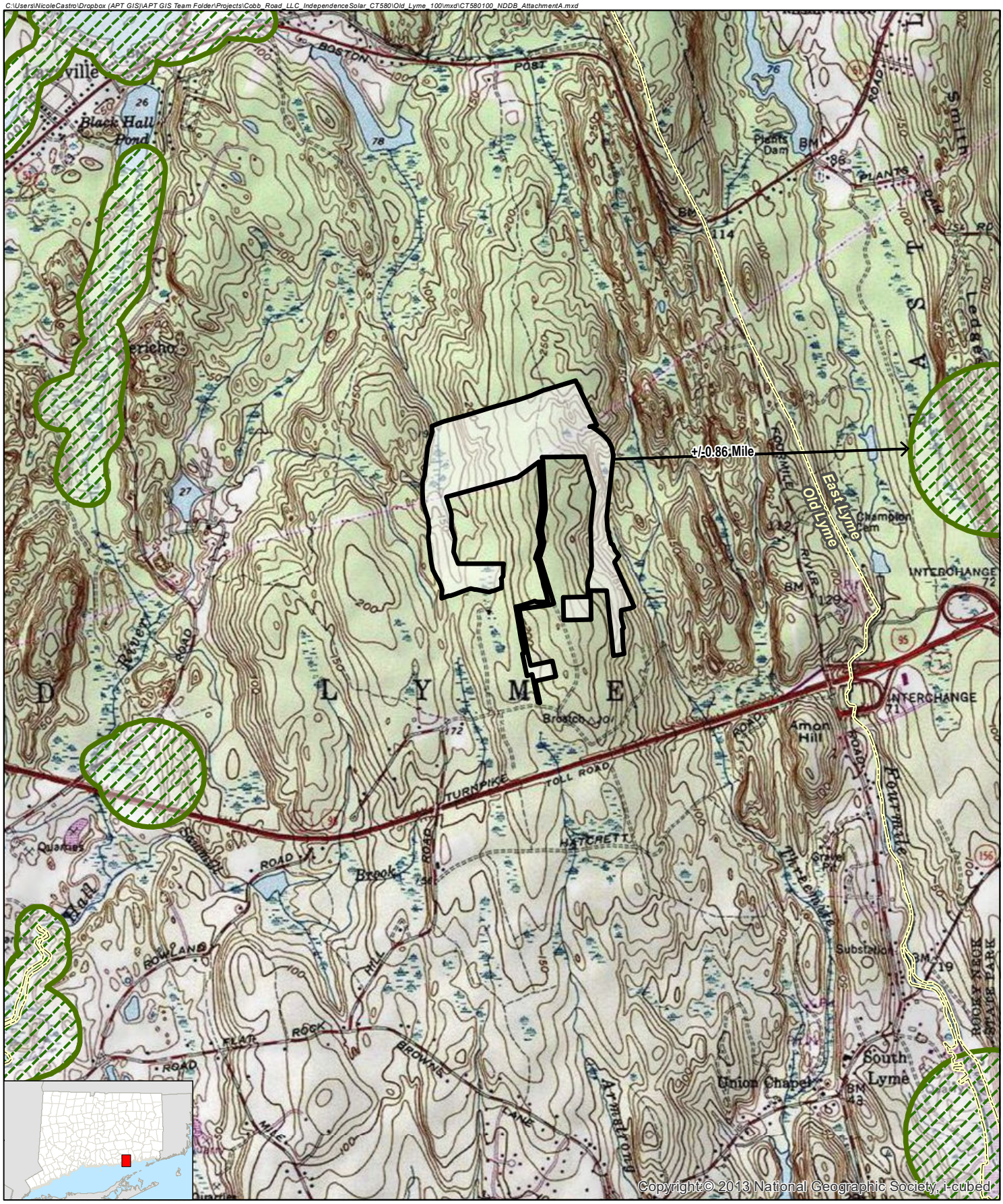
Enclosure

[2] Federal Communications Commission. *Tower Construction Guidance for Protection of Northern Long-Eared Bat Under the Endangered Species Act*. Public Notice DA 16-476. April 29, 2016.

[3] DEEP Requests for NDDB State Listed Species Reviews. http://www.ct.gov/deep/cwp/view.asp?a=2702&q=323466&deepNav_GID=1628%20

NDDB Map

C:\Users\NicoleCastro\Dropbox (APT GIS)\APT GIS Team Folder\Projects\Cobb_Road_LLC_IndependenceSolar_CT580\Old_Lyme_100\mxd\CT580100_NDDB_AttachmentA.mxd



Legend

- Site
- Natural Diversity Database (NDDB June 2019)
- Municipal Boundary

N
W E
S

2,000 1,000 0 2,000
Feet

NDDB
Attachment A: Overview Map

Proposed Solar Facility
20-1 Short Hills Road
Old Lyme, CT

Cobb Road, LLC

Map Notes:
Base Map Source: USGS 7.5 Minute Topographic Quadrangle Maps: Old Lyme (1976), CT
Map Scale: 1 inch =2,000 feet
Map Date: August 2019

