ENVIRONMENTAL ASSESSMENT

PROPOSED

ELLINGTON SOLAR PROJECT

277 SADDS MILL ROAD

ELLINGTON, CONNECTICUT

TOLLAND COUNTY

Prepared for:

1 Griffin Road South
Suite 200
Bloomfield, CT 06002

Prepared by:

All-Points Technology Corporation, P.C.
567 Vauxhall Street Extension – Suite 311
Waterford, CT 06385

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1 Introduction

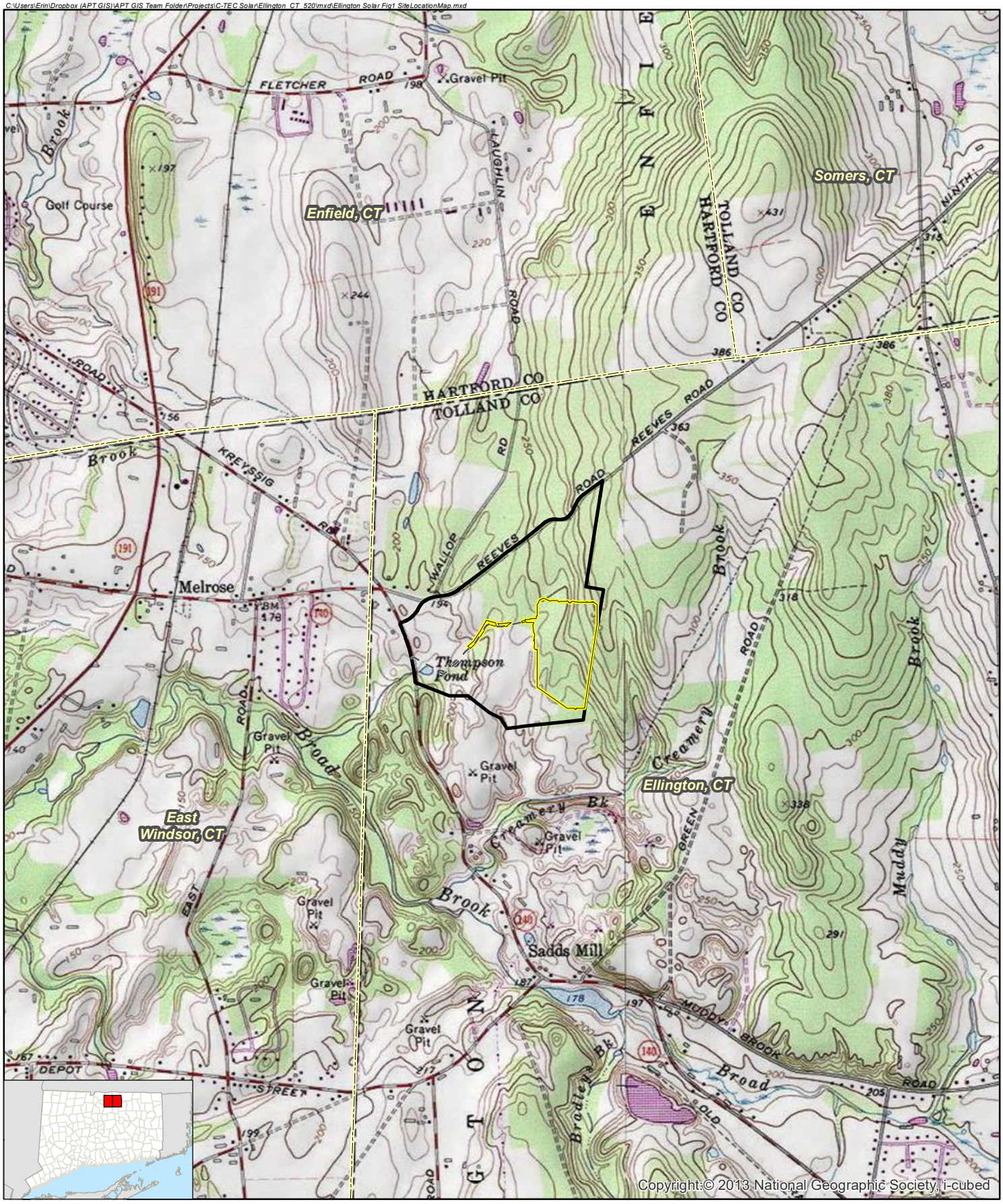
All-Points Technology Corporation, P.C. ("APT") prepared this Environmental Assessment ("EA") on behalf of CTEC Solar, LLC (hereinafter referred to as the "Petitioner") for the proposed installation of a ±6.0 megawatt[1] ("MW") solar-based electric generating facility ("Project") located in the Town of Ellington, Connecticut ("Town"). This EA has been completed to support the Petitioner'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 electric generating facility.

The results of this assessment demonstrate that the proposed development will comply with the Connecticut Department of Energy and Environmental Protection's ("DEEP") air and water quality standards and will not have an undue adverse effect on the existing environment and ecology.

The Project will be located at 277 Sadds Mill Road in Ellington ("Site"); the Site consists of two irregularly shaped parcels[2] that equal approximately 157.3 acres. The Site's northern and eastern extents consist of undeveloped wooded areas while the western extent is a mix of undeveloped wooded land and agricultural fields. The central portion of the Site is currently developed with an operating sand and gravel, mulch and compost recycling facility ("Materials Facility"). Several temporary structures associated with the Materials Facility are located within the central and western portions of the developed areas, and a guard shack/operations office is located along the Site's main access road to the west. The Site is privately-owned and is zoned Industrial (I) by the Town, with the exception of a narrow strip along the northern property line which is zoned Rural Agricultural Residential (RAR). The Project will be entirely within the Industrial zone.

Figure 1, *Site Location Map*, depicts the location of the Site and the immediate surrounding area.

[1] The output referenced is Alternating Current (AC).
[2] For the purposes of this report, both parcels are considered the "Site" unless otherwise noted.



Legend

- Site
- Project Area
- Access Road (No Improvements)
- Municipal Boundary

Map Notes:
Base Map Source: USGS 7.5 Minute Topographic Quadrangle Map, Broad Brook, CT (1984) and Ellington, CT (1984)
Map Scale: 1 inch = 2,000 feet
Map Date: March 2021

N

2,000 1,000 0 2,000 Feet

Figure 1
Site Location Map

Proposed Solar Energy Facility
277 Sadds Mill Road
Ellington, Connecticut

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2 Proposed Project

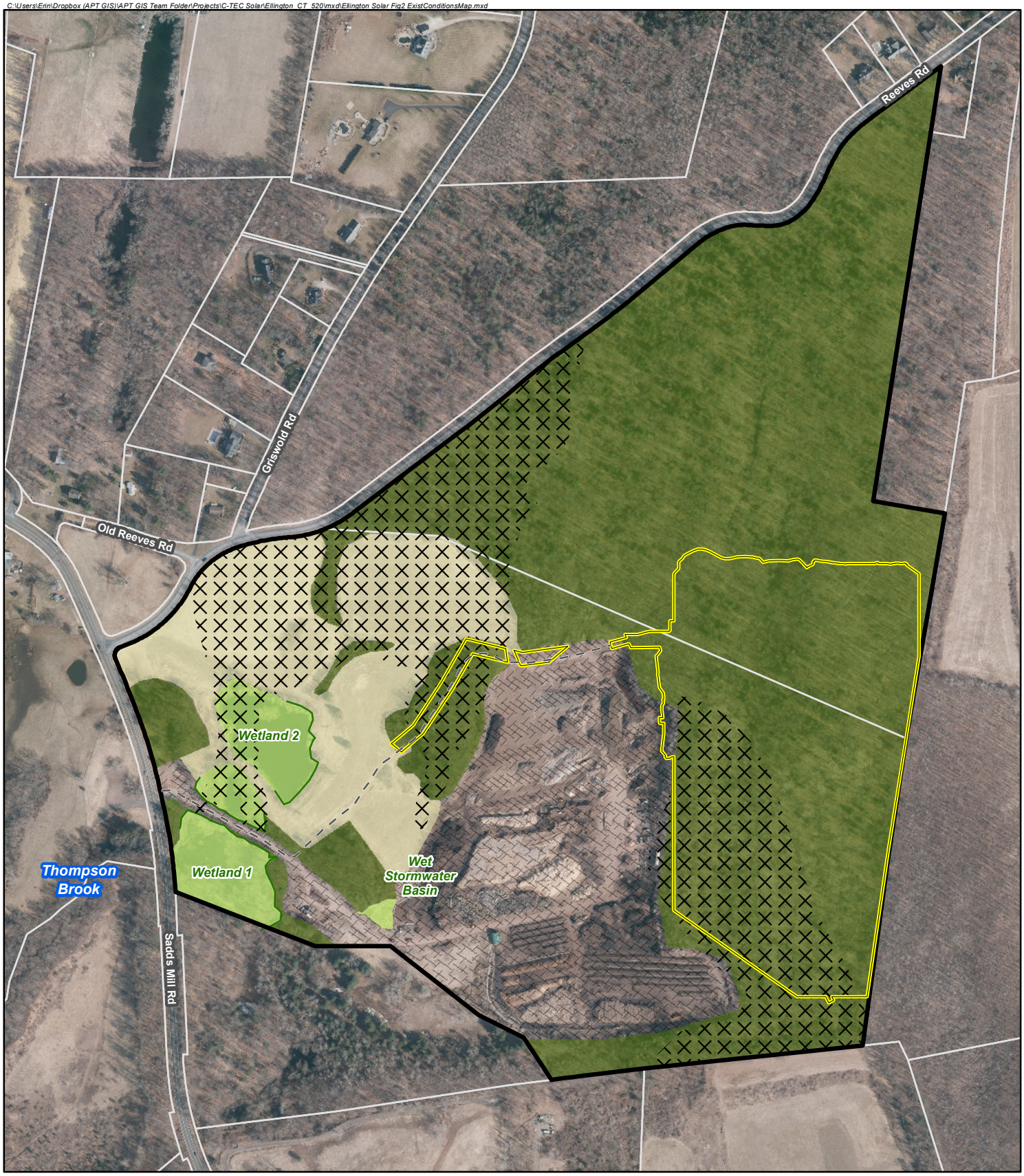
2.1 Project Setting

The Site is located on the eastern side of Sadds Mill Road (CT 140) and is bounded by Reeves Road to the north and the Ellington Transfer Station to the south. The Project will be located along the eastern property line within a wooded portion of the Site and east of the Materials Facility.

The Site's existing topography varies throughout, with grades gradually sloping downward in a northeast to south/southeast pattern. Ground elevations range from approximately 300 feet above mean sea level ("AMSL") in the northeast to approximately 228 feet AMSL to the south.

Figure 2, *Existing Conditions Map*, depicts current conditions on the Site.

The surrounding land use is characterized primarily by a mix of undeveloped wooded and agricultural land to the north and east with some industrial (sand and gravel production) and the Ellington Transfer Station and agricultural land to the south. The Ellington Transfer Station is owned and operated by the Materials Innovation and Recycling Authority, a Connecticut state agency. Residential development becomes more prevalent farther to the northwest/west of the Site.



Legend

- Site
- Approx. Parcel Boundary
- Project Area
- Access Road (No Improvements)
- Prime Farmland Soils
- Delineated Wetland Boundary

Habitat Cover Type

- Agricultural Field
- Developed
- Mixed Hardwood Forest
- Wetlands

N

500 250 0 500 Feet

Figure 2
Existing Conditions Map

Proposed Solar Energy Facility
277 Sadds Mill Road
Ellington, Connecticut

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Map Notes:
Base Map Source: 2019 Aerial Photograph (CTECO)
Map Scale: 1 inch = 500 feet
Map Date: March 2021

2.2 Project Development and Operation

Upon its completion, the solar electric energy generating facility ("Facility") will consist of a total of 18,432 Q. Peak Duo XL-G10.3/BFG 480W photovoltaic modules ("panels"); 60 CPS SCA60KTL-DO/US-480 and eight (8) CPS SCA50KTL-DO/US-480 inverters; two (2) pad mounted switchgears; two (2) 2,000 kVA transformers, and four (4) service interconnection lines. A ground-mounted racking system will be used to secure the panel arrays. The perimeter of the solar field will be surrounded by a seven (7)-foot tall chain-link security fence. The proposed electrical interconnection to the existing Eversource distribution system will extend to the solar field above ground initially, following existing dirt access roads originating from Sadds Mill Road, before transitioning to underground at the fence line. The aboveground portion of the interconnection will require the installation of approximately 13 new utility poles. Once complete, the Facility will occupy approximately 24.0 acres of the Site with an additional ±8.13 acres of improvements beyond the fenced limits, for a total of ±32.13 acres ("Project Area").

Proposed development drawings are provided in Appendix A, *Project Plans*.

The leading edge of the panels will be approximately thirty-six (36) 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. The Petitioner does not envision requiring any "snow removal" operations; rather, the snow will be allowed to melt or slide off.

Construction activities within the Project Area will include tree clearing; grading; installing erosion and sedimentation (E&S") control measures; creating stormwater basins; installing racking and modules; electrical trenching, and installing overhead utility poles. A specific low-growth pollinator mix from The Bee and Butterfly Habitat Fund will be used to reseed areas within the fenced field to attract specific pollinating species (see Appendix A, *Project Plans* for details).

Approximately 31.7 acres of tree clearing will be required for construction of the proposed Facility. Some additional tree trimming/clearing will be required to accommodate the installation of the new electric utility poles.

Earthwork is required to bring grades below 15% within the fenced field and excavation, and regrading activities (cuts/fills) are necessary within other portions of the Project Area for Project development and construction of stormwater management basins. These features and topographic modifications will allow the Project to comply with the DEEP's *Appendix I, Stormwater Management at Solar Array Construction Projects*. ("*Appendix I*").

The Facility is unstaffed; after construction is complete and the Facility is operable, traffic at the Site will be minimal. It is anticipated that the Facility will require mowing and routine maintenance of the electrical equipment one (1) time per year. Annual maintenance will typically involve two (2) technicians for a day. Repairs will be made on an as-needed basis.

2.2.1 Access

The Facility will be accessed from the west, utilizing the existing Materials Facility dirt road network originating off of Sadds Mill Road. The Project will not create any new roads or require regrading/resurfacing of the existing access roads, nor will the Project affect continued access to the remainder of the Site.

2.2.2 Public Health and Safety

The Project will meet or exceed applicable local, state, national and industry health and safety standards and requirements related to electric power generation. 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 will be gated, limiting access to authorized personnel only while two (2) additional gates will be installed along the southern fence line to provide access for inspection and maintenance of stormwater management basins. All Town emergency response personnel will be provided access via a Knox Pad lock. The Facility will be remotely monitored and will have the ability to remotely de-energize in the case of an emergency.

2.2.3 Land Use Plans

The Project is consistent with state and federal policies and will support the state's energy goals by developing a renewable energy resource while not having a substantial adverse environmental effect. Although local land use requirements do not apply to this Project, it has been designed to meet the intent of the Town's land use regulations, to the extent feasible. As stated previously,

the Site is located in two different zones with a majority of the Site located in the Industrial (I) zone, with the exception of a narrow strip along the northern property line which is zoned Rural Agricultural Residential (RAR). The Project will be located entirely within the portion of the Site that is zoned Industrial.

While the Town's 2019 Plan of Conservation and Development ("POCD") does not specifically address renewable energy sources, the Petitioner believes the Project will benefit the local community by improving electrical service for existing and future development through the availability of enhanced local generating capacity that does not rely solely on the congested regional electrical transmission network.

3 Environmental Conditions

This section provides an overview of the current environmental conditions at the Site and an evaluation of the Project's potential impacts on the environment. The results of this assessment demonstrate that the Project will comply with the DEEP air and water quality standards and will not have an undue adverse effect on the existing environment and ecology.

Please refer to Figure 3, Proposed Conditions Map for a depiction of the Project and its compatibility with the resources discussed herein.

3.1 Habitat and Wildlife

Four (4) habitat types (vegetative communities) have been identified on the Site, with two (2) located within and proximate to the Project Area. Transitional ecotones separate these distinct habitat types while interior wetland habitats are also located in proximity to the Project Area. These varied habitats have the ability to support several species and are as follows.

The varied habitats are as follows:

- Agriculture Field;
- Mixed Hardwood Forest;
- Developed; and
- Wetlands.

Wetlands introduced in this section are described in detail in Section 3.3.1 of this report.

Legend

- Site
- Approx. Parcel Boundary
- Delineated Wetland Boundary
- Wetlands
- Access Road (No Improvements)
- Limit of Disturbance
- Solar Modules
- Conc. Equipment Pad
- Gravel Area
- Stormwater Basin
- Perimeter Fence
- Treeline (Clearing Limit)
- Interconnection Path (Overhead)
- Utility Pole

Figure 3
Proposed Conditions Map

Proposed Solar Energy Facility
277 Sadds Mill Road
Ellington, Connecticut

N

500 250 0 500 Feet

Map Notes:
Base Map Source: 2019 Aerial Photograph (CTECO)
Map Scale: 1 inch = 500 feet
Map Date: March 2021

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3.1.1 Habitat Types

Agricultural Field

Portions of the existing dirt road that will be used to access the Facility bisect maintained hayfields that consist of typical cool-season grasses that are routinely mowed and/or hayed.

The installation of the overhead utility poles required for the interconnection would have a nominal effect on this habitat. The existing dirt access road will not need to be regraded or resurfaced. Therefore, no impacts to this habitat type are anticipated.

Mixed Hardwood Forest

Mixed Hardwood Forest habitat occupies a majority of the northeast and eastern extents of the Site with smaller isolated pockets of forested habitat located within the Developed and Agricultural habitats in the central western and western extents of the Site. These smaller fragmented forested habitats share similar species compositions as the larger forested block to the east. However, due to increased 'edge' effects, these isolated forested blocks have increased invasive species dominance in the understory and along the transitional margins including autumn olive (*Elaeagnus umbellata*), multiflora rose (*Rosa multiflora*), and Asiatic bittersweet (*Celastrus orbiculatus*).

The larger forest block in the eastern portion of the Site is generally dominated in the overstory by mature hardwoods including red and white oaks (*Quercus ruba* and *Quercus alba*) and sugar and red maple (*Acer rubrum* and *Acer saccharum*), with suppressed components of American beech (*Fagus grandifolia*). A majority of this forested habitat is in the stem exclusionary phase with dense stocking and closed canopy. Generally, two age classes appear to be present within the forest overstory. As such, understory growth is limited, with dominant species consisting of mapleleaf viburnum (*Viburnum acerifolium*), musclewood (*Viburnum acerifolium*), and American beech/red maple thickets.

In the southeast corner of the Site, this habitat has been recently logged with much of the overstory removed. Dominant species previously listed remain dominant in the overstory and understory. Due to the recent nature of the overstory selective cut, this area has not had the opportunity to rebound and therefore classification of the transitional nature of this habitat type is provided as an inclusion to the larger Forested habitat. It is noted that at the time of inspection, a majority of the removed tree canopy has been left in place on the forest floor ("slash") retaining

much of the biological nutrient content of the trees harvested and improving habitat structure in the understory. Please refer to Sections 3.1.3 and 3.1.4 for additional discussions of this habitat type.

Developed

The installation of the overhead utility poles required for the interconnection would have minimal effect on developed areas of the Site, which consist of the Materials Facility and existing dirt access roads and structures/access roads associated with it.

Wetland

Two (2) wetland areas were identified on the Site. No impacts to these resources are anticipated as a result of this Project. As these wetlands consist of a complex of habitat types, a more detailed discussion of each wetland is provided in Section 3.3.1.

Table 1, *Habitat Areas Table* provides the total acreages of each habitat type located on the Site and the area proposed to be occupied by the Project.

Table 1: Habitat Area Table

Habitat Areas		
Habitat Type	Total Area On-Site (+/- ac.)	Area Occupied by Project (+/- ac.)
Agricultural Field	21.3	0.0
Mixed Hardwood Forest	97.2	31.7
Developed	31.9	0.5
Wetland	6.3	0.0

3.1.2 Core Forest Determination

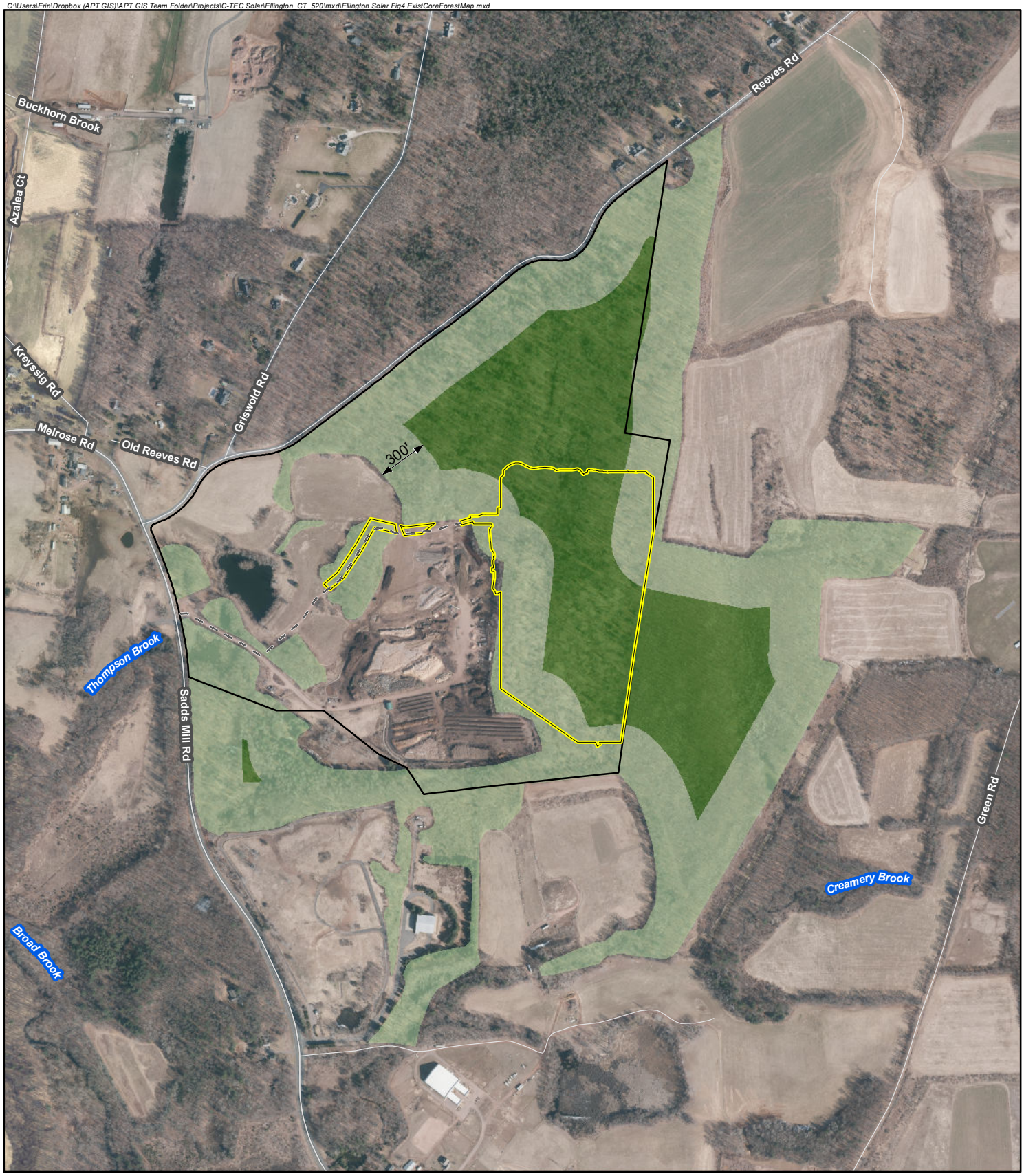
APT evaluated the size and extent of the contiguous interior forest block (or "core forest") present within and adjacent to the Site using two (2) publicly available GIS-based datasets designed to assess impacts to core forest habitat. In addition, an independent evaluation was performed (based on GIS analysis of 2016 leaf-off aerial photography, field observations and professional experience).

The first dataset, the Department's *Forestland Habitat Impact Mapping* [3], does not include the Site within an area mapped as core forest.

The second dataset, UConn's Center for Land Use Education and Research's ("CLEAR") Forest Fragmentation Analysis ("FFA")[4] study, designates "core forest" as greater than 300 feet from non-forested habitat. This 300-foot zone is referred to as the "edge width" and represents sub-optimal breeding habitat for forest-interior birds due to 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 identifies three categories of core forest: small (< 250 acres); medium (250-500 acres); and large (>500 acres). Based on the FFA criteria, the Site contains forested habitat that includes a "small core" forest interior. This is consistent with APT's independent analysis, which indicates that the total area of this small core forest block is approximately 60.97 acres. This small-sized core forest block is isolated by Reeves Road from a larger forest block that is off-site to the north. The Project Area, which has been part of a managed woodlot since the 1720's including recent logging operations, is located within the southern portion of this forest zone. See Figure 4, *Existing Core Forest Map*.

[3] Source: http://ctdeep.maps.arcgis.com/apps/webappviewer/index.html?id=7b81844bab634281b544c20bf2d7bfb8: This spatial screening layer identifies prime contiguous and connected core forestland blocks. If the project intersects with the Forestland Habitat Impact Map there is a potential for material effects to core forest.

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



Legend

- Site
- Project Area
- Access Road (No Improvements)

Existing Forest Block

- Core Forest
- Edge Forest

Figure 4
Existing Core Forest Map

Proposed Solar Energy Facility
277 Sadds Mill Road
Ellington, Connecticut

N

800 400 0 800
Feet

Map Notes:
Base Map Source: 2019 Aerial Photograph (CTECO)
Map Scale: 1 inch = 800 feet
Map Date: March 2021

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In total, ±31.7 acres of tree clearing are required for the development of the Facility, including the installation of the interconnection line. However, only ±17.33 acres of tree clearing would occur within the small core forest block. The majority of forested habitat on the Site proposed to be cleared for Facility development is considered edge forest due to existing fragmentation.

The clearing activities would create ±13.1 acres of new edge forest, resulting in reduction of the total small core forest block from ±60.97 acres to ±30.43 acres. Considering the small size of the existing core forest block and existing perforations, the Project would not likely result in a significant negative impact to core forest habitat. See Figure 5, *Proposed Core Forest Map*.

CTEC personnel, the landowner and individuals from DEEP Forestry performed a Site walk and inspection on February 14th, 2018. After the completion of the Site walk representatives from DEEP Forestry indicated that this project would not materially affect the status of any habitat identified as core forest. In accordance with Connecticut General Statutes §16-50k(a) and based on the size of the proposed Facility (>2.0 MW), the Petitioner sent correspondence to DEEP Forestry in December of 2020 documenting the results of the Site visit and the assessment that the Project will not materially affect core forest. The Petitioner received notification on December 23, 2020 that DEEP Forestry concurred with this assessment and the Project "…*will not materially affect the status of such Site as core forest*". A copy of this letter is included in *Appendix B, DEEP Forestry & DOA Correspondence*.

Legend

- Site
- Project Area
- Access Road (No Improvements)

Proposed Forest Block

- Core Forest
- Edge Forest
- Direct Impact to Core Forest
- Direct Impact to Edge Forest
- Newly Created Edge Forest (Previously Core Forest)

N

800 400 0 800 Feet

Figure 5
Proposed Core Forest Map

Proposed Solar Energy Facility
277 Sadds Mill Road
Ellington, Connecticut

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Map Notes:
Base Map Source: 2019 Aerial Photograph (CTECO)
Map Scale: 1 inch = 800 feet
Map Date: March 2021

3.1.3 Wildlife

The proposed Facility will alter two (2) of the four (4) habitat types located on Site: Mixed Hardwood Forest and Developed. Project-related activities proposed within existing Developed areas are not anticipated to affect wildlife since these areas currently provide little value from a wildlife utilization standpoint. Therefore, the following discussion focuses on the Mixed Hardwood Forest.

The Mixed Hardwood Forest habitat on this Site, in combination with larger forested habitat to the north and east, is of suitable size and continuity to support forest-dependent wildlife species and higher species biodiversity. However, existing land uses surrounding the Site have created substantial habitat fragmentation. The Site itself is dominated by edge forest, and Reeves Road and surrounding agricultural fields represent ecological barriers to additional forested habitat beyond the Site. As such, Project-related impacts to forested habitat would not likely result in a significant negative effect (i.e., additional habitat fragmentation) on a larger landscape scale.

The edge forest habitat prevalent on the Site provides higher quality habitat for species that are more tolerant of human disturbance, habitat fragmentation and resultant "edge" effects. Generalist wildlife species, including several song birds and mammals such as raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), grey squirrel (*Sciurus carolinensis*), Virginia opossum (*Didelphus virginiana*), and eastern chipmunk (*Tamias striatus*) could be expected to use these areas of the Site.

Forest-Dwelling Birds

Habitat for forest-dwelling birds includes areas suitable for forest-interior neotropical migrants, many of which are identified as a "greatest conservation need" ("GCN") by the DEEP's *2015 Connecticut Wildlife Action Plan*.

Species that may utilize the Site's forested areas include the wood thrush (*Hylocichla mustelina*) and ovenbird (*Seiurus aurocapilla*). Other common forest-interior species expected to occur include the eastern wood pewee (*Contopus virens*) and the red-eyed vireo (*Vireo olivaceus*). These species are noted as examples; similar species would also likely be present. In addition to the forest block being small, the forest structure is of moderate quality for forest-dwelling songbirds due to the extensive recent selective-cut logging operations and the limited shrub and midstory strata development. The recent logging operations have disturbed the soils and

increased light penetration to the forest floor, resulting in regeneration of a more robust midstory strata and allowing invasive shrub species that are currently present in the understory to take advantage of these conditions and become even more dominant.

3.1.4 Habitat Enhancement Area

Once the perimeter fence has been installed, the strip of land between the eastern fence line and the proposed forest edge will remain clear of mature trees to prevent shading of the solar arrays. The Petitioner has agreed to establish a Habitat Enhancement Area along the eastern edge of the facility that will be managed for wildlife use by restricting mowing on a rotation basis every four (4) to seven (7) years. This mowing plan will allow the area to revert to late old field habitat and create a soft ecotone that can provide cover and a suitable environment for forest-dwelling wildlife and edge nesting birds. Soils that are disturbed during construction activities within this shade mitigation zone will be seeded with a pollinator-friendly seed mix to provide permanent stabilization and wildlife habitat.

3.2 Rare Species

APT reviewed publicly-available information to determine the potential presence of state/federally listed species and critical habitat on or proximate to the Site.

3.2.1 Natural Diversity Data Base

The DEEP 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 DEEP 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 DEEP 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) polygons 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 DEEP NDDB mapping (June 2020) and determined if any such species or habitats occur partially or entirely on Site. The NDDB mapping reveals that no NDDB polygon exists partially or entirely on Site. Therefore, consultation with NDDB is not required. See *Appendix C, DEEP NDDB Mapping* for location of the nearest NDDB polygon.

3.2.2 USFWS Consultation

The northern long-eared bat ("NLEB"; *Myotis septentrionalis*) is a federally-listed[5] threatened species also 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 East Granby, approximately 11 miles to the west.

The Project will result in the removal of a number of trees with greater than three (3) inches DBH. Since tree removal activities can potentially impact NLEB habitat, APT completed a determination of compliance with Section 7 of the Endangered Species Act of 1973 for the Project.

In compliance with the US Fish and Wildlife Service ("USFWS") criteria for assessing NLEB, the Project will not likely result in an adverse effect or incidental take[6] of NLEB and does not require a permit from USFWS. A UWFWS letter dated October 21, 2020 confirmed compliance; thus, no further consultation with USFWS is required for the proposed activity.

A full review of the *Endangered Species Act (ESA) Compliance Determination* and USFWS's Response Letter is provided in Appendix D, *USFWS and NDDB Compliance Statement*.

[5] Listing under the federal Endangered Species Act

[6] "Incidental take" is defined by the Endangered Species Act as take that is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." For example, harvesting trees can kill bats that are roosting in the trees, but the purpose of the activity is not to kill bats.

3.3 Water Resources

3.3.1 Wetlands and Watercourses

An APT Registered Soil Scientist completed a field inspection and wetland delineation on September 25, 2020 and November 4, 2020. Two (2) wetlands were identified on the Site. The results of the field delineation are summarized below. The locations of these resources are depicted on Figure 2, *Existing Conditions Map*.

Wetland 1

Wetland 1 is located within the southwestern portion of the Site and consists of seasonally saturated and flooded wetland soils in addition to open water features. The Site's existing dirt access road currently bisects Wetland 1, with conveyance being provided via a 24-inch reinforced concrete culvert. More northern areas of Wetland 1 experience permanent to semi-permanent flooding as a result of the hydraulic restriction caused by this culvert while the southern extents of Wetland 1 consist of a broad emergent swamp with bordering scrub/shrub dominant habitats. This wetland resource generally drains south and east under Sadds Mill Road forming a confluence with drainage received from the larger Thompson Pond (identified as Wetland 2) to the north. A portion of this wetland also discharges west, under Sadds Mill Road, forming into Thompson Brook.

Wetland 2

Wetland 2, located within the western portion of the Site and north of Wetland 1, consists of a large permanently flooded open water resource known as Thompson Pond which drains south via an outlet structure into Wetland 1. The boundaries of this resource are steeply sloping banks dominated by exposed sandy areas and complexes of scrub-shrub vegetation.

3.3.2 Wetland Impacts

No direct impacts to wetlands or watercourses are associated with developing the majority of the Facility, which is distant from the identified wetland resources. The nearest construction activity to either wetland resource would occur within approximately 5 feet, consisting of the installation of the new utility poles associated with the interconnection along the existing dirt access road. Such work activities would not be expected to have an adverse impact to nearby wetland resources since the new utility poles would be located within developed/disturbed areas along

the shoulder of the existing access road generally consisting of fill. Resurfacing and/or regrading of the existing access road is not proposed. Table 2, *Wetlands Impacts Table*, provides a summary of distances to wetland resources.

Any potential impacts associated with the Project's construction activities will be minimized by the proper installation and maintenance of proposed sedimentation and erosion controls, in accordance with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*. As such, the Project will not have a likely adverse impact to wetland resources.

Table 2: Wetlands Impacts Table

Wetland Impacts		
Direct Impacts to Wetland 1 (ac.)	0	
Direct Impacts to Wetland 2 (ac.)	0	
Total Direct Impacts to Wetlands (ac.)	0	
Project Proximity to Wetlands (from limit of disturbance)	Distance (+/-ft.)	Direction (of wetland/water from LOD)
Wetland 1	5	north
Wetland 2	145	north
Solar Installation Proximity to Wetlands (from perimeter fence)	Distance (+/-ft.)	Direction (of wetland/water from perimeter fence)
Wetland 1	1540	west
Wetland 2	1395	west

3.3.3 Floodplain Areas

APT reviewed the United States Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map ("FIRM") for the Subject Property. 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 area of the Subject Property is mapped on FIRM PANEL #090158 0005 C, dated February 5, 1997. Based upon the reviewed FIRM Map, the proposed Project Area is located in an area designated as Zone X, which is defined as areas of minimal flooding, typically above the 500-year flood level.

The Project Area is not located within a 100- and 500-year flood zone and as such, no special considerations or precautions relative to flooding are required for the Project.

3.4 Water Quality

Once operative, the Facility will be unstaffed, and no potable water uses or sanitary discharges are planned. No liquid fuels are associated with the operation of the Facility. Stormwater generated by the proposed development will be properly handled and treated in accordance with the 2004 *Connecticut Stormwater Quality Manual*.

3.4.1 Groundwater

Groundwater underlying the Site is classified by publicly available DEEP mapping as "GA".[7] This classification indicates groundwater within the area is presumed to be suitable for human consumption without treatment. Additionally, the extreme southwestern portion of the Subject Property, which contains the access route) is classified as "GA, GAA may not meet current standards" indicating that groundwater in this area may be degraded.

Based upon the reviewed DEEP mapping, the Subject Property is not located within a mapped (preliminary or final) DEEP Aquifer Protection Area ("APA").

The Project will have no adverse environmental effect on ground water quality.

3.4.2 Surface Water

Based upon DEEP mapping, the Site is located in Major Drainage Basin 4 (Connecticut River), Regional Drainage Basin 42 (Scantic River), and Sub regional Drainage Basin 4206 (Broad Brook). The majority of the Site and the entirety of the Project Area are located in Local Drainage Basin 4206-08 (Creamery Brook at mouth above Broad Brook) while the northwestern portion of the Site is located in Local Drainage Basin 4206-00 (Broad Brook above Hydes Brook).

Based upon the reviewed DEEP mapping, the Subject Property is not located within a mapped Public Drinking Supply Watershed nor are any of the wetland/surface water features, including Thompson Brook, mapped as DEEP Cold Water Habitat Sites.

Thompson Pond is located on the southwestern portion of the Subject Property and is classified as a Class A surface waterbody by the DEEP with designated uses that include habitat for fish and other aquatic life and wildlife; potential drinking water supplies; recreation; navigation; and

[7] Designated uses in GA classified areas include existing private and potential public or private supplies of drinking water and base flow or hydraulically connected surface water bodies.

water supply for industry and agriculture. The Project access route is over 100 feet to the south and east of Thompson Pond.

The Project will have no adverse environmental effect on surface water quality, as sufficient setbacks have been established from water resources. During construction, E&S controls will be installed and maintained in accordance with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*. Once operative, stormwater will be managed in accordance with the 2004 *Connecticut Stormwater Quality Manual*.

3.4.3 Stormwater Management

In addition to the 2004 Connecticut Stormwater Quality Manual, the Project has been designed to meet DEEP's *Appendix I*. Preparation for the Project development requires approximately 32.13 acres of disturbance, of which ±23.36 will require clearing and grubbing and ±8.77 will consist of tree removal (stumps to remain). Three areas interior to the array that are greater than 15% slope are being graded to be less than 15% slope. Due to the conversion of existing woods to meadow and a required a half-drop in hydrologic soil groups within the array area, from DEEP's Appendix I, there will be an increase in stormwater runoff on Site. In order to manage this increase, three grass-lined stormwater management basins with outflow control devices and overflow weirs would be installed along the southern and western Project Area.

All areas that are grubbed during construction will be seeded. The area within the Facility and along the eastern fence line will be seeded with The Bee & Butterfly Habitat Fund CT Solar Array Mix – 36", consisting of almost 85% of wildflowers, forbs, and legumes. The remaining area outside of the Facility will be seeded with a New England semi-shade grass and forbs mix (or equal).

Post-development peak discharges to the waters of the State of Connecticut for the 2-, 25-, 50- and 100- year storm events are less than the pre-development peak discharges. As a result, the proposed solar array will not result in any adverse conditions to the surrounding areas and properties. For technical details regarding stormwater, please refer to the Stormwater Management Report submitted under separate cover. To safeguard water resources from potential impacts during construction, the Petitioner 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 DEEP Stormwater Management. The SWPCP will

include monitoring of established E&S controls that will be installed and maintained in accordance with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*. The Petitioner will also apply for a *General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities* from DEEP.

With the incorporation of these protective measures, stormwater runoff from Project development will not result in an adverse impact to water quality associated with nearby surface water bodies.

3.5 Air Quality

The Site is currently developed with a mix of developed (Materials Facility) and undeveloped (agricultural/forested) land. Due to the nature of a solar energy generating facility, no air emissions will be generated during operations and, therefore, the operation of the Facility will have no adverse effects on air quality and no permit is 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.

3.6 Soils and Geology

The construction of the stormwater management basins and grading within the Facility will generate some excess material that will be distributed on site. Any excess material will be transferred to the Materials Facility on Site. Prior to the removal or placement of fill material, the topsoil will be stripped and stockpiled for use on disturbed areas. The topsoil will be spread over the disturbed areas being seeded. See *Appendix A, Project Plans.*

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*.

Surficial materials on the western portion of the Site are comprised of deposits of sand and gravel while surficial materials on the eastern portion of the Site are comprised of thin deposits of glacial till.

Soils located on and within the vicinity of the Site are identified as follows.

- Manchester gravelly sandy loam –an excessively-drained sandy and gravelly glaciofluvial deposited soil derived from sandstone and shale and/or basalt parent material.
- Enfield silt loam – a well-drained coarse-silty eolian deposited over sandy and gravelly glaciofluvial deposited soil derived from granite, schist, and/or gneiss parent material.
- Narragansett silt loam – a well-drained coarse-loamy eolian deposited over sandy and gravelly melt-out till deposited soil derived from gneiss and/or schist and/or sandstone and shale parent material.
- Gravelly udorthents-Pits complex - moderately well-drained soils derived from gravelly outwash parent material.

Bedrock beneath the Subject Property is identified as Portland Arkose. Portland Arkose is described as a reddish-brown to maroon micaceous arkose and siltstone and red to black fissile silty shale which grades eastward into coarse conglomerate (fanglomerate).

The Petitioner does not anticipate encountering bedrock during Project development.

3.6.1 Prime 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] the Project Area contains Prime Farmland Soils (See Figure 2, *Existing Conditions Map).*

The majority of the Site, except for those areas associated with the Materials Facility, has remained largely undeveloped and used primarily for agriculture (western portions) and forest management activities (Project Area) over the past century. Recognizing that the Project has a

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

useful life and could be considered temporary in nature, the Petitioner has proposed using minimally intrusive methods for construction of the Project where feasible. The use of a ground-mounted racking system for the installation of the solar panels and associated equipment minimizes the need for substantial grading for this portion of the Project.

Some excavation and regrading activities are necessary within areas mapped as Prime Farmland Soils to facilitate site development and construct stormwater management basins. These features and topographic modifications allow the Project to comply with *Appendix I*. Topsoil removed from these areas will be segregated from underlying horizons and either stockpiled or spread throughout the Project Area as top dressing for reestablishing vegetation. No topsoil will leave the Site.

After its useful life, the Facility will be decommissioned and all of the disturbed areas will be top dressed with native soils and reseeded with the same (or approved equivalent) pollinator blend as established within the rest of the Facility area. Implementation of these proposed design strategies demonstrates that the Project will not materially affect Prime Farmland Soils. In accordance with Connecticut General Statutes §16-50k(a), the Petitioner sent correspondence to the Connecticut Department of Agriculture ("DOA") in December of 2020, documenting that the Project will not materially affect Prime Farmland Soils on the Site. The DOA responded on April 5, 2021 and stated that "*…the Department of Agriculture can conclude that this project will not materially affect the status of project land as prime farmland"*. A copy of this letter is included in *Appendix B, DEEP Forestry & DOA Correspondence.*

Based on conversations with and at the request of the property owner, the Petitioner intends to plant a specific pollinator blend of low-growth grasses intended to attract and promote the propagation of pollinator species within the fenced perimeter of the Project. The Bee and Butterfly Habitat Fund has provided a specific seed blend and the necessary operation and maintenance program needed to establish the proposed pollinator-friendly species. The Petitioner is awaiting a written response from DOA.

Table 3, *Farmland Soils Assessment and Impacts Table* provided below details the amount of farmland soils located on the Site and the proposed impact from the Project.

Table 3: Farmland Soils Assessment and Impacts Table

Farmland Soils Assessment and Impacts		
Farmland Soil Classification	Total Area On-Site (+/- ac.)	Area within Project Limits (+/- ac.)
Prime Farmland Soil Area	39.7	10.6

3.7 Historic and Archaeological Resources

Heritage Consultants LLC ("Heritage Consultants") at the request of APT, 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 one (1) National Register of Historic Places ("NRHP") property within one (1) mile of the Site. This resource is not proximate to the Project Area and due to its distance from the Site, no direct or indirect effects from the Project are anticipated.

In terms of archaeological potential, it was determined that approximately 14.84 acres located along the central and eastern portions of the Project Area retained a moderate potential to contain intact archaeological deposits in the subsoil. At the request of the Petitioner, Heritage performed a Phase 1B Professional Cultural Resources Assessment and Reconnaissance Survey ("Phase 1B").

Fieldwork for the Phase 1B assessment included a pedestrian survey, photo-documentation, and the excavation of 302 shovel tests across the Project Area, none of which yielded any cultural materials, cultural features, or soil anomalies. Based on the results, no additional testing prior to construction of the proposed Project is deemed necessary.

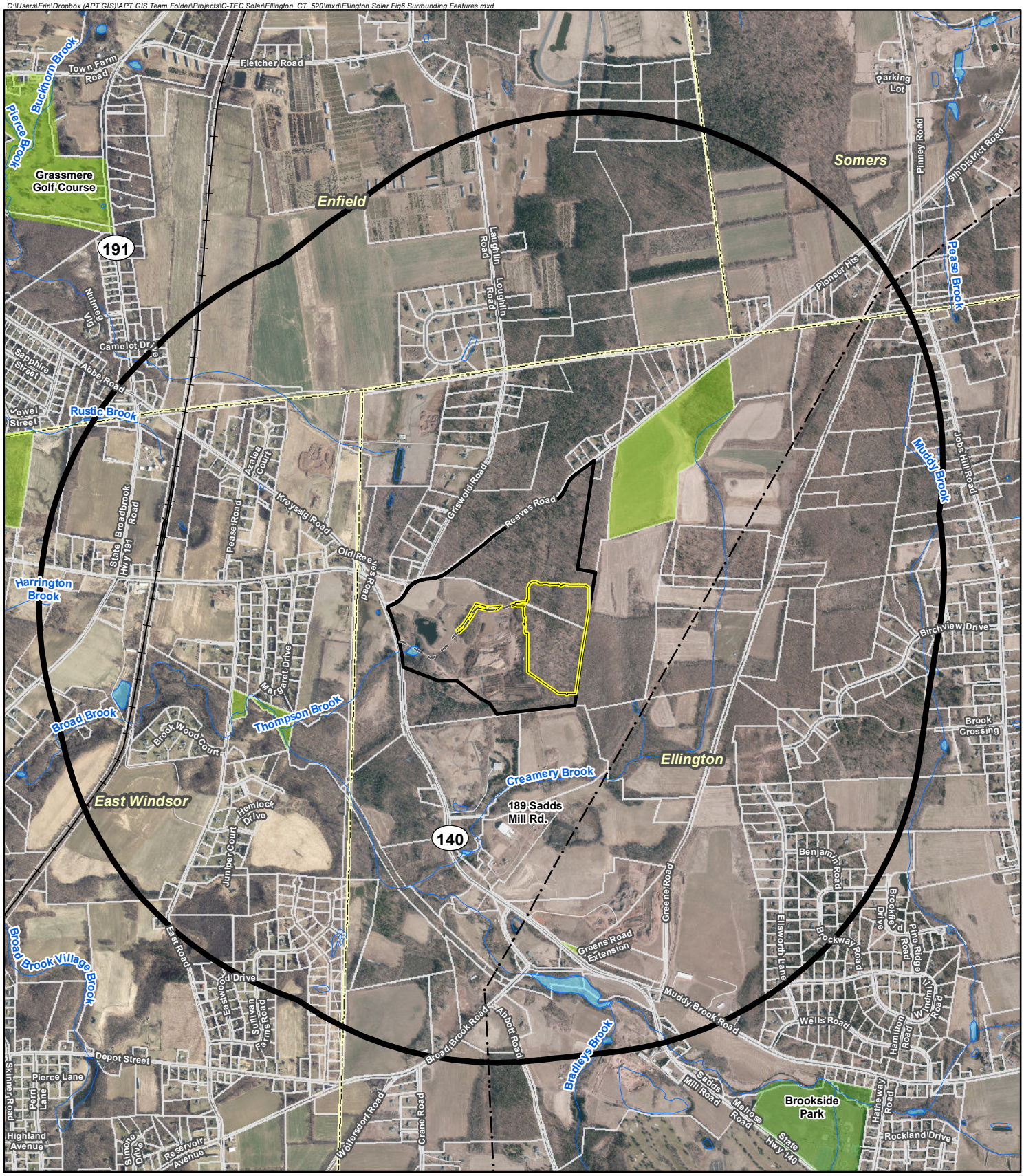
On behalf of APT, Heritage Consultants submitted Project and Site historic/cultural information, as well as copies of the Phase 1A and 1B reports to the SHPO for agency review and comment on January 5, 2021. SHPO responded on February 9, 2021 stating that "…SHPO concurs with the findings of the report that additional archeological investigations of the Project Area is not warranted and that no historic properties will be affected by the proposed activities."

Copies of the Phase 1A and Phase 1B reports as well as SHPO's response letter are included in Appendix E, *SHPO Response and Cultural Resources Reconnaissance Survey Reports.*

3.8 Scenic and Recreational Areas

No state or local designated scenic roads or scenic areas are located near the Site and therefore none will be physically or visually impacted by development of the Project. Additionally, there are no CT Blue Blaze Hiking Trails located proximate to the Site.

There are no public recreational areas located proximate to the Site; the nearest protected open space parcel is approximately 550 feet to the northeast at 48 Reeves Road. This parcel is an undeveloped parcel managed by the Northern Connecticut Land Trust. The nearest private recreational area, an equestrian center located at 189 Sadds Mill Road in Ellington, CT, is located approximately 2,300 feet to the south. Impacts to either resource, either physical or visual, are not anticipated. See Figure 6, *Surrounding Features Map,* for these and other resources located within one mile of the Site.



Legend

- 1 Mile Radius
- Site
- Approx. Parcel Boundary
- Project Area
- Access Road (No Improvements)
- Municipal Boundary
- Railroad
- Transmission Line
- Watercourse

Open Space Property

- Municipal Park
- Municipal

Figure 6
Surrounding Features Map

Proposed Solar Energy Facility
277 Sadds Mill Road
Ellington, Connecticut

Map Notes:
**Legend Item Not Located Within Mapped Area*
Base Map Source: 2019 Aerial Photograph (CTECO)
Map Scale: 1 inch = 2,000 feet
Map Date: March 2021

N

2,000 1,000 0 2,000 Feet

CTEC SOLAR

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3.9 Noise

The central portion of the Site is currently developed with an active sand and gravel, mulch and compost recycling facility. The remainder of the Site is undeveloped. Noise associated with the daily operation of Materials Facility is the only noise source that presently exists.

Construction noise is exempted under the Connecticut regulations for the control of noise under RCSA 22a-69-1.8(h).[9] 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 DEEP noise standards for a Class A Noise Zone.[10] The Site is located within an Industrial (I) zone and is abutted by areas zoned Rural Agricultural Residential (RAR). Conservatively, the Facility would be considered a Class C (Industrial) noise emitter to Class A (Residential) receptors. As such, it is subject to noise standards of 61dBA during the daytime and 51 dBA at night. The Facility's only noise generating equipment are the inverters and transformers. Based on the most conservative information provided by specified equipment manufacturers, the loudest proposed equipment are the two (2) 2,000 kVA transformers that will generate a maximum sound level of approximately 61 dBA (measured at 1-foot away).

Sound reduces with distance and the inverters and transformers are inactive at night. The closest property line to the either transformer is approximately 880 feet to the northeast (currently undeveloped) while the nearest residence, located at the corner of Griswold Road and Reeves Road, is located approximately 1,800 feet to the northwest. Both parcels are zoned Rural Agricultural Residential (RAR).

APT applied the Inverse Square Law[11] to evaluate the relative sound level of the transformers at the nearest property line. Based on these calculations, nearby receptors are of sufficient distances

[9] The Town does not have a noise ordinance.

[10] RCSA 22a-69-3.5. Noise Zone Standards

[11] Inverse Square Law states that *the intensity of a force is inversely proportional to the square of the distance from that force*. With respect to sound, this means that any a noise will have a drastic drop-off in volume as it moves away from the source and then shallows out.

from the proposed Project-related equipment and once operational, noise levels during Facility operation will meet applicable DEEP noise standards for Class A Noise Zones.

Please refer to the transformer and inverter specification sheets provided in Appendix F, *Product Information Sheets*.

3.10 Lighting

The Site is void of structures, except for several temporary structures associated with the Materials Facility in the central and eastern portions of the Site and a guard shack/operations office along the Site's main access road. Several of these structures have exterior security and safety lighting to aid in the operation of the Materials Facility.

No exterior lighting is planned for the Project. There will be some small, non-intrusive lighting fixtures within the equipment to aid in maintenance.

3.11 FAA Determination

APT submitted relevant Project information to the Federal Aviation Administration ("FAA") for an aeronautical study to evaluate potential hazards to air navigation. The FAA provided a Determination of No Hazard to Air Navigation on December 11, 2020. See Appendix G, *FAA Determination*. Based on this determination, there is no need to conduct a glare analysis.

3.12 Visibility

The Facility will consist of 18,432 non-reflective solar panels measuring approximately 10 feet above final grade. The proposed electrical interconnection to an existing distribution pole located to the west of the Facility on Sadds Mill Road will require the installation of approximately 13 new utility poles.

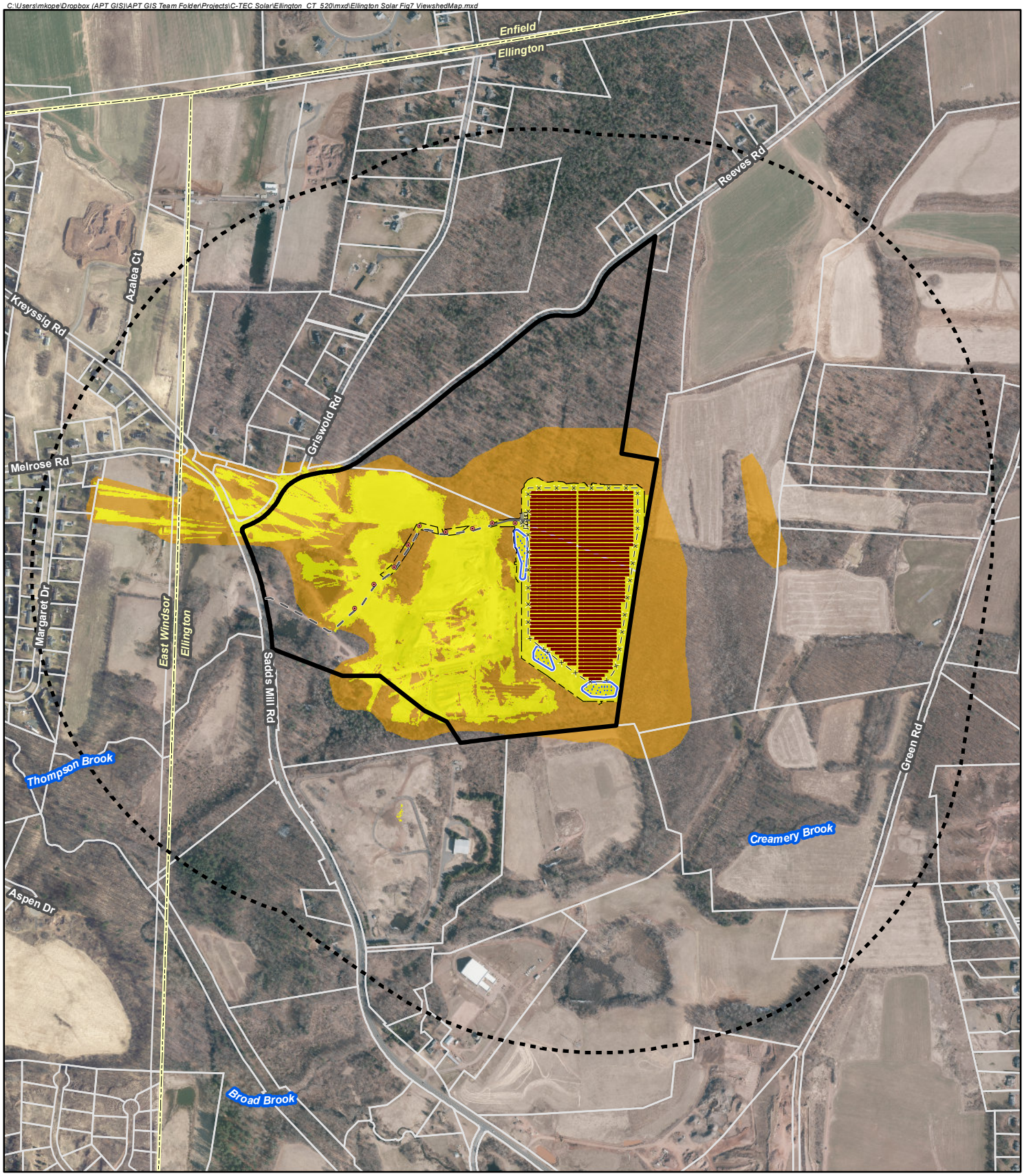
The Site itself is a mix of agricultural fields, wooded and developed areas. Year-round visibility of the proposed Facility beyond the Property is not expected due to its positioning within the Site, its relatively low height, and existing intervening vegetation. Some potential limited year-round views of the tops of the new utility poles from locations to the west and south may be experienced, with the furthest locations being to the west at distances up to ±0.4 mile away, stretching into

East Windsor. The majority of properties with potential year-round views of the tops of the utility poles are currently undeveloped.

Limited seasonal views, when the leaves are off of the deciduous trees, could extend up to ±0.4 mile to the west and would be from locations that are primarily undeveloped. Similar to year-round views, these potential views would also be minimized by a combination of the Facility's relatively low height, positioning, and the presence of intervening vegetation.

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 25 degrees, thereby further reducing reflectivity.

Please see Figure 7 – *Proposed Conditions Viewshed Map* for a graphical representation of perceived year-round and seasonal visibility of the Facility.



Legend

- Site
- Predicted Year-Round Visibility (82 Acres)
- Seasonal Visibility (78 Acres)
- 0.5-Mile Radius
- Approximate Parcel Boundary (CT DEEP)
- Municipal Boundary
- Access Road (No Improvements)
- Limit of Disturbance
- Conc. Equipment Pad
- Gravel Area
- Stormwater Basin
- Solar Modules
- Stormwater Swale
- Perimeter Fence
- New Utility Pole

N

1,000 500 0 1,000 Feet

Figure 7
Proposed Conditions Viewshed Map

Proposed Solar Energy Facility
277 Sadds Mill Road
Ellington, Connecticut

Map Notes:
Base Map Source: 2019 Aerial Photograph (CTECO)
Map Scale: 1 inch = 1,000 feet
Map Date: March 2021

CTEC SOLAR

ALL-POINTS TECHNOLOGY CORPORATION

4 Conclusion

As demonstrated in this Environmental Assessment, the Project will comply with the DEEP 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 majority of the Project Area is currently wooded and will require clearing. However, in light of the small size of the existing core forest block and existing perforations and DEEP Forestry's site visit and assessment, it has been determined that the Project would not materially affect core forest habitat.

Portions of the Project Area are located within mapped Prime Farmland Soils. The Petitioner has designed the Project to minimize disturbances to these soils by proposing minimally intrusive methods for construction and installation of Facility components, limiting the amounts of cuts/fills and grading to the extent feasible, and ensuring that no soil will be exported from the Site. The Petitioner will use a specific low-growth pollinator mix from The Bee and Butterfly Habitat Fund to reseed within the fenced Facility to attract pollinating species to the area. Once the Facility has reached the end of its projected useful life, the panels and equipment can be removed and the Project Area restored.

The DEEP and DOA determined that they do not anticipate any negative impacts resulting from the development of the Project. Similarly, the SHPO also determined that no historic properties will be affected by the proposed activities.

No wetlands, watercourses or vernal pools will be directly impacted by the Project. No vernal pools were identified on the Site. The nearest wetland boundary to construction activities is approximately 5 feet away from the installation of utility poles needed for the interconnection. The nearest wetland boundary to construction activities associated with the fenced Facility is over 1,300 ft away. To aid in the protection of these resources, E&S controls will be installed and maintained throughout construction in accordance with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*. The distance from the main areas of disturbance within the fenced Facility to wetlands and implementation of management techniques will mitigate potential impacts to wetland resources during construction.

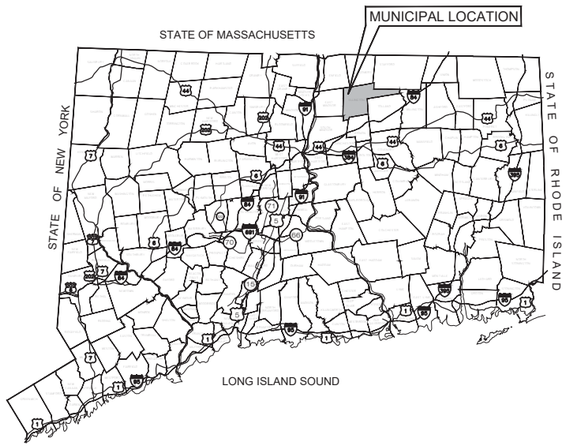
Overall, the Project's design minimizes the creation of impervious surfaces. Some regrading and minor excavations will be required for the development of the Facility and for the construction of stormwater management features, but the majority of the Project Area will maintain existing grades. The Project has been designed to adequately handle stormwater runoff via a grass-lined infiltration basin with outflow control devices and overflow weirs. The Project has been designed in accordance with the DEEP's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities as well as DEEP's Appendix I*. The Petitioner will implement a SWPCP, in accordance with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*, that will include provisions for monitoring of development activities and the establishment of E&S controls to be installed and maintained throughout construction.

No adverse impact to any federal or state threatened, endangered or special concern species is anticipated and no State-listed species have been identified as potentially occurring within the vicinity of the Site. The Northern long-eared bat was identified as potentially occurring within the vicinity of the Site but to the Project should not result in an adverse effect or an incidental take.

Year-round visibility of the proposed Facility beyond the Property is not expected due to its positioning within the Site and existing intervening vegetation. Some limited year-round views of the tops of the new utility poles from locations to the northwest and southwest could potentially be experienced at distances up to ±0.4 mile away. The majority of properties with potential year-round views of the utility poles are currently undeveloped. Seasonal views, when the leaves are off the trees, could extend up to similar distances to the northwest, south and east but would be from locations that are primarily undeveloped.

APPENDIX A

PROJECT PLANS



C-TEC SOLAR, LLC

"ELLINGTON SOLAR"

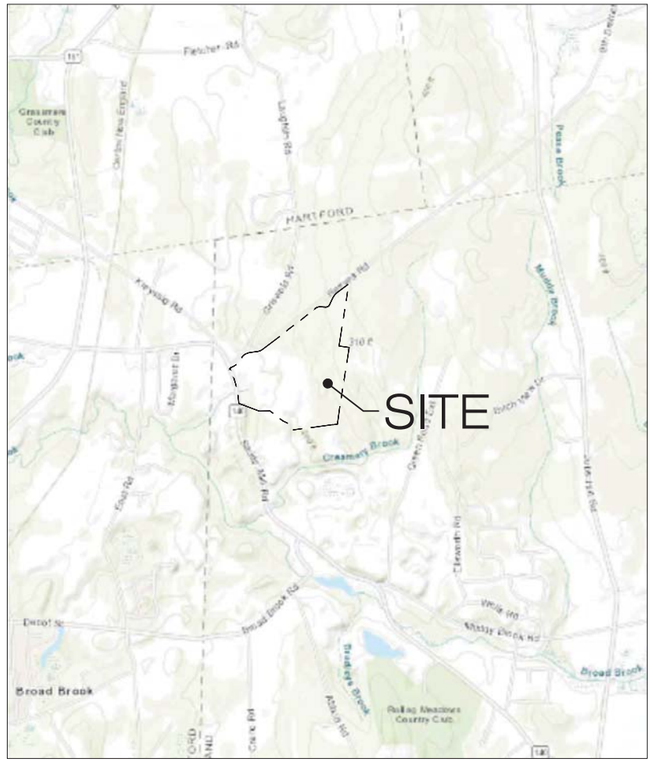
277 SADDS MILL RD
ELLINGTON, CT

LIST OF DRAWINGS

SITE INFORMATION

SITE NAME:	"ELLINGTON SOLAR"
LOCATION:	277 SADDS MILL RD ELLINGTON, CT
SITE TYPE/DESCRIPTION:	ADD (1) GROUND MOUNTED SOLAR PANEL ARRAY W/ ASSOCIATED EQUIPMENT, AND STORMWATER MANAGEMENT.
PROPERTY OWNER:	THOMPSON FAMILY LAND TRUST SADDS MILL RD ELLINGTON, CT
APPLICANT:	C-TEC SOLAR, LLC 1 GRIFFIN RD SOUTH, SUITE 200 BLOOMFIELD, CT 06002
ENGINEER CONTACT:	BRADLEY J. PARSONS, P.E. (860) 663-1697 x208
LATITUDE:	41°56'10.28" N
LONGITUDE:	72°30'11.16" W
ELEVATION:	250'± AMSL
MBLU:	136 004 0000 & 157 006 0000
ZONE:	I AND RAR
EXISTING LAND USE:	MATERIALS FACILITY
PROPOSED LAND USE:	COMMUNICATIONS, TRANSPORTATION AND PUBLIC UTILITY USES - LARGE SCALE GROUND MOUNTED SOLAR PHOTOVOLTAIC INSTALLATIONS
TOTAL SITE ACREAGE:	157.30± AC.
TOTAL DISTURBED AREA:	32.13± AC.
APPROX. VOLUME OF CUT:	16,770± CY
APPROX. VOLUME OF FILL:	14,999± CY
APPROX. NET VOLUME:	1,771± CY OF CUT

USGS TOPOGRAPHIC MAP



SCALE : 1" = 2000'± SOURCE: USGS 7.5 BROAD BROOK QUADRANGLE, CT 2012

C-TECSOLAR
1 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860)-580-7174

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHAUL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
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DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: THOMPSON FAMILY LAND TRUST
ADDRESS: SADDS MILL RD ELLINGTON, CT

ELLINGTON SOLAR

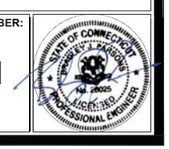
SITE ADDRESS: 277 SADDS MILL RD ELLINGTON, CT

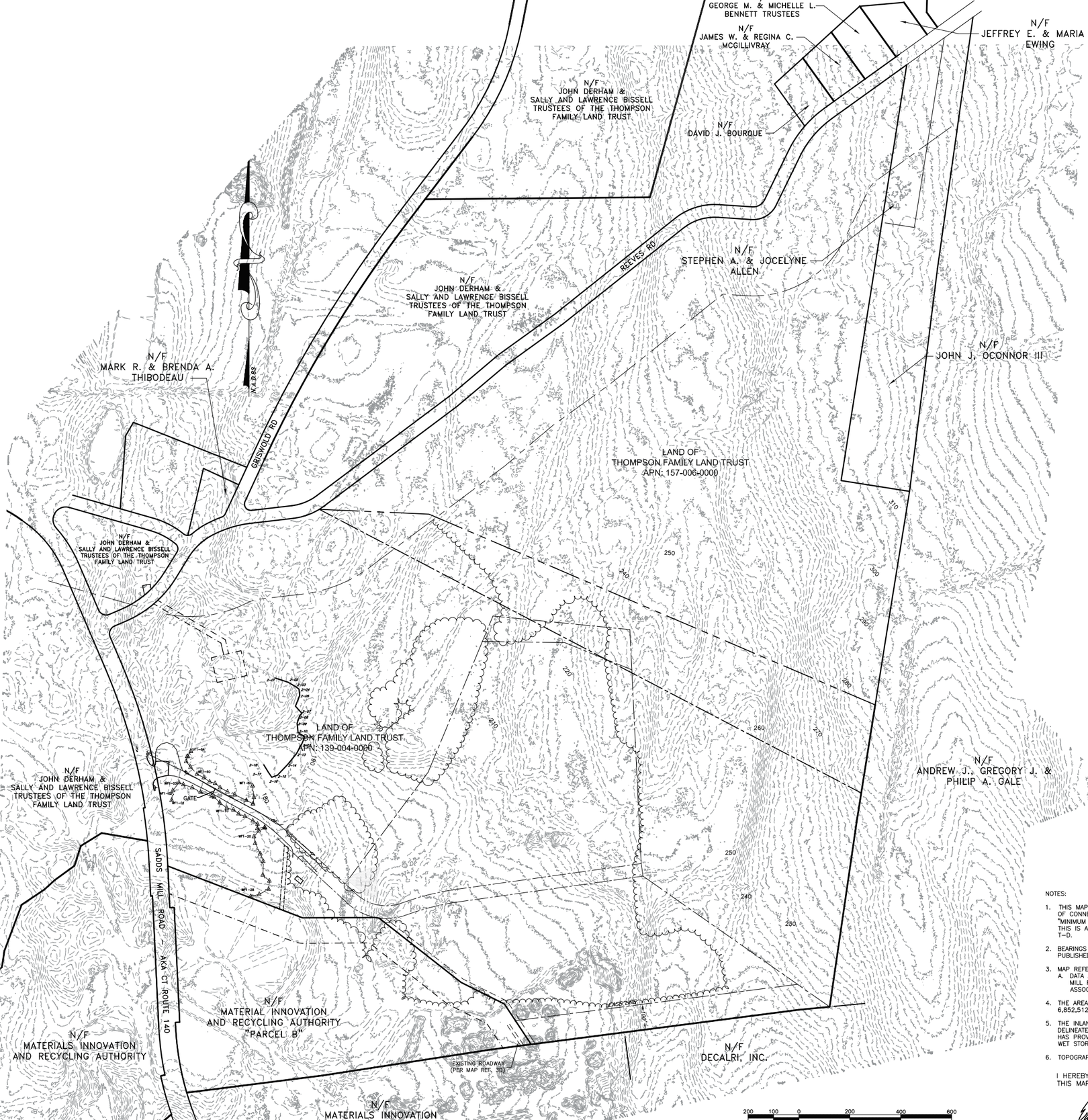
APT FILING NUMBER: CT481520

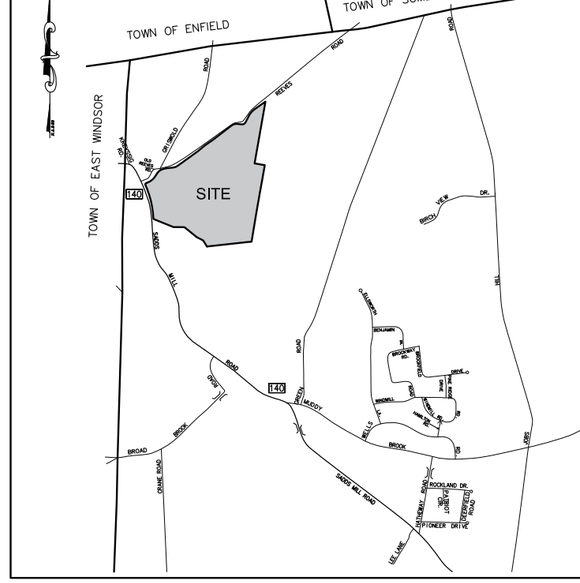
DRAWN BY: JT
DATE: 04/09/21
CHECKED BY: BJP

SHEET TITLE:
TITLE SHEET & INDEX

SHEET NUMBER:
T-1







KEY MAP - SCALE: 1"=2,000'

NOTES:

1. THIS MAP AND SURVEY HAVE BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20, "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT". THIS IS A TOPOGRAPHIC SURVEY CONFORMING TO TOPOGRAPHIC ACCURACY CLASS T-D.
2. BEARINGS DEPICTED ON THIS PLAN ARE BASED ON CGS NAD 83 DATUM PER THE PUBLISHED COORDINATES OF CTGS 1123 & 6363 MONUMENTS.
3. MAP REFERENCES:
   A. DATA ACCUMULATION PLAN LAND OF THOMPSON FAMILY LAND TRUST SADDS MILL ROAD - CT ROUTE 140 ELLINGTON, CONNECTICUT GARDNER & PETERSON ASSOCIATES, LLC DATE: 10-20-2020 SHEET 1 OF 1 MAP NO 4974B.
4. THE AREA OF PARCELS APN: 139-004-0000 & APN: 157-006-0000 TOTALS 6,852,512 SQ.FT. OR 157.31 ACRES.
5. THE INLAND WETLANDS WITHIN THE FUTURE SOLAR LEASE AREA ARE AS FIELD DELINEATED BY ALL-POINTS TECHNOLOGY CORP. ALL-POINTS TECHNOLOGY CORP. HAS PROVIDED THE WETLAND LOCATION FOR FLAGS 2-01 THRU 2-18 AND THE WET STORMWATER BASIN.
6. TOPOGRAPHY DEPICTED ON THIS PLAN IS FROM 2016 CT LIDAR.

I HEREBY DECLARE THAT, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

Eric R. Peterson

LEGEND

- PROPERTY LINE
- EASEMENT
- UTILITY POLE
- OHW — OHW — OVERHEAD WIRES
- SIGN
- 120 — ELEVATION CONTOUR
- x120.3 — EXISTING ELEVATION
- ZONE LINE
- WF1-01 — WETLAND BOUNDARY
- APPROXIMATE TREELINE

REVISIONS
12-01-2020 WETLANDS 2-01 THRU 2-18

TOPOGRAPHIC SURVEY
LAND OF
THOMPSON FAMILY LAND TRUST
SADDS MILL ROAD - CT ROUTE 140
ELLINGTON, CONNECTICUT

GARDNER & PETERSON ASSOCIATES, LLC
178 HARTFORD TURNPIKE
TOLLAND, CONNECTICUT
PROFESSIONAL ENGINEERS LAND SURVEYORS

BY	SCALE	DATE	SHEET NO.	MAP
	1"=200'	10-20-2020	1 OF 1	4974B

GENERAL NOTES

1. ALL CONSTRUCTION SHALL COMPLY WITH PROJECT DEVELOPER STANDARDS, TOWN OF ELLINGTON 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, TOWN OF ELLINGTON, 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 ZONING AND STORMWATER PERMITS REQUIRED BY GOVERNMENT AGENCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL TOWN OF ELLINGTON 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 ELLINGTON.
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 GARDNER & PETERSON ASSOCIATES, LLC. DATED OCTOBER 20, 2020.
2. THERE ARE BVWS LOCATED ON THE SITE AS INDICATED ON THE PLANS. BVW BOUNDARIES WERE FLAGGED AND LOCATED BY ALL-POINTS TECHNOLOGY, IN SEPTEMBER AND NOVEMBER 2020.
3. THERE WILL BE GRADING ON-SITE ASSOCIATED WITH THE PROPOSED STORM WATER CONTROLS AND AREAS GREATER THAN 15% SLOPE. THE GRADING ON SITE IS INTENDED TO DIRECT STORMWATER RUNOFF TO THE PROPOSED STORMWATER CONTROLS.
4. 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.
5. 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.
6. 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 AND PROJECT GEOTECHNICAL REPORT IF THERE IS NO PROJECT SPECIFICATIONS MANUAL. ALL FILL MATERIAL UNDER STRUCTURES AND PAVED AREAS SHALL BE PER THE ABOVE STATED APPLICABLE SPECIFICATIONS, AND/OR PROJECT GEOTECHNICAL REPORT, 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.
7. 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 ELLINGTON AND STATE OF CONNECTICUT.
8. 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 ELLINGTON 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 CONTRACTOR'S 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 ELLINGTON.
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 ELLINGTON.
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 ELLINGTON, UTILITY PROVIDERS AND GOVERNING AUTHORITIES.

GENERAL LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
BUILDING SETBACK		
SOLAR SETBACK		
EASEMENT		
TREE LINE		
WETLAND	V V V	
WETLAND BUFFER		
VERNAL POOL		
VERNAL POOL BUFFER		
WATERCOURSE		
WATERCOURSE BUFFER		
MAJOR CONTOUR		
MINOR CONTOUR		
UNDERGROUND ELECTRIC		E E
OVERHEAD ELECTRIC		OH OH
GAS LINE		
WATER LINE		W W
BASIN		
SWALE		
FENCE		
LIMIT OF DISTURBANCE		LOD
LIMIT OF CLEARING AND GRUBBING		LCG
FILTER SOCK		FS FS
SILT FENCE		SF SF
BAFFLE		

C-TECSOLAR
1 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860)-580-7174

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHAUL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	04/09/21	FOR REVIEW: BJP
1		
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: THOMPSON FAMILY LAND TRUST
ADDRESS: SADDS MILL RD ELLINGTON, CT

ELLINGTON SOLAR

SITE ADDRESS: 277 SADDS MILL RD ELLINGTON, CT

APT FILING NUMBER: CT481520

DRAWN BY: JT

DATE: 04/09/21

CHECKED BY: BJP

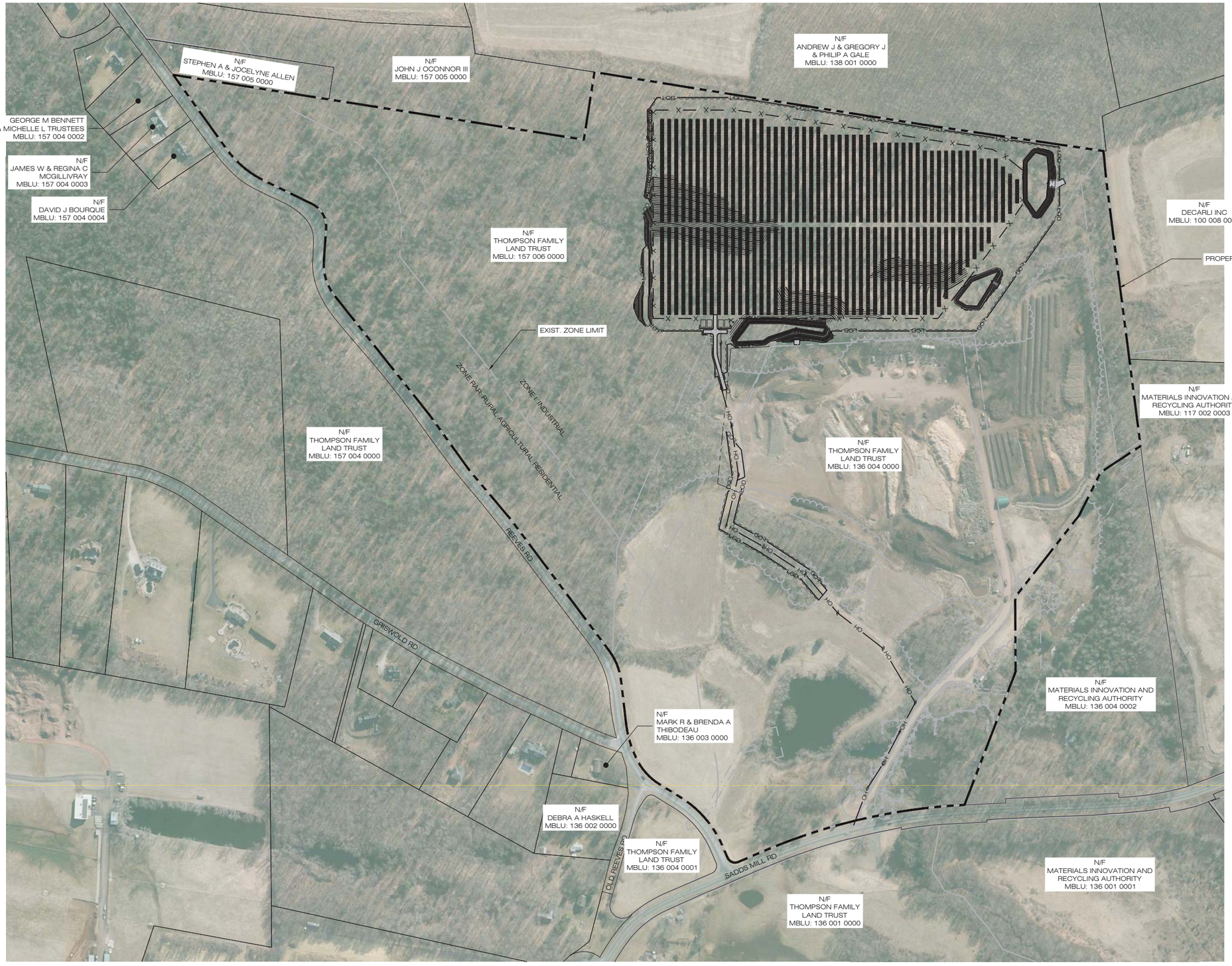
SHEET TITLE:

GENERAL NOTES

SHEET NUMBER:

GN-1

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



N

1 OP-1 **OVERALL LOCUS MAP**

SCALE : 1" = 200'-0"

200 0 100 200 400

(IN FEET) 1 inch = 200 ft.

C-TECSOLAR

1 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860)-580-7174

ALL-POINTS TECHNOLOGY CORPORATION

567 VAUXHAUL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
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SHEET TITLE:

OVERALL LOCUS MAP

SHEET NUMBER:

OP-1

STATE OF CONNECTICUT BRADLEY J. PARSONS No. 28005 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 ELLINGTON, 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. SEE CONSTRUCTION SEQUENCE FOR ADDITIONAL INFORMATION. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE EROSION & SEDIMENT CONTROL PLAN ARE SHOWN AS REQUIRED BY THE ENGINEER. 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. 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 CONFORMING TO 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. SEED AND MULCH 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. VEGETATIVE ESTABLISHMENT SHALL OCCUR ON 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. DURING CONSTRUCTION, CONTRACTOR SHALL SEED ALL DISTURBED AREAS WITH ANNUAL RYE. FINAL SEEDING MIXTURE WITHIN THE FENCED ARRAY SHALL BE CT SOLAR ARRAY MIX - 36" SEED MIX (SEE SITE DETAILS SHEET 7/DN-1), OR APPROVED EQUAL BY OWNER. FINAL SEEDING MIXTURE OUTSIDE THE FENCED ARRAY SHALL BE ERNST SOLAR FARM SEED MIX (ERNMX-186) (SEE SITE DETAILS SHEET 8/DN-1), OR APPROVED EQUAL BY OWNER. APPLICATION RATE SHALL BE PER THE MANUFACTURES SEED MIX SPECIFICATION.

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 BASIN (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.

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 32.13± ACRES OF EXISTING LOT.

THE PROPOSED PROJECT INVOLVES THE FOLLOWING CONSTRUCTION:

A. CLEARING, GRUBBING, AND GRADING OF EXISTING LOT.
B. CONSTRUCTION OF A TOTAL OF 18,432 GROUND MOUNTED SOLAR PANELS AND ASSOCIATED EQUIPMENT.
C. THE STABILIZATION OF DISTURBED AREAS WITH PERMANENT VEGETATIVE TREATMENTS.

2. FOR THIS PROJECT, THERE ARE APPROXIMATELY 32.13± ACRES OF THE SITE BEING DISTURBED WITH NEGLIGIBLE INCREASE IN THE IMPERVIOUS AREA OF THE SITE, AS ALL ACCESS THROUGH THE SITE WILL BE COMPACTED EARTH. IMPERVIOUS AREAS ARE LIMITED TO THE CONCRETE PADS FOR ELECTRICAL EQUIPMENT.

3. THE PROJECT SITE, AS MAPPED IN THE SOIL SURVEY OF STATE OF CONNECTICUT (NRCS, VERSION 18, DEC 6, 2018), CONTAINS TYPE 67B, 67C, 704A, AND 704B (HYDROLOGIC SOIL GROUP B), AND TYPE 305 (HYDROLOGIC SOIL GROUP C). A GEOTECHNICAL ENGINEERING REPORT WILL BE PROVIDED BY THE PROJECT DEVELOPER.

4. IT IS ANTICIPATED THAT THE CIVIL CONSTRUCTION AND PHASE 1 OF THE SOLAR ARRAY WILL BE COMPLETED IN APPROXIMATELY 3-4 MONTHS. PHASE 2 OF THE SOLAR ARRAY WILL BE COMPLETED IN THE FUTURE.

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 ELLINGTON 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:

A. STAGED CONSTRUCTION;
B. MINIMIZE THE DISTURBED AREAS TO THE EXTENT PRACTICABLE DURING CONSTRUCTION;
C. STABILIZE DISTURBED AREAS WITH TEMPORARY OR PERMANENT MEASURES AS SOON AS POSSIBLE, OR AS REQUIRED BY THE GUIDELINES;
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 REPORT DATED APRIL 2021.
B. SWPCP DATED APRIL 2021.

SUGGESTED CONSTRUCTION SEQUENCE

THE FOLLOWING SUGGESTED SEQUENCE OF CONSTRUCTION ACTIVITIES IS PROJECTED BASED UPON ENGINEERING JUDGEMENT AND BEST MANAGEMENT PRACTICES. THE CONTRACTOR MAY ELECT TO ALTER THE SEQUENCING TO BEST MEET THE CONSTRUCTION SCHEDULE, THE EXISTING SITE ACTIVITIES AND WEATHER CONDITIONS. SHOULD THE CONTRACTOR ALTER THE CONSTRUCTION SEQUENCE OR ANY EROSION AND SEDIMENTATION CONTROL MEASURES THEY SHALL MODIFY THE STORMWATER POLLUTION CONTROL PLAN ("SWPCP") AS REQUIRED BY THE GENERAL PERMIT. MAJOR CHANGES IN SEQUENCING AND/OR METHODS MAY REQUIRE REGULATORY APPROVAL PRIOR TO IMPLEMENTATION.

1. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING. PHYSICALLY FLAG THE LIMITS OF DISTURBANCE IN THE FIELD AS NECESSARY TO FACILITATE THE PRE-CONSTRUCTION MEETING.

2. CONDUCT A PRE-CONSTRUCTION MEETING TO DISCUSS THE PROPOSED WORK AND EROSION AND SEDIMENTATION CONTROL MEASURES. THE MEETING SHOULD BE ATTENDED BY THE OWNER, THE OWNER'S REPRESENTATIVE(S), 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 CALL BEFORE YOU DIG AT 1-800-922-4455, AS REQUIRED, PRIOR TO THE START OF CONSTRUCTION.

PHASE 1

4. REMOVE EXISTING IMPEDIMENTS AS NECESSARY AND PROVIDE MINIMAL CLEARING AND GRUBBING TO INSTALL THE REQUIRED CONSTRUCTION ENTRANCE/S.

5. CLEAR ONLY AS NEEDED TO INSTALL THE PERIMETER EROSION AND SEDIMENTATION CONTROL MEASURES AND, IF APPLICABLE, TREE PROTECTION. ALL WETLAND AREAS SHALL BE PROTECTED BEFORE MAJOR CONSTRUCTION BEGINS.

6. INSTALL PERIMETER EROSION CONTROL.

7. INSTALL GRAVEL ACCESS ROAD.

8. INSTALL TEMPORARY SEDIMENT BASINS TSB-1, TSB-2A, AND TSB-2B.

PHASE 2 (UPON COMPLETION OF THE INSTALLATION OF EACH OF THE TEMPORARY SEDIMENT BASINS)

9. INSTALL THE DIVERSION BERM AND BYPASS TO THE NORTH AND ASSOCIATED GRADING AS NECESSARY AS SHOWN ON EC-7.

10. ONCE THE DIVERSION BERM AND BYPASS IN THE NORTH ARE IN PLACE, THE REMAINING ARRAY AREA CLEARING AND GRUBBING CAN BE COMPLETED AS REQUIRED. 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.

11. INSTALL TEMPORARY WOOD CHIP DIVERSION BERM.

12. TEMPORARILY SEED DISTURBED AREAS NOT UNDER CONSTRUCTION FOR THIRTY (30) DAYS OR MORE.

13. INSTALL REMAINING ELECTRICAL CONDUIT.

14. INSTALL RACKING POSTS FOR GROUND MOUNTED SOLAR PANELS.

15. INSTALL GROUND MOUNTED SOLAR PANELS AND COMPLETE ELECTRICAL INSTALLATION.

16. AFTER SUBSTANTIAL COMPLETION OF THE INSTALLATION OF THE SOLAR PANELS, COMPLETE REMAINING SITE WORK, INCLUDING ANY REQUIRED LANDSCAPE SCREENING, AND STABILIZE ALL DISTURBED AREAS.

17. FINE GRADE, RAKE, SEED AND MULCH ALL REMAINING DISTURBED AREAS.

18. AFTER THE SITE IS STABILIZED AND WITH THE APPROVAL OF THE PERMITTEE, REMOVE PERIMETER EROSION AND SEDIMENTATION CONTROLS AND TEMPORARY DIVERSION BERM, CLEAN AND CONVERT TEMPORARY SEDIMENT BASINS. ANY AREAS DISTURBED DURING CLEAN UP SHALL BE PERMANENTLY SEEDED.

19. MONITOR THE SITE FOR TWO FULL GROWING SEASONS (APRIL-OCTOBER), THEN ISSUE NOTICE OF TERMINATION.

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DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: THOMPSON FAMILY LAND TRUST
ADDRESS: SADDS MILL RD ELLINGTON, CT

ELLINGTON SOLAR

SITE ADDRESS: 277 SADDS MILL RD ELLINGTON, CT

APT FILING NUMBER: CT481520

DRAWN BY: JT
DATE: 04/09/21
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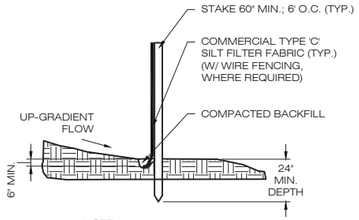
SHEET TITLE:
SEDIMENTATION & EROSION CONTROL NOTES

SHEET NUMBER:
EC-1

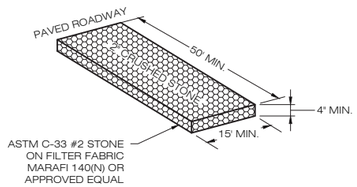
STATE OF CONNECTICUT BRADLEY J. PARSONS No. 28025 LICENSED PROFESSIONAL ENGINEER



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

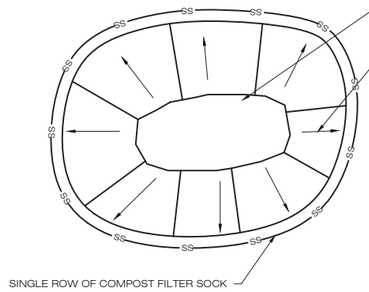
1 EC-4 SILT FENCE DETAIL

SCALE : N.T.S.



2 EC-4 CONSTRUCTION ENTRANCE DETAIL

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.

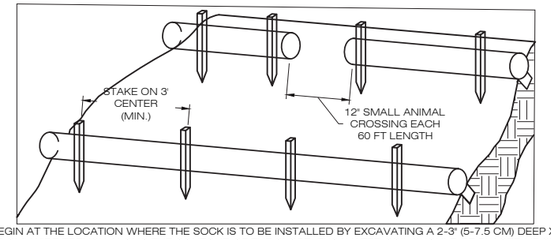
2. SOIL/AGGREGATE STOCKPILE SITES TO BE WHERE SHOWN ON THE DRAWINGS.

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

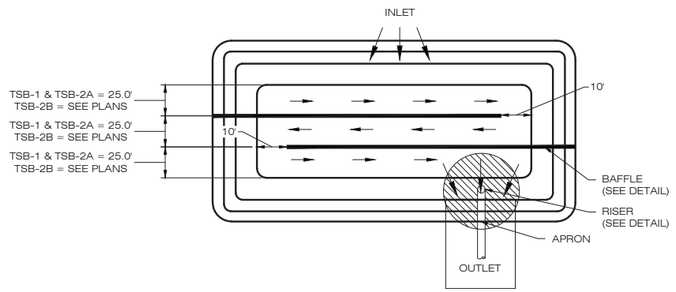
SCALE : N.T.S.



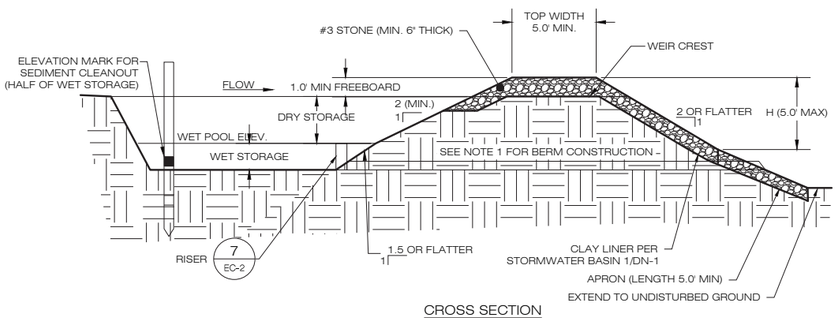
1. BEGIN AT THE LOCATION WHERE THE SOCK IS TO BE INSTALLED BY EXCAVATING A 2-3" (5-7.5 CM) DEEP X 9" (22.9 CM) WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UP SLOPE FROM THE ANCHOR TRENCH.
2. PLACE THE SOCK IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT 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.

4 EC-4 COMPOST FILTER SOCK SEDIMENTATION CONTROL BARRIER

SCALE : N.T.S.



TOP VIEW

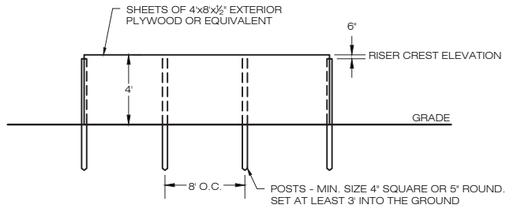


CROSS SECTION

NOTES:
1. CONSTRUCT TEMPORARY SEDIMENT BASIN BERMS AND SIDEWALLS PER THE GRASS LINED BASIN DETAIL.
2. SEDIMENT BAFFLES SHALL BE INSTALLED AS SHOWN ON EC-1.
3. SEE TSB SIZING TABLE FOR WET AND DRY STORAGE VOLUMES.

5 EC-2 TEMPORARY SEDIMENT BASIN

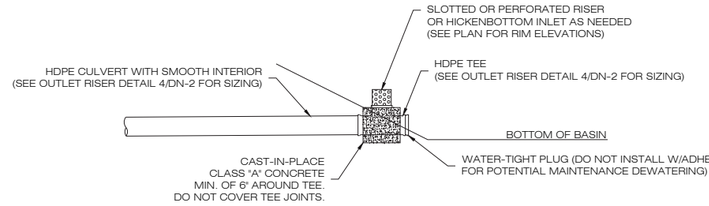
SCALE : N.T.S.



NOTES:
1. FILL ANY VOIDS BETWEEN THE BOTTOM OF THE BASIN AND BAFFLE.

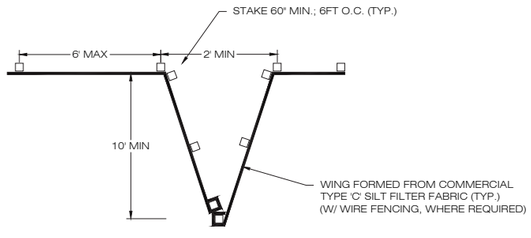
6 EC-4 SEDIMENT TRAP BAFFLE

SCALE : N.T.S.



7 EC-2 RISER DETAIL

SCALE : N.T.S.



NOTES:
1. WRAP SILT FENCE AT ENDS.

2. NO JOINING FENCE SECTIONS SHALL BE INSTALLED WITHIN 30 FEET OF WING.

8 EC-4 SILT FENCE WING DETAIL

SCALE : N.T.S.