ALL-POINTS TECHNOLOGY CORPORATION

APPENDIX H

Inverter Product Information Sheet

Technical	Inverter Part Number		XGI 1500-150/166-UL
	Overall DC:AC Ratio		1.298
		Unit	
AC Output (Single Inverter)	Power - Nominal Rated	kVA	150
	Power - Output, Continuous Rated @ 1.0 PF	kW	150
	Voltage - Output, Max. (600V-AC, 3-phase, 4-wire preferred)	V	600
	Current - Output, Max.	A	160
	Efficiency	η%	98.5 CEC
	Power Factor - Range	±%	+/- 0.85
	Total Harmonic Distortion at 1.0 PF	%	< 3%
	AC Load Break Disconnect/Breaker Included?	Y/N	Y
	AC Connections:		
	Connection Type (screw lug, spring tension, etc.)		M12 studs for compression terminals
	Quantity per Inverter		3
	Voltage - Rated	V	600
	Current - Rated	A	420
	Range of Allowable Wire Sizes	AWG	2/0-500kcmil
DC Input (Single Inverter)	Power - Maximum Input (kWp)	kWp	225
	Number of MPPT Inputs	MPPT	1
	Number of string inputs per MPPT	Strings	16-28 inputs allowed
	Voltage - DC Strike Voltage	V	920
	Voltage - Maximum DC	V	1500
	Voltage - MPPT Range	V	860-1450
	Current - Maximum	A	178
	DC:AC Ratio Maximum	DC:AC	1.5
	DC Load Break Disconnect/Breaker Included?	Y/N	Y
	DC Connections:		
	Connection Type (screw lug, spring tension, etc.)		M12 studs for compression terminals
	Quantity per Inverter		2
	Voltage - Rated	V	1500
	Current - Rated	A	420
	Range of Allowable Wire Sizes	AWG	4/0-500kcmil
Grounding Provisions (Single Inverter)	DC Grounding System Type (ungrounded, - ground, + ground)		Ungrounded
	Connection Type (screw lug, spring tension, etc.)		1 M8 Stud and 1 M6 threaded insert
	Quantity of Grounding Connection Points		2
	Range of Allowable Wire Sizes	AWG	4 AWG - 1/0
General (Single Inverter)	Enclosure Rating - NEMA or IEC		NEMA 4X
	Cooling System Type (Natural Convection, Forced Air, Liquid)		Forced Air
	Temperature - Operating Range	°C	-40C to +60C
	Sound - Maximum Noise Level	dBA	56 dBA @ 3 meters
	Auxiliary Power Source Required? If yes, describe.	Y/N	N

	Certification - IEEE-1547	Y/N	Y	
	Certification - UL1741	Y/N	Y	
	Certification - Quality Standards/Certifications (please list)		UL1741SA, UL1998	
DC Combiner (Single Box)			Remote DC Combiner	Attached DC Combiner
	DC Voltage Configuration (ungrounded preferred)		Ungrounded	Ungrounded
	Voltage - Maximum DC	V	1500	1500
	Current - Maximum	A	250	250
	Fuses Provided on Both + and - terminals?	Y/N	Y	Y
	DC Connections - Inputs:			
	Connection Type (screw lug, spring tension, etc.)		Screw Lug	Screw Lug
	Quantity per Inverter (24 "+" and "-" string inputs preferred)		16,20,24,26,28	16,20,24,26,28
	Voltage - Rated	V	1500	1500
	Current - Rated	A	30A per fuse holder	30A per fuse holder
	Range of Allowable Wire Sizes	AWG	14 - 4AWG	14 - 4AWG
	DC Connections - Outputs:			
	Connection Type (screw lug, spring tension, etc.)		3/8" Stud	3/8" Stud
	Quantity per Inverter		1 pos, 1 neg per combiner	1 pos, 1 neg per combiner
	Voltage - Rated	V	1500	1500
	Current - Rated	A	250	250
	Range of Allowable Wire Sizes	AWG	500kcmil max	4/0 harness provided
• Manufacturer must provide Inverter and combiner box datasheets and other supporting documentation with their proposal.				

		Unit		
Safety	Ground Fault Detection Device (GFD)	Y/N	Y	
	Loss of Grid Detection	Y/N	Y	
	Anti-Islanding Detection	Y/N	Y	
	DC Reverse Polarity Detection	Y/N	Y	
	AC & DC Short Circuit/Overcurrent Protection	Y/N	Y	
	AC & DC Overvoltage Protection	Y/N	Y	
	High Temperature Detection	Y/N	Y	
	Arc Fault Protection/Rapid Shutdown (NEC 2014 690.11 & 690.12)	Y/N	Not availible at this time, no test standard availible	
		Unit	Remote DC Combiner	Attached DC Combiner
Warranty	OEM Warranty on Materials and Workmanship - Inverter	Years	5	
	OEM Warranty on Materials and Workmanship - Combiner	Years	5	5
	Location of Nearest Service Technician	City/State	Illinois	