TEMPORARY SEDIMENT BASIN SIZING TABLE

NAME	DRAINAGE AREA (AC)	REQ. WET VOLUME (CF)	REQ. RESIDENCE TIME VOLUME (CF)	TOTAL VOLUME REQ. (CF)	PROP. BTM. ELEV. (FT)	PROP. OUTLET RIM ELEV. (FT)	PROP. WEIR CREST ELEV. (FT)	PROP. TOP ELEV. (FT)	WET VOL. PROVIDED (CF)	RESIDENCE TIME VOLUME PROVIDED (CF)	TOTAL VOL. PROVIDED. (CF)
TSB-1	18.171 AC	35,782 CF	33,106 CF	68,888 CF	225.00'	227.00'	228.60	230.00'	36,058 CF	33,873 CF	69,931 CF
TSB-2A	4.735 AC	9,440 CF	8,250 CF	17,690 CF	230.50'	231.50'	233.00'	234.50'	9,836 CF	17,277 CF	27,113 CF
TSB-2B	14.546 AC	28,644 CF	23,233 CF	27,113 CF	228.00'	230.10'	231.50'	233.00'	29,188 CF	25,060 CF	54,248 CF

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APT FILING NUMBER: CT481520

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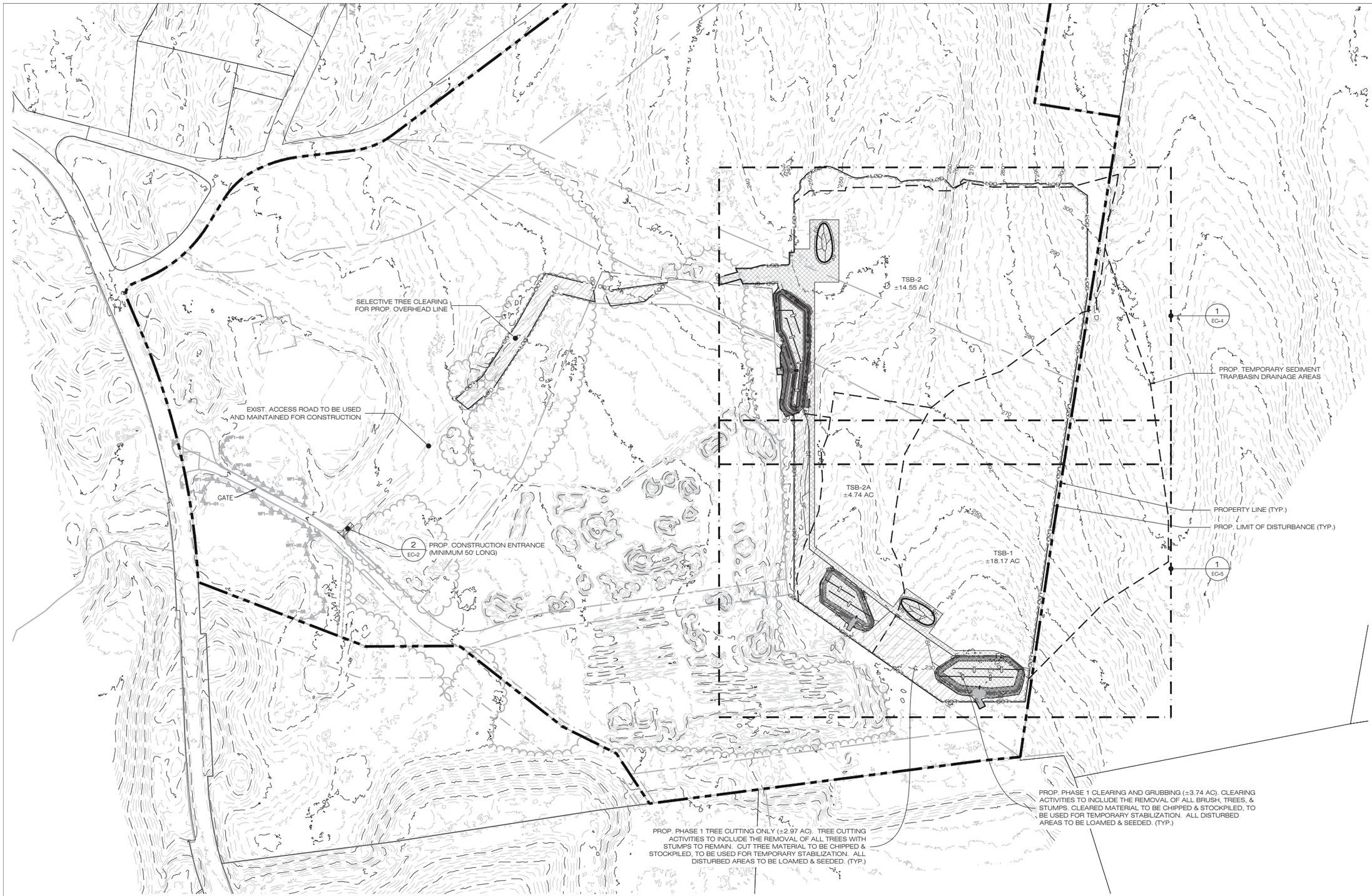
DATE: 04/09/21 CHECKED BY: BJP

SHEET TITLE:
SEDIMENTATION & EROSION CONTROL DETAILS

SHEET NUMBER:
EC-2

STATE OF CONNECTICUT BRADLEY J. PARSONS No. 25005 LICENSED PROFESSIONAL ENGINEER



PHASE 1 CLEARING LEGEND	
CLEARING AND GRUBBING	
TREE CUTTING ONLY	

1 EC-3 **PHASE 1 - SEDIMENTATION & EROSION CONTROL PLAN**
SCALE : 1" = 150'-0"

150 0 75 150 300
(IN FEET) 1 inch = 150 ft.

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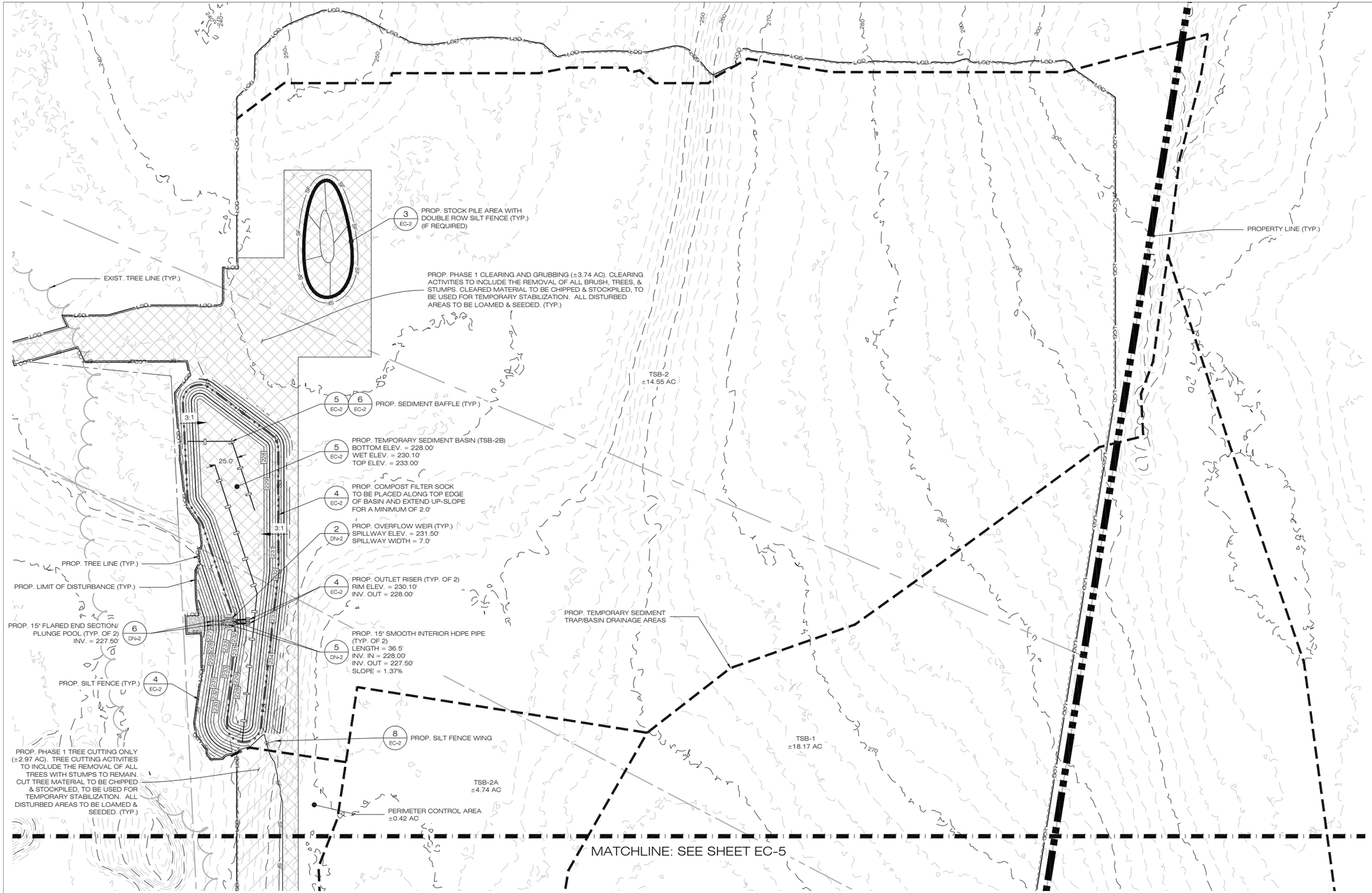
SHEET TITLE:
PHASE 1 SEDIMENTATION & EROSION CONTROL PLAN

SHEET NUMBER:
EC-3

STATE OF CONNECTICUT BRADLEY J. PARSONS 14 2005 LICENSED PROFESSIONAL ENGINEER



PHASE 1 CLEARING LEGEND	
CLEARING AND GRUBBING	
TREE CUTTING ONLY	

1 EC-4 **PHASE 1 - SEDIMENTATION & EROSION CONTROL PLAN**

SCALE : 1" = 50'-0"

50 0 25 50 100

(IN FEET) 1 inch = 50 ft.

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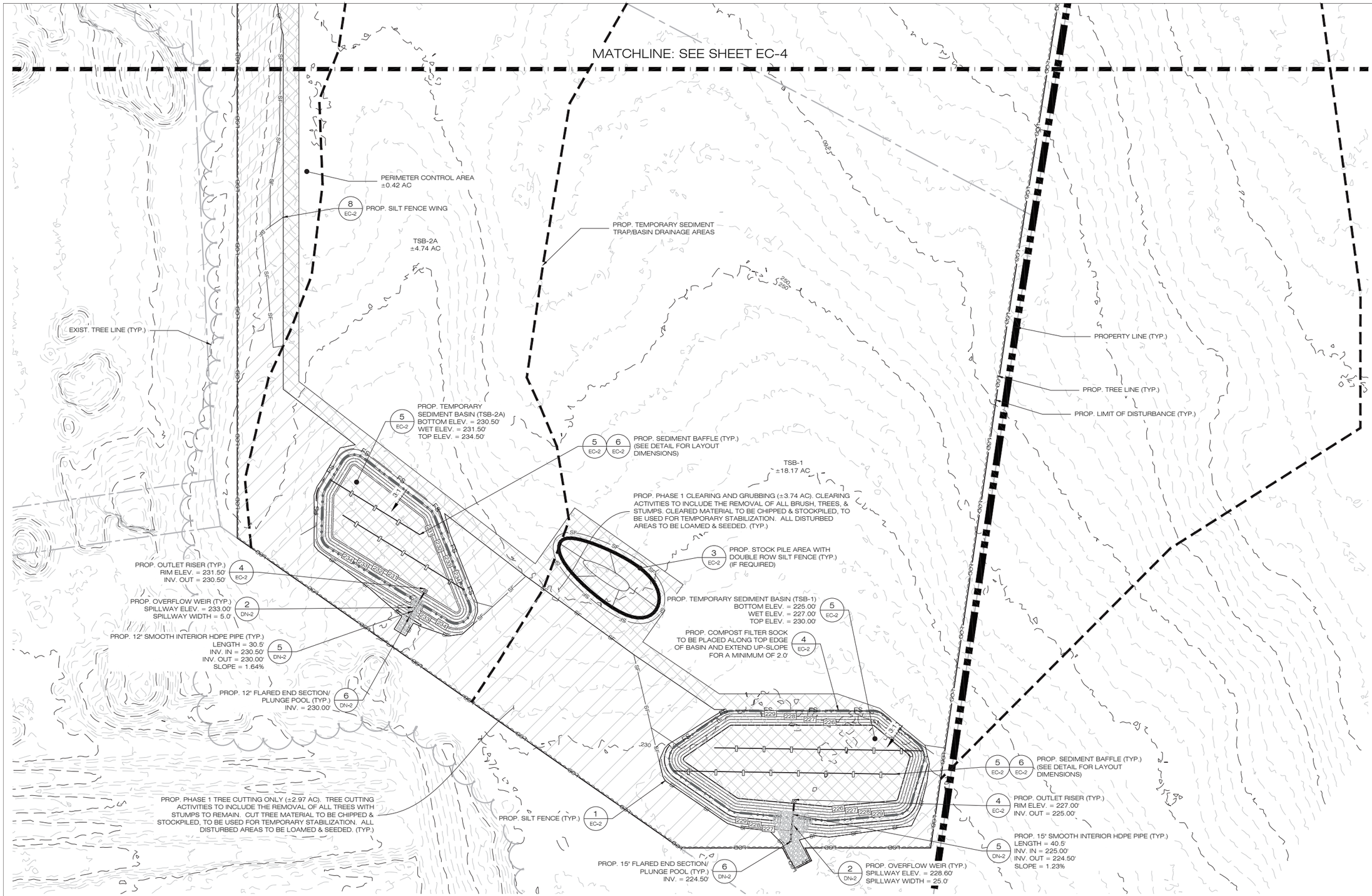
SHEET TITLE:
PHASE 1 SEDIMENTATION & EROSION CONTROL PLAN

SHEET NUMBER:
EC-4

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



1 EC-5 **PHASE 1 - SEDIMENTATION & EROSION CONTROL PLAN**
SCALE : 1" = 50'-0"

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OWNER: THOMPSON FAMILY LAND TRUST
ADDRESS: SADDS MILL RD ELLINGTON, CT

ELLINGTON SOLAR

SITE ADDRESS: 277 SADDS MILL RD ELLINGTON, CT

APT FILING NUMBER: CT481520

DRAWN BY: JT
DATE: 04/09/21 CHECKED BY: BJP

SHEET TITLE:
PHASE 1 SEDIMENTATION & EROSION CONTROL PLAN

SHEET NUMBER:
EC-5

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

PHASE 2 CLEARING LEGEND	
CLEARING AND GRUBBING	
TREE CUTTING ONLY	

1 EC-6 PHASE 2 - SEDIMENTATION & EROSION CONTROL PLAN

SCALE : 1" = 150'-0"

150 0 75 150 300
(IN FEET) 1 inch = 150 ft.

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567 VAUXHAUL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
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SHEET TITLE:
PHASE 2 SEDIMENTATION & EROSION CONTROL PLAN

SHEET NUMBER:
EC-6

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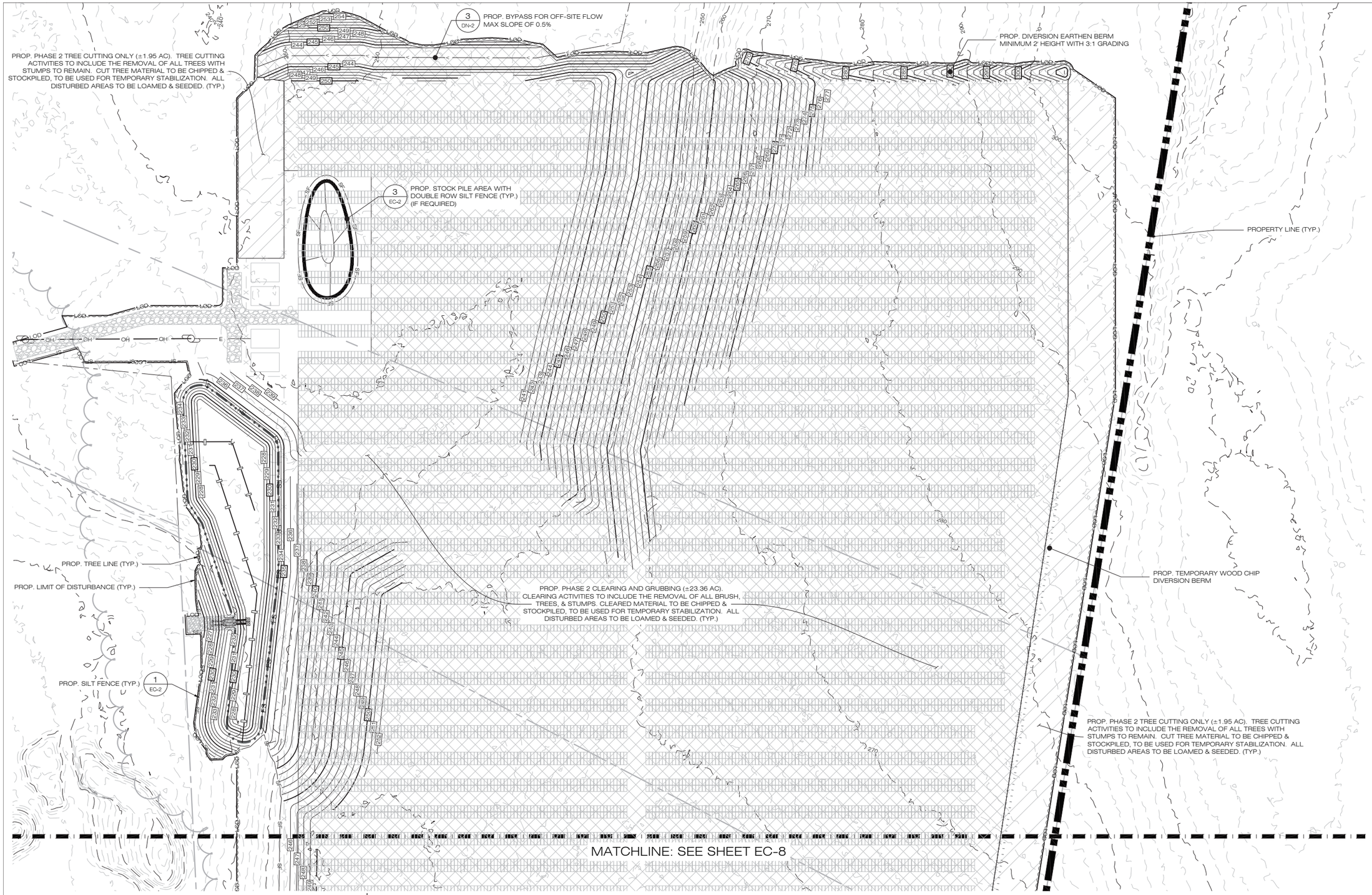

PHASE 2 CLEARING LEGEND	
CLEARING AND GRUBBING	
TREE CUTTING ONLY	

1 EC-7 PHASE 2 - SEDIMENTATION & EROSION CONTROL PLAN

SCALE : 1" = 50'-0"

50 0 25 50 100

(IN FEET) 1 inch = 50 ft.

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ELLINGTON SOLAR

SITE ADDRESS: 277 SADDS MILL RD ELLINGTON, CT

APT FILING NUMBER: CT481520

DRAWN BY: JT

DATE: 04/09/21 CHECKED BY: BJP

SHEET TITLE:

PHASE 2 SEDIMENTATION & EROSION CONTROL PLAN

SHEET NUMBER:

EC-7

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

MATCHLINE: SEE SHEET EC-7

PROP. PHASE 2 CLEARING AND GRUBBING (±23.36 AC). CLEARING ACTIVITIES TO INCLUDE THE REMOVAL OF ALL BRUSH, TREES, & STUMPS. CLEARED MATERIAL TO BE CHIPPED & STOCKPILED, TO BE USED FOR TEMPORARY STABILIZATION. ALL DISTURBED AREAS TO BE LOAMED & SEEDED. (TYP.)

EXIST. TREE LINE (TYP.)

PROP. TEMPORARY WOOD CHIP DIVERSION BERM

PROPERTY LINE (TYP.)

PROP. TREE LINE (TYP.)

PROP. LIMIT OF DISTURBANCE (TYP.)

PROP. PHASE 2 TREE CUTTING ONLY (±1.95 AC). TREE CUTTING ACTIVITIES TO INCLUDE THE REMOVAL OF ALL TREES WITH STUMPS TO REMAIN. CUT TREE MATERIAL TO BE CHIPPED & STOCKPILED, TO BE USED FOR TEMPORARY STABILIZATION. ALL DISTURBED AREAS TO BE LOAMED & SEEDED. (TYP.)

PROP. SILT FENCE (TYP.) 4 / EC-2

PHASE 2 CLEARING LEGEND	
CLEARING AND GRUBBING	
TREE CUTTING ONLY	

1 / EC-8 **PHASE 2 - SEDIMENTATION & EROSION CONTROL PLAN**

SCALE : 1" = 50'-0"

50 0 25 50 100

(IN FEET) 1 inch = 50 ft.

C-TECSOLAR

1 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860)-580-7174

ALL-POINTS TECHNOLOGY CORPORATION

567 VAUXHAUL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	04/09/21	FOR REVIEW: BJP
1		
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DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: THOMPSON FAMILY LAND TRUST
ADDRESS: SADDS MILL RD ELLINGTON, CT

ELLINGTON SOLAR

SITE ADDRESS: 277 SADDS MILL RD ELLINGTON, CT

APT FILING NUMBER: CT481520

DRAWN BY: JT

DATE: 04/09/21 CHECKED BY: BJP

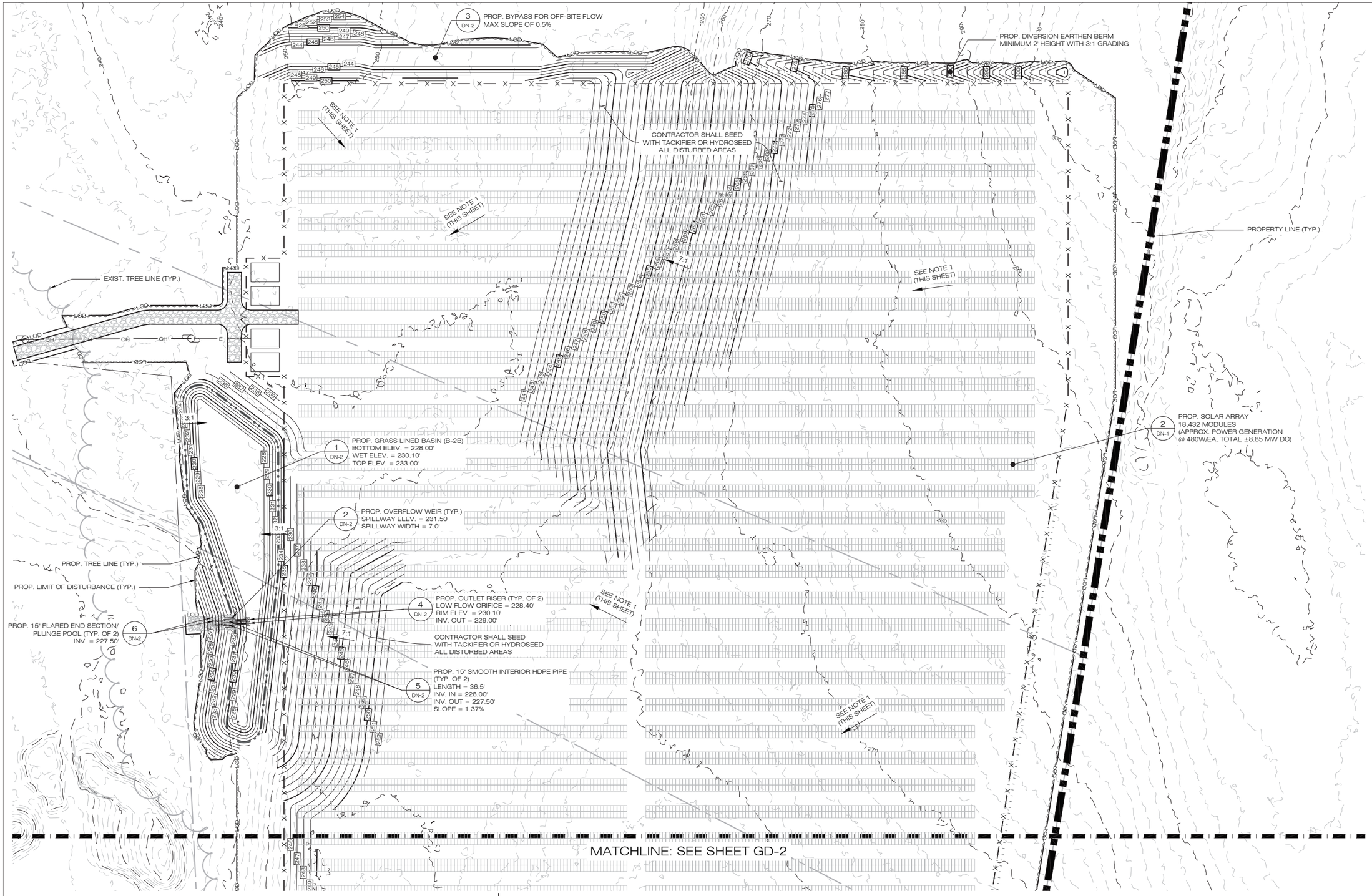
SHEET TITLE:

PHASE 2 SEDIMENTATION & EROSION CONTROL PLAN

SHEET NUMBER:

EC-8

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



NOTES:
1. GRADE/SHAPE AREA TO MAINTAIN EXIST. DRAINAGE PATTERNS.
2. CONTRACTOR SHALL REMOVE ALL BAFFLES AND CLEAN OUT SEDIMENT BASINS TO BE CONVERTED TO PERMANENT GRASS LINED BASINS.
3. CONTRACTOR SHALL MODIFY/REPLACE THE TEMPORARY SEDIMENT BASIN RISER AS NEEDED UPON THE SITE OR DRAINAGE AREA BEING DEEMED STABILIZED PER THE SWPCP.

1 GD-1 **FINAL GRADING & DRAINAGE PLAN**
SCALE : 1" = 50'-0"

50 0 25 50 100
(IN FEET) 1 inch = 50 ft.

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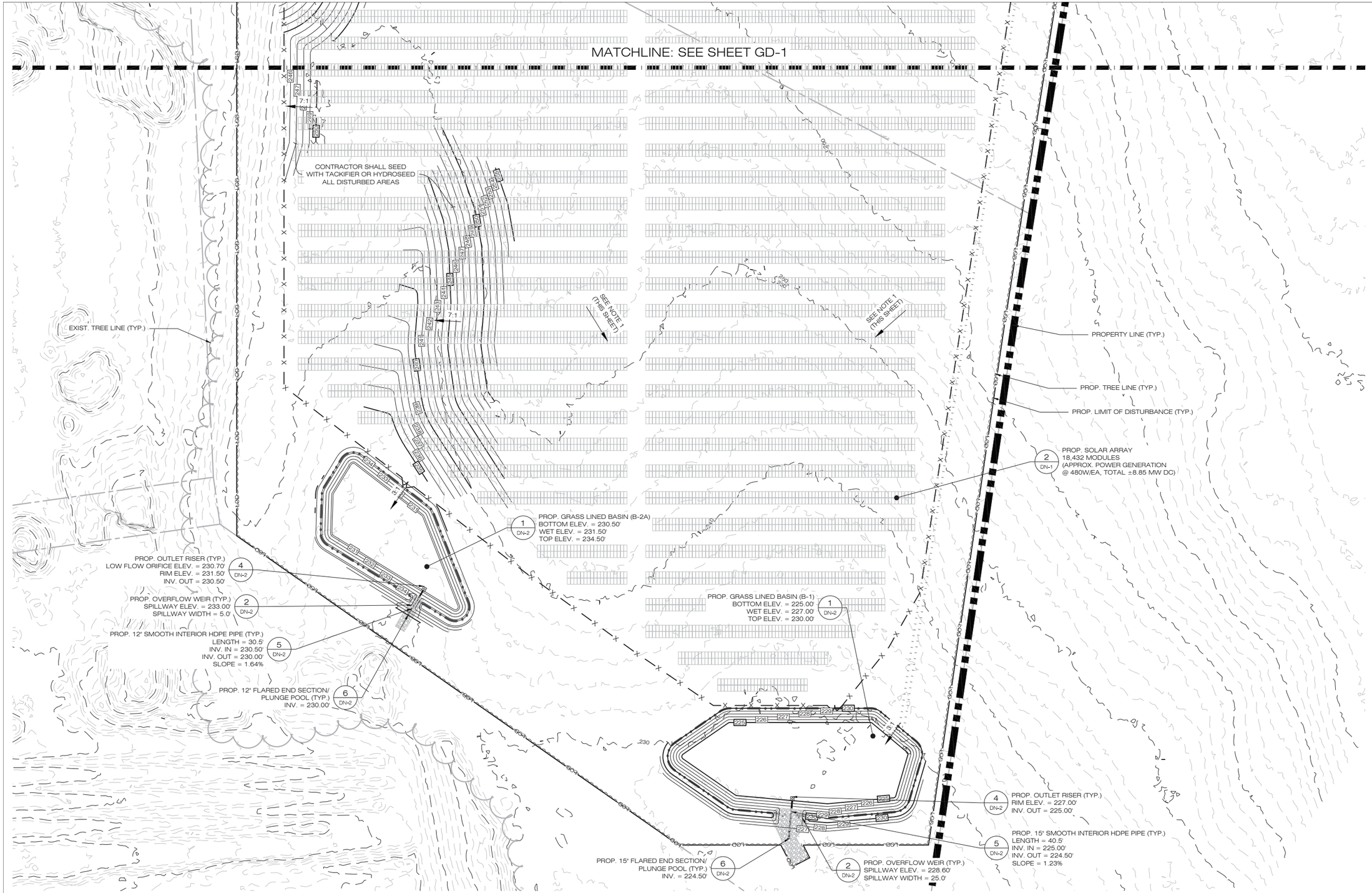
FINAL GRADING & DRAINAGE PLAN

SHEET NUMBER:
GD-1

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



NOTES:
1. GRADE/SHAPE AREA TO MAINTAIN EXIST. DRAINAGE PATTERNS.
2. CONTRACTOR SHALL REMOVE ALL BAFFLES AND CLEAN OUT SEDIMENT BASINS TO BE CONVERTED TO PERMANENT GRASS LINED BASINS.
3. CONTRACTOR SHALL MODIFY/REPLACE THE TEMPORARY SEDIMENT BASIN RISER AS NEEDED UPON THE SITE OR DRAINAGE AREA BEING DEEMED STABILIZED PER THE SWPCP.

1 GD-2 FINAL GRADING & DRAINAGE PLAN

SCALE : 1" = 50'-0"

50 0 25 50 100

(IN FEET) 1 inch = 50 ft.

C-TECSOLAR
1 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
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SHEET TITLE:
FINAL GRADING & DRAINAGE PLAN

SHEET NUMBER:
GD-2

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

1 SP-1 **SITE & UTILITY PLAN**
SCALE : 1" = 50'-0"

50 0 25 50 100
(IN FEET) 1 inch = 50 ft.

C-TECSOLAR
1 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
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SHEET TITLE:
SITE & UTILITY PLAN

SHEET NUMBER:
SP-1

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

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

PROP. DIVERSION EARTHEN BERM
MINIMUM 2' HEIGHT WITH 3:1 GRADING

PROP. UTILITY POLES (TYP. OF 13)
(FINAL LOCATION BY ELECTRICAL ENGINEER)

PROP. OVERHEAD LINE
(FINAL LOCATION BY
ELECTRICAL ENGINEER)

PROP. 15.0' GRAVEL ACCESS ROAD W/ TURNAROUND (3 DN-1)

PROP. 20' x 30' CONC.
EQUIPMENT PAD (TYP. OF 4) (4 DN-1)

PROP. ELECTRICAL TRENCH (TYP.)
(BY OTHERS)

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

PROP. TREE LINE (TYP.)

PROP. LIMIT OF DISTURBANCE (TYP.)

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

PROP. PERMANENT GRASS LINED
STORMWATER MANAGEMENT BASIN (B-2B) (TYP.) (1 DN-2)

PROP. SOLAR ARRAY
18,432 MODULES
(APPROX. POWER GENERATION
@ 480W/EA, TOTAL ±8.85 MW DC) (2 DN-1)

PROPERTY LINE (TYP.)

15.0' (MIN.)

13.3' (TYP.)

15.0' (TYP.)

20.0'
(TYP.)

15.0'

OH

E

LOD

MATCHLINE: SEE SHEET SP-3

1 SP-2 **SITE & UTILITY PLAN**
SCALE : 1" = 50'-0"

50 0 25 50 100
(IN FEET) 1 inch = 50 ft.

C-TECSOLAR
1 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860)-580-7174

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WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

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OWNER: THOMPSON FAMILY LAND TRUST
ADDRESS: SADDS MILL RD ELLINGTON, CT

ELLINGTON SOLAR

SITE ADDRESS: 277 SADDS MILL RD ELLINGTON, CT

APT FILING NUMBER: CT481520

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DATE: 04/09/21 CHECKED BY: BJP

SHEET TITLE:

SITE & UTILITY PLAN

SHEET NUMBER:

SP-2

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

MATCHLINE: SEE SHEET SP-2

EXIST. TREE LINE (TYP.)

20.0' (TYP.)

13.3' (TYP.)

15.0' (TYP.)

13.3' (TYP.)

15.0' (MIN.)

15.0' MIN.

13.3' (TYP.)

15.0' (TYP.)

13.3' (TYP.)

20.0' (TYP.)

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

PROPERTY LINE (TYP.)

PROP. TREE LINE (TYP.)

PROP. LIMIT OF DISTURBANCE (TYP.)

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

2 DN-1 PROP. SOLAR ARRAY
18,432 MODULES
(APPROX. POWER GENERATION
@ 480W/EA, TOTAL ±8.85 MW DC)

1 DN-2 PROP. PERMANENT GRASS LINED STORMWATER MANAGEMENT BASIN (B-2A) (TYP.)

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

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

1 DN-2 PROP. PERMANENT GRASS LINED STORMWATER MANAGEMENT BASIN (B-1) (TYP.)

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

1 SP-3 **SITE & UTILITY PLAN**
SCALE : 1" = 50'-0"

50 0 25 50 100
(IN FEET) 1 inch = 50 ft.

C-TECSOLAR
1 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
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APT FILING NUMBER: CT481520

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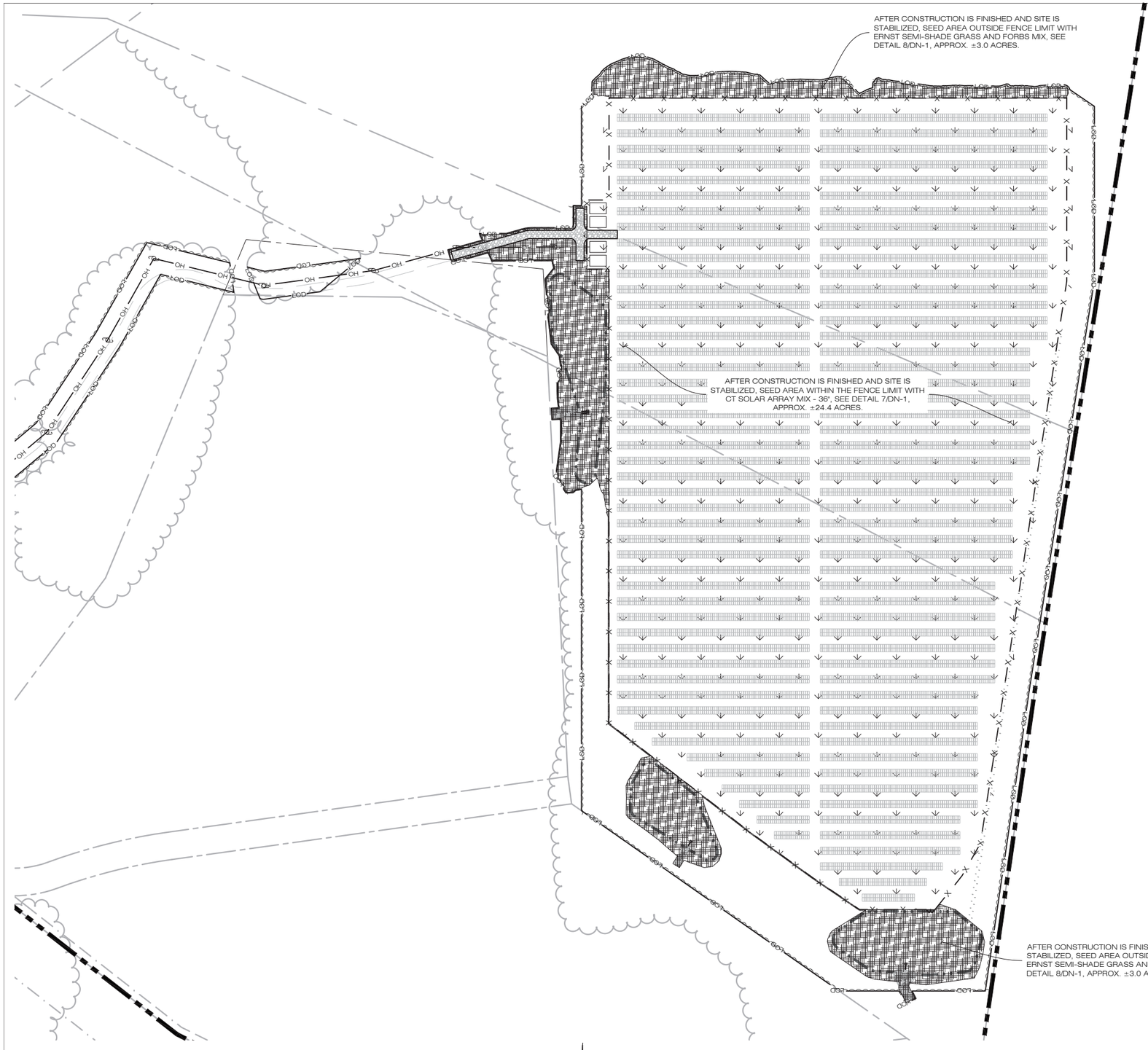
SHEET TITLE:

SITE & UTILITY PLAN

SHEET NUMBER:

SP-3

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



1 / LP-1 **LANDSCAPE SEEDING PLAN**
SCALE : 1" = 100'-0"

100 0 50 100 200
(IN FEET) 1 inch = 100 ft.

C-TECSOLAR
1 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860)-580-7174

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COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

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ELLINGTON SOLAR

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APT FILING NUMBER: CT481520

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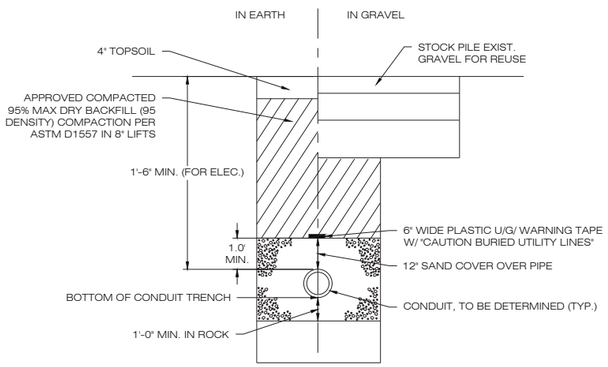
DATE: 04/09/21 CHECKED BY: BJP

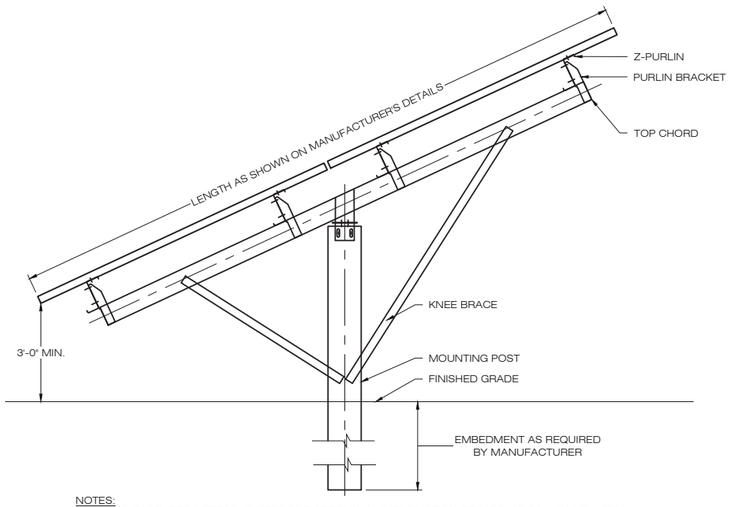
SHEET TITLE:
LANDSCAPE SEEDING PLAN

SHEET NUMBER:
LP-1

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

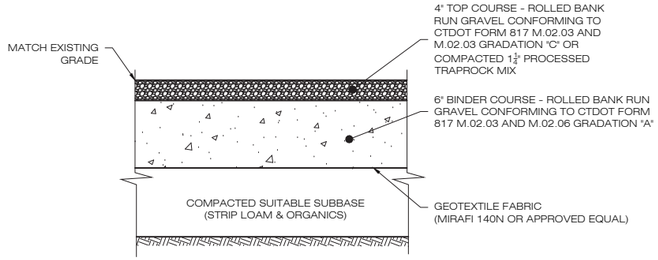


1 DN-1 **ELECTRICAL TRENCH DETAIL**
SCALE : N.T.S.



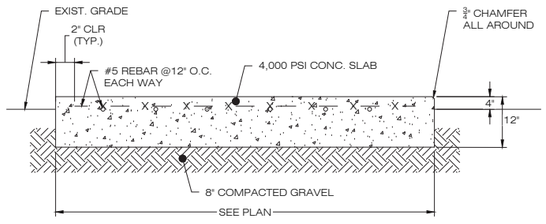
NOTES:
SEE MANUFACTURER'S DETAIL SHEETS FOR ADDITIONAL INFORMATION REGARDING RACKING SYSTEM REQUIREMENTS AND INSTALLATION PROCEDURES. RACKING SYSTEM TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

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

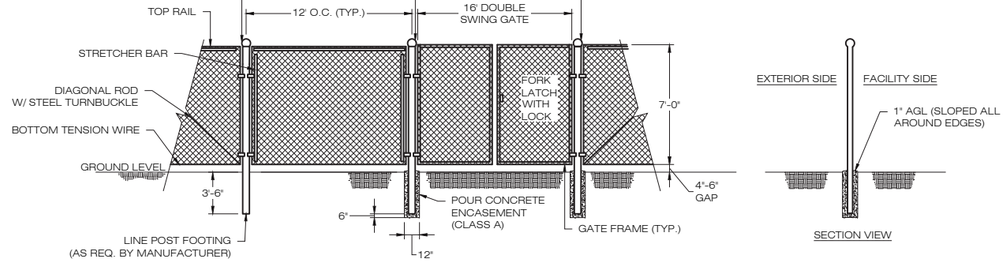


NOTES:
1. SUBBASE MAY CONSIST OF NATIVE MATERIALS IF FOUND ACCEPTABLE BY THE ENGINEER. SUBBASE TO BE COMPACTED TO 95% MAX DRY DENSITY.
2. SUBBASE IS TO BE FREE FROM DEBRIS AND UNSUITABLE MATERIALS.

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.

ELLINGTON SOLAR
LLC

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.

The Bee & Butterfly Habitat Fund
A Unique Conservation Solution.

Seed A Legacy Program

CT Solar Array Mix - 36"
2020

Species	Scientific Name	Suggested Seeding Rates	PLS lbs per acre	PLS seeds per sq ft	% of Mixture PLS	Bloom Period	Pollinator Value
Plains Oval Sedge	*Carex brevior*	0.01 - 0.05	0.050	0.74	1.92%	--	--
Prairie Junegrass	*Koeleria pyramidata*	--	0.100	5.31	13.72%	--	--
Alsike Clover	*Trifolium hybridum*	0.01 - 0.1	0.300	4.69	12.10%	2	5
Ashy Sunflower, Native Source	*Helianthus mollis*	0.01 - 0.04	0.030	0.14	0.36%	3	5
Birdsfoot Trefoil	*Lotus corniculatus*	0.1 - 0.8	0.500	4.25	10.96%	2	5
Blackeyed Susan	*Rudbeckia hirta*	0.01 - 0.1	0.070	2.53	6.54%	2	1
Butterfly Milkweed	*Asclepias tuberosa*	0.01 - 0.04	0.050	0.08	0.21%	2	5
Common Milkweed, Michigan Native	*Asclepias syriaca*	0.03 - 0.08	0.050	0.09	0.24%	2	5
Crimson Clover	*Trifolium incarnatum*	0.1 - 2.0	1.300	4.47	11.54%	2	5
Curly Top Gumweed, Native Source	*Grindelia squarrosa*	0.005 - 0.02	0.020	0.26	0.67%	3	5
Foxglove Beardstongue, Native Source	*Penstemon digitalis*	0.01 - 0.03	0.020	0.18	0.47%	1	5
Golden Alexander	*Zizia aurea*	0.02 - 0.04	0.100	0.40	1.04%	1	5
Gray Goldenrod	*Solidago nemoralis*	0.001 - 0.005	0.008	0.19	0.48%	3	4
Heath Aster	*Symphyotrichum ericoides*	0.001 - 0.004	0.005	0.58	1.49%	3	5
Ladino or White Clover	*Trifolium repens*	0.1 - 0.5	0.300	4.90	12.66%	2	5
Lanceleaf Coreopsis	*Coreopsis lanceolata*	0.05 - 0.1	0.200	1.01	2.62%	2	4
Red Clover	*Trifolium pratense*	0.1 - 2.0	0.150	0.94	2.42%	2	4
Western Yarrow	*Achillea millefolium*	0.01 - 0.05	0.030	1.96	5.07%	1	2
White Dutch Clover	*Trifolium repens*	0.1 - 0.5	0.300	6.00	15.50%	2	5
Rice Hulls - Filler for low planting rate mixtures		--	2.500	0.00	0.00%	--	--
		Grasses Total:	0.150	6.059	15.64%		
		Wildflower/Forb/Legume Total:	3.433	32.680	84.36%		
		Filler Total:	2.500	0.000	0.00%		
		Total Mixture:	**6.083**	**38.739**	**100.00%**		

7 DN-1 **CT SOLAR ARRAY MIX - 36" SEED MIX**

ERNST SEEDS

Ernst Conservation Seeds
8884 Mercer Pike
Meadville, PA 16335
(800) 873-3321 Fax (814) 336-5191
www.ernstseed.com

Date: March 01, 2021

Ernst Solar Farm Seed Mix - ERNMX-185

	Botanical Name	Common Name	Price/lb
45.50 %	*Festuca rubra*	Creeping Red Fescue	2.20
15.00 %	*Festuca ovina var. duriuscula, 'Jetty'*	Hard Fescue, 'Jetty'	3.52
15.00 %	*Festuca ovina var. duriuscula, Gladiator*	Hard Fescue, Gladiator	3.52
10.00 %	*Festuca rubra ssp. commutata*	Chewings Fescue	2.70
5.00 %	*Poa pratensis, 'Selway'*	Kentucky Bluegrass, 'Selway'	3.08
5.00 %	*Poa pratensis, Appalachian*	Kentucky Bluegrass, Appalachian	3.08
4.50 %	*Trifolium repens, Dutch*	White Clover, Dutch	4.84
100.00 %		**Mix Price/lb Bulk:**	**$2.85**

Seeding Rate: 6 lb per 1,000 sq ft
Lawn & Turfgrass Sites; Solar Sites

Provide a 2' clearance between the ground and the solar panels. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

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

C-TECSOLAR
1 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860)-580-7174

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHAUL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
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ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

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ELLINGTON SOLAR

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APT FILING NUMBER: CT481520

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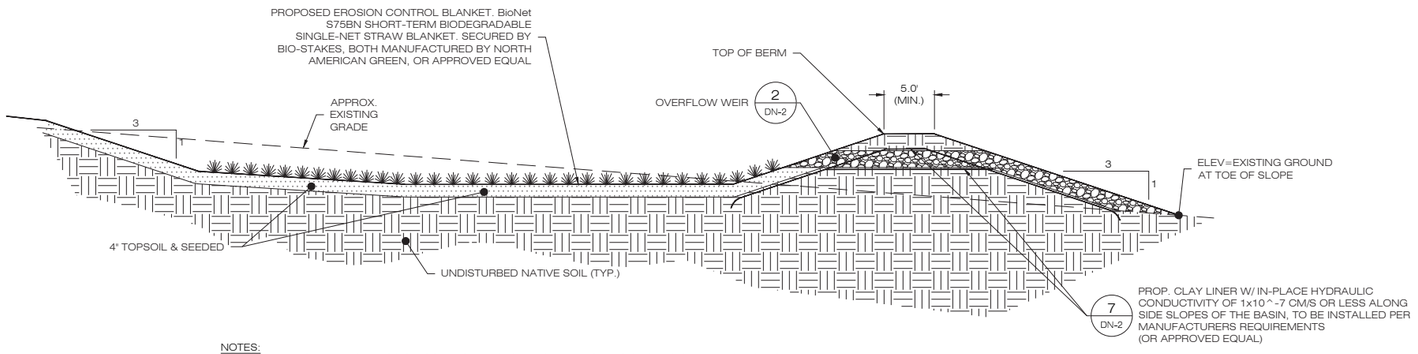
SHEET TITLE:
SITE DETAILS

SHEET NUMBER:
DN-1

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

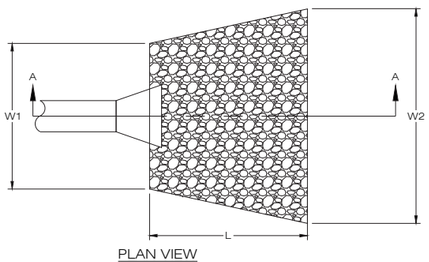


NOTES:
- SEED MIX TO BE ERNST EROSION CONTROL/ RESTORATION MIX FOR MOIST SITES ON THE BOTTOM OF THE BASIN AND ERNST EROSION/RESTORATION MIX FOR DRY SITES ON THE SIDE SLOPES.
- FOR CONVERTING TEMPORARY SEDIMENT BASIN TO INFILTRATION BASIN, REMOVE BAFFLES, CLEAN OUT SEDIMENT, RESHAPE AS REQUIRED. SEE PLANS FOR BASIN DEPTHS AND ELEVATIONS.
- INSPECT AND CLEAN PIPES.

1 DN-2 GRASS LINED BASIN
SCALE : N.T.S.

NOTES:
1. SEED MIX TO BE ERNST EROSION CONTROL/ RESTORATION MIX FOR MOIST SITES ON THE BOTTOM OF THE BASIN AND ERNST EROSION/RESTORATION MIX FOR DRY SITES ON THE SIDE SLOPES.
2. IF DEPTH VARIES FROM 1.5', SEE PLAN CALLOUTS.

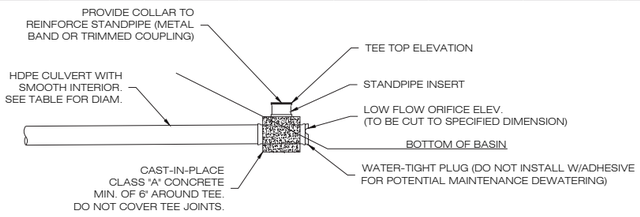
3 DN-2 GRASS LINED SWALE
SCALE : N.T.S.



FLARED END SECTION SIZING			
BASIN	MIN. L (FT)	MIN. W1 (FT)	MIN W2 (FT)
B-1	25'	3.75	16'
B-2A	17'	3.00'	11'
B-2B	25'	3.75'	15'

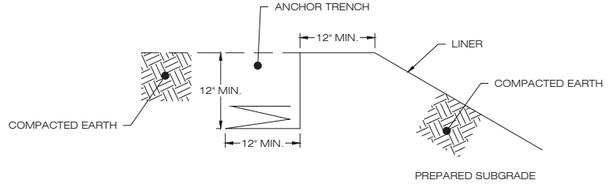
6 DN-2 FLARED END SECTION
SCALE : N.T.S.

HDPE OUTLET PIPE SIZING TABLE								
BASIN	LOW FLOW ORIFICE DIAMETER (IN.)	LOW FLOW ORIFICE INV. ELEV. (FT)	TEE TOP ELEV. (FT)	OUTLET PIPE SIZE (IN.)	OUTLET PIPE LENGTH (FT)	OUTLET PIPE SLOPE (%)	OUTLET PIPE INV. ELEV. AT STRUCTURE (FT)	OUTLET PIPE INV. AT OUTFALL (FT)
B-1	N/A	N/A	227.00'	15"	40.5'	1.23%	225.00'	224.50'
B-2A	4.0"	230.70'	231.50'	12"	30.5'	1.64%	230.50'	230.00'
B-2B (TWIN OUTLETS)	4.0"	228.40'	230.10'	15"	36.5'	1.37%	228.00'	227.50'

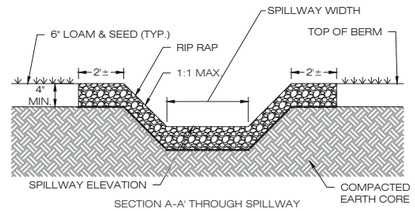


NOTES:
1. TEE TO BE ADS ADVANEDGE (TM) FABRICATED TEE OR APPROVED EQUAL. CONTRACTOR TO MODIFY TEE AS NEEDED.
2. CONVERT TEMPORARY SEDIMENT BASIN RISER TO FINAL BASIN OUTLET RISER.

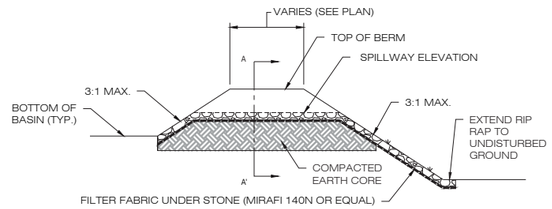
4 DN-2 OUTLET RISER
SCALE : N.T.S.



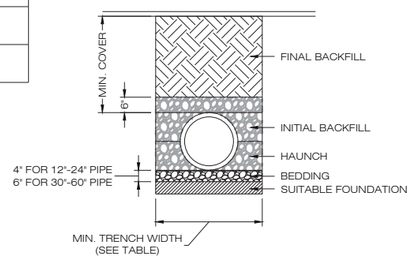
7 DN-2 LINER ANCHOR DETAIL
SCALE : N.T.S.



SECTION A-A' THROUGH SPILLWAY



2 DN-2 OVERFLOW WEIR DETAIL
SCALE : N.T.S.



RECOMMENDED MIN. TRENCH WIDTH	
PIPE DIA.	MIN. TRENCH WIDTH
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
48"	80"
60"	96"

NOTES:
1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321 , "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (7S0mm-900mm).
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

5 DN-2 HDPE STORM DRAINAGE TRENCH DETAIL
SCALE : N.T.S.

C-TECSOLAR
1 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860)-580-7174

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHAUL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	04/09/21	FOR REVIEW: BJP
1		
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: THOMPSON FAMILY LAND TRUST
ADDRESS: SADDS MILL RD ELLINGTON, CT

ELLINGTON SOLAR

SITE ADDRESS: 277 SADDS MILL RD ELLINGTON, CT

APT FILING NUMBER: CT481520

DRAWN BY: JT
DATE: 04/09/21 CHECKED BY: BJP

SHEET TITLE:
SITE DETAILS

SHEET NUMBER:
DN-2

STATE OF CONNECTION — BRADLEY J. PARSONS — No. 28005 — LICENSED PROFESSIONAL ENGINEER

APPENDIX B

DEEP FORESTRY & DOA

CORRESPONDENCE

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

December 23, 2020

Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

cc: Lee D. Hoffman, Attorney
Pullman & Comley LLC
90 State House Square
Hartford, CT 06103-3702

RE: CTEC Solar
Proposed 6.0 MW (AC) Solar Array – 277 Sadds Mill Road, Ellington, CT 06029

Dear Ms. Bachman,

Lee D. Hoffman, Attorney for Pullman & Comley LLC on behalf of CTEC Solar ("Petitioner") has contacted the Connecticut Department of Energy and Environmental Protection ("DEEP") Bureau of Natural Resources and informed us of the intention to file a petition for a declaratory ruling with the Connecticut Siting Council. Petitioner proposes to construct a solar photovoltaic facility with a capacity of two or more megawatts, to be located at 277 Sadds Mill Road, Ellington, CT 06029 ("Site").

No core forested acres will be impacted by the installation of the solar panels, associated systems and site work involved with this proposed project. Pursuant to Sec. 16-50k of the Connecticut General Statutes the DEEP Bureau of Natural Resources staff have reviewed documents submitted by the Petitioner concerning this proposed project, which include a site map dated December 2020 attached to an email dated December 22, 2020 prepared by Lee D. Hoffman, Attorney for Pullman & Comley LLC.

In conducting such review of the proposed project, DEEP Bureau of Natural Resources has determined that such proposed project, as represented in the above mentioned documents **will not** materially affect the status of such Site as core forest.

Nothing in this letter relieves the Petitioner of other obligations under applicable federal, state, and local law that may be necessary as part of the proposed project design and implementation.

If you have any questions, you may contact me at 860-424-3010, or by mail at 79 Elm Street, Sixth Floor, Hartford, CT 06106-5127.

Connecticut is one of the most heavily forested states in America. Our forests clean our air and water, shelter our wildlife, sequester carbon, contribute tens of millions of dollars to our economy, and add immeasurably to the quality of our lives. Yet every day, our forests are under threat. Invasive insects and diseases and our dense and growing human population continue to stress our forests in

unprecedented ways. Thank you for helping us to conserve a healthy core forest for future generations, providing public transparency and working to make thoughtful development choices.

Sincerely,

Rick Jacobson, Chief
Bureau of Natural Resources
Department of Energy and Environmental Protection

CC: Bryan P. Hurlburt, Connecticut Department of Agriculture

Jenny Dickson, Director of Wildlife, Bureau of Natural Resources, DEEP

Christopher Martin, Director of Forestry, Bureau of Natural Resources, DEEP

DEEP.OPPD@ct.gov

siting.council@ct.gov

STATE OF CONNECTICUT
DEPARTMENT OF AGRICULTURE
Office of the Commissioner

Bryan P. Hurlburt
Commissioner

860-713-2501
www.CTGrown.gov

April 5, 2021

Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: CTEC Solar – Proposed Solar Facility, 277 Sadds Mill Rd., Ellington

Dear Executive Director Bachman:

Pursuant to 16-50k(a) of the Connecticut General Statutes, we have reviewed the above cited project with respect to agricultural impacts, specifically, that "…such project will not materially affect the status of such land as prime farmland…"

The project is to be located on two parcels. There is a northerly parcel which is 57.69 acres, and a southerly parcel that is 99.63 acres in size. The solar project will develop approximately 30.5 acres across the two parcels. Overall, the project size is about ten (10) percent of the size of the farm (the total acreage of the farm is reported by the developer to be 317 acres). The area proposed for development contains approximately 10.8 acres of prime farmland (per the developer and confirmed through NRCS web soil survey) and was confirmed by site visit on February 14, 2018 to be wooded. During the February 14, 2018 site visit, an active apiary was observed on the farm.

In the project description submitted to the Department of Agriculture, dated December 23, 2020 (enclosed), the farm owners (Trustees of the Thompson Family Land Trust) stated that existing agricultural operations consist of growing crops for corn and hay on 30-35 acres in the western portion of the property, which will not be impacted by the project. The landowners also stated that there is some tree farming currently occurring on the property and that the tree farming activities will not be impacted by the project.

On January 14, 2021, A meeting was held with the landowner, the landowner's representative, Lee Hoffman, representatives of the Department of Agriculture (Jaime Smith and Stephen Anderson) and CTEC Solar representatives. In that meeting, the landowners and the developer stated the project's three goals to be as follows:

1) Overall sustainability of the farming operation, and continuation of the existing activities which will not be impacted due to the solar development;

2) To provide pollinator habitat and expand apiaries in the area of the site developed for solar. The developer states that this will be an improvement over existing use in the area where the solar project would be developed, which now is wooded and only used for timber, firewood and hunting; and

3) To provide honey for a planned diversification of the farm, which may include establishment of an on-farm distillery on the site.

The department received additional project clarifications in a letter from the trustees of the Thompson Farm, dated March 19, 2021 (enclosed). In that letter, the landowners stated that the farm's trustees intend to increase the size of their apiaries from a current size of 17 hives, to an expected size of 22 hives, and add another honeybee yard to the farm. This apiary expansion would result in an increase in honey production from 80 pounds per year to approximately 200 pounds per year. The trustees also provide a plan for the eventual re-establishment of a craft distillery on the farm, which would use the honey produced on the farm.

Based on the above, the successful implementation of these co-use activities and the continued production agriculture activities throughout this site, the Department of Agriculture can conclude that this project will not materially affect the status of project land as prime farmland. The Department of Agriculture will continue to monitor the proposed project, and should changes to the proposal raise concerns to the Department, we reserve the right to modify our position on this project, including opposing it, in the future, as detailed plans are provided by the developers.

If you have any questions, please feel free to contact either me or Stephen Anderson of my staff. Steve can be reached at Stephen.Anderson@ct.gov, or at (860) 713-2592.

Sincerely,

Bryan P. Hurlburt
Commissioner

Enc. Project description, dated 12/23/2020
Letter from Thompson Farm Trustees, dated March 19. 2021

Cc: Katie Dykes, Commissioner, Department of Energy and Environmental Protection
Lee Hoffman, Pullman & Comley LLC

March 19, 2021

Stephen Anderson
State of Connecticut Department of Agriculture
450 Columbus Blvd., Suite 701
Hartford, CT 06103

Re: Solar Energy Project Considerations – The Thompson Farm, Sadds Mill Road, Ellington, Connecticut

Dear Mr Anderson

Three months ago, your office was alerted to the desire of our farm to have a solar facility constructed on our farm to assist our farm's operations financially so that we can support our ongoing agricultural business. The Thompson Farm is respectfully requesting that the CT Department of Agriculture support the proposed solar facility on a portion of the Thompson Farm located in Ellington.

The Thompson Farm has appreciated working with CT DO-AG and USDA reps on the site for over 16 years to develop an innovative and locally appropriate solar facility on our farm just as the DOAG suggested we do from their initial invitation to attend workshops to promote a new concept of on-farm solar. After 16 years of planning and baseline work on our site, the project is ready to go forward. We have appreciated working with your agency, USDA, and the Town of Ellington to pass appropriate zoning codes making large scale solar an approved use in an industrial zone and having Connecticut make large scale solar a public policy objective of the state. More importantly for us, this project will provide a new stable income source to help sustain our other farming operations.

This planned solar facility will produce a sustainable income to the farm by converting sunshine to a locally-produced commodity to sell to Connecticut residents. Without the ability to generate on-site solar at grid scale, like similar products produced on farms in Massachusetts, New York, Maine and other states, Connecticut farmers have been struggling to compete. Our farms need projects like this to compete in traditional markets and find new markets to satisfy next-generation demands.

The Thompson Farm

The Thompson Farm, located in Ellington, CT, is the 16th oldest continuously operated farm in Connecticut. It is one of only 36 Federally recognized and designated National Bicentennial Farms in Connecticut by the USDA. The Thompson Farm has been in operation since before 1730 when this Melrose section of Ellington and East Windsor was all still part of Windsor. (See https://www.journalinquirer.com/towns/east_windsor/melrose-maintains-village-tradition-in-east-windsor/article_ccb2c162-70a2-11e8-81a4-2fbc696a05c2.html for more information.)
The Thompson Farm is bisected by the Ellington/East Windsor Town line and again by CT Highway Route 140. The site of the proposed Thompson Farm solar project is in a wooded

section of the farm in the southeast corner of the Ellington portion of the farm. It is a section heavily impacted by drought, insects and poor soils as seen and in the condition of the trees and as noted by Chris Martin, DEEP's State Forester. A copy of Mr. Martin's letter is attached. The proposed site represents less than 10% of the acreage of the Thompson Farm. The selection of this project keeps the remaining agricultural land open for continued farming activities on the farm's most productive land. The project will have the benefit of keeping almost 270 additional acres of land open for other agricultural-based or forestry activities.

The Proposed Project

The Thompson Farm began to assess the viability of a farm-based solar installation about 16 years ago following one of the first CT Dept of AG/USDA solar conferences for farms. This initial conference was innovative and attracted about 30 farms and about 10-15 vendors with tabletop booths and organizers from Dept of Ag and USDA CT offices. It was the nascent meeting for various stakeholders to understand what it would take solar to a larger scale and benefit Connecticut's farmers. Following that meeting, we requested and arranged to meet the USDA solar representative from the meeting to come tour the farm and assess its merits, deficiencies, and opportunities as a host site for large scale solar. The Thompson Farm had identified a parcel of land which the USDA representative agreed was a good site. That site is the same 30-acre parcel of wooded land which is proposed for the Thompson Farm solar project.

For the past 16 years, the Thompson Farm has followed CT solar adoption, new legislation, and the track record of the early projects like Somers Solar Center which is nearby. During that time, the Thompson Farm read about the loss of pollinator habitat and heard directly about the difficulty of honey bee health regionally from Ted Jones, founder of Jones Apiary and manager of the hives co-located on our farm. Even at that time it was apparent that the highest and best use for this section of the farm was as a solar farm co-located with pollinator habitat to bring an added benefit to the significant agricultural fields which surround our farm. The benefit of a properly designed and managed pollinator habitat will be symbiotic for both the farms in the area and the solar arrays. This will allow us to increase forage for additional honey bee hives and establish 30 acres of dense pollinator habitat. By so doing, other established, clear and productive farmland will not be taken out of production for pollinator habitat creation, which would limit income generating activity.

The Thompson Farm has partnered with the Bee and Butterfly Fund, www.beeandbutterflyfund.org, and Rob Davis of Fresh Energy, www.fresh-energy.org, and CTEC, https://www.ctecsolar.com, to create what the Thompson Farm believes is a cost-effective replicable model for the State and region to begin to address the loss of critical pollinator habitat. Connecticut recognizes the critical loss of pollinator habitat and has enacted PA 16-17 to prioritize the creation of Pollinator habitat as a valuable and productive use of land in Connecticut.

The selected site will not negatively impact the existing farm crop operations on the more productive fields and pastures. The Thompson Farm solar fields will benefit the existing

operations and the operations of other farms in Ellington and East Windsor with the incorporation of pollinator habitat throughout the site. For the past 20 years, the collaboration of the Thompson Farm with Jones Apiaries has resulted in a healthy honey bee yard of approximately 17 hives. According to Ted Jones, the growing density of housing in Connecticut means that the average honey bee density is about one yard of 10 hives per square mile. The Thompson Farm solar project will significantly increase forage for honey bees and native bee and butterfly pollinators for the surrounding agricultural area. It is anticipated that within two to three years of the establishment of the pollinator habitat, the Thompson Farm will increase its hives from 17 to 22 and will have built a second honey bee yard in an area closer to the solar fields with the new yard increasing the honey yield.

The Proposed Project Supports Additional Agricultural Uses

For decades, the Thompson Farm was known nationally for its high-quality Thompson's brand of Apple based products, the most common of which was its clarified cider and fermented and distilled vinegars. J.A. Thompson and Son shipped cider and vinegar across the region and across the country to new markets on newly-settled lands in the midwest and west from 1863 to 1973. The mill buildings remain on the farm and is an idled grandfathered use within the industrial zone of the town of Ellington. With the passage of the new on-farm distilling ordinances and a mill with a pre-prohibition history of distilling small amounts of specialty Champagne Cider, there is an interest in re-establishing a craft distillery on the farm in the JA Thompson and Son mill complex. One of the requirements of the on-farm distillery ordinance is that a portion of the product used in the distilled spirit be produced on the farm. Since the only product produced on the farm which is appropriate to use in a distilled spirit is honey, the growth of our honey production will allow the Thompson Farm to meet this threshold criteria.

Just as the Thompson Farm has taken 16 years to bring an innovative and sustainable solar project to its final stages of development and implementation, we anticipate that the assessment and business development of a viable distillery on the farm will follow the permitting, the clearing of the land, co-location of the solar arrays and establishment of the pollinator habitat which follows on after construction phases. We anticipate the growth of the existing apiary from 17-22 hives will occur in the first five years and establishment of a second yard near to the solar fields to occur in years 3-8. We are committed to this increase in hives. This increase in hives will form the basis for our distilled spirits manufacturing.

Over the next 6 years, we will be assessing the market for an on-farm distillery in Ellington because at this point there is none. It took 7 years to get compost permitted, and 27 years to grow it from nothing to where it is, it has taken 15 years to get solar to this point (with the assistance of Kip Kolesinskas along the way) with 3 plus years of intensive work and investment by CTEC. The distillery is a long-term concept. It is a reuse of a historic cider mill we have kept up and maintained since 1973. As far as we can tell, the CT Dept of Ag has no programs which would help us in this effort — this is a concept that requires the solar and honey first. While "farm to flask" is real elsewhere but Brand new to CT. We anticipate that honey produced at the farm will increase from its current production of 80 pounds per year to approximately 200

pounds per year in 5-6 years. With this increased production comes the ability to begin our distillation operations.

Site Selection – This Is the Right Site for the Appropriate Use

Smaller to mid-sized CT Farms are family owned businesses which are capital intensive and resource constrained. This has been the case since the first generation began farming here and will continue to be the case for the 10th generation of farmers. Therefore, any assessment of alternate uses for land depends on the ability to meet site selection criteria. This again has been true since the first land was cleared almost 300 years ago. In the past 300 years, Thompson farmers have considered the use or crop they required and then selected the site on the farm and manually cut, cleared, stumped and destoned the hay fields, pastures and cropland. They did the same for their houses, barns and cider mill. In all that time, the section of the farm now being considered for solar was not deemed of sufficient quality for any crop whether it was rye, wheat, corn, potatoes, tobacco, mulberries or apple orchards. This parcel was not deemed satisfactory for pasture for sheep or cattle, and not suitable for pigs or goats.

The land was only suitable for sand and gravel removal and was permitted for this as part of a larger operation, but the Thompson Farm ended the operation before we extracted the gravel from under these parcels. Again, the cost to clear and stump and prepare this site was not economically attractive compared to the ongoing timber management from this parcel. The decline in the timber quality, as related in the letter from the state forrester and seconded by our woodcutter, has been caused by drought, insects and declining soil quality and has directly translated into lower quality timber over the past 25-30 years. Lower quality translates into lower revenue and an inability for the land to pay for itself through 10-15-year timber harvest cycles.

The Thompson Farm solar project developer was told that it was the first solar project to reach out to request a site visit to understand if the site met the threshold criteria to be approved following the passage of P.A. 17-218. We were taking a proactive collaborative approach and working with the appropriate state agencies now tasked with implementing the legislation as part of the balanced approach to the needs of the state and to farmers. The site does not have core forest designation. The site does have approximately 6 acres of soils in the woodland designated as prime soils but currently wooded.

It is the intent of the Thompson Farm for the solar developer to cut, stump and clear the site including the 6-acre area that, although designated as having prime soils, currently struggles to maintain quality hardwood tree growth. The 6 acres of land designated as prime will have solar arrays installed and pollinator habitat established. We anticipate that the 6 acres of pollinator habitat located on the prime soils will establish itself better and perhaps faster than the surrounding soils and yield more of the forage required to increase the honey yield on the farm. We would welcome a collaboration with the Ag extension service to evaluate the increased yield of pollinator species on prime soils vs non-prime soils in the same solar facility.

Conclusion

After considering alternative beneficial co-location activities. pollinators are the clear choice of co-location activities which bring the greatest indirect and direct benefit to the many stakeholders in the host community and surrounding agricultural fields and crop land.
In conclusion we again respectfully request the support of the Department of Agriculture for the development of the solar facility located on the Thompson Farm in Ellington.

Regards.

John de Rham
John MM de Rham, Co-Trustee
Lawrence F. Bissell, Co-Trustee Thompson Farm (Thompson Family Land Trust)

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PULLMAN & COMLEY 100 YEARS

Lee D. Hoffman
90 State House Square
Hartford, CT 06103-3702
p 860 424 4315
f 860 424 4370
lhoffman@pullcom.com
www.pullcom.com

December 23, 2020

VIA ELECTRONIC MAIL

Stephen Anderson
State of Connecticut Department of Agriculture
450 Columbus Blvd., Suite 701
Hartford, CT 06103

Re: Solar Energy Project Considerations, Sadds Mill Road, Ellington, Connecticut

Dear Mr. Anderson:

I am writing on behalf of my client, CTEC Solar, LLC ("CTEC"), with respect to its proposed project to be located at 277 Sadds Mill Road in Ellington, Connecticut (the "Project"). As an initial matter, I want to thank you for taking the time to discuss the project with CTEC when you walked the project site with Jason Bowsza and Kip Kolesinskas (as well as Chris Martin from CT DEEP) approximately two years ago. us in detail at your offices. As we discussed at that visit, the payments from the proposed use of a portion of the Thompson Family's farm for a solar array will allow the Thompson Family to continue its other agricultural and business pursuits at the site. Because the Project will be leasing this property from the Thompson family, the project intends to return the land in as good a condition as it found the land in, if not better.

With that goal in mind, this letter will serve as an update as to the activities CTEC has taken with respect to this proposed site, and to provide the Department with additional information concerning the site. As you know, section 16-50k(a) of the Connecticut General Statutes requires that for a solar photovoltaic facility with a capacity of two or more megawatts to be located on prime farmland, "excluding any such facility that was selected by the Department of Energy and Environmental Protection in any solicitation issued prior to July 1, 2017, pursuant to section 16a-3f, 16a-3g or 16a-3j", the Department of Agriculture must represent, in writing, to the Connecticut Siting Council that such project will not materially affect the status of such land as prime farmland. It is our hope that once the Department has reviewed this information, it would agree that the Project will not materially affect the status of the prime farmland on the site.

As we mentioned when we met before, and as indicated on the attached map, the Thompson Family farm is currently used for some traditional farming activities including corn and hay on approximately 30-35 acres of the parcels identified on the map, and the property does contain prime farmland soils. Parts of the underlying property have also been used for a tree farm. The

Project would be located in a forested area of the site that is not being used for crop production. As you can see on the attached map, the crop production is occurring on the western portion of the site, while the solar array will be located in a forested area in the southeastern corner of the site.

Per the January 16, 2020 guidance that has previously been posted by the Department, CTEC is providing additional information on the Project for the Department's review. Our answers to the Department's request for information are provided in the responses below.

1) **Farm/Property Information** - Provide a description of the farm property, including but not limited to the following (include appropriate maps and surveys to allow evaluation):

   a. Farm owner(s), farm name and location:

      The property is located at 277 Sadds Mill Road, Ellington, CT. The landowners are John Derham, and Sally and Lawrence Bissell, Trustees of the Thompson Family Land Trust ("the Property").

   b. Total acreage, identification of prime, statewide and/or locally important farmland soils & acreage:

      The Property consists of two parcels, both owned by the same trustees as listed above. The northerly parcel is 57.69 acres with a map/block/lot number of 157 006 0000. It abuts Reeves Road on it's northwest boundary. The southerly property is 99.63 acres with a map/block/lot number of 136 004 0000. It abuts Reeves Road on the northwestern portion of it's boundary and Sadds Mill Road to the west. The intersection of these two roads is at the northwestern corner of this parcel. The Project area will involve the development of approximately 30.5 acres of the underlying lot across the two parcels, in the southeast area of the parcels ("Project Area"). Based on state mapping sources, approximately 14.6 acres of Statewide Important Farmland Soils are mapped within the central, northwestern, and southwestern portion of the Property while approximately 39.7 acres of Prime Farmland Soils are located in its northwestern and southeastern portions. CTEC has determined that the Project Area contains approximately 10.8 acres of mapped Prime Farmland Soils and approximately 0.1 acres of mapped Statewide Important Farmland Soils (See attached Figure - Farmland Soils Map).

   c. Current production agriculture on the farm and the approximate location of crops, farm buildings, etc. used to support the farming operation:

      Traditional farming activities of corn and hay take place on about 30-35 acres located in the western portion of the property. These activities will NOT be impacted

by the construction of the solar project. There is also some tree farming that occurs on the property, which will also not be impacted by the construction of the solar Project. The Project will be built in a forested area as indicated in the map below.

2) **Energy Project Information**

a. Describe the energy project, including but not limited to, the size of the project in megawatts (MW), the footprint being proposed as it relates to prime farmland on the property, # of panels (if known), and a description of infrastructure needed to support the project.

The overall proposed system size of the energy project is 6.0 MW AC, to be developed as two (2) solar-based electric generating facilities. The Northern Facility will have an output of approximately 2.2 megawatts while the Southern Facility will have an output of approximately 3.8 megawatts. The Northern Facility's footprint is approximately 7.87 acres, of which, 0 acres are located within areas mapped as Prime Farmland Soils. The Southern Facility's footprint is approximately 14.44 acres, of which 6.15 acres are located within areas mapped as Prime Farmland Soils. The preliminary site plan/layout shows 7,182 panels/modules located in the Northern Facility while the Southern Facility has 12,474 panels/modules proposed. Required infrastructure includes stormwater management features, gravel roads and one concrete equipment pad per system.

b. Describe what the energy will be used for and how it will benefit the farming operation.

The energy will be sold to The Connecticut Light & Power Company, d/b/a Eversource Energy ("Eversource") through a state approved power purchase agreement. The lease payments that the Project is making to the farm will allow the farm to continue its agricultural production on the remainder of the property.

c. Are there future plans to increase energy capacity beyond what is proposed? If so, please describe these future plans, and any impacts the increase may have on prime farmland or the overall farming operation

There are no such plans at this time.

3) **Agricultural Resource Impacts**

a. Describe any production agriculture currently being conducted within the footprint of the solar project.

There is no production agriculture currently occurring within the footprint of the Project.

b. Describe overall how the project will impact production agriculture currently being conducted on the farm.

As stated above, the payments from the solar project will allow the agricultural activities that currently take place on this site to continue. Given the location of the Project, no production agriculture will be adversely impacted, since the Project will be located away from any current production agriculture.

c. Provide a description of any plans by the farm owner(s) to foster production agriculture within or as a result of the development (e.g., grazing animals in and around the solar project, providing pollinator habitat).

The Project intends to provide pollinator habitat and construct apiaries within the Project site in order to foster production agriculture. Since the Project site is not currently being used for production agriculture, this will be an improvement.

4. **Alternatives to Locating the Energy Project on Prime Farmland**

a. Provide a description of any alternatives considered by the farm owner(s) to developing the project on prime farmland soils (e.g., the option of selling agricultural development rights for the farm instead of developing for solar, or as a mitigation measure to reduce the size of the solar development).

The Thompson Family Farm selected this site through the evaluation process of successful projects, discussions with the Town of Ellington, and CTEC's experience on site selection criteria. The Thompson farm site is zoned Industrial and grid-connected solar is an approved use in an I-zone. The Project area is visually obscured from roadways, which is important to Town of Ellington. The site uses existing roadways from the existing paved truck access on CT Rte 140 to the access gate and thereby minimizes impact to neighbors and disturbance to all current farm activities and animal stress as well as the closest location to the existing honey bee apiary. The proposed site has the best access to the existing three phase power grid which runs along Route 140 and was brought to the farm in the mid-late 1990's and which minimizes any cutting or trimming required for the solar electrical infrastructure.

Just as importantly, the Thompson Family Farm considered the quality of the land that will comprise the Project Area. Put simply, if the land were better-suited to agricultural production, the land would have been put into crop production before now. Instead, the site has been woodland managed for fuel and timber by the

Thompson's since the 1730s. In the 1730s, the entire farm was woodland which needed to be cleared by hand and teams of oxen. For almost 300 years, this land was deemed too bony and rocky with thin cover that was unsuitable for anything but woodland - mostly chestnut. The land that comprises the Project Area was not deemed good enough to clear and till, even for apple orchards or mulberries. More recently, blights, droughts, and insect infestations have decreased the quality of timber and firewood harvested and made the site ideal for grid connected solar.

As noted above, the site is less than 10% of the total acreage of the farm and the income from the solar will provide long term revenue for preserving and sustaining other traditional farm operations.

b. Describe any alternatives examined which might enable placement of some or all of the solar panels in locations other than on prime farmland (e.g., elsewhere on the property or on farm buildings).

While alternatives were considered, once all the siting criteria were layered on this site, both in terms of technical and aesthetic criteria, this site was deemed by both C-Tec and the Thompson Family Farm as the optimal location. The hay barn and barnyard were considered at one point, however, they are part of the historic barn program and are not rooftop solar appropriate.

c. Provide a description of any other form of mitigation considered by the farm owner(s) (e.g., farmland restoration, or a future commitment to preserve the farm)

In the late 1970s and early 1980s, The Thompson Family Farm contemplated succession planning and how to best preserve the farm as an entity for the next generations to farm or maintain. The Thompsons settled on a new concept which was used in Massachusetts known as a "Family Land Trust" as a way to preserve the Thompson Farm. The Thompson Farm was one of the first in CT to adopt this methodology as a way to preserve the farm. In the decades since, the Thompson Family believes that the "Family Land Trust" is one of the most popular forms of family farm and farmland preservation. The Thompson family intends to continue the use of this methodology.

Given this background, CTEC requests that the Department provide a letter to the Siting Council indicating that if CTEC proceeds with its Project in the fashion outlined above, it will not have an adverse impact on agriculture.

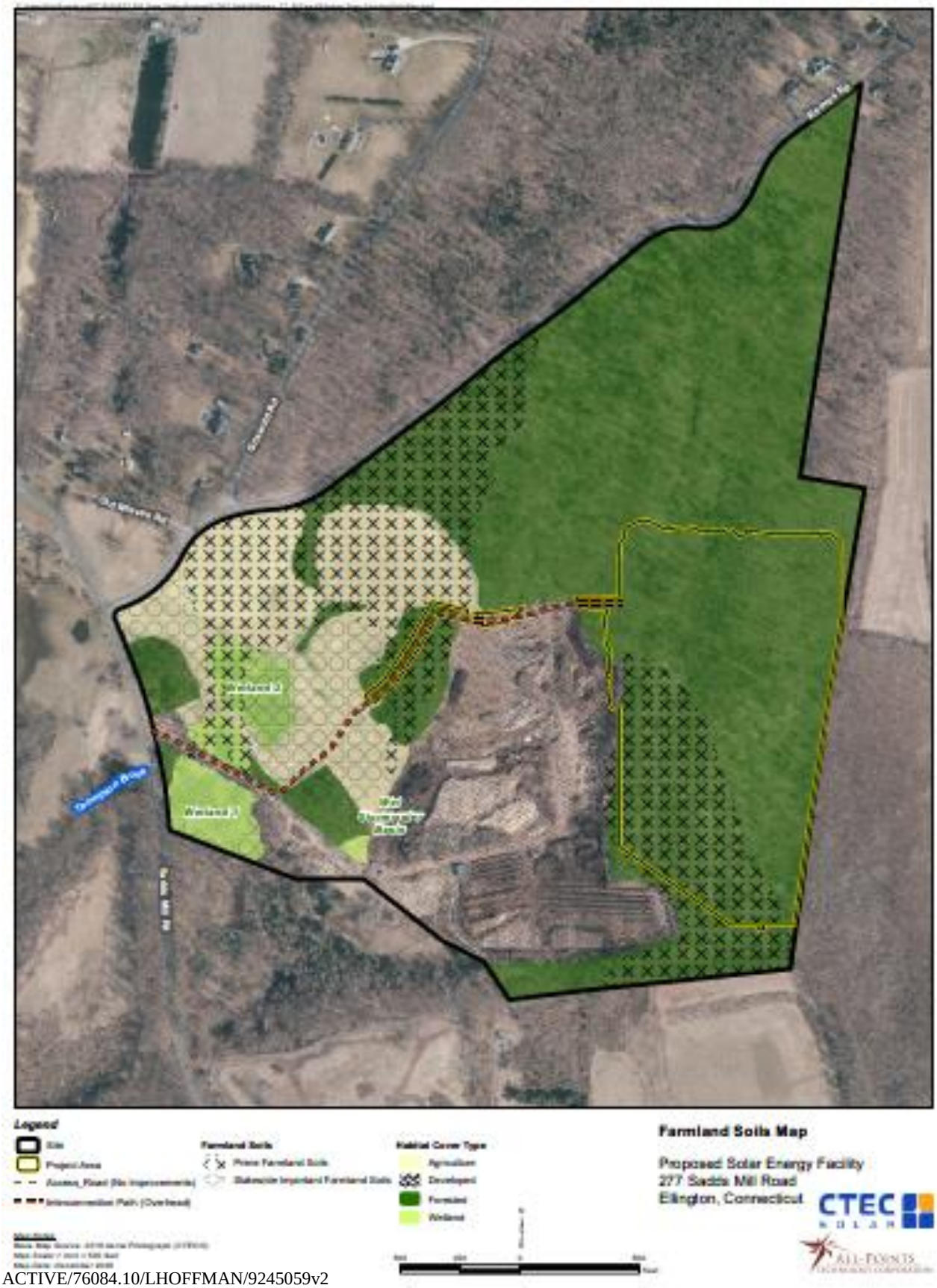
We look forward to working with the Department on this matter. Should you have any questions, please contact me at your convenience. Thank you in advance for your consideration.

Sincerely,

Lee D. Hoffman

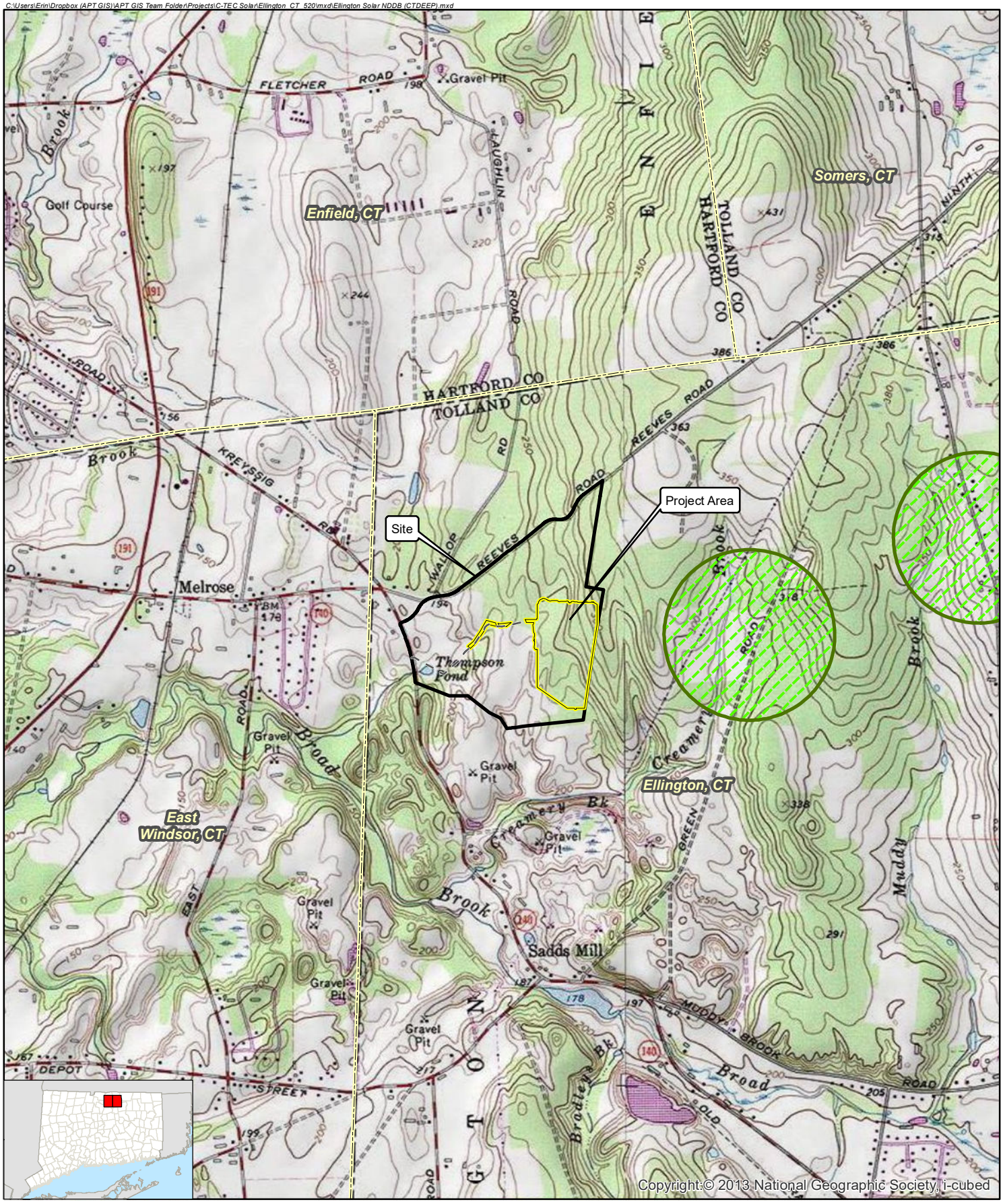
Lee D. Hoffman

Enclosure


Legend
Site
Project Area
Access_Road (No Improvements)
Interconnection Path (Overhead)
Farmland Soils
Prime Farmland Soils
Statewide Important Farmland Soils
Habitat Cover Type
Agriculture
Developed
Forested
Wetland
Wetland 2
Wetland 3
Farmland Soils Map
Proposed Solar Energy Facility
277 Saddle Mill Road
Ellington, Connecticut
CTEC SOLAR

APPENDIX C

DEEP NDDB MAPPING



Legend

- Site
- Project Area
- Access Road (No Improvements)
- Municipal Boundary
- Natural Diversity Database (updated June 2020)

Map Notes:
Base Map Source: USGS 7.5 Minute Topographic Quadrangle Map, Broad Brook, CT (1984) and Ellington, CT (1984)
Map Scale: 1:24,000
Map Date: December 2020

N

2,000 1,000 0 2,000 Feet

CTDEEP NDDB
Overview Map

Proposed Solar Energy Facility
277 Sadds Mill Road
Ellington, Connecticut

C-TECSOLAR

ALL-POINTS TECHNOLOGY CORPORATION

APPENDIX D

USFWS/NDDB COMPLIANCE STATEMENT

USFWS & NDDB Compliance Determination

December 22, 2020

Mr. Michael Morrison
Commercial Project Coordinator
C-TEC Solar LLC
1 Griffin Road S, Suite 200
Bloomfield, CT 06002

Re: Ellington Solar, 277 Sadds Mill Road, Ellington, CT
APT Job No: CT481520

On behalf of C-TEC Solar LLC ("C-Tec"), 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 energy generation facility ("Facility") would result in a potential adverse effect to listed species.

APT understands that C-TEC intends to lease a portion of the two parcels comprising the ±157.32-acre Property for development of a ±5.94 (AC) megawatt solar photovoltaic electric generating facility located at 277 Sadds Mill Road, Ellington, Connecticut ("Subject Property").

USFWS

The federal consultation was completed in accordance with Section 7 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 require ±30.5 acres of tree clearing associated with the Facility; trees provide potential NLEB habitat. A review of the Connecticut Department of Energy & Environmental Protection ("CTDEEP") Wildlife Division Natural Diversity Data Base ("NDDB") NLEB habitat map[2] revealed that the proposed Facility is not within 150 feet of a known occupied NLEB 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 ±11.0 miles to the west in East Granby.

[1] Listing under the federal Endangered Species Act

[2] *Northern long-eared bat areas of concern in Connecticut to assist with Federal Endangered Species Act Compliance* map. February 1, 2016.

APT submitted the effects determination using the NLEB key within the IPaC system for the proposed Facility (the "Action"). This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the USFWS's January 5, 2016, intra-Service Programmatic Biological Opinion ("PBO") on the Final 4(d) Rule for the NLEB for Section 7(a)(2) compliance.

Based upon the IPaC submission, the Action is consistent with activities analyzed in the PBO; please refer to the enclosed October 21, 2020 USFWS letter. The Action may affect NLEB; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). If the USFWS does not respond within 30 days from the date of the letter (November 19, 2020), one may presume that the IPaC-assisted determination was correct and that the PBO satisfies and concludes C-TEC's responsibilities for this Action under ESA Section 7(a)(2) with respect to NLEB. No response was received from USFWS; therefore, the Action complies with ESA Section 7(a)(2) with respect to NLEB.

In addition, C-TEC would consider the following additional USFWS voluntary conservation measures, where appropriate and as the project schedule allows, to reduce the potential impacts of activities in NLEB.

- 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 Connecticut Department of Energy and Environmental Protection ("DEEP") Natural Diversity Data Base ("NDDB") Maps in the location of the proposed Facility or within a 0.25 mile to the Subject Property. Please refer to the enclosed NDDB Map which depicts the nearest NDDB buffer area ±.2 mile east of the Subject Property. Since the Subject Property is not located within a NDDB buffer area, consultation with DEEP is not required in accordance with their review policy[3] or the Connecticut Siting Council's NDDB review policy.

[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

Therefore, the proposed Facility is not anticipated to adversely impact any federal or state threatened, endangered or special concern species.

Sincerely,
All-Points Technology Corporation, P.C.

Dean Gustafson
Senior Biologist

Enclosures

USFWS NLEB Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

IPaC Record Locator: 843-23946628 October 21, 2020

Subject: Consistency letter for the 'C-Tec Ellington' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Deborah Gustafson:

The U.S. Fish and Wildlife Service (Service) received on October 21, 2020 your effects determination for the 'C-Tec Ellington' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

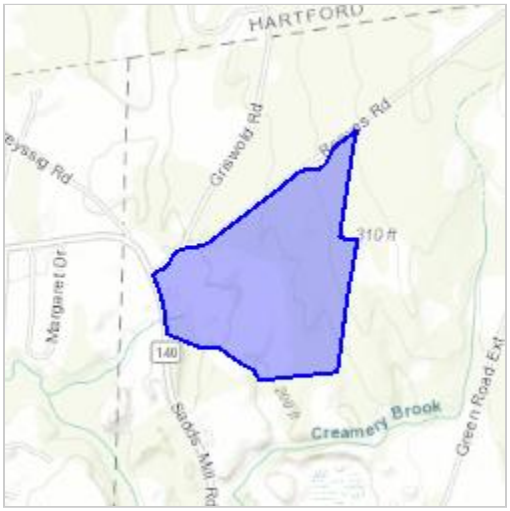
C-Tec Ellington

2. Description

The following description was provided for the project 'C-Tec Ellington':

> C-Tec Solar intends to lease a portion of the two parcels comprising the +/- 157.32-acre Property for development of a +/- 5.94 (AC) megawatt solar photovoltaic electric generating facility located at 722 Sadds Mill Road and 0 Reeves Road, Ellington, Connecticut.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.937105162050614N72.50595473203518W



Determination Key Result

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule
This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   No

2. Will your activity purposefully **Take** northern long-eared bats?

   No

3. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

6. Will the action involve Tree Removal?

   Yes

7. Will the action only remove hazardous trees for the protection of human life or property?

   No

8. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

9. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

45

2. If known, estimated acres of forest conversion from April 1 to October 31

45

3. If known, estimated acres of forest conversion from June 1 to July 31

45

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

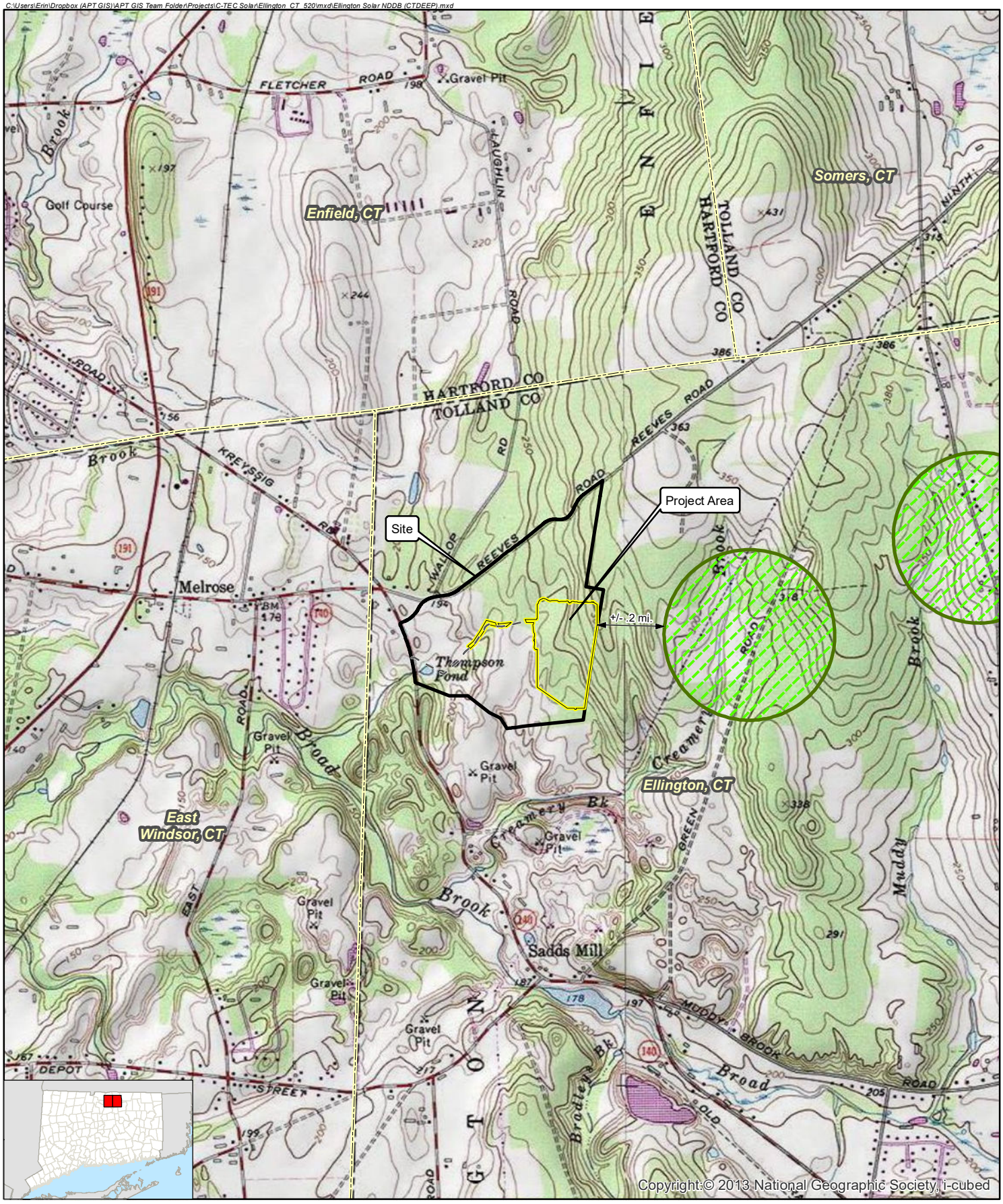
9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?
0

NDDB Map



Legend

- Site
- Project Area
- Access Road (No Improvements)
- Municipal Boundary
- Natural Diversity Database (updated June 2020)

N

2,000 1,000 0 2,000 Feet

Map Notes:
Base Map Source: USGS 7.5 Minute Topographic Quadrangle Map, Broad Brook, CT (1984) and Ellington, CT (1984)
Map Scale: 1:24,000
Map Date: December 2020

NDDB Map

Proposed Solar Energy Facility
277 Sadds Mill Road
Ellington, Connecticut

CTEC SOLAR

ALL-POINTS TECHNOLOGY CORPORATION

APPENDIX E

SHPO RESPONSE AND

CULTURAL RESOURCES

RECONNAISSANCE SURVEY REPORTS

Department of Economic and Community Development

State Historic Preservation Office

February 9, 2021

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

Subject: Phase IB Cultural Resource Reconnaissance Survey
CTEC Solar Facility
277 Sadds Mill Road
Ellington, Connecticut
ENV-21-0421

Dear Mr. George:

The State Historic Preservation Office (SHPO) has reviewed the cultural resource reconnaissance survey prepared by Heritage Consultants, LLC (Heritage), dated January 2021. 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 undertaking includes the construction of a solar facility, which is to occupy an approximately 67.3 acre project area within a larger 156.6 acre parcel. The parcel is bordered to the north and east by forested area, to the south by agricultural fields, and to the west by Sadds Mill Road. Access is to be from the west, through a new access road originating from Sadds Mill Road. The submitted report is well-written, comprehensive, and meet the standards set forth in the *Environmental Review Primer for Connecticut's Archaeological Resources*.