Manufacturer	Location of Company Headquarters (City/State/Country)	Waukegan, IL 60085
	Location of Factory for This Product (City/State/Country)	Buffalo Grove, IL 60085
	Years the Factory Has Been Producing Inverters of This Type	2
	Years Manufacturer Has Been Producing PV Inverters	17 years
	Years Manufacturer Has Been in Business	Yaskawa 104, Solectria 17
	Is the Company Publically Traded (Yes/No, if Yes, List the Exchanges)	Yes, YASKAWA ELEC CO/ADR OTCMKTS: YASKY
	Total Lifetime Aggregate MW of PV Inverters Installed Worldwide	5000+
	Total Lifetime Aggregate MW of PV Inverters Installed in USA	5000+
	Oldest Known PV Inverter Installation Over 100 kW (Size, Location)	2007, 115kW, Sacramento, CA 95834
	Manufacturer of the Inverter Power Electronic Components	Various
	Third-Party Evaluations of Inverter Quality/Performance (Photon, NREL, TUV Rheinland, etc.) Attached (Yes/No)	Black & Veatch
	Qualifies as Made in the United States / "Buy American" (Yes/No)	Yes
	Qualifies as United States ARRA-Compliant (Yes/No)	Yes

Transformer Information

Table 4. Audible Sound Levels

Self-Cooled, Two Winding kVA Rating	NEMA® TR-1 Average Decibels (dB)
45-500	56
501-700	57
701-1000	58
1001-1500	60
1501-2000	61
2001-2500	62
2501-3000	63
3001-4000	64
4001-5000	65
5001-6000	66
6001-7500	67
7501-10000	68

APPENDIX I

Photo-simulations and

Viewshed Analysis Map

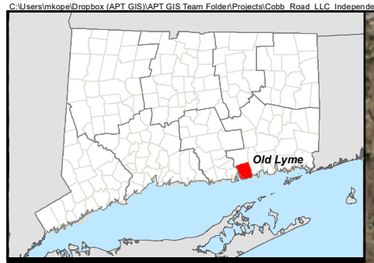
EXISTING

PROPOSED

ALL-POINTS TECHNOLOGY CORPORATION

Cobb Road, LLC

C:\Users\mkopel\Dropbox (APT GIS)\APT GIS Team Folder\Projects\Cobb_Road_LLC_IndependenceSolar_CT580\Old_Lyme_100\mxd\Viewshed_Aerial.mxd



Statewide and Regional Overview Map

Detail Area Inset Map

Viewshed Analysis Map

Proposed Solar Facility
20-1 Short Hills Road
Old Lyme, CT

Proposed solar panels to be mounted on approximate 10' AGL support structures.
Forest canopy height and topographic contours are derived from LiDAR data.
Study area encompasses a 1-mile radius and includes 2,343 acres of land.
Base Map Source: 2016 Aerial Photograph (CTECO)
Map Date: September 2019

Legend

- Site
- Study Area (1-Mile Radius)

Proposed Facility

- Perimeter Fence
- Solar Panels
- Approx. Treeline/Limit of Clearing
- Predicted Year-Round Visibility (13.6 Acres)
- Areas of Potential Seasonal Visibility (36 Acres)
- Municipal Boundary
- Trail
- Scenic Highway
- DEEP Boat Launches
- Municipal and Private Open Space Property
- State Forest/Park

Protected Open Space Property

- Federal
- Land Trust
- Municipal
- Private
- State

Data Sources:

Physical Geography / Background Data

A digital surface model (DSM) was created from the State of Connecticut 2016 LiDAR LAS data points. The first return LiDAR LAS values, associated with the highest feature in the landscape (such as a treetop or top of building), were used to capture the natural and built features on the Earth's surface beyond the approximate limits of clearing associated with the proposed solar facility. The "bare-earth" return values were utilized to reflect proposed conditions where vegetative clearing associated with the proposed solar facility would occur.

Municipal Open Space, State Recreation Areas, Trails, County Recreation Areas, and Town Boundary data obtained from CT DEEP. Scenic Roads: CTDOT State Scenic Highways (2015); Municipal Scenic Roads (compiled by APT)

Dedicated Open Space & Recreation Areas

Connecticut Department of Energy and Environmental Protection (DEEP): DEEP Property (May 2007; Federal Open Space (1997); Municipal and Private Open Space (1997); DEEP Boat Launches (1994)

Connecticut Forest & Parks Association, Connecticut Walk Books East & West

Other

CTDOT Scenic Strips (based on Department of Transportation data)

Notes

***Not all the sources listed above appear on the Viewshed Maps. Only those features within the scale of the graphic are shown.*

Limitations

The visibility analysis map(s) presented herein depict areas where portions of the proposed solar facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of 5 feet above the ground and intervening topography, tree canopy, and structures. This analysis may not necessarily account for all visible locations, as it is based on the combination of computer modeling, incorporating the DSM, and 2016 digital aerial photographs. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where portions of the proposed solar facility are likely to be seen.

0 0.125 0.25 0.5 Miles

Cobb Road, LLC

All-Points Technology Corporation