No previously recorded archaeological sites are located within 1 mile of the project area. One property listed on the National Register of Historic Places, the William H. Thompson Farmstead (NR# 03000234), is located within 1 mile of the project area; however, it will not be impacted by the undertaking.

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 302 of 316 planned shovel tests were excavated successfully throughout the proposed work area. No prehistoric or historic period cultural artifacts or features were identified during the survey.

Department of Economic and Community Development

State Historic Preservation Office

As a result of the information submitted, SHPO concurs with the findings of the report that additional archeological investigations of the project area is not warranted and that no historic properties will be affected by the proposed activities.

This office appreciates the opportunity to review and comment upon this project. For additional information, please contact Marena Wisniewski, Environmental Reviewer, at (860) 500-2357 or marena.wisniewski@ct.gov.

Sincerely,

Jonathan Kinney
Deputy State Historic Preservation Officer

NOVEMBER 2020

PHASE IA CULTURAL RESOURCES ASSESSMENT SURVEY OF THE PROPOSED C-TEC SOLAR FACILITY IN ELLINGTON, CONNECTICUT

PREPARED FOR:

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION – SUITE 311
WATERFORD, CONNECTICUT 06385

PREPARED BY:

HERITAGE CONSULTANTS
55 EAST CEDAR STREET
NEWINGTON, CONNECTICUT 06111

ABSTRACT

This report presents the results of a Phase IA cultural resources assessment survey for the proposed C-TEC Solar Facility in Ellington, Connecticut. The project area associated with this facility encompasses approximately 67.03 acres of land within a project parcel of 156.60 acres and will be accessed from a proposed access road that originates in the southwestern portion of the project parcel. The current investigation consisted of: 1) preparation of an overview of the region's prehistory, history, and natural setting; 2) a literature search to identify and discuss previously recorded cultural resources in the region; 3) a review of readily available historical maps and aerial imagery depicting the project area to identify potential historical resources and/or areas of past disturbance; 4) pedestrian survey and photo-documentation of the project area to determine their archaeological sensitivity; and 5) preparation of the current Phase IA cultural resources assessment survey report. Pedestrian survey of the existing access road determined that it was subjected to extensive disturbance; the soil on the road has been heavily compacted and disturbed, and it therefore does not possess archaeological sensitivity. No further archaeological examination of the access road is recommended. The results of the Phase IA survey indicate that 14.84 acres along the eastern border of the project area are archaeologically sensitive, and it is recommended that this area be subjected to a Phase IB cultural resources reconnaissance survey prior to construction.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF PHOTOS

CHAPTER I
INTRODUCTION

This report presents the results of a Phase IA cultural resources assessment survey of the proposed C-TEC Solar Facility at 277 Sadds Mill Road in Ellington, 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. The proposed study area occupies, approximately 67.03 acres of land within a project parcel of 156.6 acres, as well as a proposed access road. The access road measures 592.5 m (1,943.91 ft) in length. The project area is surrounded to the north and west by wooded areas and to the south and west by a landscape supply company. The proposed access road originates in the southwestern portion of the project. Heritage completed this investigation on behalf of All-Points in November of 2020. 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 include the installation of rows of solar panels across the above-referenced project area and an access roads. The proposed solar facility project includes a post driven ground mounted racking system and will require minor grading/reshaping for access road development and stormwater management. The interconnection for the facility will use an access road and will employ both under and above ground methods to connect to existing infrastructure. The project area, which is located within a wooded area, is situated at elevations ranging from approximately 85 to 117 m (279 to 384 ft) NGVD. This Phase IA cultural resources assessment survey consisted of the completion of the following tasks: 1) a contextual overview of the region's prehistory, history, and natural setting (e.g., soils, ecology, hydrology, etc.); 2) a literature search to identify and discuss previously completed cultural resources surveys and previously recorded cultural resources in the region encompassing the project area; 3) a review of readily available historical maps and aerial imagery depicting the project area in order to identify potential historical resources and/or areas of past disturbance; 4) pedestrian survey and photo-documentation of the project area 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 historical maps and aerial images of the project area, files maintained by the CT-SHPO, as well as pedestrian survey of the development area, failed to detect any previously identified archaeological sites within 1.6 km (1 mi) mile of the project area. A single National/State Register of Historic Places properties was identified within 1.6 km (1 mi) mile of the project area and is discussed in Chapter V. In addition to the cultural resources discussed above, Heritage combined data from the historical map and aerial image analysis, and the pedestrian survey to stratify the project area 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 project area contains low slopes and well-drained soils in proximity to Thompson Brook to the west.

It was determined that 14.84 acres of the project area retained a moderate potential to contain intact archaeological deposits. As a result, a Phase IB cultural resources survey is recommended prior to construction of the proposed solar facility. Pedestrian survey of the access road determined that it has

been subjected to disturbance and the soil is heavily compacted; therefore, it does not possess archaeological sensitivity. No further archaeological examination of the access road is warranted.

Project Personnel

Key personnel for this project included Mr. David R. George, M.A., R.P.A, (Principal Investigator), Ms. Renée Petruzelli M.A., R.P.A., (Project Archaeologist), Mr. Antonio Medina, B.A., (Field Operations Supervisor), Ms. Christina Volpe (Historian), and Mr. Stephen Anderson, B.A., (GIS Specialist).

CHAPTER II
NATURAL SETTING

Introduction

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

Ecoregions of Connecticut

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

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

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

<u>North-Central Lowlands Ecoregion</u>

The North-Central Lowlands ecoregion consists of a broad valley located between 40.2 and 80.5 km (25 and 50 mi) to the north of Long Island Sound (Dowhan and Craig 1976). It is characterized by extensive floodplains, backwater swamps, and lowland areas situated near large rivers and tributaries. Physiography in this region is composed of a series of north-trending ridge systems, the easternmost of which is referred to as the Bolton Range (Bell 1985:45). These ridge systems comprise portions of the terraces that overlook the larger rivers such as the Connecticut and Farmington Rivers. The bedrock of the region is composed of Triassic sandstone, interspersed with very durable basalt or "traprock" (Bell 1985). Soils found in the upland portion of this ecoregion are developed on red, sandy to clayey glacial till, while those soils situated nearest to the rivers are situated on widespread deposits of stratified sand, gravel, silt, and alluvium resulting from the impoundment of glacial Lake Hitchcock.

Hydrology in the Vicinity of the Project area

The project area is situated within a region that contains several sources of freshwater, including Thompson Pond, Thompson Brook, Creamery Brook, Broad Brook, Muddy Brook, Bradley's Pond and Sadds Mill Pond, as well as unnamed streams, ponds, and wetlands. These freshwater sources may have served as resource extraction areas for Native American and historical populations. Previously completed archaeological investigations in Connecticut have demonstrated that streams, rivers, and wetlands were focal points for prehistoric occupations because they provided access to transportation routes, sources of freshwater, and abundant faunal and floral resources.

Soils Comprising the Project area

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

A review of the soils within the project area is presented below. The project area is characterized by the presence of one major soil type: Narragansett soils (Figure 2). A review of the Narragansett series shows that they consist of very deep, well drained loamy soils; they are the types of soils that are typically correlated with prehistoric and historical use and occupation. Descriptive profiles for each soil type are presented below; they were gathered from the National Resources Conservation Service.

<u>Narragansett Series (67 B):</u>

The Narragansett series consists of very deep, well drained loamy soils formed in a mantle of medium-textured deposits overlying till. They are nearly level to moderately steep soils on till plains, low ridges, and hills. A typical profile associated with Narragansett soils is as follows: **Ap**--0 to 6 inches; dark brown (10YR 3/3) silt loam; weak medium granular structure; very friable; common medium roots; very strongly acid; clear wavy boundary. **Bw1**--6 to 15 inches; dark yellowish brown (10YR 4/6) silt loam; weak medium subangular blocky structure; very friable; common medium roots; very strongly acid; gradual wavy boundary. **Bw2**--15 to 24 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; very friable; common medium roots; strongly acid; clear wavy boundary. **Bw3**--24 to 28 inches; yellowish brown (10YR 5/6) gravelly silt loam; weak medium subangular blocky structure; very friable; few fine roots; 15 percent gravel; strongly acid; clear wavy boundary. **2C**--28 to 60 inches; light olive brown (2.5Y 5/4) very gravelly loamy coarse sand; single grain; loose; 45 percent gravel and cobbles; strongly acid.

Summary

The natural setting of the area containing the proposed C-TEC Solar Facility is common throughout the North-Central Lowlands ecoregion. Streams and rivers of this area empty into the Connecticut River, which in turn, drains into the Long Island Sound. Further, the landscape in general is dominated by sandy loamy soil type. In addition, low slopes dominate the region. Thus, in general, the project region was well suited to Native American occupation throughout the prehistoric era. This portion of Ellington was also used throughout the historical era, as evidenced by the presence of numerous historical

residences and agricultural fields throughout the region; thus, archaeological deposits dating from the prehistoric and historical era may be expected near or within the proposed project area.

CHAPTER III
PREHISTORIC SETTING

Introduction

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Summary of Connecticut Prehistory

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

CHAPTER IV
HISTORICAL OVERVIEW

Introduction

Ellington was originally part of the township of East Windsor and is bounded by Somers and Stafford in the north, East Windsor in the West, Tolland and Stafford in the East, and Vernon in the south. Ellington was first called the Great Marsh until the town was incorporated in 1786. The remainder of this chapter presents an overview history of the Ellington, as well as more specific historical data related to the project area.

Contact Period

The Town of Windsor was founded in 1633, if the first and non-permanent settlers are counted as the founders of the town. Windsor's original territory extended for several miles on both sides of the Connecticut River. Although the earliest descriptions of the town are vague, the present towns of Windsor, Windsor Locks, East Windsor, South Windsor, and Ellington are all daughter towns of Windsor. Windsor also contributed to parts of Bloomfield and East Granby. East Windsor was formed in 1768 (and South Windsor and Ellington later came from East Windsor), Bloomfield in 1835, Windsor Locks in 1854, and East Granby in 1858. As one of the three original "river towns" of Connecticut, Windsor sent delegates to the assembly that formed the colony's first legislature, which approved the Fundamental Orders of 1639. These orders acted as the government's founding document until the Royal Charter was granted by the British Crown in 1662.

Connecticut historical tradition holds that the "River Indians," a term that included the "Windsor Indians," invited the English to settle within their territory so they would counteract the overwhelming power of the Pequot tribe (Stiles 1891:103-104). Much of historians' interpretation of documents and manuscripts of the early history of the area depicts the "River Indians" as a recognizable nation whose legitimate leaders had invited the English to move in and take control of the region. A contrary interpretation would be that the leaders of one or more small independent groups offered the invitation, but that they did not have the right to surrender the whole area to the English. This debate is influenced by the interpretations of the colonists themselves.

Comfortable with the idea that land tenure derives from a sovereign, the English repeatedly tried to identify such a sovereign among the Native Americans so that they could arrange the land transfer from the native sovereign to their own. Consequently, local historians' attention to Native American matters often has been focused on the identification of to which of several larger tribal groups or confederations these small local groups belonged, in order to explain their supposed place in the larger political scheme and demonstrate the legitimacy of the town fathers' land purchases (or, in some areas, that the local Native Americans had been subjects of the Pequots, and so were dispossessed of their land in the 1636 war).

Colonial History

In 1671 Thomas and Nathaniel Bissell of the Windsor settlement purchased a tract of land from the Algonquian Nipmuc tribe that resided in the region. The purchase included land "on the east side of the Great River, bounded on the south by Potuncke River and land that was Tantonimo's, on the east by the hills beyond the pine planes, on the west by the Scantook as it runs till it comes to run due east from the

mouth of the Fresh Water River till you come to the hills beyond the pine plains, which said line marks the north bounds" (Stiles 1891: 808). The following year Windsor included the purchase as part of their settlement. Disputes between the boundary line of the Windsor township and the Massachusetts colony resulted in an ongoing land dispute between approximately 1675 and 1715. In 1715 Windsor petitioned the Assembly that lands given to Massachusetts were placing financial hardships on the town, requesting to have a survey of the bounds of the township.

Land in the future town of Ellington was first surveyed in March of 1720 for Daniel and John Ellsworth of Windsor: "…five hundred and forty acres of land between the mountains east of Windsor and Connecticut river, at a place called by the English 'The Great Marsh', and by the Indians 'Weaxkashuck'" (Stiles 1891). The first person to settle in the area encompassing Ellington was Samuel Pinney of Windsor in 1717; he built a log house in the southwestern area of the town. As early as 1725 efforts were made by a small group of settlers to have a minster through the winter with Windsor granting "the inhabitants of Great Marsh…30 acres to be laid out for a home lot for a minister" (Stiles 1891; 812). In May of 1729 people settled in the Great Marsh petitioned to separate from their parent town of East Windsor to form their own parish but were voted down. In 1732 the people of Great Marsh petitioned once again for winter privileges, allowing for a minister to establish himself near them so that the people did not have "to travel from our own dwellings & unto ye meeting-house, & there endure ye extreme cold..." (Stiles 1891). Though winter privileges were granted townspeople needed to pay for the minister themselves. In 1735 twenty-three people from the Great Marsh settlement petitioned once again and another survey was ordered by the Assembly to "judge it is best to have a society there" (Stiles 1891). October of 1735 the inhabitants of Great Marsh could establish a church and were then named the Ellington Parish of Windsor.

In 1762, members of Ellington Parish petitioned the General Assembly to incorporate as a town but were denied. They petitioned once again May of 1764 stating that they were more than fourteen miles from the Windsor meetinghouse, a journey that was especially difficult in the winter months. Their petition was denied once again however, in May of 1767 they petitioned once again, and it was determined that Windsor would be divided into Windsor and East Windsor. Finally, in 1786 the peoples of Ellington Parish requested full incorporation as a town and were granted their request. The population in 1790 was 1,056 people; by 1800 this number rose modestly to 1,209 (Stiles 1891). In June of 1806 Ellington's first meeting-house was constructed opposite of the Congregational Church and in 1839 the building was modified for duel use as a town hall and meeting house for religious services. Though there were districts of informal schools in Ellington the first formal school in Ellington was constructed in 1829 with another opened in 1849 (Stiles 1891).

Nineteenth Century

Ellington continued to modestly construct municipal buildings throughout the mid-nineteenth century. While much of the town remained focused on agricultural production, there were several small industrial operations such as saw and grist mills operating during this time. Sadds Mill Road or Route 140 is named for Roswell Sadd (1807-1879) who operated one such mill in that area. Rosswell Sadd was born in 1807 and was primarily concerned with farming until he opened a mill in the Sadds Mill Road section of Ellington around 1860. On the 1870 United States Federal Census Roswell appears as a 63-year-old with a real estate value of $5,500 and a personal estate value of $500. Listed as head of household is Sumner Sadd age 26, who notes his occupation as miller, possessing a real estate value of $3,500 (1870 Census). Rosewell passed the business on to his son Sumner when he died but discontinued operations before the turn of the century (Fahy 2005).

In 1854, at the invitation of an Ellington businessman hoping to revolutionize groundwater pumping technology, Daniel Halladay invented and patented the first commercially available windmill in Ellington. The design enabled the windmill to change direction with the wind automatically without maintenance or oversight. The Halladay Windmill Company of Ellington eventually moved operations to South Coventry however his invention was used throughout the Midwest and aided in agricultural production where windmills were widely used to provide water for crops (Fahy 2005). Going into the twentieth century, tobacco farming increasingly consumed the agricultural market in Ellington. Seventh generation Ellington resident and tobacco farmer Willian N. Pinney (1866-1956) worked to organize the Connecticut Valley Tobacco Association, advocating for fair market prices and wages for workers in Ellington and the broader tobacco farming community in Connecticut (Fahy 2005).

Early Twentieth Century and Industry

During the early twentieth century, Crystal Lake sitting north of Route 140 and east of Route 30 in Ellington, attracted a cottage community to that area. Originally called "Wabbaquasset" by the Nipmuc peoples, the pond was later referred to by European settlers as "Square Pond" (Fahy 2009). The Charter Cemetery on Crystal Lake Road was established as early as 1750. The village there included the Crystal Lake Methodist Church constructed in 1791, which brought many worshipping Methodists to the area in the early 1800s for worshipping and mutual trade purposes (Stiles 1859). The name of the village was officially changed to Crystal Lake in 1889 and by that time was a village settlement within Ellington with several prominent families residing by the Lake. The New York, New Haven and Hartford Railroad passed through Ellington stopping at a station in the western area of the town center. By 1900 the Springfield Trolley Company constructed a line between Springfield and Rockville passing through Ellington Center, advancing the Crystal Lake section as a tourist destination in that area of the state (Young 1930).

The population in Ellington rose to 2,127 by 1920 and by 1930 there were 145 cottages surrounding the Crystal Lake Village area. The principal industry in Ellington for much of the town's history up-to the Great Depression in 1930 was farming. In 1930 farming tobacco comprised over half of the farming production for the town however the discontinuation of freight service by the railroad shifted shipping of agricultural products to the town and state roads by truck. By the year 2000 the population in Ellington rose to 12,921 people with the leading source of employment being construction and small businesses located in town (CERC 2019). The population rose to 15,602 by 2010 and increased modestly to just under 18,000 people by 2019.

Historical Overview of the Project Area

The proposed project area is in the western area of Ellington bounded by Sadds Mill Road or CT Route 140 in the west and Reeves Road in the north. Historical maps indicate that this area was populated in 1857, likely due to the proximity of the East Windsor town border west of the proposed project parcel. According to the 1857 historical map, S. Thompson and T. Cady occupied land northwest of the project parcel (Figure 3). Samuel Thompson was the founder of J.A. Thompson & Son of Hartford, producers of cider, cider vinegar, and apple jelly, established in 1863. Thompson inherited his farm in Ellington from his father Samuel Thomas, who had inherited it from his father who was also named Samuel Thompson, who purchased the farm in 1741 and lived there until his death in 1782. The Samuel Thompson indicated on the 1857 historical map occupied the area until his death in 1875 (Figure 3). His son J. Abbott Thompson was born there and established the cider business with his father and served as a representative for Ellington for the state legislature in 1874, 1882, and 1884. The Thompson family continued to maintain a presence in the area with J. Abbott's son Charles A. Thompson also representing Ellington in the legislature in 1896, 1897 and 1899 and in November 1900 was elected Senator of the 24th District of Connecticut (Beers 1903:376). Listed on the 1860 United States

agricultural census as living next to Samuel Thompson is Maurice Cady who indicates himself as a farmer possessing 90 acres of land valued at $4,000 (1860 Census). According to the 1869 historical map of the project parcel little changes were made except for the removal of the Cady family from their parcel and the name J.W. Smith indicated in its place, next to the J.A. Thompson farm (Figure 4). However, according to the 1860 United States Federal Census, Smith was a 34-year-old farm laborer living with his wife Emily J. Smith, age 24 (1860b Census). According to the Census, Smith was working for and renting his home on the property of Maurice Cady who lists himself on the 1860 Census as 47-year-old farmer with a real estate value of $4,000 and a personal estate value of $600 (1860b Census).

The 1934 aerial photograph of the project parcel reveals that the land was indeed used for agricultural purposes with much of the southwestern portion of the project parcel being clearly marked agricultural parcels. The northeastern area of the project parcel including the proposed project area appears to be within an area of gradual reforestation. The 1934 aerial photograph reveals that this area remained rural with settlements outside of the proposed project parcel closer to East Windsor in the northwest (Figure 5). Secondary reforestation continues throughout much of the proposed project parcel by the time of the 1951 aerial photograph with little changes evident and the southwestern portion of the proposed project parcel in continued use for agricultural purposes (Figure 6). In the 2019 aerial photograph, there appears to be a subdivision to the west of the project parcel, and a previously unmarked pond is visible in the southwestern portion of the proposed project parcel and appears to be a terminus of the Thompson Brook that flows northeast from Broad Brook in East Windsor (Figure 7). The overall project parcel, according to the 2019 aerial photograph, appears to have remained partially in use for agricultural purposes with some ground disturbance evident in the southcentral area. The proposed project area appears to remain within a densely reforested area, removed from residential, commercial, or agricultural outbuildings (Figure 7).

Conclusion

The documentary record indicates that this area was used historically for agricultural purposes as early as 1741. There may be remnants of agricultural activity throughout the proposed project parcel, however these are likely not historically significant.

CHAPTER V
PREVIOUS INVESTIGATIONS

Introduction

This chapter presents an overview of previous archaeological research completed within the vicinity of the project area in Ellington, 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 area are taken into consideration. Specifically, this chapter reviews previously identified archaeological sites and National/State Register of Historic Places properties situated in the project region (Figures 8 and 9). The discussions presented below are based on information currently on file at the Connecticut State Historic Preservation Office (CT-SHPO) in Hartford, Connecticut. In addition, the electronic site files maintained by Heritage were examined during this investigation. Both the quantity and quality of the information contained in the original cultural resources survey reports and State of Connecticut archaeological site forms are reflected below.

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

A review of data currently on file at the CT-SHPO, as well as the electronic site files maintained by Heritage failed to detect any previously identified archaeological sites situated within 1.6 km (1 mi) of the project area (Figures 8 and 9). Though no archaeological sites have been previously identified in the area, the natural setting discussed in Chapter II suggests Native Americans may have once inhabited the area, and sites may yet be discovered. In addition, the larger project region has been in use as agricultural land since Ellington's settlement and there may be evidence of this historical occupation in the project area. A single National/State Register of Historic Places properties was identified within 1.6 km (1 mi) of the project area and is discussed below.

<u>William H. Thompson Farmstead</u>

The William H. Thompson Farmstead also known as the Pease Farm, is a nineteenth century historic farm property located at 215 and 219 Melrose Road in East Windsor, Connecticut (see Figure 9). The farmstead encompasses approximately 39 acres of land and contains six contributing buildings in one parcel. A second parcel includes two large strips of farmland that encompasses approximately 35 acres of land. The farmstead property was listed on the National Register of Historic Places on April 18, 2003. The contributing buildings are clustered around the intersection of Pease and Melrose Roads and consist of a bungalow style house and a Greek Revival style farmhouse. Two nineteenth century barns and a pumphouse are behind the farmhouse, and a small garage is situated behind the bungalow house. The William H. Thompson Farmstead is a symbol of East Windsor's agrarian history and possesses both historical and architectural significance due to its 50-year association with a local civic and religious leader and the Thompson House which is a well-preserved vernacular interpretation of the Greek Revival style. Together with its associated buildings and agricultural land, the farmstead represents the broader regional agricultural and social history of the upper Connecticut River Valley. The William H. Thompson Farmstead will not be impacted by the proposed solar facility.

CHAPTER VI
METHODS

Introduction

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

Research Framework

The current Phase IA cultural resources assessment survey was designed to assess the archaeological sensitivity of the project area, 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 area. The methods used to complete this investigation were designed to provide coverage of all portions of the project area. The fieldwork portion of this undertaking entailed pedestrian survey, photo-documentation, and mapping (see below).

Archival Research & Literature Review

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

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

Field Methodology and Data Synthesis

Heritage also performed fieldwork for the Phase IA cultural resources assessment survey of the project area associated with the proposed solar project in Ellington, Connecticut. This included pedestrian

survey, photo-documentation, and mapping of the area containing the proposed Facility. During the completion of the pedestrian survey, representatives from Heritage photo-documented all potential areas of impact using digital media.

CHAPTER VII
RESULTS OF THE INVESTIGATION & MANAGEMENT RECOMMENDATIONS

Introduction

This chapter presents the results of the Phase IA cultural resources assessment survey of the project area in Ellington, Connecticut. As stated in the introductory section of this report, the goals of the investigation included completion of the following tasks: 1) a contextual overview of the region's prehistory, history, and natural setting (e.g., soils, ecology, hydrology, etc.); 2) a literature search to identify and discuss previously completed cultural resources surveys and previously recorded cultural resources in the project region; 3) a review of readily available historical maps and aerial imagery depicting the project area in order to identify potential historical 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

At the time of survey, the project area was characterized by wooded areas to the north and west, by wooded areas to the east, and to the south and west by a landscape supply company. The proposed access road originates in the southwestern portion of the project parcel and extends across the existing landscape supplies company property (Photos 1 through 5). The area to the east of the project area is characterized by agricultural fields. The project area is situated at elevations ranging from approximately 85 to 117 m (279 to 384 ft) NGVD and encompasses 67.03 acres of land. As discussed in Chapter II he predominant soil type located throughout the project area Narragansett soils, which are located on slopes of 0 to 25 percent and are characterized as well drained. The main portion of the project area is situated in a wooded area and lies to the north and east of an existing landscape supplies company.

Overall Sensitivity of the Proposed Project Area

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

With respect to the potential for identifying prehistoric archaeological sites, the project area was divided into areas of no/low and/or moderate/high archaeological potential by analyzing the landform types, slope, aspect, soils contained within them, and their distance to water. In general, areas located less than 300 m (1,000 ft) from a freshwater source and that contain slopes of less than 8 percent and well-drained soils possess a high potential for producing prehistoric archaeological deposits. Those areas

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

In addition, the potential for a given area to yield evidence of historical period archaeological deposits is based not only on the above-defined landscape features but also on the presence or absence of previously identified historical period archaeological resources as identified during previous archaeological surveys, recorded on historical period maps, or captured in aerial images of the region under study. In this case, proposed project items that are situated within 100 m (328 ft) of a previously identified historical period archaeological site or a National or State Register of Historic Places district/individually listed property also may be deemed to retain a moderate/high archaeological sensitivity. In contrast, those areas situated over 100 m (328 ft) from any of the above-referenced properties would be considered to retain a no/low historical period archaeological sensitivity.

Management Recommendations

The combined review of historical maps, aerial images, land deeds, and pedestrian survey indicates that the acre project area contains low slopes and well drained soils situated in proximity to Thompson Brook to the west. Soils found throughout the project area are mainly attributed to the Narragansett series, which consists of well drained loamy soils. A review of soils in the area indicates that intact B-Horizons deposits are likely within the project area. Based on the totality of the information available, including landscape type, well-drained soil types, proximity to freshwater, it is the professional opinion of Heritage that 14.84 acres along the eastern border and running north to south within the project area retains a moderate sensitivity for yielding archaeological deposits (Figure 10 and Photos 6 through 9). Pedestrian survey of the access road determined that it has been subjected to extensive disturbance and soil compaction; therefore; it does not possess archaeological sensitivity (Photos 1 through 5). No further archaeological examination of the access road is recommended. However, it is recommended that a systematic Phase IB cultural resources survey of the moderate sensitivity area along the eastern border of the project area be conducted prior to the construction of the solar facility.

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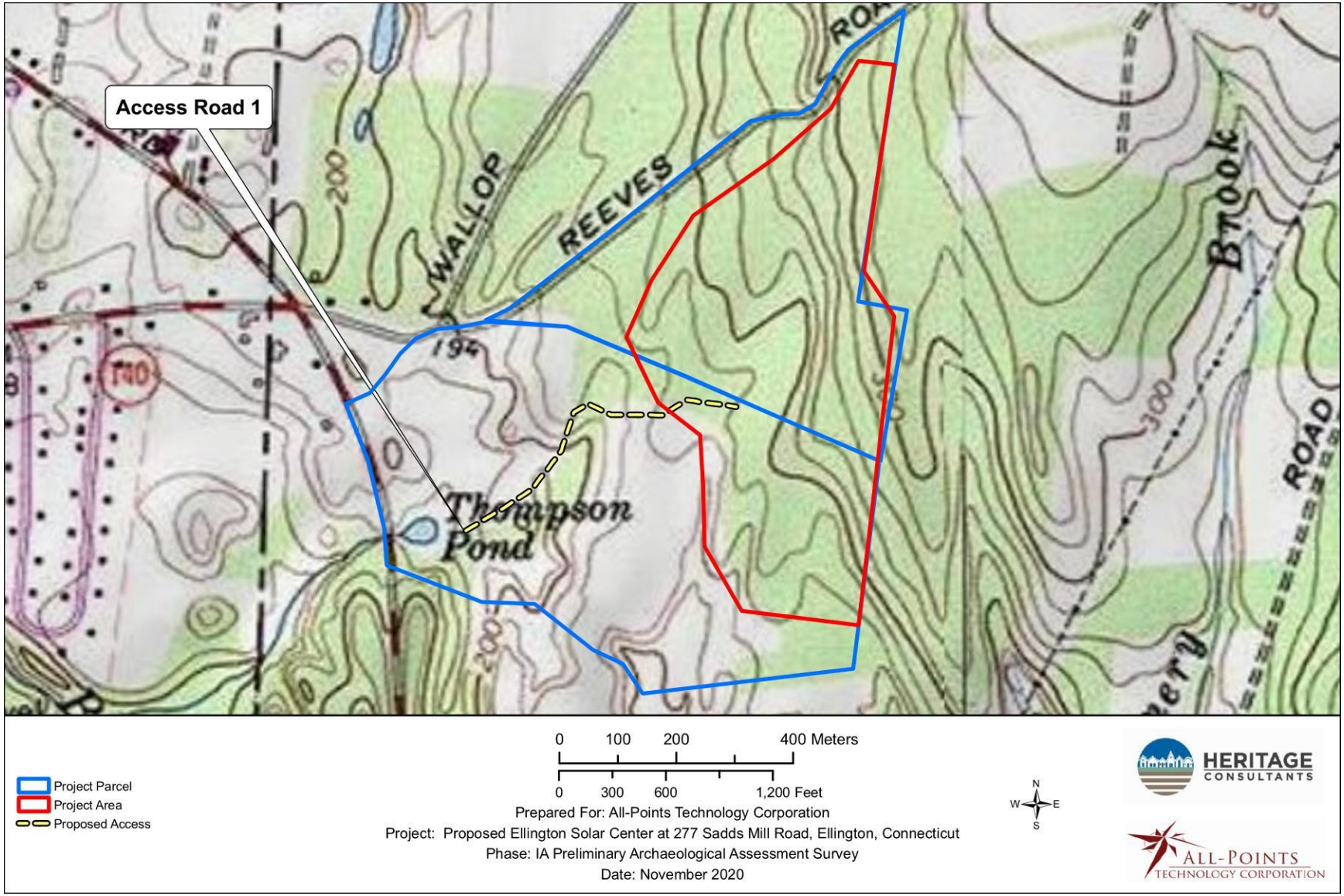

Figure 1. Excerpt from a USGS 7.5' series topographic quadrangle image showing the location of the project area in Ellington, Connecticut.

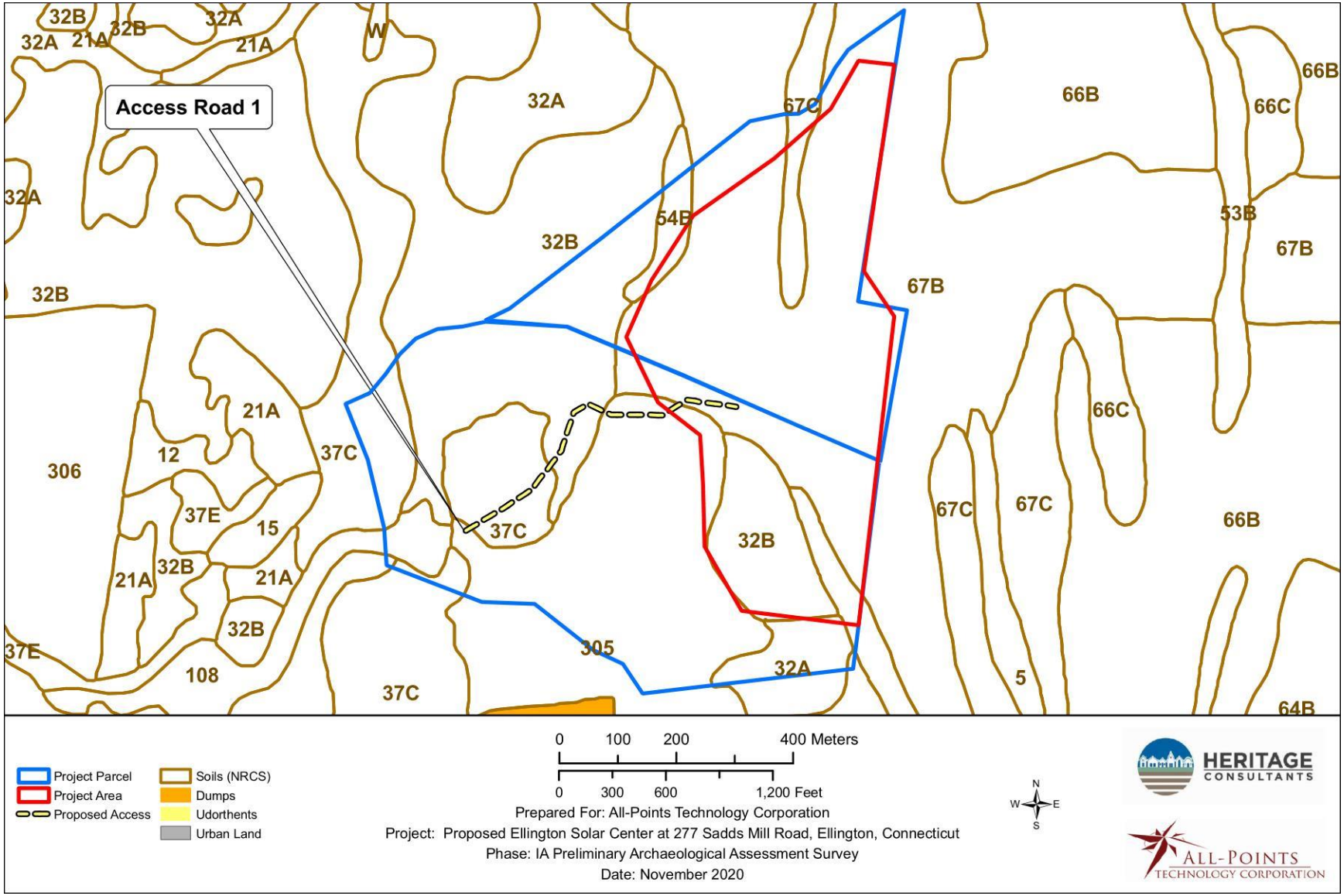

Figure 2. Map of soils located in the vicinity of the project area in Ellington, Connecticut.

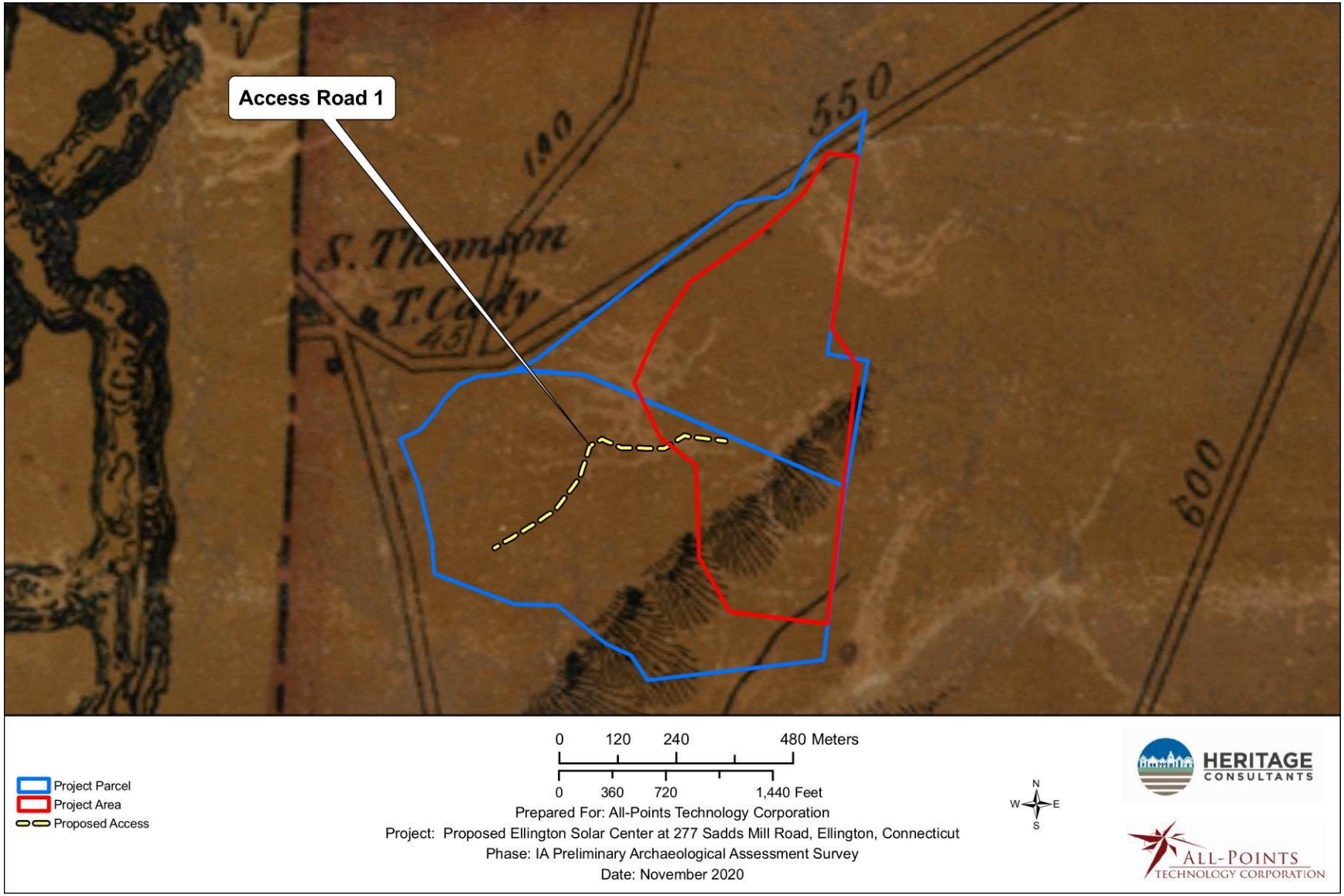

Figure 3. Excerpt from an 1857 historical map showing the location of the project area in Ellington, Connecticut.

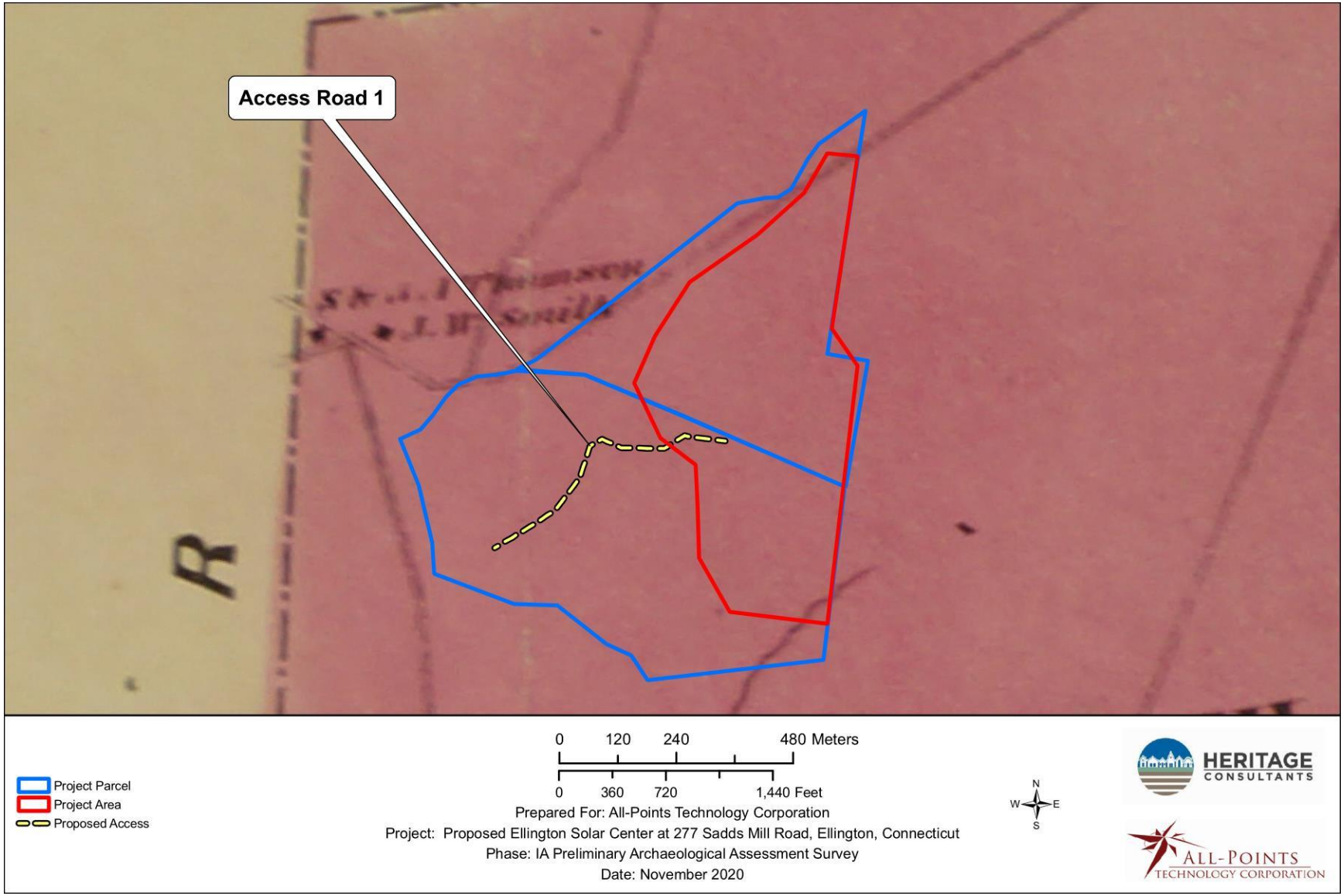

Figure 4. Excerpt from an 1869 historical map showing the location of the project area in Ellington, Connecticut.

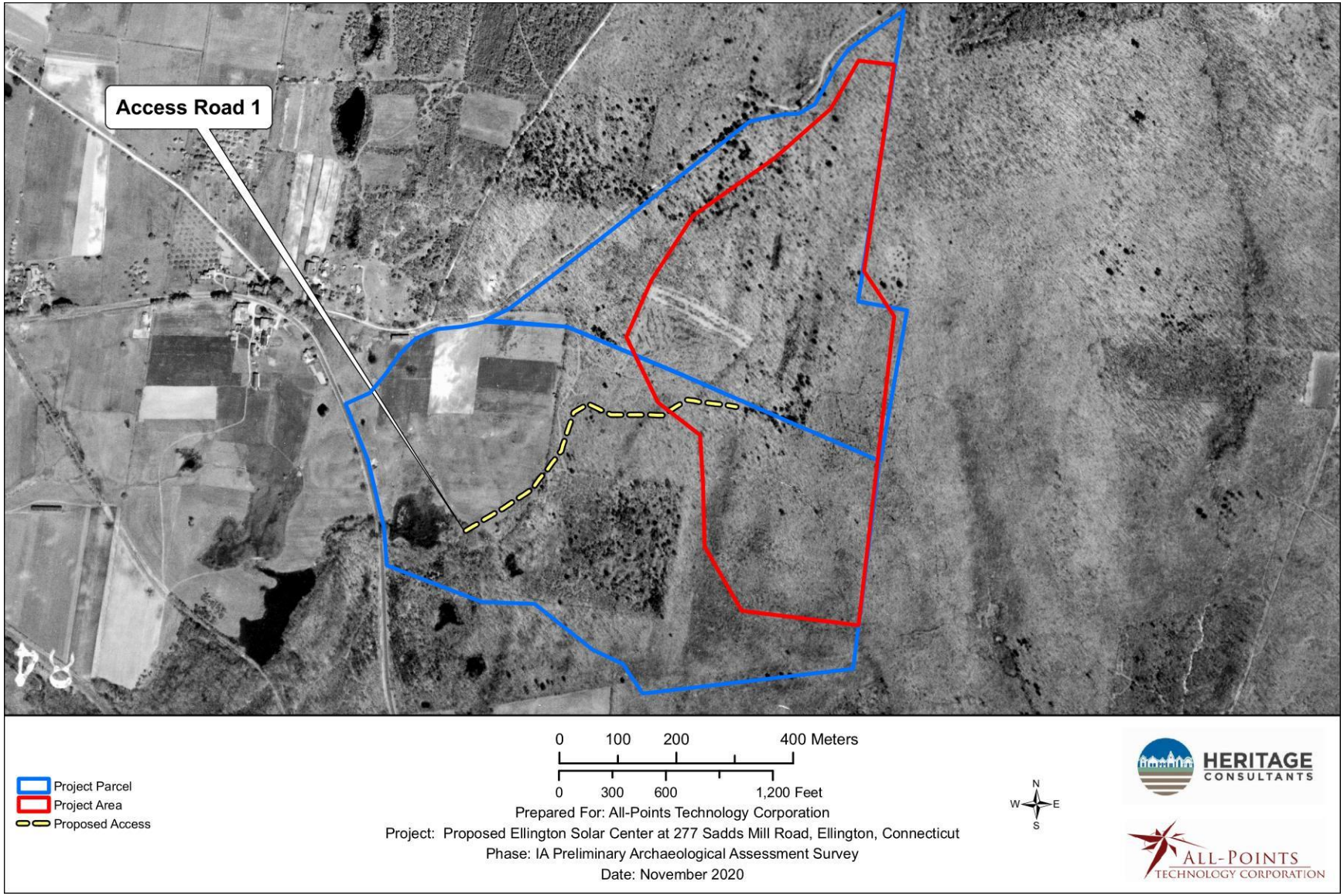

Figure 5. Excerpt from a 1934 aerial photograph showing the location of the project area in Ellington, Connecticut.

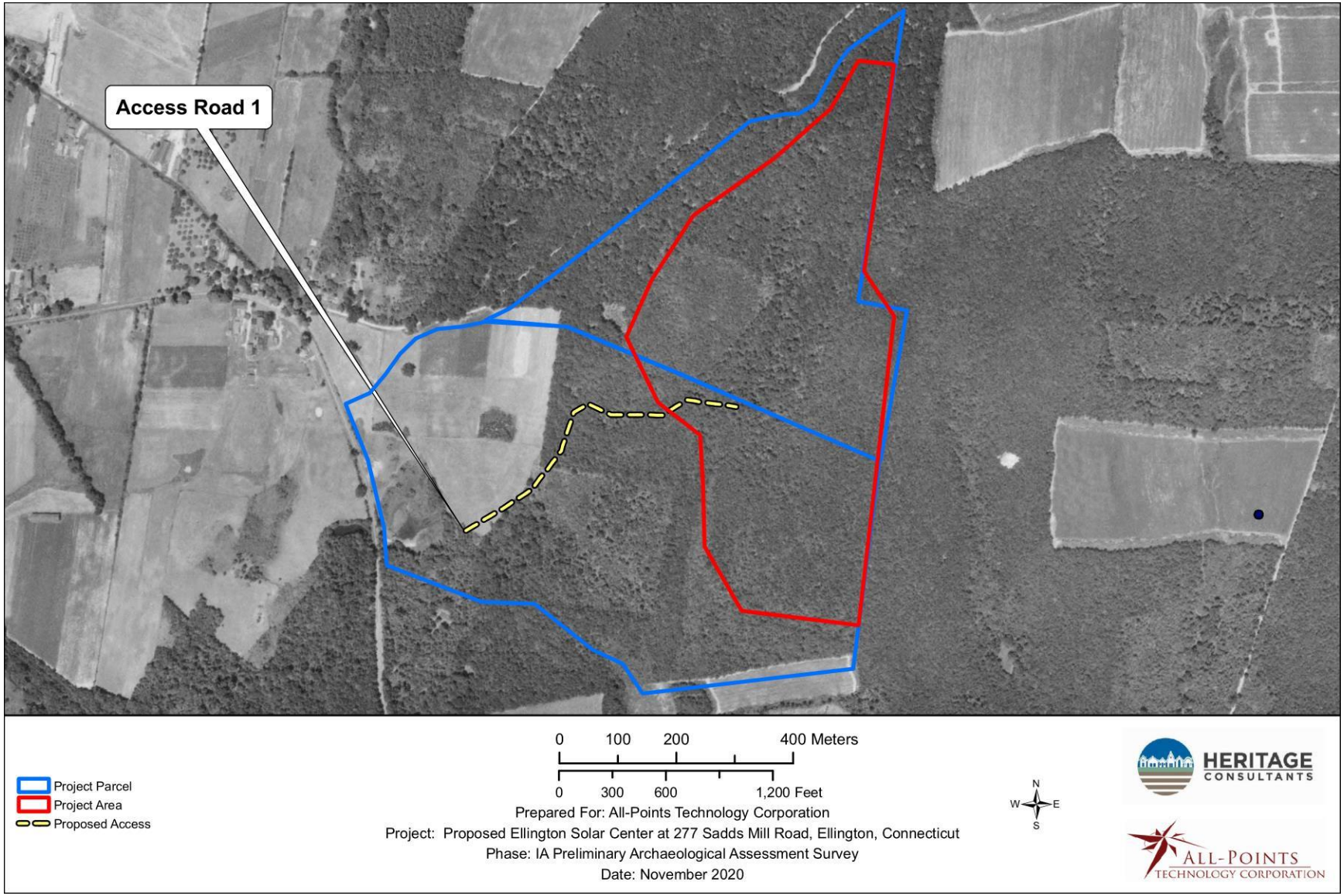

Figure 6. Excerpt from a 1951 aerial photograph showing the location of the project area in Ellington, Connecticut.

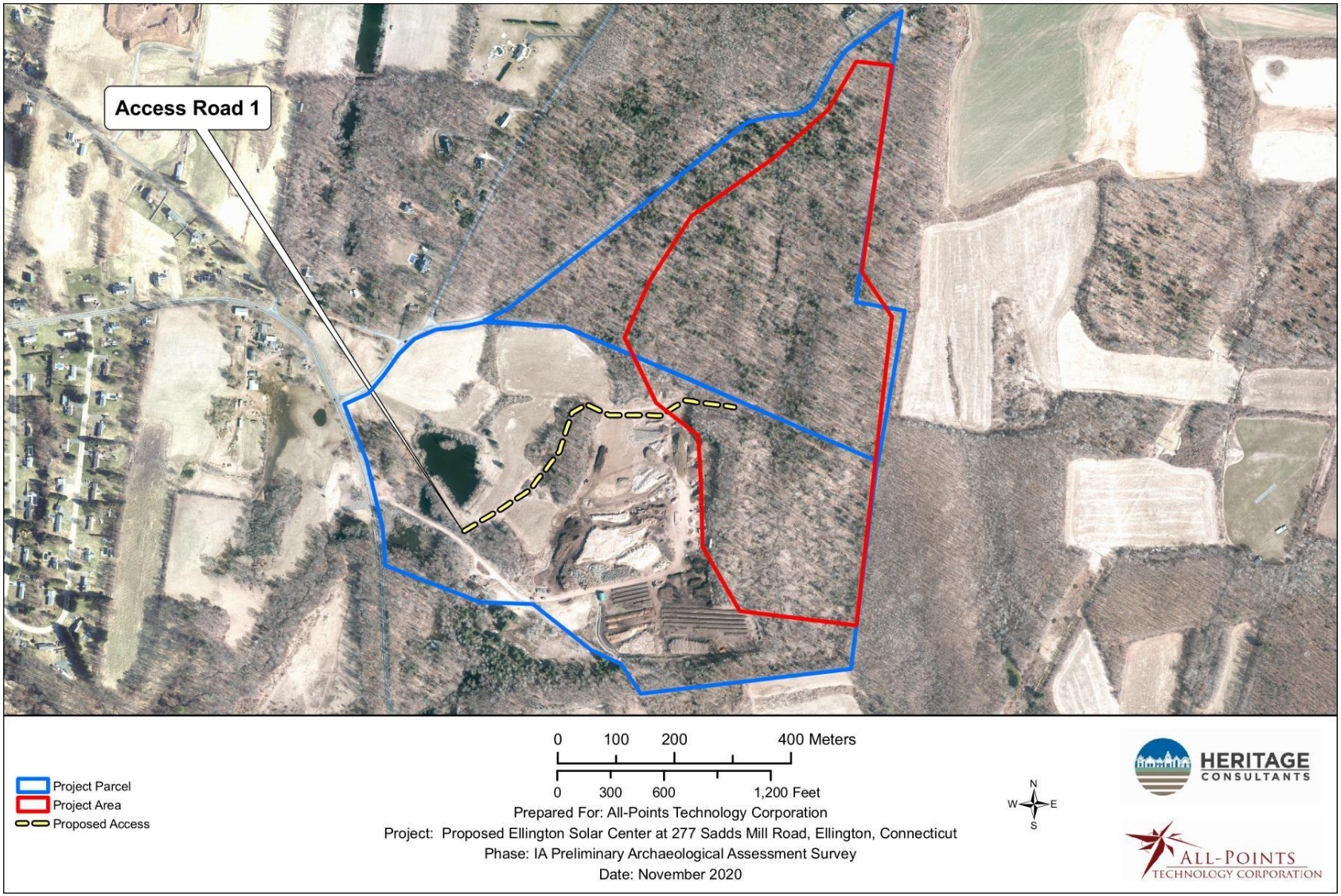

Figure 7. Excerpt from a 2019 aerial photograph showing the location of the project area in Ellington, Connecticut.

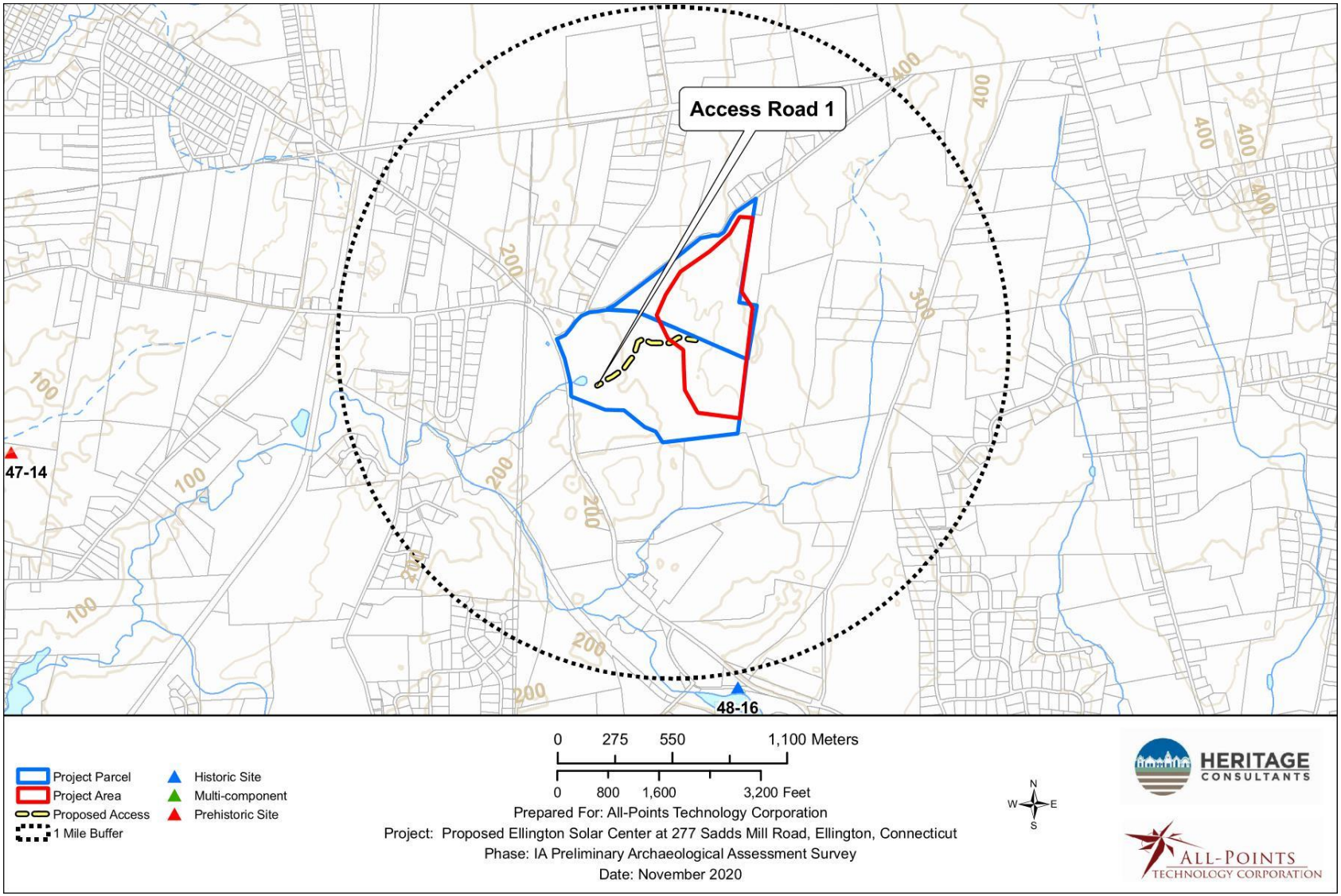

Figure 8. Digital map showing the location of previously identified archaeological sites in the vicinity of the project area in Ellington, Connecticut.

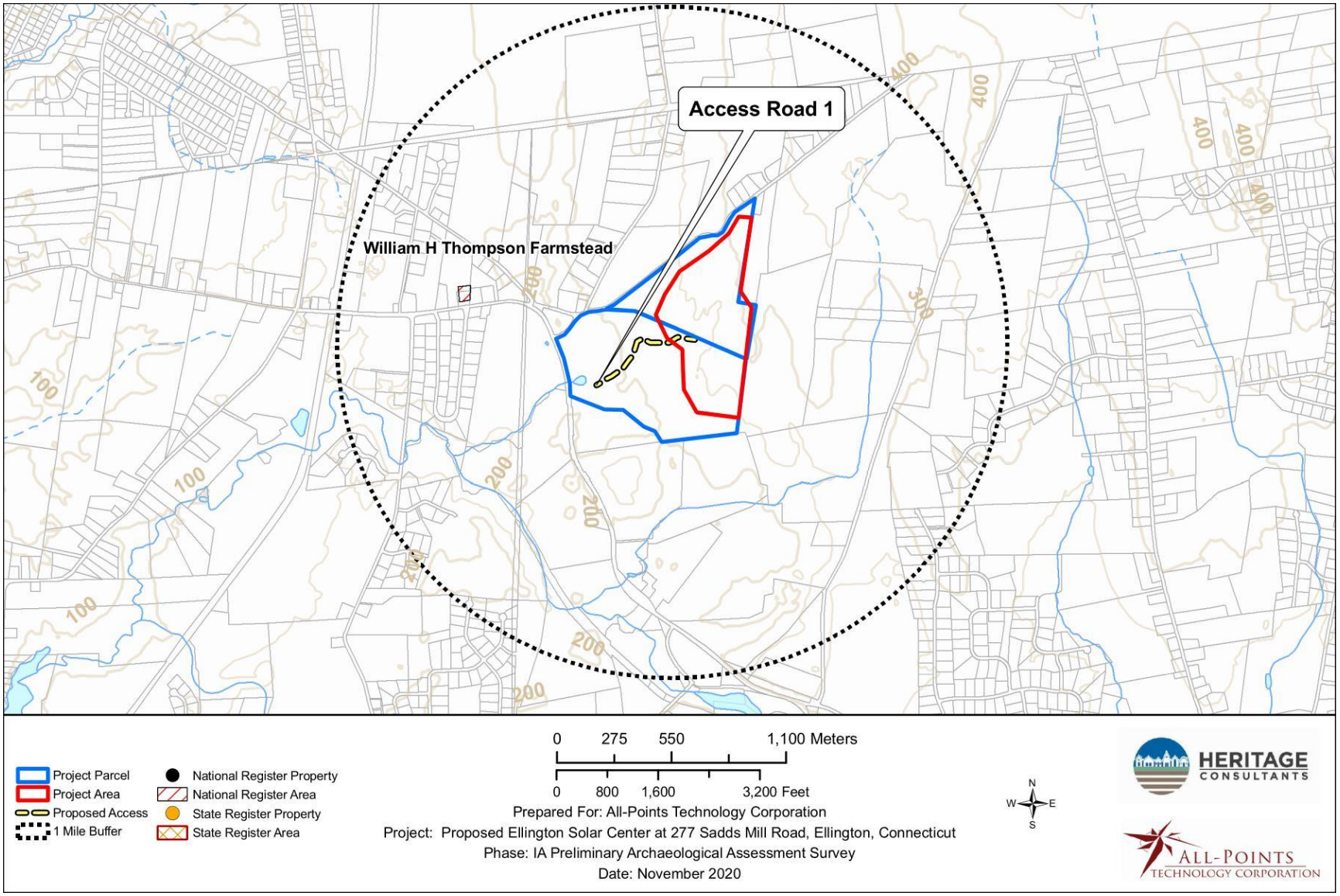

Figure 9. Digital map depicting the locations of previously identified National/State Register of Historic Places properties in the vicinity of the project area in Ellington, Connecticut.

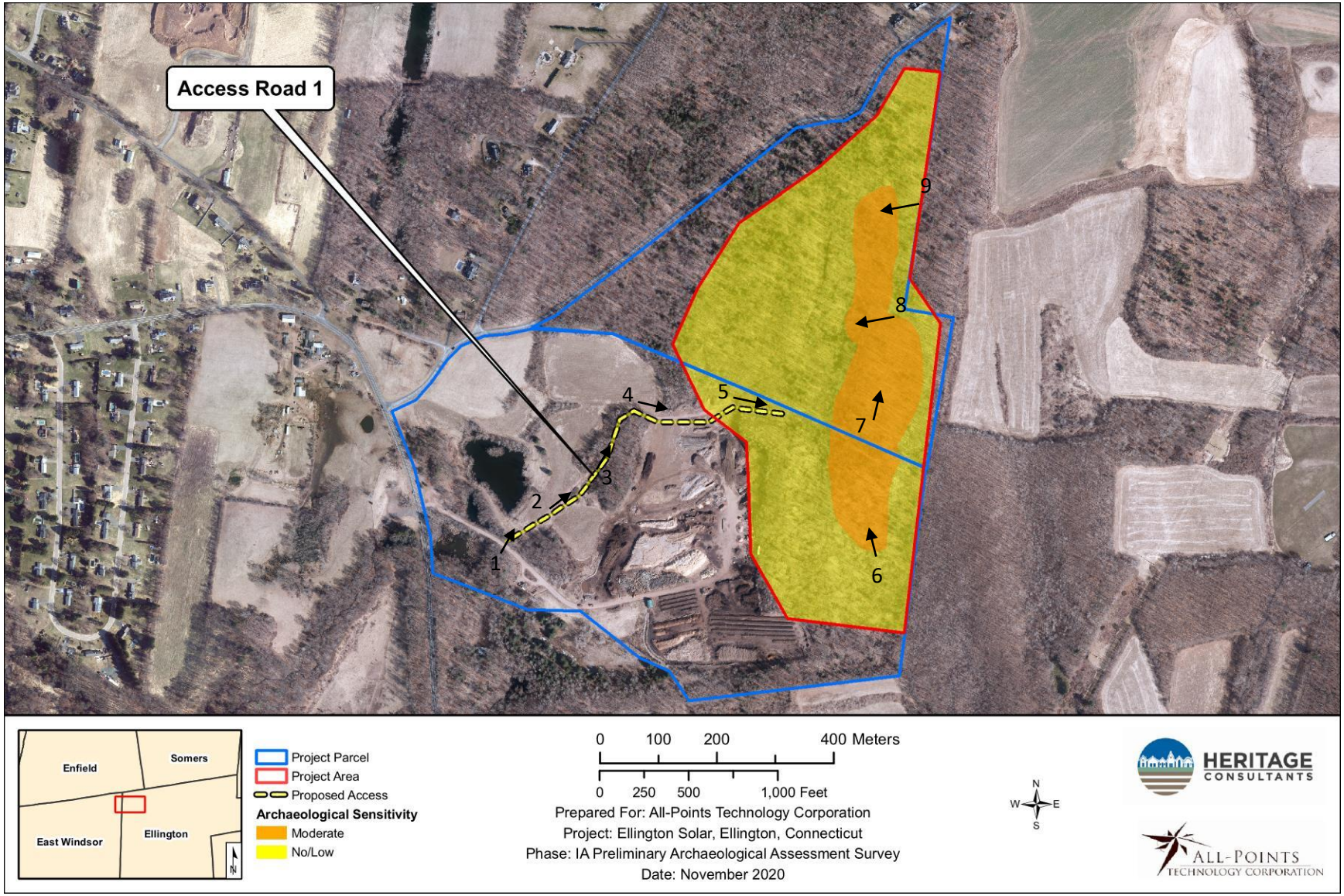

Figure 10. Aerial image showing no/low and moderate archaeologically sensitive areas and directional indicators of photos taken of the project area in Ellington, Connecticut.

Photo 1. Overview of Access Road 1 of the project area in Ellington, Connecticut. Photo taken facing north.

Photo 2. Overview of Access Road 1 of the project area in Ellington, Connecticut. Photo taken facing northeast.

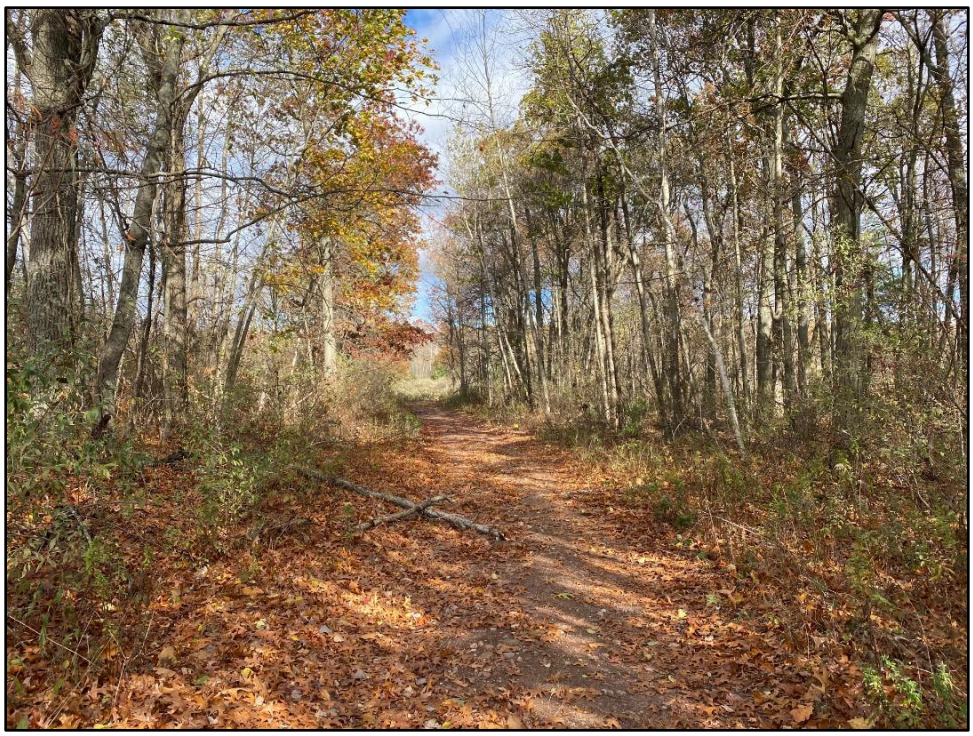

Photo 3. Overview of Access Road 1 of the project area in Ellington, Connecticut. Photo taken facing north.

Photo 4. Overview of Access Road 1 of the project area in Ellington, Connecticut. Photo taken facing east.

Photo 5. Overview of Access Road 1 of the project area in Ellington, Connecticut. Photo taken facing southeast.

Photo 6. Overview photograph of the moderate sensitivity area along the eastern boundary of project area. Photo taken facing north.

Photo 7. Overview photograph of the moderate sensitivity area along the eastern boundary of project area. Photo taken facing north.

Photo 8. Overview photograph of the moderate sensitivity area along the eastern boundary of project area. Photo taken facing west.

Photo 9. Overview photograph of the moderate sensitivity area along the eastern boundary of project area. Photo taken facing west.

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PHASE IB CULTURAL RESOURCES RECONNAISSANCE SURVEY OF THE PROPOSED CTEC SOLAR FACILITY PROJECT IN ELLINGTON, CONNECTICUT

PREPARED FOR:

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION, SUITE 311
WATERFORD, CT 06385

PREPARED BY:

HERITAGE CONSULTANTS
P.O. BOX 310249
NEWINGTON, CONNECTICUT 06131

ABSTRACT

This report presents the results of a Phase IB cultural reconnaissance survey of the proposed CTEC solar center in Ellington, Connecticut. Heritage completed the current Phase IB cultural resources reconnaissance survey on behalf of All-Points Technology Corporation in December of 2020. Phase IB survey was completed in the central and eastern portion of the solar center, which was previously determined to have moderate/high sensitivity for archaeological resources during a Phase IA assessment survey and it contained 14.84 acres. A total of 302 of 316 (96 percent) planned shovel tests were excavated throughout the moderate/high archaeologically sensitive portions of the project area. This effort failed to identify any archaeological artifacts, features, or cultural resources loci. No additional examination of the project area 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 of moderate/ high archaeologically sensitivity areas associated with the proposed CTEC Solar Facility at 277 Sadds Mill Road in Ellington, Connecticut (Figure 1). All-Points Technology Corporation (All-Points) requested that Heritage Consultants, LLC (Heritage) complete the current reconnaissance survey as part of the planning process for the proposed solar facility. Heritage completed this investigation in December of 2020. All work associated with this investigation was performed in accordance the *Environmental Review Primer for Connecticut's Archaeological Resources* (Poirier 1987) promulgated by the Connecticut Historic Commission, State Historic Preservation Office.

Project Description and Methods Overview

The proposed project will include the installation of rows of solar panels across the above-referenced project area and an access road to the west. The proposed solar facility project will include a post driven ground mounted racking system and will require minor grading/reshaping for access road development and stormwater management. The interconnection for the facility will use an access road and will employ both under and above ground methods to connect to existing infrastructure. The project area, which is located within a wooded area, is situated at elevations ranging from approximately 85 to 117 m (279 to 384 ft) NGVD. During November of 2020, Heritage staff conducted a pedestrian survey of the proposed development parcel to assess field conditions and soil integrity. This included photo-documentation and mapping of the subject parcel. Based on the totality of the information available, including landscape type, well-drained soil types, and proximity to freshwater, it was the professional opinion of Heritage that 14.84 acres along the eastern border of the project parcel retained a moderate/high sensitivity for yielding archaeological deposits. Heritage recommended that this are be subjected to Phase IB cultural resources survey prior to the construction of the proposed solar center.

The current Phase IB cultural resources reconnaissance survey consisted of the completion of the following tasks: 1) a contextual overview of the area'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 study area; 3) a review of readily available historic maps and aerial imagery depicting the study area in order to identify potential historic resources and/or areas of past disturbance; 4) subsurface testing of the moderate/high sensitivity area within the proposed solar center; and 5) preparation of the current Phase IB cultural resources reconnaissance survey report.

Project Results and Management Recommendations Overview

During the current Phase IB cultural resources survey, a total of 302 of 316 (96 percent) planned shovel tests were excavated throughout the moderate/high sensitivity area within solar center in Ellington, Connecticut. This effort failed to identify any artifacts, features, or cultural resources loci. No additional examination of the project area is recommended prior to construction.

Project Personnel

Key personnel for this project included: David R. George, M.A., R.P.A., (Project Manager), Ms. Kelsey Tuller, M.A. (Field Director); Mr. Stephen Anderson, B.A., (GIS Specialist); and Ms. Christina Volpe, B.A., (Historian). Ms. Elizabeth Correia, M.A., (Laboratory Specialist) completed this report.

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 study area is chronicled in Chapter IV, while a discussion of previous archaeological investigations near the study area is presented in Chapter V. The methods used to complete this investigation are discussed in Chapter VI. The results of this investigation and management recommendations for the project parcel 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 area in Ellington, Connecticut. Previous archaeological research has documented that specific environmental factors can be associated with both prehistoric and historical period site selection. These include general ecological conditions, as well as types of fresh water sources present, degree of slopes, and soils situated within a given project area. The remainder of this chapter provides a brief overview of the ecology, hydrological resources, and soils present within the project area and the larger region in general.

Ecoregions of Connecticut

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

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

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

<u>North-Central Lowlands Ecoregion</u>

The North-Central Lowlands ecoregion consists of a broad valley located between 40.2 and 80.5 km (25 and 50 mi) to the north of Long Island Sound (Dowhan and Craig 1976). It is characterized by extensive floodplains, backwater swamps, and lowland areas situated near large rivers and tributaries. Physiography in this region is composed of a series of north-trending ridge systems, the easternmost of which is referred to as the Bolton Range (Bell 1985:45). These ridge systems comprise portions of the terraces that overlook the larger rivers such as the Connecticut and Farmington Rivers. The bedrock of the region is composed of Triassic sandstone, interspersed with very durable basalt or "traprock" (Bell 1985). Soils found in the upland portion of this ecoregion are developed on red, sandy to clayey glacial till, while those soils situated nearest to the rivers are situated on widespread deposits of stratified sand, gravel, silt, and alluvium resulting from the impoundment of glacial Lake Hitchcock.

Hydrology in the Vicinity of the Project Area

The project area is situated within a region that contains several sources of freshwater, including Thompson Pond, Thompson Brook, Creamery Brook, Broad Brook, Muddy Brook, Bradley's Pond and Sadds Mill Pond, as well as unnamed streams, ponds, and wetlands. These freshwater sources may have served as resource extraction areas for Native American and historical populations. Previously completed archaeological investigations in Connecticut have demonstrated that streams, rivers, and wetlands were focal points for prehistoric occupations because they provided access to transportation routes, sources of freshwater, and abundant faunal and floral resources.

Soils Comprising the Project Area

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

A review of the soils within the project area is presented below. The project area is characterized by the presence of one major soil type: Narragansett soils (Figure 2). A review of the Narragansett series shows that they consist of very deep, well drained loamy soils; they are the types of soils that are typically correlated with prehistoric and historical use and occupation. Descriptive profiles for each soil type are presented below; they were gathered from the National Resources Conservation Service.

<u>Narragansett Series (67 B):</u>

The Narragansett series consists of very deep, well drained loamy soils formed in a mantle of medium-textured deposits overlying till. They are nearly level to moderately steep soils on till plains, low ridges, and hills. A typical profile associated with Narragansett soils is as follows: **Ap**--0 to 6 inches; dark brown (10YR 3/3) silt loam; weak medium granular structure; very friable; common medium roots; very strongly acid; clear wavy boundary. **Bw1**--6 to 15 inches; dark yellowish brown (10YR 4/6) silt loam; weak medium subangular blocky structure; very friable; common medium roots; very strongly acid; gradual wavy boundary. **Bw2**--15 to 24 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; very friable; common medium roots; strongly acid; clear wavy boundary. **Bw3**--24 to 28 inches; yellowish brown (10YR 5/6) gravelly silt loam; weak medium subangular blocky structure; very friable; few fine roots; 15 percent gravel; strongly acid; clear wavy boundary. **2C**--28 to 60 inches; light olive brown (2.5Y 5/4) very gravelly loamy coarse sand; single grain; loose; 45 percent gravel and cobbles; strongly acid.

Summary

The natural setting of the area containing the proposed CTEC Solar Facility is common throughout the North-Central Lowlands ecoregion. Streams and rivers of this area empty into the Connecticut River, which in turn, drains into the Long Island Sound. Further, the landscape in general is dominated by sandy loamy soil type. In addition, low slopes dominate the region. Thus, in general, the project region was well suited to Native American occupation throughout the prehistoric era. This portion of Ellington was also used throughout the historical era, as evidenced by the presence of numerous historical

residences and agricultural fields throughout the region; thus, archaeological deposits dating from the prehistoric and historical era may be expected near or within the proposed project area.

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. 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 current project area.

Paleo-Indian Period (12,000 to 10,000 B.P.)

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

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

The only other Paleo-Indian site studied in detail in Connecticut is the Hidden Creek Site (72-163) (Jones 1997). The Hidden Creek Site is situated on the southeastern margin of the Great Cedar Swamp on the Mashantucket Pequot Reservation in Ledyard, Connecticut. While excavation of the Hidden Creek Site produced evidence of Terminal Archaic and Woodland Period components (see below) in the upper soil horizons, the lower levels of the site yielded artifacts dating from the Paleo-Indian era. Recovered Paleo-Indian artifacts included broken bifaces, side-scrapers, a fluted preform, gravers, and end-scrapers. Based on the types and number of tools, Jones (1997:77) hypothesized that the Hidden Creek Site represented a short-term occupation, and 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 archaeologists 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, and are represented by camps that were relocated periodically to take advantage of seasonally available resources (McBride 1984; Pfeiffer 1986). In this sense, a foraging type of settlement pattern was employed during the Early Archaic Period.

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

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

In addition to Neville points, Dincauze (1976) described two other projectile point 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; Wiegand 1978, 1980).

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

different from the “coeval” Narrow-Stemmed Tradition.

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

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

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

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

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

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

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

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

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

The Middle Woodland Period is marked by an increase in the number of ceramic types and forms utilized (Lizee 1994a), as well as an increase in the amount of exotic lithic raw material used in stone tool manufacture (McBride 1984). The latter suggests that regional exchange networks were established, and that they were used to supply local populations with necessary raw materials (McBride 1984; Snow 1980). The Middle Woodland Period is represented archaeologically by narrow stemmed and Jack's Reef projectile points; increased amounts of exotic raw materials in recovered lithic assemblages, including chert, argillite, jasper, and hornfels; and conoidal ceramic vessels decorated with dentate stamping. Ceramic types 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; Wiegand 1983).

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

CHAPTER IV
HISTORIC OVERVIEW

Introduction
Ellington was originally part of the township of East Windsor and is bounded by Somers and Stafford in the north, East Windsor in the West, Tolland and Stafford in the East, and Vernon in the south. Ellington was first called the Great Marsh until the town was incorporated in 1786. The remainder of this chapter presents an overview history of the Ellington, as well as more specific historical data related to the project area.

Contact Period
The Town of Windsor was founded in 1633, if the first and non-permanent settlers are counted as the founders of the town. Windsor's original territory extended for several miles on both sides of the Connecticut River. Although the earliest descriptions of the town are vague, the present towns of Windsor, Windsor Locks, East Windsor, South Windsor, and Ellington are all daughter towns of Windsor. Windsor also contributed to parts of Bloomfield and East Granby. East Windsor was formed in 1768 (and South Windsor and Ellington later came from East Windsor), Bloomfield in 1835, Windsor Locks in 1854, and East Granby in 1858. As one of the three original "river towns" of Connecticut, Windsor sent delegates to the assembly that formed the colony's first legislature, which approved the Fundamental Orders of 1639. These orders acted as the government's founding document until the Royal Charter was granted by the British Crown in 1662.

Connecticut historical tradition holds that the "River Indians," a term that included the "Windsor Indians," invited the English to settle within their territory so they would counteract the overwhelming power of the Pequot tribe (Stiles 1891:103-104). Much of historians' interpretation of documents and manuscripts of the early history of the area depicts the "River Indians" as a recognizable nation whose legitimate leaders had invited the English to move in and take control of the region. A contrary interpretation would be that the leaders of one or more small independent groups offered the invitation, but that they did not have the right to surrender the whole area to the English. This debate is influenced by the interpretations of the colonists themselves.

Comfortable with the idea that land tenure derives from a sovereign, the English repeatedly tried to identify such a sovereign among the Native Americans so that they could arrange the land transfer from the native sovereign to their own. Consequently, local historians' attention to Native American matters often has been focused on the identification of to which of several larger tribal groups or confederations these small local groups belonged, in order to explain their supposed place in the larger political scheme and demonstrate the legitimacy of the town fathers' land purchases (or, in some areas, that the local Native Americans had been subjects of the Pequots, and so were dispossessed of their land in the 1636 war).

Colonial History
In 1671 Thomas and Nathaniel Bissell of the Windsor settlement purchased a tract of land from the Algonquian Nipmuc tribe that resided in the region. The purchase included land "on the east side of the Great River, bounded on the south by Potuncke River and land that was Tantonimo's, on the east by the hills beyond the pine planes, on the west by the Scantook as it runs till it comes to run due east from the mouth of the Fresh Water River till you come to the hills beyond the pine plains, which said line marks

the north bounds" (Stiles 1891: 808). The following year Windsor included the purchase as part of their settlement. Disputes between the boundary line of the Windsor township and the Massachusetts colony resulted in an ongoing land dispute between approximately 1675 and 1715. In 1715 Windsor petitioned the Assembly that lands given to Massachusetts were placing financial hardships on the town, requesting to have a survey of the bounds of the township.

Land in the future town of Ellington was first surveyed in March of 1720 for Daniel and John Ellsworth of Windsor: "…five hundred and forty acres of land between the mountains east of Windsor and Connecticut river, at a place called by the English 'The Great Marsh', and by the Indians 'Weaxkashuck'" (Stiles 1891). The first person to settle in the area encompassing Ellington was Samuel Pinney of Windsor in 1717; he built a log house in the southwestern area of the town. As early as 1725 efforts were made by a small group of settlers to have a minster through the winter with Windsor granting "the inhabitants of Great Marsh…30 acres to be laid out for a home lot for a minister" (Stiles 1891; 812). In May of 1729 people settled in the Great Marsh petitioned to separate from their parent town of East Windsor to form their own parish but were voted down. In 1732 the people of Great Marsh petitioned once again for winter privileges, allowing for a minister to establish himself near them so that the people did not have "to travel from our own dwellings & unto ye meeting-house, & there endure ye extreme cold..." (Stiles 1891). Though winter privileges were granted townspeople needed to pay for the minister themselves. In 1735 twenty-three people from the Great Marsh settlement petitioned once again and another survey was ordered by the Assembly to "judge it is best to have a society there" (Stiles 1891). October of 1735 the inhabitants of Great Marsh could establish a church and were then named the Ellington Parish of Windsor.

In 1762, members of Ellington Parish petitioned the General Assembly to incorporate as a town but were denied. They petitioned once again May of 1764 stating that they were more than fourteen miles from the Windsor meetinghouse, a journey that was especially difficult in the winter months. Their petition was denied once again however, in May of 1767 they petitioned once again, and it was determined that Windsor would be divided into Windsor and East Windsor. Finally, in 1786 the peoples of Ellington Parish requested full incorporation as a town and were granted their request. The population in 1790 was 1,056 people; by 1800 this number rose modestly to 1,209 (Stiles 1891). In June of 1806 Ellington's first meeting-house was constructed opposite of the Congregational Church and in 1839 the building was modified for duel use as a town hall and meeting house for religious services. Though there were districts of informal schools in Ellington the first formal school in Ellington was constructed in 1829 with another opened in 1849 (Stiles 1891).

Nineteenth Century

Ellington continued to modestly construct municipal buildings throughout the mid-nineteenth century. While much of the town remained focused on agricultural production, there were several small industrial operations such as saw and grist mills operating during this time. Sadds Mill Road or Route 140 is named for Roswell Sadd (1807-1879) who operated one such mill in that area. Rosswell Sadd was born in 1807 and was primarily concerned with farming until he opened a mill in the Sadds Mill Road section of Ellington around 1860. On the 1870 United States Federal Census Roswell appears as a 63-year-old with a real estate value of $5,500 and a personal estate value of $500. Listed as head of household is Sumner Sadd age 26, who notes his occupation as miller, possessing a real estate value of $3,500 (1870 Census). Rosewell passed the business on to his son Sumner when he died but discontinued operations before the turn of the century (Fahy 2005).

In 1854, at the invitation of an Ellington businessman hoping to revolutionize groundwater pumping technology, Daniel Halladay invented and patented the first commercially available windmill in Ellington. The design enabled the windmill to change direction with the wind automatically without maintenance or oversight. The Halladay Windmill Company of Ellington eventually moved operations to South Coventry however his invention was used throughout the Midwest and aided in agricultural production where windmills were widely used to provide water for crops (Fahy 2005). Going into the twentieth century, tobacco farming increasingly consumed the agricultural market in Ellington. Seventh generation Ellington resident and tobacco farmer Willian N. Pinney (1866-1956) worked to organize the Connecticut Valley Tobacco Association, advocating for fair market prices and wages for workers in Ellington and the broader tobacco farming community in Connecticut (Fahy 2005).

Early Twentieth Century and Industry

During the early twentieth century, Crystal Lake sitting north of Route 140 and east of Route 30 in Ellington, attracted a cottage community to that area. Originally called "Wabbaquasset" by the Nipmuc peoples, the pond was later referred to by European settlers as "Square Pond" (Fahy 2009). The Charter Cemetery on Crystal Lake Road was established as early as 1750. The village there included the Crystal Lake Methodist Church constructed in 1791, which brought many worshipping Methodists to the area in the early 1800s for worshipping and mutual trade purposes (Stiles 1859). The name of the village was officially changed to Crystal Lake in 1889 and by that time was a village settlement within Ellington with several prominent families residing by the Lake. The New York, New Haven and Hartford Railroad passed through Ellington stopping at a station in the western area of the town center. By 1900 the Springfield Trolley Company constructed a line between Springfield and Rockville passing through Ellington Center, advancing the Crystal Lake section as a tourist destination in that area of the state (Young 1930).

The population in Ellington rose to 2,127 by 1920 and by 1930 there were 145 cottages surrounding the Crystal Lake Village area. The principal industry in Ellington for much of the town's history up-to the Great Depression in 1930 was farming. In 1930 farming tobacco comprised over half of the farming production for the town however the discontinuation of freight service by the railroad shifted shipping of agricultural products to the town and state roads by truck. By the year 2000 the population in Ellington rose to 12,921 people with the leading source of employment being construction and small businesses located in town (CERC 2019). The population rose to 15,602 by 2010 and increased modestly to just under 18,000 people by 2019.

Historical Overview of the Project Area

The proposed project area is in the western area of Ellington bounded by Sadds Mill Road or CT Route 140 in the west and Reeves Road in the north. Historical maps indicate that this area was populated in 1857, likely due to the proximity of the East Windsor town border west of the proposed project parcel. According to the 1857 historical map, S. Thompson and T. Cady occupied land northwest of the project parcel (Figure 3). Samuel Thompson was the founder of J.A. Thompson & Son of Hartford, producers of cider, cider vinegar, and apple jelly, established in 1863. Thompson inherited his farm in Ellington from his father Samuel Thomas, who had inherited it from his father who was also named Samuel Thompson, who purchased the farm in 1741 and lived there until his death in 1782. The Samuel Thompson indicated on the 1857 historical map occupied the area until his death in 1875 (Figure 3). His son J. Abbott Thompson was born there and established the cider business with his father and served as a representative for Ellington for the state legislature in 1874, 1882, and 1884. The Thompson family continued to maintain a presence in the area with J. Abbott's son Charles A. Thompson also representing Ellington in the legislature in 1896, 1897 and 1899 and in November 1900 was elected Senator of the 24th District of Connecticut (Beers 1903:376). Listed on the 1860 United States

agricultural census as living next to Samuel Thompson is Maurice Cady who indicates himself as a farmer possessing 90 acres of land valued at $4,000 (1860 Census). According to the 1869 historical map of the project parcel little changes were made except for the removal of the Cady family from their parcel and the name J.W. Smith indicated in its place, next to the J.A. Thompson farm (Figure 4). However, according to the 1860 United States Federal Census, Smith was a 34-year-old farm laborer living with his wife Emily J. Smith, age 24 (1860b Census). According to the Census, Smith was working for and renting his home on the property of Maurice Cady who lists himself on the 1860 Census as 47-year-old farmer with a real estate value of $4,000 and a personal estate value of $600 (1860b Census).

The 1934 aerial photograph of the project parcel reveals that the land was indeed used for agricultural purposes with much of the southwestern portion of the project parcel being clearly marked agricultural parcels. The northeastern area of the project parcel including the proposed project area appears to be within an area of gradual reforestation. The 1934 aerial photograph reveals that this area remained rural with settlements outside of the proposed project parcel closer to East Windsor in the northwest (Figure 5). Secondary reforestation continues throughout much of the proposed project parcel by the time of the 1951 aerial photograph with little changes evident and the southwestern portion of the proposed project parcel in continued use for agricultural purposes (Figure 6). In the 2019 aerial photograph, there appears to be a subdivision to the west of the project parcel, and a previously unmarked pond is visible in the southwestern portion of the proposed project parcel and appears to be a terminus of the Thompson Brook that flows northeast from Broad Brook in East Windsor (Figure 7). The overall project parcel, according to the 2019 aerial photograph, appears to have remained partially in use for agricultural purposes with some ground disturbance evident in the southcentral area. The proposed project area appears to remain within a densely reforested area, removed from residential, commercial, or agricultural outbuildings (Figure 7).

Conclusion

The documentary record indicates that this area was used historically for agricultural purposes as early as 1741. There may be remnants of agricultural activity throughout the proposed project parcel, however these are likely not historically significant.

CHAPTER V
PREVIOUS INVESTIGATIONS

Introduction

This chapter presents an overview of previous archaeological research completed within the vicinity of the project area in Ellington, 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 area are taken into consideration. Specifically, this chapter reviews previously identified archaeological sites and National/State Register of Historic Places properties situated in the project region (Figures 8 and 9). The discussions presented below are based on information currently on file at the Connecticut State Historic Preservation Office (CT-SHPO) in Hartford, Connecticut. In addition, the electronic site files maintained by Heritage were examined during this investigation. Both the quantity and quality of the information contained in the original cultural resources survey reports and State of Connecticut archaeological site forms are reflected below.

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

A review of data currently on file at the CT-SHPO, as well as the electronic site files maintained by Heritage failed to detect any previously identified archaeological sites situated within 1.6 km (1 mi) of the project area (Figures 8 and 9). Though no archaeological sites have been previously identified in the area, the natural setting discussed in Chapter II suggests Native Americans may have once inhabited the area, and sites may yet be discovered. In addition, the larger project region has been in use as agricultural land since Ellington's settlement and there may be evidence of this historical occupation in the project area. A single National/State Register of Historic Places properties was identified within 1.6 km (1 mi) of the project area and is discussed below.

<u>William H. Thompson Farmstead</u>

The William H. Thompson Farmstead also known as the Pease Farm, is a nineteenth century historic farm property located at 215 and 219 Melrose Road in East Windsor, Connecticut (see Figure 9). The farmstead encompasses approximately 39 acres of land and contains six contributing buildings in one parcel. A second parcel includes two large strips of farmland that encompasses approximately 35 acres of land. The farmstead property was listed on the National Register of Historic Places on April 18, 2003. The contributing buildings are clustered around the intersection of Pease and Melrose Roads and consist of a bungalow style house and a Greek Revival style farmhouse. Two nineteenth century barns and a pumphouse are behind the farmhouse, and a small garage is situated behind the bungalow house. The William H. Thompson Farmstead is a symbol of East Windsor's agrarian history and possesses both historical and architectural significance due to its 50-year association with a local civic and religious leader and the Thompson House which is a well-preserved vernacular interpretation of the Greek Revival style. Together with its associated buildings and agricultural land, the farmstead represents the broader regional agricultural and social history of the upper Connecticut River Valley. The William H. Thompson Farmstead will not be impacted by the proposed solar facility.

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 area within the project area in Ellington, Connecticut. It also includes the location and point-of-contact for the final facility at which all 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 previously identified moderate/high sensitivity area associated with the proposed project parcel. Fieldwork for the project was comprehensive in nature; planning considered the results of each previously completed archaeological survey within the project region, the distribution of previously recorded archaeological sites located near the proposed project parcel, and a geological assessment of the study area. The methods used to complete this investigation were designed to provide complete and thorough coverage of the previously identified moderate/high sensitivity area. 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 portion of the study area was 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 entire moderate/high sensitivity area was examined visually and photographed. The pedestrian survey portion of this investigation included visual reconnaissance of all areas scheduled for impacts by the proposed development project. The field methodology also included subsurface testing of the moderate/high sensitivity area, during which shovel tests were excavated at 20 m (65.6 ft) intervals along 11 parallel survey transects spaced 20 m (65.6 ft) apart throughout the 14.84 acre survey area.

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:

Dr. Sarah Sportman
Office of Connecticut State Archaeology
Box U-1023

University of Connecticut
Storrs, Connecticut 06269

CHAPTER VII
RESULTS OF THE INVESTIGATION

Introduction

This chapter presents the results of a Phase IB cultural resources reconnaissance survey of the moderate/high sensitivity portion of the proposed Ellington solar center (Figure 10). The Phase IB investigation was completed on behalf of All-Points in December of 2020 by personnel representing Heritage. All fieldwork was performed in accordance with the *Environmental Review Primer for Connecticut's Archaeological Resources* (Poirier 1987) promulgated by the Connecticut State Historic Preservation Office. The Phase IB cultural resources reconnaissance survey results are presented below.

Results of the Phase IB Cultural Resources Reconnaissance Survey

As discussed in Chapter I of this document, the proposed project will include the installation of rows of solar panels across the above-referenced project area and an access road. The proposed solar facility project includes a post driven ground mounted racking system and will require minor grading/reshaping for access road development and stormwater management. The interconnection for the facility will use an access road and will employ both under and above ground methods to connect to existing infrastructure. The project area, which is located within a wooded area, is situated at elevations ranging from approximately 85 to 117 m (279 to 384 ft) NGVD. At the time of Phase IB survey, the 14.84 acre moderate/high sensitivity area was characterized by forest with partially cleared areas.

The current Phase IB survey effort consisted of pedestrian survey, subsurface testing, and mapping of the previously identified moderate/high sensitivity portion of the project parcel. The subsurface testing regime associated with the Phase IB cultural resources reconnaissance survey resulted in the excavation of 302 of 316 (96 percent) planned shovel tests measuring 50 x 50 cm (19.7 x 19.7 in) in size throughout archaeologically sensitive portions of the solar center project area (Figure 10). The 14 planned but unexcavated shovel test pits fell within areas of steep slope or localized disturbance. Despite this intensive field effort, no artifacts, features, or cultural resources loci were identified. No additional examination of the project area is recommended prior to construction.

CHAPTER VIII
SUMMARY AND MANAGEMENT RECOMMENDATIONS

Heritage completed the current Phase IB cultural resources reconnaissance survey on behalf of All-Points Technology Corporation in December of 2020. Phase IB Survey was completed in the central and eastern portion of the solar center project area in Ellington, Connecticut, which was previously determined to have moderate/high sensitivity for archaeological resources. A total of 302 of 316 (96 percent) planned shovel tests were excavated during the field effort. No prehistoric or historical period artifacts, features, or cultural resources loci were identified. Thus, no additional archaeological examination of the project area is recommended prior to construction.

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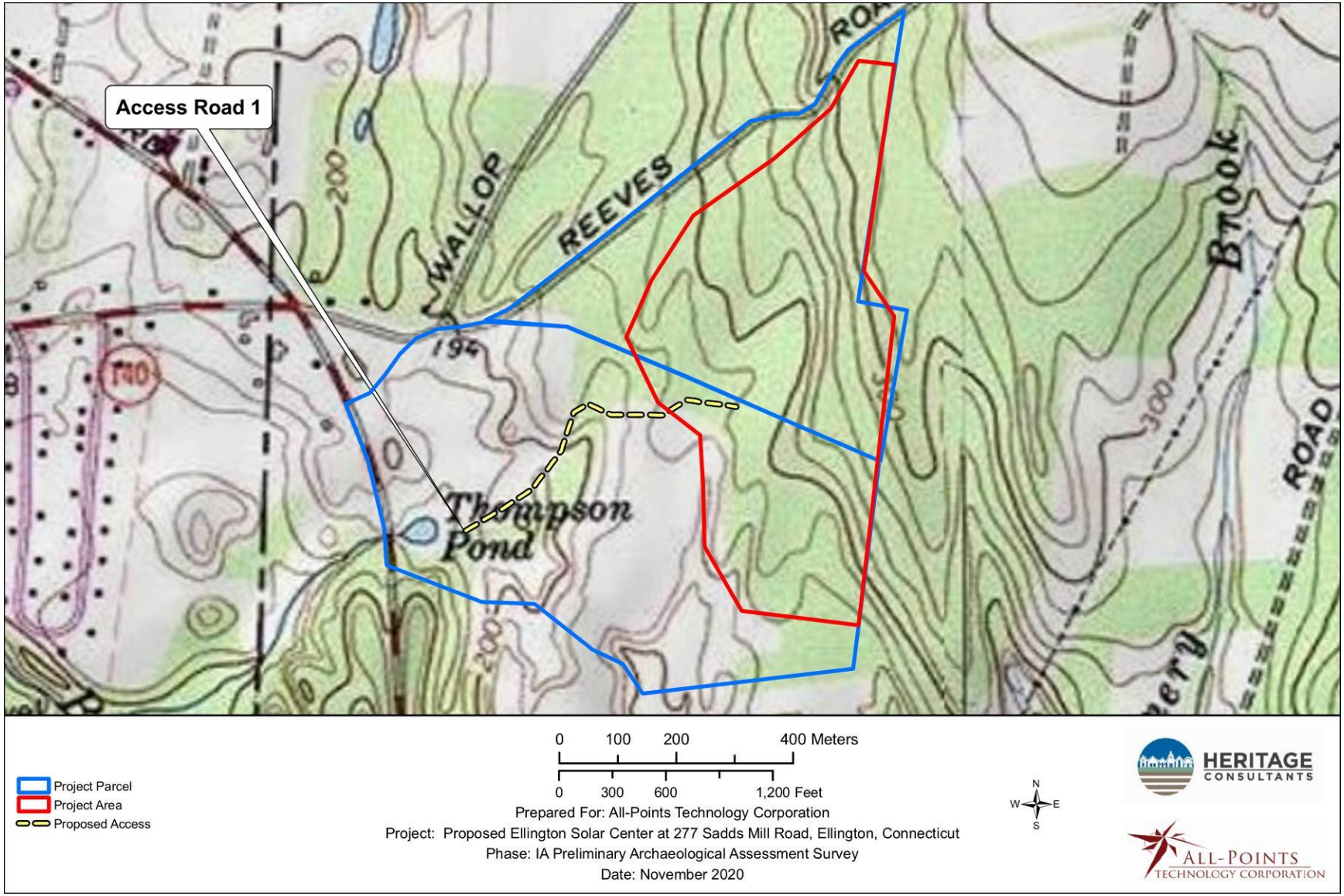


Figure 1. Excerpt from a USGS 7.5' series topographic quadrangle image showing the location of the project area in Ellington, Connecticut.

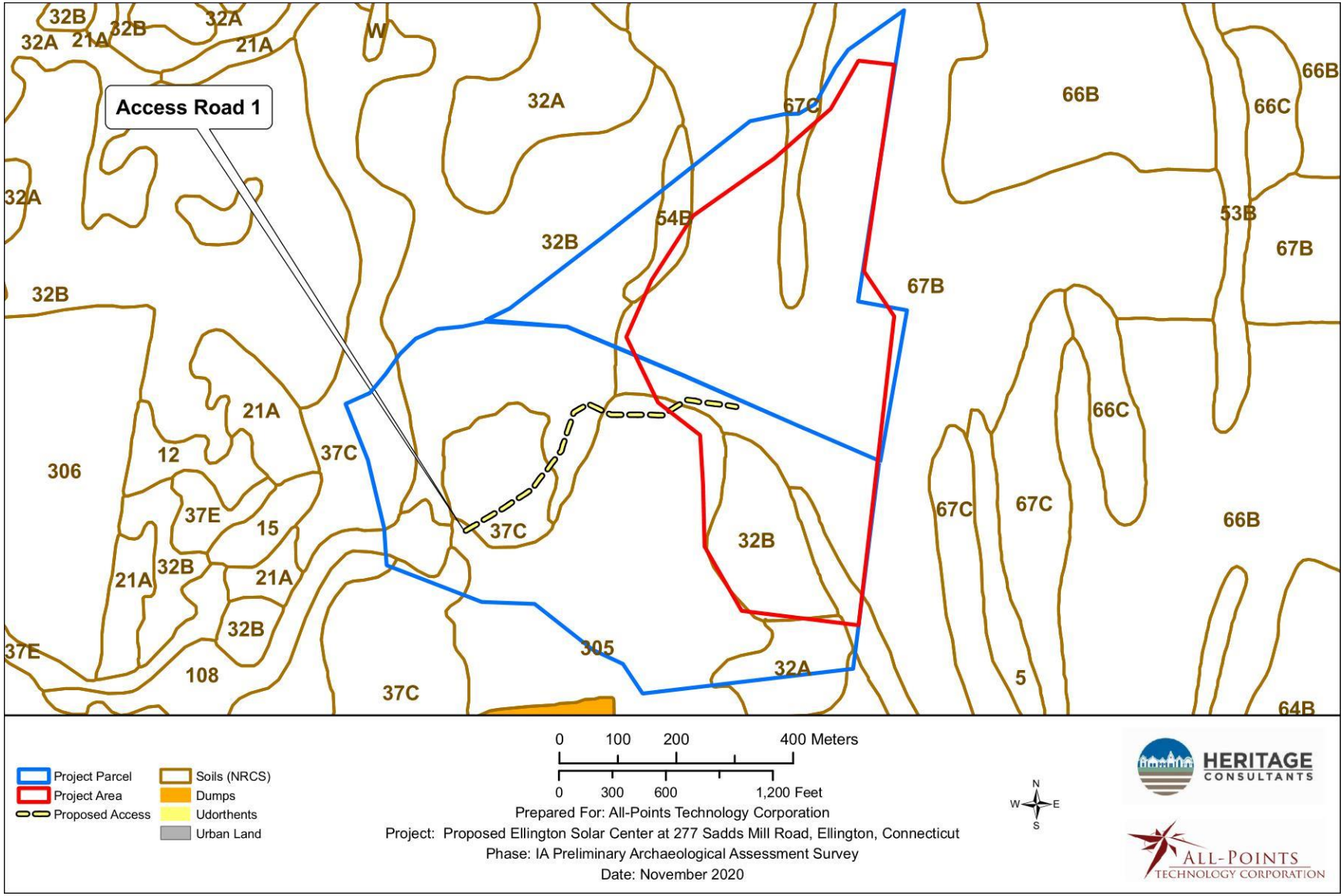


Figure 2. Map of soils located in the vicinity of the project area in Ellington, Connecticut.

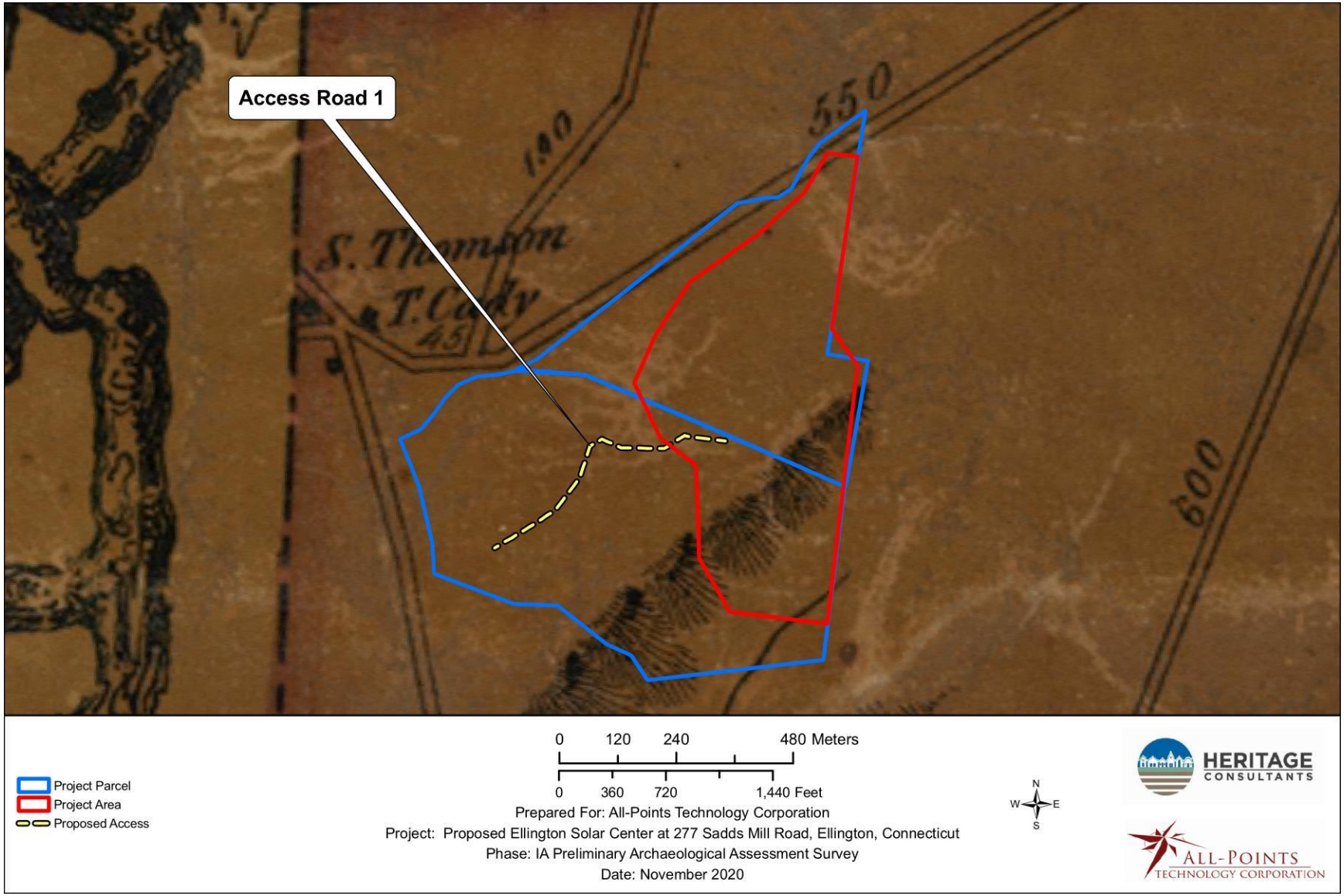


Figure 3. Excerpt from an 1857 historical map showing the location of the project area in Ellington, Connecticut.

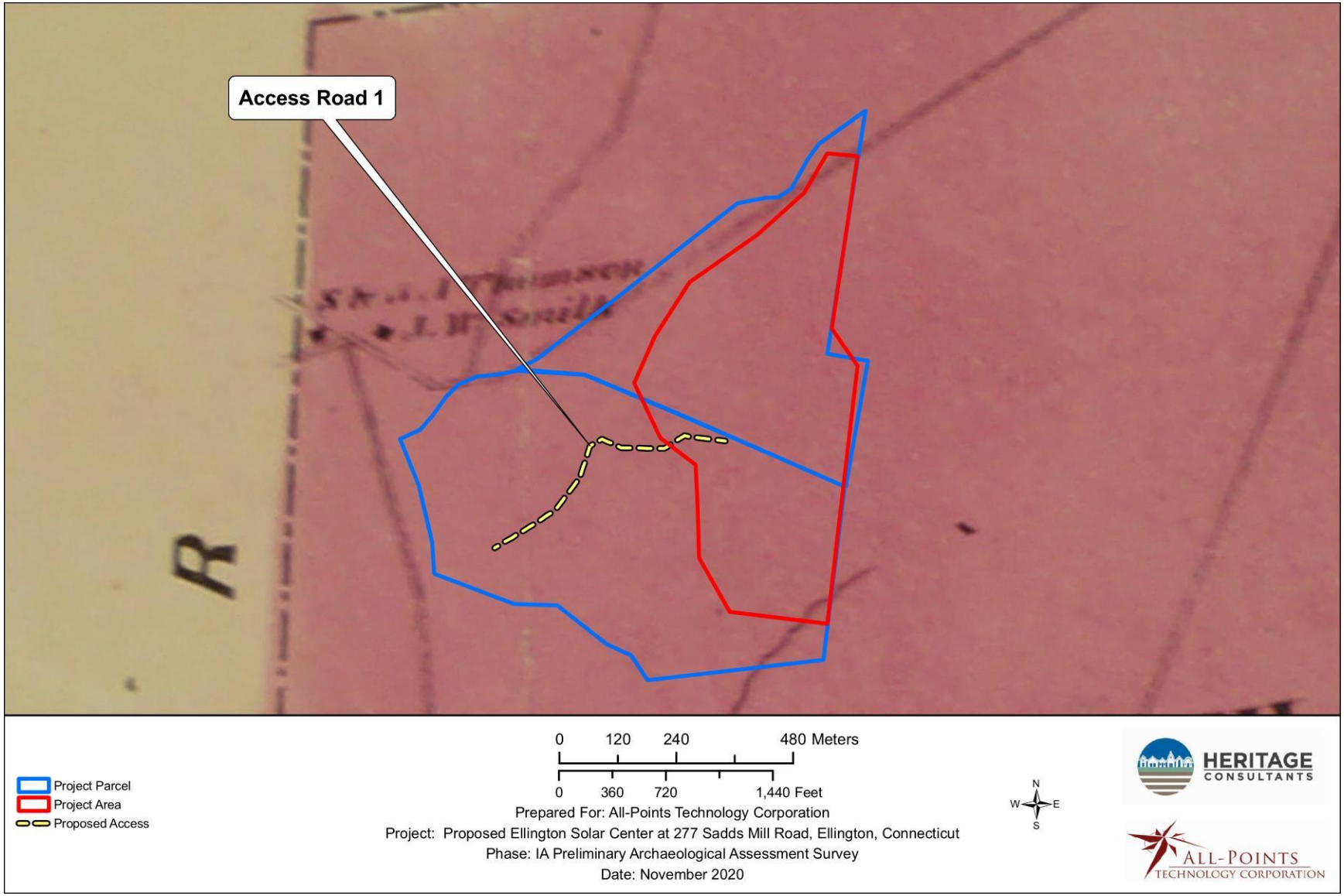


Figure 4. Excerpt from an 1869 historical map showing the location of the project area in Ellington, Connecticut.

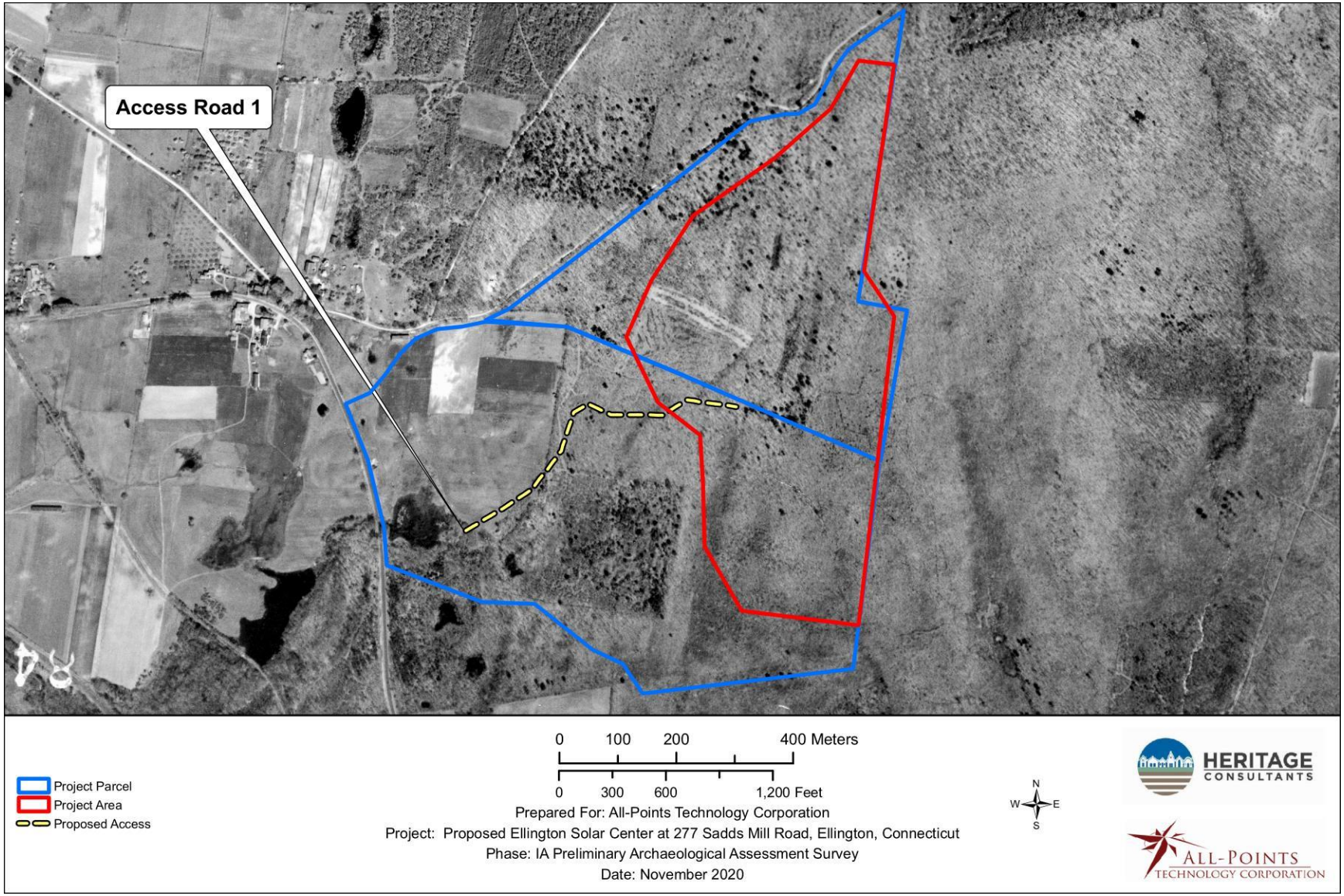


Figure 5. Excerpt from a 1934 aerial photograph showing the location of the project area in Ellington, Connecticut.

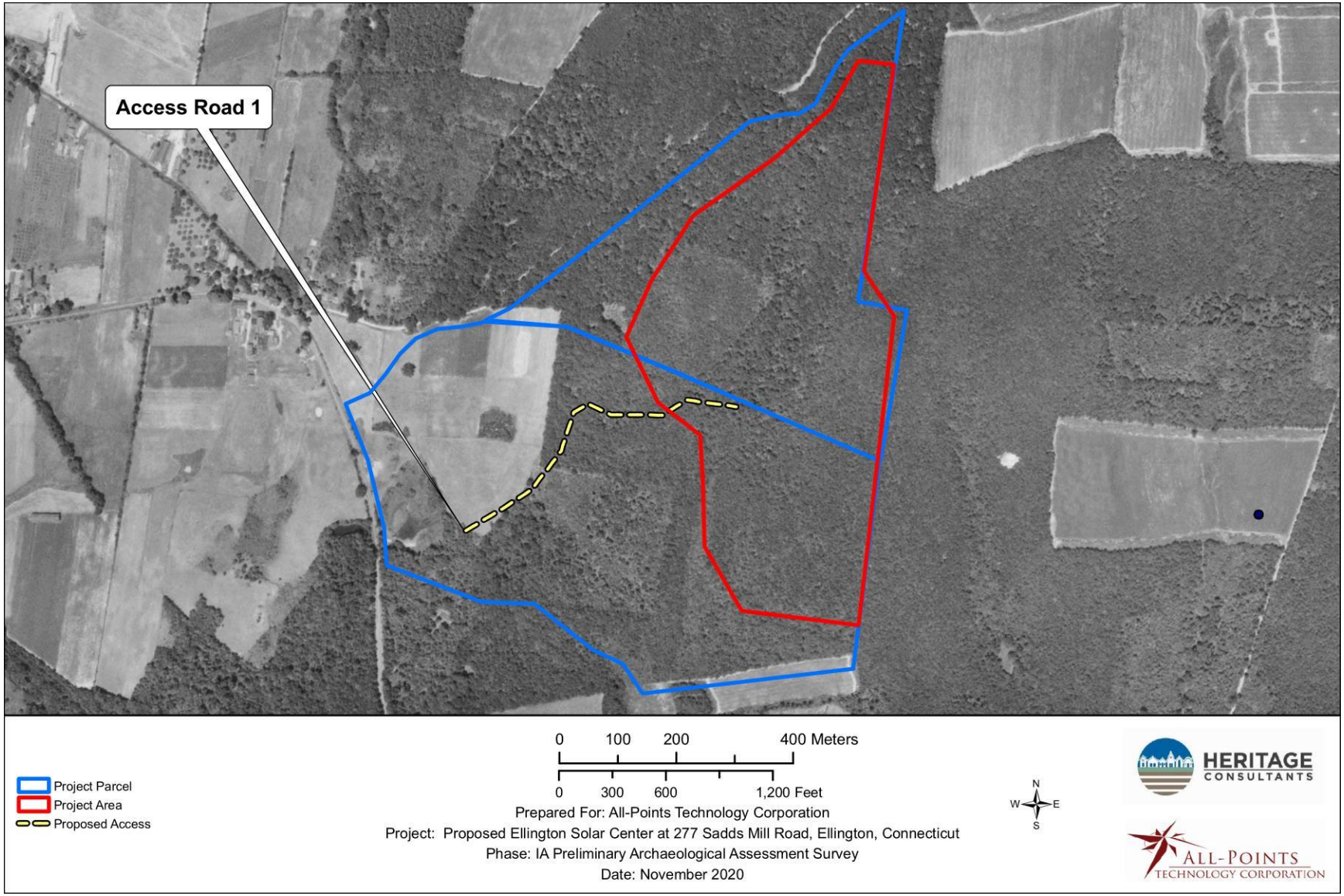


Figure 6. Excerpt from a 1951 aerial photograph showing the location of the project area in Ellington, Connecticut.

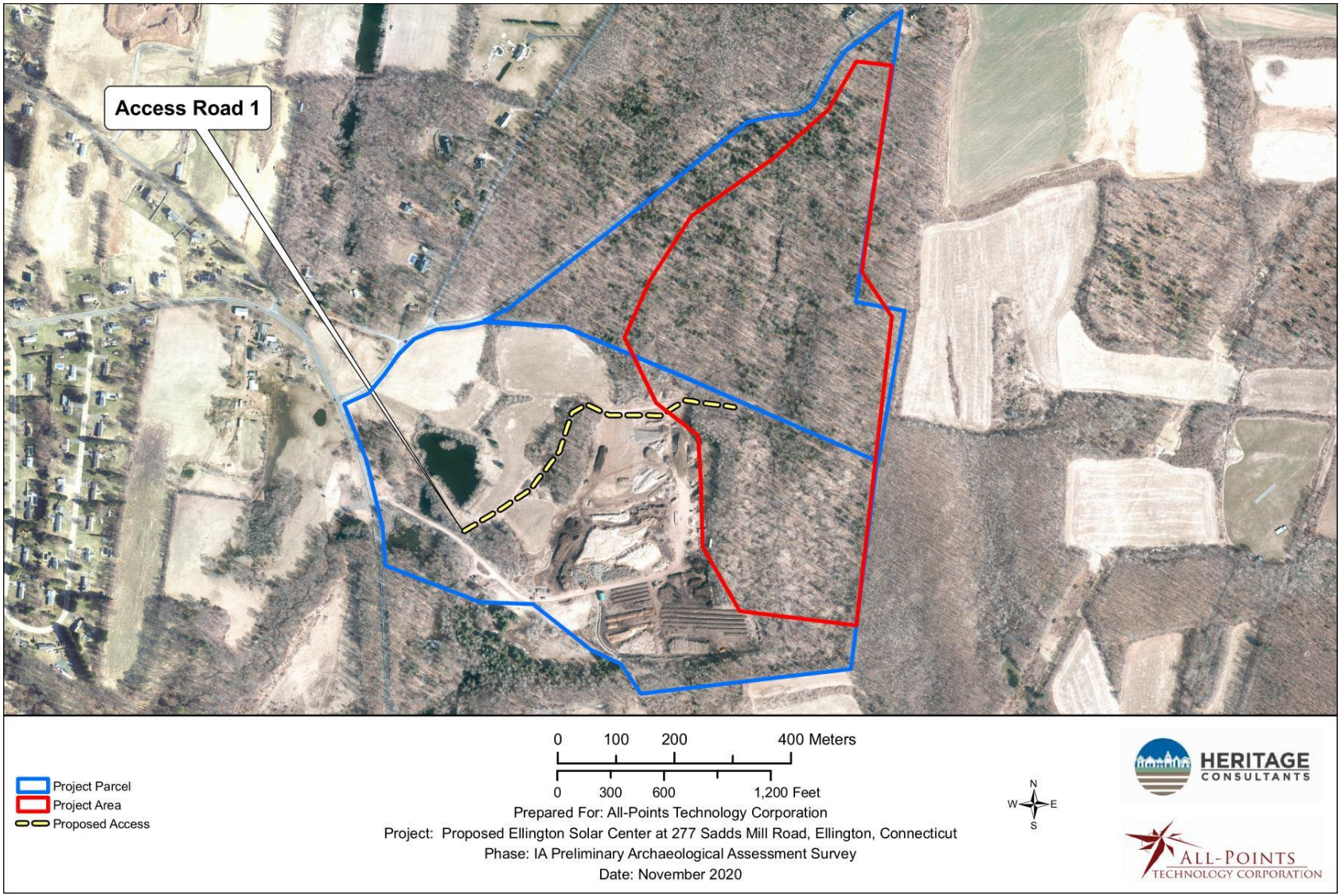


Figure 7. Excerpt from a 2019 aerial photograph showing the location of the project area in Ellington, Connecticut.

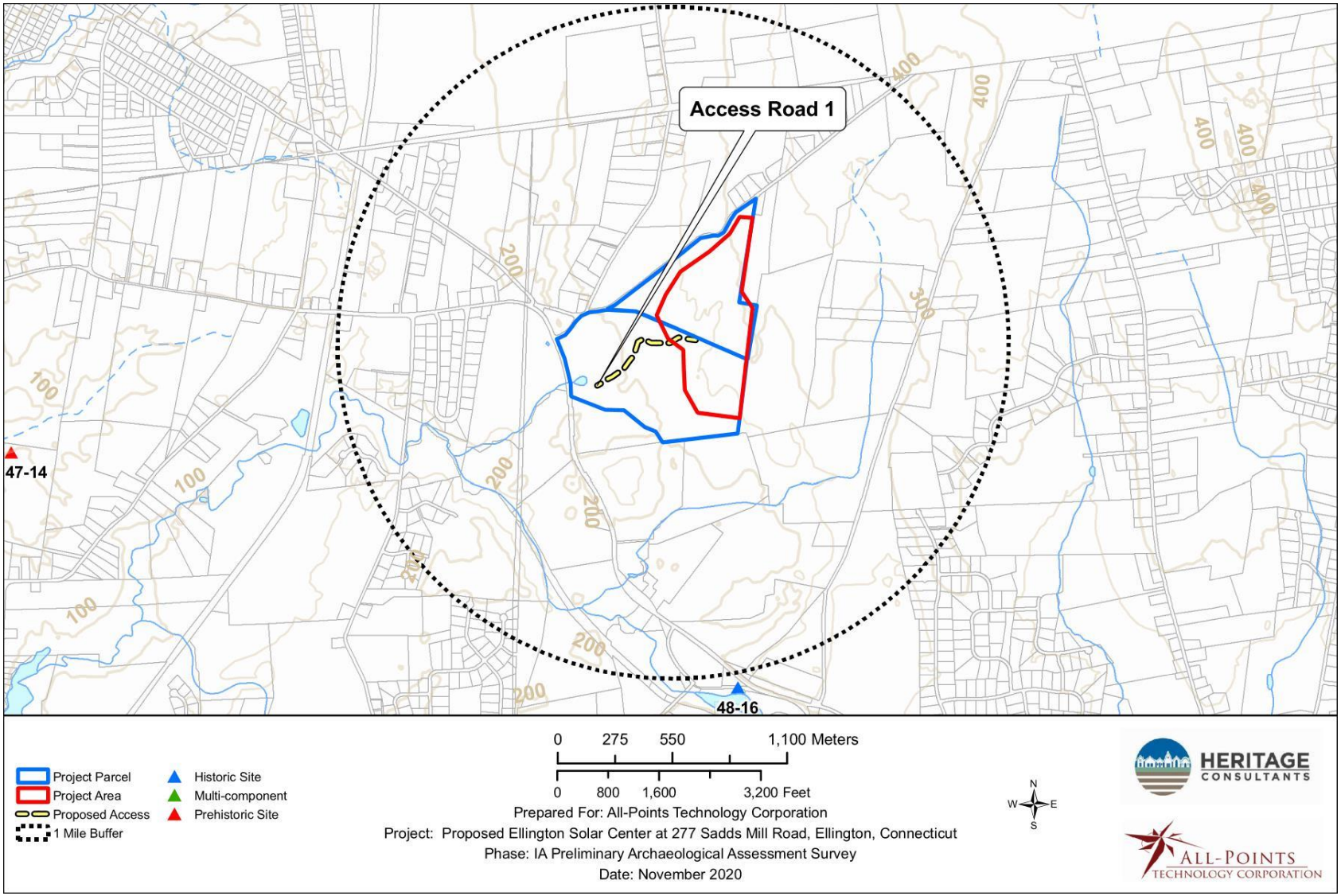


Figure 8. Digital map showing the location of previously identified archaeological sites in the vicinity of the project area in Ellington, Connecticut.

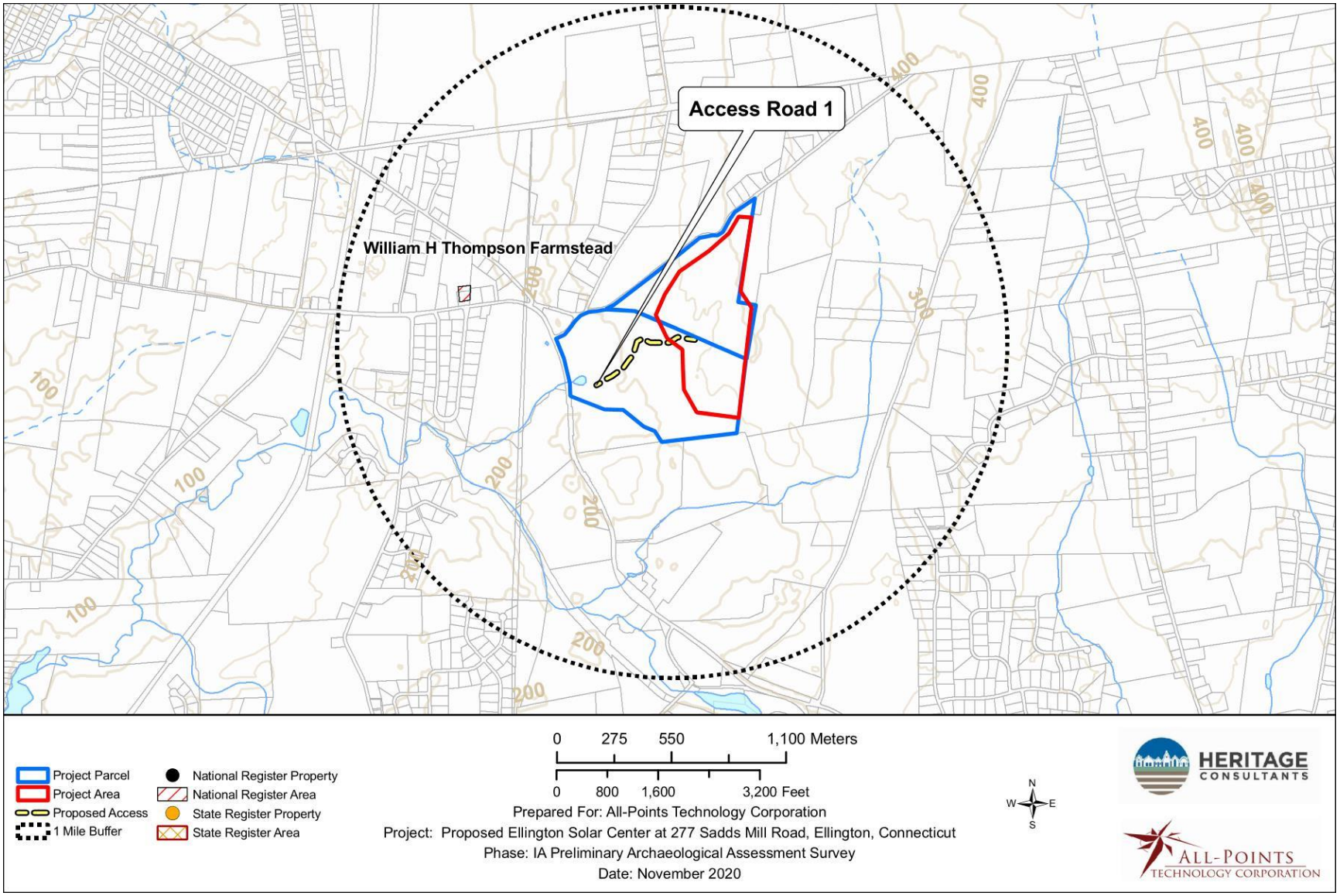


Figure 9. Digital map depicting the locations of previously identified National/State Register of Historic Places properties in the vicinity of the project area in Ellington, Connecticut.

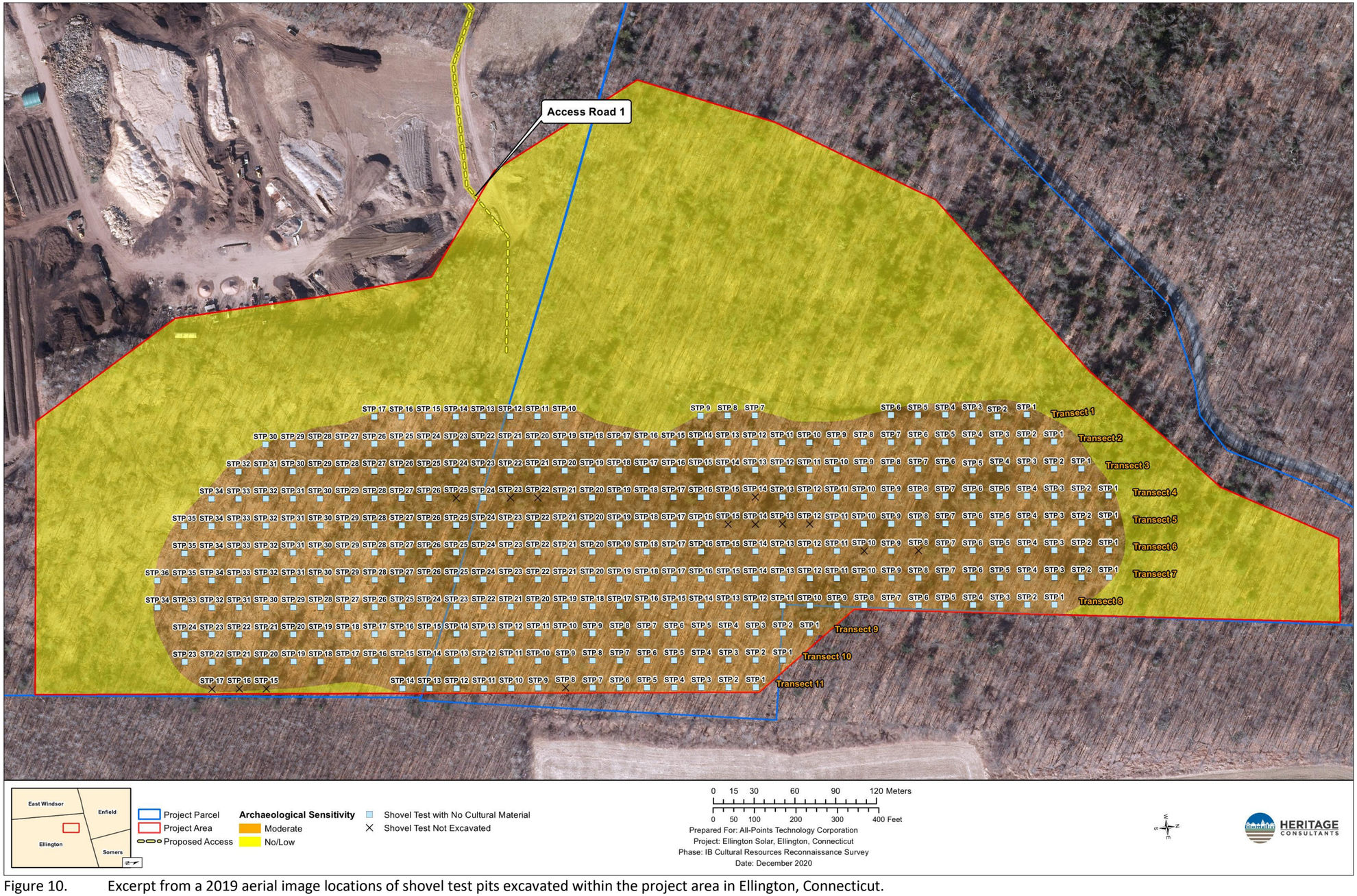


Figure 10. Excerpt from a 2019 aerial image locations of shovel test pits excavated within the project area in Ellington, Connecticut.

Photo 1. Overview photograph of the survey area from the northeastern corner. Photo taken facing west.

Photo 2. Overview photograph of the survey area from the southeastern corner. Photo taken facing north.

Photo 3. Overview photograph of the survey area from the center. Photo taken facing north.

Photo 4. Overview photograph of the survey area from the north-central portion. Photo taken facing west.

APPENDIX F

PRODUCT INFORMATION SHEETS

powered by Q.ANTUM DUO Z

Q.PEAK DUO XL-G10.3 / BFG
470-485

BIFACIAL DOUBLE GLASS MODULE WITH EXCELLENT RELIABILITY AND ADDITIONAL YIELD

EUPD RESEARCH TOP BRAND PV MODULES EUROPE 2020

Q CELLS Yield Security

BIFACIAL ENERGY YIELD GAIN OF UP TO 20 %
Bifacial Q.ANTUM solar cells with zero gap cell layout make efficient use of light shining on the module rear-side for radically improved LCOE.

LOW ELECTRICITY GENERATION COSTS
Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.2 %.

INNOVATIVE ALL-WEATHER TECHNOLOGY
Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID and Anti PID Technology[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

FRAME FOR VERSATILE MOUNTING OPTIONS
High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400 Pa) and wind loads (2400 Pa).

A RELIABLE INVESTMENT
Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty[2].

[1] APT test conditions according to IEC / TS 62804-1:2015 method B (-1500 V, 168 h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

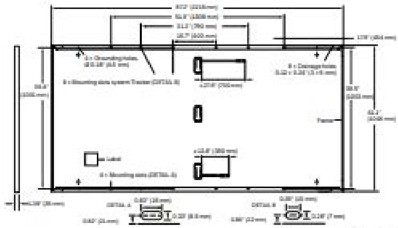
Ground-mounted solar power plants

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION

Format	87.2 in × 41.1 in × 1.38 in (including frame) (2216 mm × 1045 mm × 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) ≥27.6 in (700 mm), (−) ≥13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



Drawing not to scale

ELECTRICAL CHARACTERISTICS

POWER CLASS				470		475		480		485	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC[1] AND BSTC[1] (POWER TOLERANCE +5 W / −0 W)											
					BSTC*		BSTC*		BSTC*		BSTC*
Minimum	Power at MPP[1]	P_{MPP}	[W]	470	514.1	475	519.6	480	525.0	485	530.5
	Short Circuit Current[1]	I_{SC}	[A]	11.04	12.08	11.08	12.12	11.12	12.17	11.16	12.21
	Open Circuit Voltage[1]	V_{OC}	[V]	52.91	53.10	53.15	53.34	53.39	53.58	53.63	53.82
	Current at MPP	I_{MPP}	[A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
	Voltage at MPP	V_{MPP}	[V]	44.73	44.72	45.03	45.02	45.33	45.32	45.63	45.62
	Efficiency[1]	η	[%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9

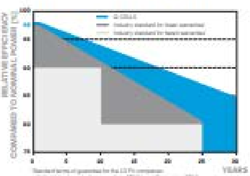
Bifaciality of P_{MPP} and I_{SC} 70% ±5% • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

[1]Measurement tolerances P_{MPP} ±3%; I_{SC}; V_{OC} ±5% at STC: 1000 W/m², *at BSTC: 1000 W/m² + φ × 135 W/m², φ = 70% ±5%, 25±2°C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT[2]							
Minimum	Power at MPP	P_{MPP}	[W]	353.8	357.6	361.4	365.1
	Short Circuit Current	I_{SC}	[A]	8.89	8.92	8.96	8.99
	Open Circuit Voltage	V_{OC}	[V]	50.04	50.27	50.49	50.72
	Current at MPP	I_{MPP}	[A]	8.27	8.30	8.34	8.37
	Voltage at MPP	V_{MPP}	[V]	42.77	43.06	43.35	43.63

[2]800 W/m², NMOT, spectrum AM 1.5

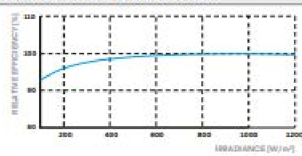
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.45% degradation per year. At least 93.95% of nominal power up to 10 years. At least 84.95% of nominal power up to 30 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25°C, 1000 W/m²)

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	−0.27
Temperature Coefficient of P_{MPP}	γ	[%/K]	−0.34	Nominal Module Operating Temperature	NMOT	[°F]	108±5.4 (42±3°C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1500	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI / UL 61730	TYPE 29[4]
Max. Design Load, Push / Pull[3]	[lbs/ft²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty	−40°F up to +185°F (−40°C up to +85°C)
Max. Test Load, Push / Pull[3]	[lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)		

[3]See Installation Manual

[4]New Type is similar to Type 3 but with metallic frame

QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells); Certification in process.

C Certified US UL 61730

www.tuv.com ID 1111208277

Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

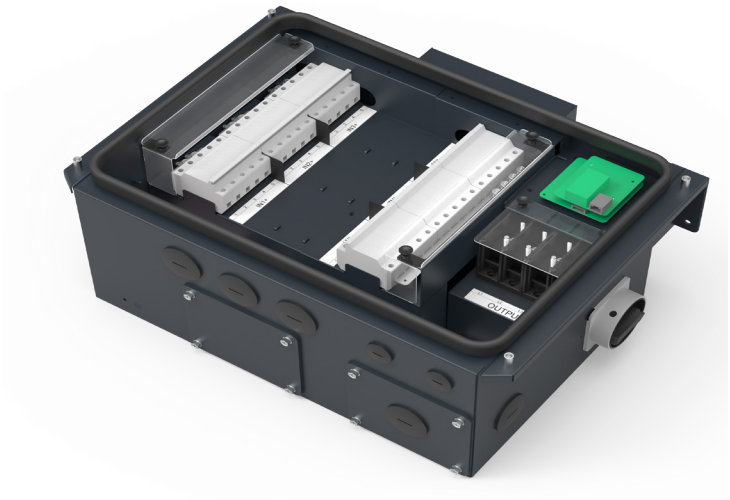
50/60kW, 1000Vdc String Inverters for North America

The 50 & 60kW (55 & 66kVA) medium power CPS three phase string inverters are designed for ground mount, large rooftop and carport applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 98.8% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 50/60KTL products ship with either the Standard wire-box or the Rapid Shutdown wire-box, each fully integrated and separable with touch safe fusing, monitoring, and AC and DC disconnect switches. The integrated PLC transmitter in the Rapid Shutdown wire-box enables PVRSS certified module-level rapid shutdown when used with the Tigo TS4-F/TS4-A-F products, APS RSD-S-PLC-A products, and NEP PVG-4 products. The CPS Flex Gateway enables monitoring, controls and remote product upgrades.

CPS SCA50KTL-DO/US-480
CPS SCA60KTL-DO/US-480

Key Features

- NEC 2017 PVRSS Certified Rapid Shutdown
- 55 & 66kVA rating allows max rated Active Power @±0.91PF
- Selectable Max AC Apparent Power of 50/55kVA and 60/66kVA
- NEC 2014/17 compliant & UL listed Arc-Fault circuit protection
- 15-90° Mounting orientation for low profile roof installs
- Optional Flex Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 3 MPPT's with 5 inputs each for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- UL1741 SA Certified to CA Rule 21, including SA14 FW and SA15 VW
- Separable wire-box design for fast service
- Standard 10 year warranty with extensions to 20 years
- Generous 1.8 and 1.5 DC/AC Inverter Load Ratios



50/60KTL Standard Wire-box

50/60KTL Rapid Shutdown Wire-box

Chint Power Systems America
6800 Koll Center Parkway, Suite 235 Pleasanton, CA 94566
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

Model Name	CPS SCA50KTL-DO/US-480	CPS SCA60KTL-DO/US-480
DC Input		
Max. PV Power	90kW (33kW per MPPT)	
Max. DC Input Voltage	1000Vdc	
Operating DC Input Voltage Range	200-950Vdc	
Start-up DC Input Voltage / Power	330V / 80W	
Number of MPP Trackers	3	
MPPT Voltage Range @ PF>0.99	480-850Vdc	540-850Vdc
Max. PV Short-Circuit Current (Isc x 1.25)	204A (68A per MPPT)	
Number of DC Inputs	15 inputs, 5 per MPPT	
DC Disconnection Type	Load-rated DC switch	
DC Surge Protection	Type II MOV, 2800V_C, 20kA I_{TM} (8/20μS)	
AC Output		
Rated AC Output Power @ PF>0.99 to ±0.91[1]	50kW	60kW
Max. AC Apparent Power (Selectable)	50/55kVA	60/66kVA
Rated Output Voltage	480Vac	
Output Voltage Range[2]	422 - 528Vac	
Grid Connection Type	3Φ / PE / N (Neutral optional)	
Max. AC Output Current @480Vac	60.2/66.2A	72.2/79.4A
Rated Output Frequency	60Hz	
Output Frequency Range[2]	57 - 63Hz	
Power Factor	>0.99 (±0.8 adjustable)	
Current THD @ Rated Load	<3%	
Max. Fault Current Contribution (1 Cycle RMS)	64.1A	
Max. OCPD Rating	110A	125A
AC Disconnection Type	Load-break rated AC switch	
AC Surge Protection	Type II MOV, 1240V_C, 15kA I_{TM} (8/20μS)	
System and Performance		
Topology	Transformerless	
Max. Efficiency	98.8%	
CEC Efficiency	98.5%	
Stand-by / Night Consumption	<1W	
Environment		
Enclosure Protection Degree	NEMA Type 4X	
Cooling Method	Variable speed cooling fans	
Operating Temperature Range[3]	-22°F to +140°F / - 30°C to +60°C	
Non-Operating Temperature Range[4]	No low temp minimum to +158°F / +70°C maximum	
Operating Humidity	0 to 100%	
Operating Altitude	13,123.4ft / 4000m (derating from 9842.5ft / 3000m)	
Audible Noise	<60dBA @ 1m and 25°C	
Display and Communication		
User Interface and Display	LCD+LED	
Inverter Monitoring	SunSpec, Modbus RS485	
Site Level Monitoring	CPS Flex Gateway (1 per 32 inverters)	
Modbus Data Mapping	CPS	
Remote Diagnostics / FW Upgrade Functions	Standard / (with Flex Gateway)	
Mechanical		
Dimensions (HxWxD)	39.4 x 23.6 x 10.24in. (1000 x 600 x 260mm)	
Weight	Inverter: 123.5lbs/56kg; Wire-box: 33lbs/15kg	
Mounting / Installation Angle[5]	15 to 90 degrees from horizontal (vertical or angled)	
AC Termination	M8 Stud Type Terminal Block (Wire range: #6 - 3/0AWG CU/AL, Lugs not supplied)	
DC Termination[6]	Screw Clamp, Neg. Busbar (RSD version[6]) Wire range: #14 - #6AWG CU	
Fused String Inputs (5 per MPPT)[7]	15A fuses provided (Fuse values up to 30A acceptable)	
Safety		
Certifications and Standards	UL1741SA-2016, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547a-2014; FCC PART15	
Selectable Grid Standard	IEEE 1547a-2014, CA Rule 21, ISO-NE	
Smart-Grid Features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAr, Freq-Watt, Volt-Watt	
Warranty		
Standard	10 years	
Extended Terms	15 and 20 years	

1) Active Power Derating begins; at PF=±0.91 to ±0.8 when Max AC Apparent Power is set to 55 or 66kVA.
2) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.
3) Active Power Derating begins; at 40°C when PF=±0.9 and MPPT ≥Vmin, at 45°C when PF=1 and MPPT ≥Vmin, and at 50°C when PF=1 and MPPT V ≥ 700Vdc.
4) See user manual for further requirements regarding non-operating conditions.
5) Shade Cover accessory required for installation angles of 75 degrees or less.
6) RSD wire-box only includes fuses/fuseholders on the positive polarity, compliant with NEC 2017, 690.9 (C).
7) Fuse values above 20A have additional spacing requirements or require the use of the Y-Comb Terminal Block. See user manual for details.

Three-phase pad-mounted compartmental type transformer

General

At Eaton, we are constantly striving to introduce new innovations to the transformer industry, bringing you the highest quality, most reliable transformers. Eaton's Cooper Power series Transformer Products are ISO 9001 compliant, emphasizing process improvement in all phases of design, manufacture, and testing. In order to drive this innovation, we have invested both time and money in the Thomas A. Edison Technical Center, our premier research facility in Franksville, Wisconsin. Such revolutionary products as distribution-class UltraSIL™ Polymer-Housed Evolution™ surge arresters and Envirotemp™ FR3™ fluid have been developed at our Franksville lab.

With transformer sizes ranging from 45 kVA to 12 MVA and high voltages ranging from 2400 V to 46 kV, Eaton has you covered. From fabrication of the tanks and cabinets to winding of the cores and coils, to production of arresters, switches, tap changers, expulsion fuses, current limit fuses, bushings (live and dead) and molded rubber goods, Eaton does it all. Eaton's Cooper Power series transformers are available with electrical grade mineral oil or Envirotemp™ FR3™ fluid, a less-flammable and bio-degradable fluid. Electrical codes recognize the advantages of using Envirotemp™ FR3™ fluid both indoors and outdoors for fire sensitive applications. The bio-based fluid meets Occupational Safety and Health Administration (OSHA) and Section 450.23 NEC Requirements.

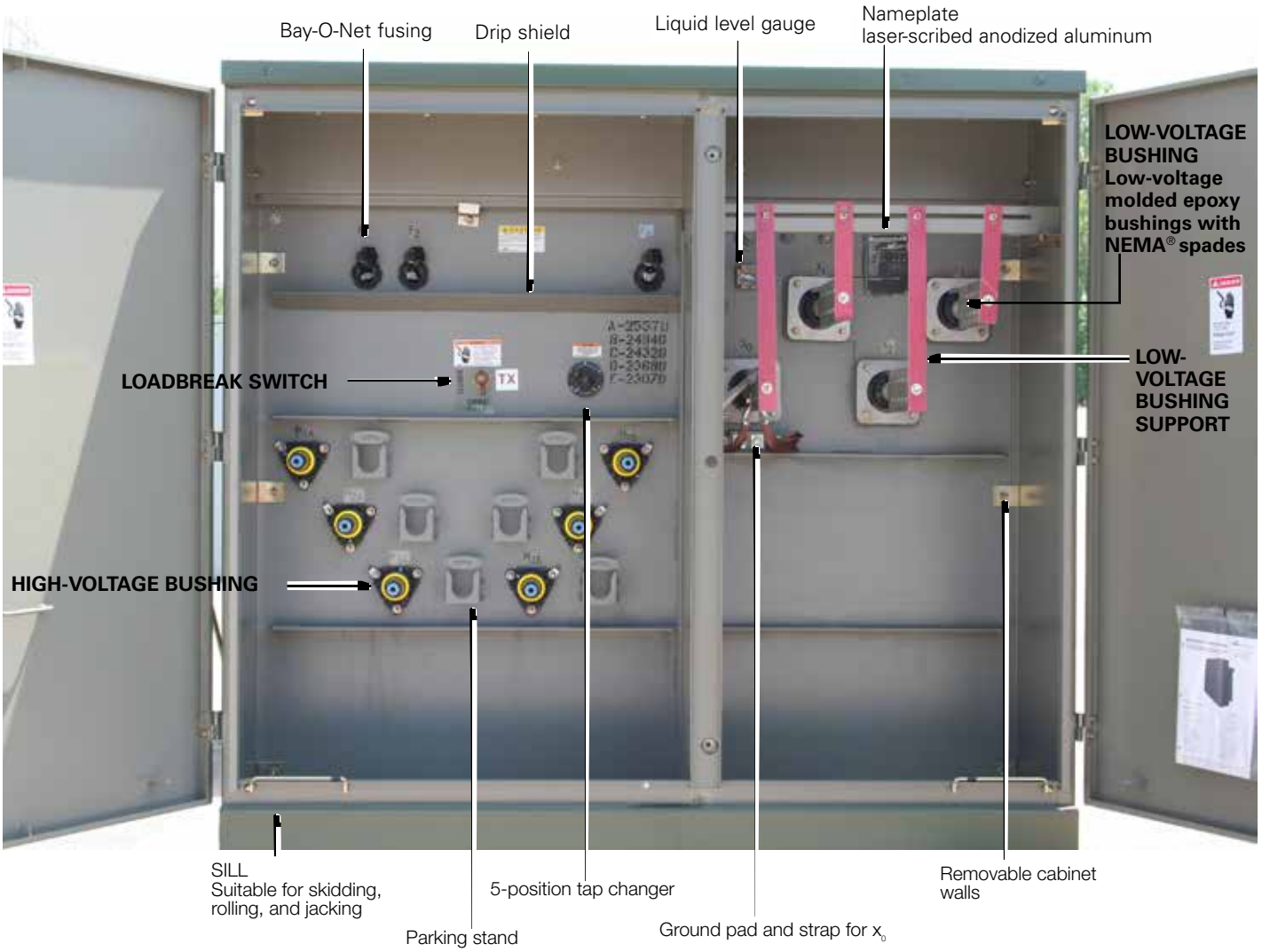


Figure 1. Three-phase pad-mounted compartmental type transformer.

Table 1. Product Scope

Type	Three Phase, 50 or 60 Hz, 65 °C Rise (55 °C, 55/65 °C), 65/75 °C, 75 °C
Fluid Type	Mineral oil or Envirotemp™ FR3™ fluid
Coil Configuration	2-winding or 4-winding or 3-winding (Low-High-Low), 3-winding (Low-Low-High)
Size	45 – 10,000 kVA
Primary Voltage	2,400 – 46,000 V
Secondary Voltage	208Y/120 V to 14,400 V
Specialty Designs	Inverter/Rectifier Bridge
	K-Factor (up to K-19)
	Vacuum Fault Interrupter (VFI)
	UL® Listed & Labeled and Classified
	Factory Mutual (FM) Approved®
	Solar/Wind Designs
	Differential Protection
	Seismic Applications (including OSHPD)
	Hardened Data Center

Table 2. Three-Phase Ratings

Three-Phase 50 or 60 Hz
kVA Available[1]: 45, 75, 112.5, 150, 225, 300, 500, 750, 1000, 1500, 2000, 2500, 3000, 3750, 5000, 7500, 10000

[1]Transformers are available in the standard ratings and configurations shown or can be customized to meet specific needs.

Table 3. Impedance Voltage

	Low-voltage rating		
Rating (kVA)	**≤ 600 V**	**2400 Δ through 4800 Δ**	**6900 Δ through 13800GY/7970 or 13800 Δ**
45-75	2.70-5.75	2.70-5.75	2.70-5.75
112.5-300	3.10-5.75	3.10-5.75	3.10-5.75
500	4.35-5.75	4.35-5.75	4.35-5.75
750-2500	5.75	5.75	5.75
3750	5.75	5.75	6.00
5000		6.00	6.50

Note: The standard tolerance is ± 7.5%

Table 4. Audible Sound Levels

	NEMA® TR-1 Average
Self-Cooled, Two Winding kVA Rating	**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

Table 5. Insulation Test Levels

KV Class	Induced Test 180 or 400 Hz 7200 Cycle	kV BIL Distribution	Applied Test 60 Hz (kV)
1.2	Twice Rated Voltage	30	10
2.5		45	15
5		60	19
8.7		75	26
15		95	34
25		125	40
34.5		150	50

Table 6. Temperature Rise Ratings 0-3300 Feet (0-1000 meters)

	Standard	Optional
Unit Rating (Temperature Rise Winding)	65 °C	55 °C, 55/65 °C, 75 °C
Ambient Temperature Max	40 °C	50 °C
Ambient Temperature 24 Hour Average	30 °C	40 °C
Temperature Rise Hotspot	80 °C	65 °C

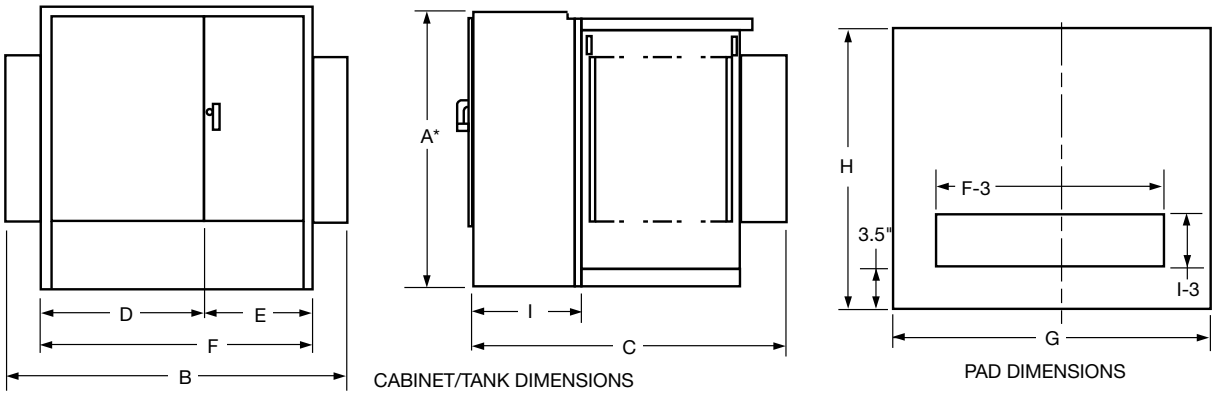


Figure 2. Transformer and pad dimensions.

* Add 9" for Bay-O-Net fusing.

Table 7. Fluid-filled—aluminum windings 55/65 °C Rise[1]

65° Rise	DEAD-FRONT—LOOP OR RADIAL FEED—BAY-O-NET FUSING OIL FILLED—ALUMINUM WINDINGS										
	OUTLINE DIMENSIONS (in.)									Gallons of	Approx. Total
kVA Rating	A*	B	C	D	E	F	G	H	I	Fluid	Weight (lbs.)
45	50	68	39	42	26	68	72	43	20	110	2,100
75	50	68	39	42	26	68	72	43	20	115	2,250
112.5	50	68	49	42	26	68	72	53	20	120	2,350
150	50	68	49	42	26	68	72	53	20	125	2,700
225	50	72	51	42	30	72	76	55	20	140	3,150
300	50	72	51	42	30	72	76	55	20	160	3,650
500	50	89	53	42	30	72	93	57	20	190	4,650
750	64	89	57	42	30	72	93	61	20	270	6,500
1000	64	89	59	42	30	72	93	63	20	350	8,200
1500	73	89	86	42	30	72	93	90	24	410	10,300
2000	73	72	87	42	30	72	76	91	24	490	12,500
2500	73	72	99	42	30	72	76	103	24	530	14,500
3000	73	84	99	46	37	84	88	103	24	620	16,700
3750	84	85	108	47	38	85	88	112	24	660	19,300
5000	84	96	108	48	48	96	100	112	24	930	25,000
7500	94	102	122	54	48	102	100	126	24	1,580	41,900

1 Weights, gallons of fluid, and dimensions are for reference only and not for construction. Please contact Eaton for exact dimensions.

* Add 9" for Bay-O-Net fusing.

Table 8. Fluid-Filled—Copper Windings 55/65 °C Rise[1]

65° Rise	DEAD-FRONT—LOOP OR RADIAL FEED—BAY-O-NET FUSING OIL FILLED—COPPER WINDINGS										
	OUTLINE DIMENSIONS (in.)									Gallons of	Approx. Total
kVA Rating	A*	B	C	D	E	F	G	H	I	Fluid	Weight (lbs.)
45	50	64	39	34	30	64	69	43	20	110	2,100
75	50	64	39	34	30	64	69	43	20	115	2,350
112.5	50	64	49	34	30	64	69	53	20	115	2,500
150	50	64	49	34	30	64	69	53	20	120	2,700
225	50	64	51	34	30	64	73	55	20	140	3,250
300	50	64	51	34	30	64	75	55	20	160	3,800
500	50	81	53	34	30	64	85	57	20	200	4,800
750	64	89	57	42	30	72	93	61	20	255	6,500
1000	64	89	59	42	30	72	93	63	20	300	7,800
1500	73	89	86	42	30	72	93	90	24	410	10,300
2000	73	72	87	42	30	72	76	91	24	420	11,600
2500	73	72	99	42	30	72	76	103	24	500	14,000
3000	73	84	99	46	37	84	88	103	24	720	18,700
3750	84	85	108	47	38	85	88	112	24	800	20,500
5000	84	96	108	48	48	96	100	112	24	850	25,000
7500	94	102	122	54	48	102	100	126	24	1,620	46,900

[1] Weights, gallons of fluid, and dimensions are for reference only and not for construction. Please contact Eaton for exact dimensions.

* Add 9" for Bay-O-Net fusing.

Standard features

Connections and neutral configurations

- Delta - Wye: Low voltage neutral shall be a fully insulated X0 bushing with removable ground strap.
- Grounded Wye-Wye: High voltage neutral shall be internally tied to the low voltage neutral and brought out as the H0X0 bushing in the secondary compartment with a removable ground strap.
- Delta-Delta: Transformer shall be provided without a neutral bushing.
- Wye-Wye: High voltage neutral shall be brought out as the H0 bushing in the primary compartment and the low voltage neutral shall be brought as the X0- bushing in the secondary compartment.
- Wye-Delta: High voltage neutral shall be brought out as the H0 bushing in the primary compartment. No ground strap shall be provided (line to line rated fusing is required).

High and low voltage bushings

- 200 A bushing wells (15, 25, and 35 kV)
- 200 A, 35 kV Large Interface
- 600 A (15, 25, and 35 kV) Integral bushings (dead-front)
- Electrical-grade wet-process porcelain bushings (live-front)

Tank/cabinet features

- Bolted cover for tank access (45-2500 kVA)
- Welded cover with hand hole (>2500 kVA)
- Three-point latching door for security
- Removable sill for easy installation
- Lifting lugs (4)
- Stainless steel cabinet hinges and mounting studs
- Steel divider between HV and LV compartment
- 20" Deep cabinet (45-1000 kVA)
- 24" Deep cabinet (1500-7500 kVA)
- 30" Deep cabinet (34.5/19.92 kV)
- Pentahead captive bolt
- Stainless steel 1-hole ground pads (45-500 kVA)
- Stainless steel 2-hole ground pads (750-10,000 kVA)
- Parking Stands (dead-front)

Valves/plugs

- One-inch upper filling plug
- One-inch drain plug (45-500 kVA)
- One-inch combination drain valve with sampling device in low voltage compartment (750-10,000 kVA)
- Automatic pressure relief valve

Nameplate

- Laser-scribed anodized aluminum nameplate

Figure 3. Drain valve with sampler.

Figure 4. Automatic Pressure relief valve.

Figure 5. Liquid level gauge.

Figure 6. External Gauges.

Figure 7. External visible break with gauges.

Optional features

High and low voltage bushings

- 200 A (15, 25 kV) bushing inserts
- 200 A (15, 25 kV) feed thru inserts
- 200 A (15, 25 kV) (HTN) bushing wells with removable studs
- High-voltage 600 A (15, 25, 35 kV) deadbreak one-piece bushings
- Low voltage 6-, 8-holes spade
- Low voltage 12-, 16-, 20-holes spade (750-2500 kVA)
- Low voltage bushing supports

Tank/cabinet features

- Stainless steel tank base and cabinet
- Stainless steel tank base, cabinet sides and sill
- 100% stainless steel unit
- Service entrance (2 inch) in sill or cabinet side
- Touch-up paint (domestic)
- Copper ground bus bar
- Kirk-Key provisions
- Nitrogen blanket
- Bus duct cutout

Special designs

- Factory Mutual (FM)
- UL® Classified
- Triplex
- High altitude
- K-Factors
- Step-up
- Critical application
- Modulation transformers
- Seismic applications (including OSHPD)

Switches

- One, two, or three On/Off loadbreak switches
- 4-position loadbreak V-blade switch or T-blade switch
- Delta-wye switch
- 3-position V-Blade selector switch
- 100 A, 150 A, 300 A tap changers
- Dual voltage switch
- Visible break with VFI interrupter interlock
- External visible break (15, 25, and 35 kV, up to 3 MVA)
- External visible break with gauges (15, 25, and 35 kV, up to 3 MVA)

Gauges and devices

- Liquid level gauge (optional contacts)
- Pressure vacuum gauge (optional contacts and bleeder)
- Dial-type thermometer (optional alarm contacts)
- Cover mounted pressure relief device (optional alarm contacts)
- Ground connectors
- Hexhead captive bolt
- Molded case circuit breaker mounting provisions
- External gauges in padlockable box

Overcurrent protection

- Bay-O-Net fusing (Current sensing, dual sensing, dual element, high amperage overload)
- Bay-O-Net expulsion fuse in series with a partial range under-oil ELSP current limiting fuse (below 23 kV)
- Cartridge fusing in series with a partial range under-oil ELSP current limiting fuse (above 23 kV)
- MagneX™ interrupter with ELSP current-limiting fuse
- Vacuum Fault Interrupter (VFI)
- Visible break window
- Fuse/switch interlock

Valves/plugs

- Drain/sampling valve in high-voltage compartment
- Globe type upper fill valve

Overvoltage protection

- Distribution-, intermediate-, or station-class surge arresters
- Elbow arresters (for dead-front connections)

Metering/fan/control

- Full metering package
- Current Transformers (CTs)
- Metering Socket
- NEMA® 4 control box (optional stainless steel)
- NEMA® 7 control box (explosion proof)
- Fan Packages

Testing

- Customer test witness
- Customer final inspection
- Zero Sequence Impedance Test
- Heat Run Test
- ANSI® Impulse Test
- Audible Sound Level Test
- RIV (Corona) Test
- Dissolved Gas Analysis (DGA) Test
- 8- or 24-Hour Leak Test

Coatings (paint)

- ANSI® Bell Green
- ANSI® #61 Light Gray
- ANSI® #70 Sky Gray
- Special paint available per request

Nameplate

- Stainless steel nameplate

Decals and labels

- High voltage warning signs
- Mr. Ouch
- Bi-lingual warning
- DOE compliant
- Customer stock code
- Customer stenciling
- Shock and arc flash warning decal
- Non-PCB decal

Construction

Core

The three-legged, step-lap mitered core construction is manufactured using a high-quality cutting machine. For maximum efficiency, cores are precisely stacked, virtually eliminating gaps in the corner joints.

Five-legged wound core or shell-type triplex designs are used for wye-wye connected transformers, and other special transformer designs.

Cores are manufactured with precision cut, burr-free, grain-oriented silicon steel or amorphous metal, depending on customer preference or optimal material based upon performance requirements. Many grades of core steel are available for optimizing core loss efficiency.

Coils

Pad-mounted transformers feature a rectangular coil configuration with wire-wound, high-voltage primaries and sheet-wound secondaries. The design minimizes axial stress developed by short circuits and provides for magnetic balancing of tap connections.

Coils are wound using the highest quality winding machines providing exacting tension control and conductor placement for superior short-circuit strength and maximum efficiency.

Extra mechanical strength is provided by diamond pattern, epoxy-coated paper insulation, used throughout the coil, with additional epoxy at heavy stress points. The diamond pattern distribution of the epoxy and carefully arranged ducts, provide a network of passages through which cooling fluid can freely circulate.

Coil assemblies are heat-cured under calculated hydraulic pressure to ensure performance against short-circuit forces.

Core and coil assemblies

Pad-mounted transformer core and coil assemblies are braced with heavy steel ends to prevent the rectangular coil from distorting under short-circuit conditions. Plates are clamped in place using presses, and welded or bolted to form a solid core and coil assembly. Core and coil assemblies exceed ANSI® and IEEE® requirements for short-circuit performance. Due to the rigidity of the design, impedance shift after short-circuit is comparable to that of circular wound assemblies.

Tanks

Transformer tanks are designed for high strength and ease of handling, installation, and maintenance. Tanks are welded using precision-cut, hot rolled, pickled and oiled steel. They are sealed to protect the insulating fluid and other internal components.

Transformer tanks are pressure-tested to withstand 7 psig without permanent distortion and 15 psig without rupture.

Tank finish

An advanced multi-stage finishing process exceeds IEEE Std C57.12.28™-2014 standards. The eight-stage pre-treatment process assures coating adhesion and retards corrosion. It converts tank surfaces to a nonmetallic, water insoluble iron phosphate coating.

The paint method consists of two distinct layers of paint. The first is an epoxy primer (E-coat) layer which provides a barrier against moisture, salt and corrosives. The two-component urethane final coat seals and adds ultraviolet protection.

Vacuum processing

Transformers are dried and filled with filtered insulating fluid under vacuum, while secondary windings are energized. Coils are heated to drive out moisture, ensuring maximum penetration of fluid into the coil insulation system.

Insulating fluid

Eaton's Cooper Power series transformers are available with electrical-grade mineral insulating oil or Envirotemp™ FR3™ fluid. The highly refined fluids are tested and degassed to assure a chemically inert product with minimal acid ions. Special additives minimize oxygen absorption and inhibit oxidation. To ensure high dielectric strength, the fluid is re-tested for dryness and dielectric strength, refiltered, heated, dried, and stored under vacuum before being added to the completed transformer.

Eaton's Cooper Power series transformers filled with Envirotemp™ FR3™ fluid enjoy unique fire safety, environmental, electrical, and chemical advantages, including insulation life extending properties.

A bio-based, sustainable, natural ester dielectric coolant, Envirotemp™ FR3™ fluid quickly and thoroughly biodegrades in the environment and is non-toxic per acute aquatic and oral toxicity tests.

Building for Environmental and Economic Sustainability (BEES) total life cycle assessment software, utilized by the US Dept. of Commerce, reports its overall environmental performance impact score at 1/4th that reported for mineral oil. Envirotemp™ FR3™ fluid has also earned the EPA Environmental Technology Verification of transformer materials.

With a fire point of 360 °C, Envirotemp™ FR3™ fluid is FM Approved® and Underwriters Laboratories (UL®) Classified "Less-Flammable" per NEC® Article 450-23, fitting the definition of a Listed Product per NEC®.

Figure 8. VFI transformer with visible break.

Pad-mounted VFI transformer

Eaton's Cooper Power series VFI transformer combines a conventional distribution transformer with the proven Vacuum Fault Interrupter (VFI). This combination provides both voltage transformation and transformer over current protection in one space saving and money saving package. The pad-mounted VFI transformer protects the transformer and provides proper coordination with upstream protective devices. When a transformer fault or overload condition occurs, the VFI breaker trips and isolates the transformer.

The three-phase VFI breaker has independent single-phase initiation, but is three-phase mechanically gang-tripped. A trip signal on any phase will open all three phases. This feature eliminates single-phasing of three phase loads. It also enables the VFI breaker to be used as a three-phase load break switch.

Due to the resettable characteristics of the VFI breaker, restoring three-phase service is faster and easier.

The sealed visible break window and switch is an option that can be installed to provide visible break contact. This feature provides enhanced safety and allows an operator to see if the loadbreak switch contacts are in an open or closed position before performing

maintenance.

Envirotran™ FM Approved special protection transformer

Eaton's Cooper Power series Envirotran™ transformer is FM Approved and suitable for indoor locations. Factory Mutual Research Corporation's (FMRC) approval of the Envirotran transformer line makes it easy to comply with and verify compliance with Section 450.23, 2008 NEC, Less-Flammable Liquid-Filled Transformer Requirements for both indoor and outdoor locations.

Envirotran FM Approved transformers offer the user the benefit of a transformer that can be easily specified to comply with NEC, and makes FM Safety Data Sheet compliance simpler, while also providing maximum safety and flexibility for both indoor and outdoor installations.

Because the "FM Approved" logo is readily visible on the transformer and its nameplate, NEC compliance is now easily verifiable by the inspector.

Envirotran FM Approved transformers are manufactured under strict compliance with FMRC Standard 3990 and are filled with

FM APPROVED

FM Approved Envirotemp™ FR3™ fluid, a fire-resistant dielectric coolant.

Special application transformers

Data Center transformer

With focus rapidly shifting from simply maximizing uptime and supporting demand to improving energy utilization, the data center industry is continually looking for methods to increase its energy efficiency and reliability. Utilizing cutting edge technology, Eaton's Cooper Power series Hardened Data Center (HDC) transformers are the solution. Designed with special attention given to surge protection, HDC liquid-filled transformers provide superior performance under the harshest electrical environments. Contrary to traditional dry-type units, HDC transformers provide unsurpassed reliability, overloadability, operational life, efficiency, thermal loading and installed footprint. These units have reliably served more than 100 MW of critical data center capacity for a total of more than 6,000,000 hours without any reported downtime caused by a thermal or short-circuit coil failure.

The top priority in data center operations is uninterrupted service. Envirotran HDC transformers from Eaton, having substantially higher levels of insulation, are less susceptible to voltage surges. Eaton has experienced zero failures due to switching transients. The ANSI® and IEEE® standard impulse withstand ratings are higher for liquid-filled transformers, making them less susceptible to insulation failure. The Envirotran HDC transformer provides ultimate protection by increasing the BIL rating one level higher than standard liquid-filled transformer ratings. The cooling system of liquid-filled transformers provides better protection from severe overloads—overloads that can lead to significant loss of life or failure.

Data center design typically includes multiple layers of redundancy, ensuring maximum uptime for the critical IT load. When best in class transformer manufacturing lead times are typically weeks, not days, an unexpected transformer failure will adversely affect the facility's reliability and profitability. Therefore, the ability to determine the electrical and mechanical health of a transformer can reduce the probability of costly, unplanned downtime. Routine diagnostic tests, including key fluid properties and dissolved gas analysis (DGA), can help determine the health of a liquid-filled transformer. Although sampling is not required for safe operation, it will provide the user with valuable information, leading to scheduled repair or replacement, and minimizing the duration and expense of an outage. With a dry-type transformer, there is no reliable way to measure the health or likelihood of an impending failure.

Solar transformer

As a result of the increasing number of states that are adopting aggressive Renewable & Alternative Energy Portfolio Standards, the solar energy market is growing—nearly doubling year over year. Eaton, a key innovator and supplier in this expanding market, is proud to offer its Cooper Power series Envirotran transformers specifically designed for Solar Photovoltaic medium-voltage applications. Eaton is working with top solar photovoltaic developers, integrators and inverter manufacturers to evolve the industry and change the way we distribute power.

In accordance with this progressive stance, every Envirotran Solar transformer is filled with non-toxic, biodegradable Envirotemp™ FR3™ dielectric fluid, made from renewable seed oils. On top of its biodegradability, Envirotemp™ FR3™ fluid substantially extends the life of the transformer insulation, saving valuable resources. What better way to distribute green power than to use a green transformer. In fact, delaying conversion to Envirotran transformers places the burden of today's environmental issues onto tomorrow's generations. Eaton can help you create a customized transformer, based on site specific characteristics including: temperature profile, site altitude, solar profile and required system life. Some of the benefits gained from this custom rating include:

- Reduction in core losses
- Improved payback on investment
- Reduction in footprint
- Improved fire safety
- Reduced environmental impact

For the solar photovoltaic industry, Eaton is offering standard step up transformers and dual secondary designs, including 4-winding, 3-winding (Low-High-Low) and 3-winding (Low-Low-High) designs.

Wind transformer

Eaton is offering custom designs for renewable energy power generation. Eaton manufactures its Cooper Power series Generator Step-Up (GSU) transformers for installation at the base of every wind turbine. Additionally, grounding transformers are available for wind power generation.

DOE efficiency

The United States Department of Energy (DOE) has mandated efficiency values for most liquid type, medium voltage transformers. As a result, all applicable Eaton's Cooper Power series transformers 2500 kVA and below conform to efficiency levels as specified in the DOE ruling "10 CFR Part 431 Energy Conservation Program".

Underwriters Laboratories® (UL®) Listed and Labeled/ Classified

The Envirotran transformer from Eaton can be specified as UL® Listed & Labeled, and/or UL® Classified. Underwriters Laboratories (UL®) listing is a verification of the design and construction of the transformer to the ANSI® and IEEE® standards. UL® listing generally is the most efficient, cost-effective solution for complying with relevant state and local electrical codes. UL® Combination Classification/Listing is another way in which to comply with Section 450.23, 2008 NEC® requirements. This combines the UL® listed transformer with a UL® Classified Less-Flammable Liquid and complies with the use restrictions found within the liquid Classification.

c UL US LISTED

K-Factor transformer

With a drastic increase in the use of ferromagnetic devices, arcing devices, and electric power converters, higher frequency loads have increased significantly. This harmonic loading has the potential to generate higher heat levels within a transformer's windings and leads by as much as 300%. Harmonic loading has the potential to induce premature failure in standard-design distribution transformers.

In addition to standard UL® "K-Factor" ratings, transformers can be designed to customer-provided specifications detailing precise loading scenarios. Onsite measurements of magnitude and frequency, alongside harmonic analysis of the connected load can be performed by Eaton engineers or a third party consultant. These field measurements are used to determine exact customer needs and outline the transformer specifications.

Eaton will design harmonic-resistant transformers that will be subjected to the unique harmonic loads. These units are designed to maintain normal temperature rise under harmonic, full-load conditions. Standard UL® "K-Factor" designs can result in unnecessary costs when the "next-highest" K-Factor must be selected for a calculated design factor. To save the customer these unnecessary costs, Eaton can design the transformer to the specific harmonic spectrum used in the application. Eaton's Cooper Power series K-factor transformers are filled with mineral oil or Envirotemp™ FR3™ fluid and enjoy the added benefits of dielectric cooling such as higher efficiencies than dry-type transformers.

Modulation transformer

Bundled with an Outboard Modulation Unit (OMU) and a Control and Receiving Unit (CRU), a Modulation Transformer Unit (MTU) is designed to remotely achieve two way communication.

The use of an MTU reduces travel time and expense versus traditional meter reading performed by high voltage electricians. Additionally, with MTU it is possible to manage and evaluate energy consumption data, providing reduced metering costs and fewer tenant complaints.

An MTU utilizes existing utility infrastructure, therefore eliminating the need to engineer and construct a dedicated communication network.

Figure 9. Modular transformer.

Inverter/rectifier bridge

Eaton complements its range of applications for transformers by offering dual winding designs. These designs are intended for connection to 12-pulse rectifier bridges.

Product attributes

To set us apart from other transformer manufactures, Eaton includes the following guarantees with every three-phase pad-mounted transformer.

Engineered to order (ETO)

Providing the customer with a well developed, cost-effective solution is the number one priority at Eaton. Using customer specifications, Eaton will work with the customer from the beginning to the end to develop a solution to fit their needs. Whether it is application specific, site specific, or a uniquely specified unit, Eaton will provide transformers with the best in class value and performance, saving the customer time and money.

Made in the U.S.A.

Eaton's three-phase pad-mounted transformers are produced right here in the United States of America. Our manufacturing facilities are positioned strategically for rapid shipment of products. Furthermore, should the need arise, Eaton has a broad network of authorized service repair shops throughout the United States.

Superior paint performance

Protecting transformers from nature's elements worldwide, Eaton's E-coat system provides unrivaled transformer paint life, and exceeds IEEE Std C57.12.28™-2014 and IEEE Std C57.12.29™-2005 standards. In addition to the outside of the unit, each transformer receives a gray E-coat covering in the interior of the tank and cabinet, providing superior rust resistance and greater visibility during service.

If the wide range of standard paint selections does not suit the customer's needs, Eaton will customize the paint color to meet their requirements.

Rectangular coil design

Eaton utilizes a rectangular coil design. This winding technique results in a smaller overall unit footprint as well as reducing the transformer weight. The smaller unit size does not hinder the transformer performance in the least. Units have proven short circuit withstand capabilities up to 10 MVA.

Testing

Eaton performs routing testing on each transformer manufactured including the following tests:

- Insulation Power Factor: This test verifies that vacuum processing has thoroughly dried the insulation system to required limits.
- Ratio, Polarity, and Phase Relation: Assures correct winding ratios and tap voltages; checks insulation of HV and LV circuits. Checks entire insulation system to verify all live-to-ground clearances.
- Resistance: This test verifies the integrity of internal high-voltage and low-voltage connections; provides data for loss upgrade calculations.
- Routine Impulse Tests: The most severe test, simulating a lightning surge. Applies one reduced wave and one full wave to verify the BIL rating.
- Applied Potential: Applied to both high-voltage and low-voltage windings, this test stresses the entire insulation system to verify all live-to-ground clearances.
- Induced Potential: 3.46 times normal plus 1000 volts for reduced neutral designs.
- Loss Test: These design verification tests are conducted to assure that guaranteed loss values are met and that test values are

within design tolerances. Tests include no-load loss and excitation current along with impedance voltage and load loss.

- Leak Test: Pressurizing the tank to 7 psig assures a complete seal, with no weld or gasket leaks, to eliminate the possibility of moisture infiltration or fluid oxidation.

Design performance tests

The design performance tests include the following:

- Temperature Rise: Our automated heat run facility ensures that any design changes meet ANSI® and IEEE® temperature rise criteria.
- Audible Sound Level: Ensures compliance with NEMA® requirements.
- Lightning Impulse: To assure superior dielectric performance, this test consists of one reduced wave, two chopped waves and one full wave in sequence, precisely simulating the harshest conditions.

Thomas A Edison Research and Test Facility

We are constantly striving to introduce new innovations to the transformer industry, bringing you the highest quality transformer for the lowest cost. Eaton's Cooper Power series Transformer Products are ISO 9001 compliant, emphasizing process improvement in all phases of design, manufacture, and testing. We have invested millions of dollars in the Thomas A. Edison Technical Center, our premier research facility in Franksville, Wisconsin affirming our dedication to introducing new innovations and technologies to the transformer industry. This research facility is fully available for use by our customers to utilize our advanced electrical and chemical testing labs.

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

Eaton's Cooper Power Systems Division
2300 Badger Drive
Waukesha, WI 53188
United States
Eaton.com/cooperpowerseries

Printed in USA
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For Eaton's Cooper Power series three-phase transformer product information call 1-877-277-4636 or visit: www.eaton.com/cooperpowerseries.

Powering Business Worldwide

APPENDIX G

FAA DETERMINATION LETTER

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANE-6943-OE

Issued Date: 12/11/2020

Bradley J. Parsons, PE, PMP
All-Points Technology Corporation - Engineering
3 Saddlebrook Dr
Killingworth, CT 06419

****DETERMINATION OF NO HAZARD TO AIR NAVIGATION FOR TEMPORARY STRUCTURE****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Crane Point 1 (Also HP)
Location:	Ellington, CT
Latitude:	41-56-12.94N NAD 83
Longitude:	72-30-04.64W
Heights:	298 feet site elevation (SE)
	22 feet above ground level (AGL)
	320 feet above mean sea level (AMSL)

This aeronautical study revealed that the temporary structure does not exceed obstruction standards and would not be a hazard to air navigation provided the condition(s), if any, in this letter is (are) met:

SEE ATTACHMENT FOR ADDITIONAL CONDITION(S) OR INFORMATION

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of a structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this temporary structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Aviation Administration Flight Procedures Office if the structure is subject to the issuance of a Notice To Airman (NOTAM).

If you have any questions, please contact our office at (404) 305-6582, or Stephanie.Kimmel@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-6943-OE

Signature Control No: 458488121-459151988 (TMP)
Stephanie Kimmel
Specialist

Additional Condition(s) or Information for ASN 2020-ANE-6943-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 320 feet above mean sea level.

Location: The structure will be located 2.1 nautical miles west of 7B9 Airport reference point.

Part 77 Obstruction Standard(s) Exceeded and Aeronautical Impacts, if any:

Aeronautical study revealed that the temporary structure will not exceed any Part 77 obstruction standard. Aeronautical study confirmed that the temporary structure will have no effect on any existing or proposed arrival, departure or en route instrument/visual flight rules (IFR/VFR) operations or procedures. Additionally, aeronautical study confirmed that the temporary structure will have no physical or electromagnetic effect on the operation of air navigation and communications facilities and will not impact any airspace and routes used by the military. Based on this aeronautical study, the FAA finds that the temporary structure will have no adverse effect on air navigation and will not impact any aeronautical operations or procedures.

Based on this aeronautical study, the structure would not constitute a substantial adverse effect on aeronautical operations or procedures because it will be temporary. The temporary structure would not be considered a hazard to air navigation provided all of the conditions specified in this determination are strictly met.

As a condition to this Determination, the structure is to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 M, Obstruction Marking and Lighting, marked-Chapters 3(Marked),14(Temporary),&15.

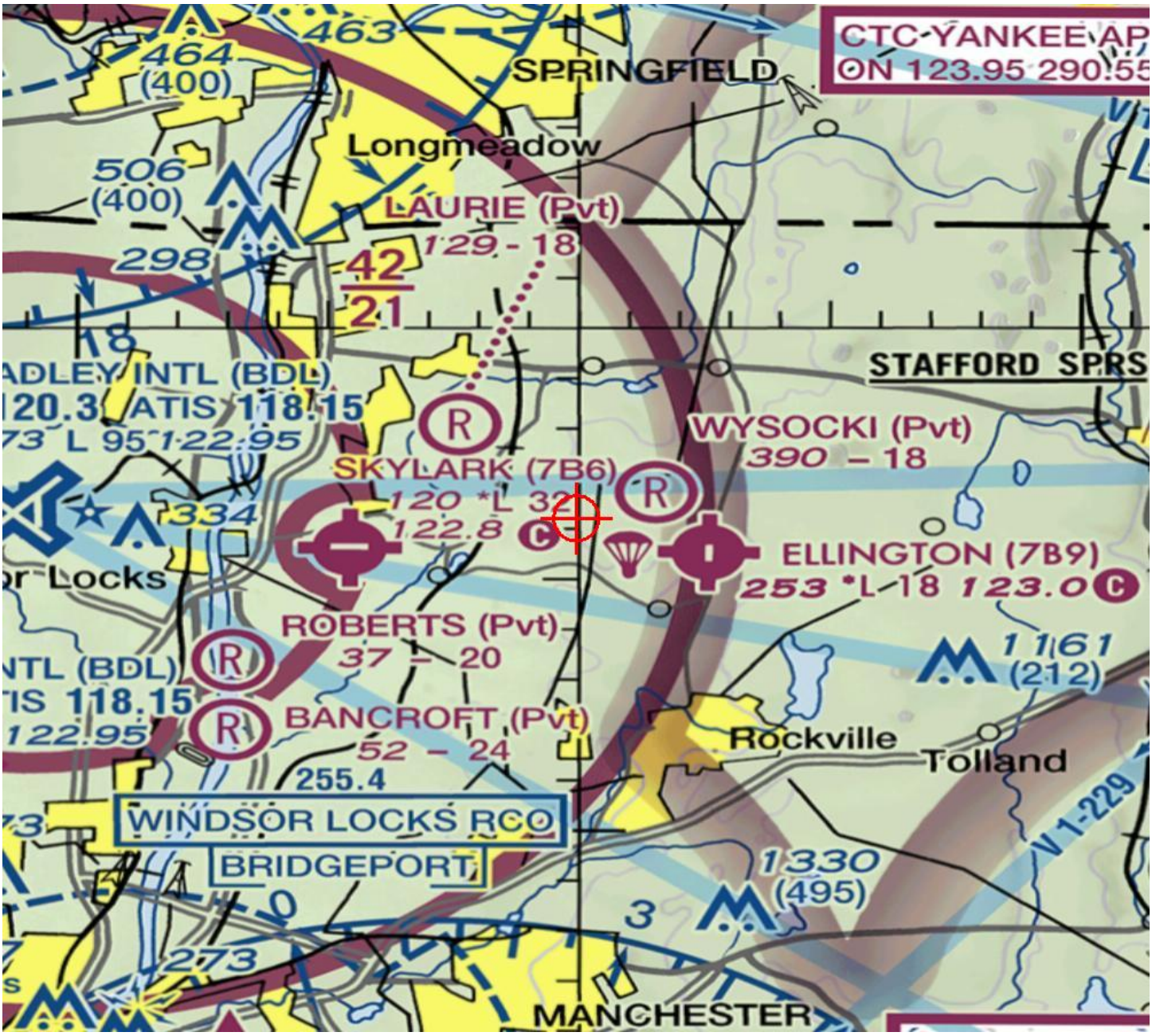
Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

It is required that the manager of SKYLARK AIRPARK, (413) 537-5121 be notified at least 3 business days prior to the temporary structure being erected and again when the structure is removed from the site.

This determination expires on 06/11/2022 unless extended, revised, or terminated by the issuing office.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

Sectional Map for ASN 2020-ANE-6943-OE



Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANE-6944-OE

Issued Date: 12/11/2020

Bradley J. Parsons, PE, PMP
All-Points Technology Corporation - Engineering
3 Saddlebrook Dr
Killingworth, CT 06419

****DETERMINATION OF NO HAZARD TO AIR NAVIGATION FOR TEMPORARY STRUCTURE****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Crane Point 2
Location:	Ellington, CT
Latitude:	41-56-10.43N NAD 83
Longitude:	72-30-04.68W
Heights:	288 feet site elevation (SE)
	22 feet above ground level (AGL)
	310 feet above mean sea level (AMSL)

This aeronautical study revealed that the temporary structure does not exceed obstruction standards and would not be a hazard to air navigation provided the condition(s), if any, in this letter is (are) met:

SEE ATTACHMENT FOR ADDITIONAL CONDITION(S) OR INFORMATION

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of a structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this temporary structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Aviation Administration Flight Procedures Office if the structure is subject to the issuance of a Notice To Airman (NOTAM).

If you have any questions, please contact our office at (404) 305-6582, or Stephanie.Kimmel@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-6944-OE

Signature Control No: 458488122-459151984 (TMP)
Stephanie Kimmel
Specialist

Additional Condition(s) or Information for ASN 2020-ANE-6944-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 320 feet above mean sea level.

Location: The structure will be located 2.1 nautical miles west of 7B9 Airport reference point.

Part 77 Obstruction Standard(s) Exceeded and Aeronautical Impacts, if any:

Aeronautical study revealed that the temporary structure will not exceed any Part 77 obstruction standard. Aeronautical study confirmed that the temporary structure will have no effect on any existing or proposed arrival, departure or en route instrument/visual flight rules (IFR/VFR) operations or procedures. Additionally, aeronautical study confirmed that the temporary structure will have no physical or electromagnetic effect on the operation of air navigation and communications facilities and will not impact any airspace and routes used by the military. Based on this aeronautical study, the FAA finds that the temporary structure will have no adverse effect on air navigation and will not impact any aeronautical operations or procedures.

Based on this aeronautical study, the structure would not constitute a substantial adverse effect on aeronautical operations or procedures because it will be temporary. The temporary structure would not be considered a hazard to air navigation provided all of the conditions specified in this determination are strictly met.

As a condition to this Determination, the structure is to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 M, Obstruction Marking and Lighting, marked-Chapters 3(Marked),14(Temporary),&15.

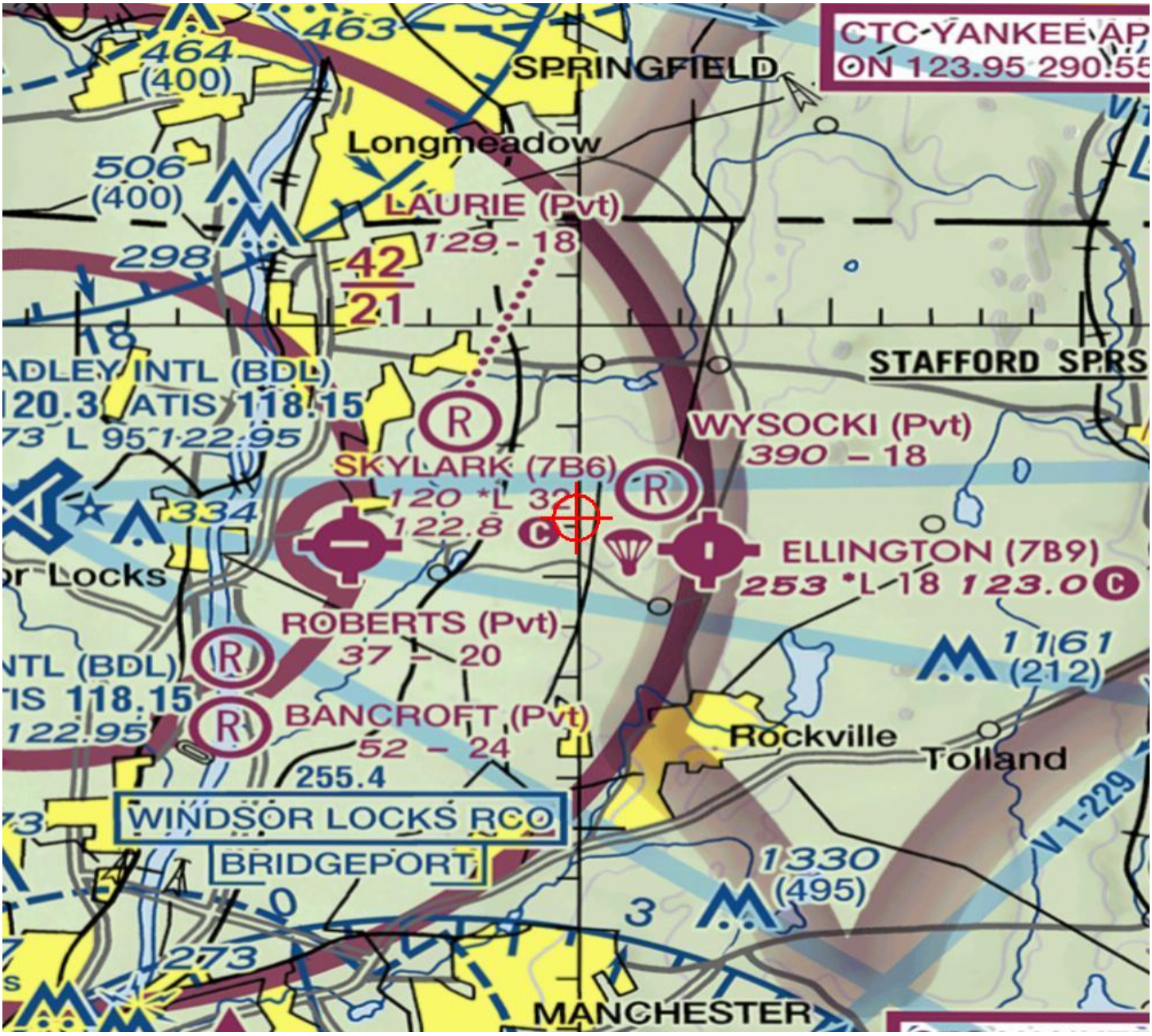
Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

It is required that the manager of SKYLARK AIRPARK, (413) 537-5121 be notified at least 3 business days prior to the temporary structure being erected and again when the structure is removed from the site.

This determination expires on 06/11/2022 unless extended, revised, or terminated by the issuing office.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

Sectional Map for ASN 2020-ANE-6944-OE



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Federal Aviation Administration
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10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANE-6945-OE

Issued Date: 12/11/2020

Bradley J. Parsons, PE, PMP
All-Points Technology Corporation - Engineering
3 Saddlebrook Dr
Killingworth, CT 06419

****DETERMINATION OF NO HAZARD TO AIR NAVIGATION FOR TEMPORARY STRUCTURE****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Crane Point 3
Location:	Ellington, CT
Latitude:	41-55-59.34N NAD 83
Longitude:	72-30-07.34W
Heights:	230 feet site elevation (SE)
	22 feet above ground level (AGL)
	252 feet above mean sea level (AMSL)

This aeronautical study revealed that the temporary structure does not exceed obstruction standards and would not be a hazard to air navigation provided the condition(s), if any, in this letter is (are) met:

SEE ATTACHMENT FOR ADDITIONAL CONDITION(S) OR INFORMATION

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of a structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this temporary structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Aviation Administration Flight Procedures Office if the structure is subject to the issuance of a Notice To Airman (NOTAM).

If you have any questions, please contact our office at (404) 305-6582, or Stephanie.Kimmel@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-6945-OE

Signature Control No: 458488125-459151989 (TMP)
Stephanie Kimmel
Specialist

Additional Condition(s) or Information for ASN 2020-ANE-6945-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 320 feet above mean sea level.

Location: The structure will be located 2.1 nautical miles west of 7B9 Airport reference point.

Part 77 Obstruction Standard(s) Exceeded and Aeronautical Impacts, if any:

Aeronautical study revealed that the temporary structure will not exceed any Part 77 obstruction standard. Aeronautical study confirmed that the temporary structure will have no effect on any existing or proposed arrival, departure or en route instrument/visual flight rules (IFR/VFR) operations or procedures. Additionally, aeronautical study confirmed that the temporary structure will have no physical or electromagnetic effect on the operation of air navigation and communications facilities and will not impact any airspace and routes used by the military. Based on this aeronautical study, the FAA finds that the temporary structure will have no adverse effect on air navigation and will not impact any aeronautical operations or procedures.

Based on this aeronautical study, the structure would not constitute a substantial adverse effect on aeronautical operations or procedures because it will be temporary. The temporary structure would not be considered a hazard to air navigation provided all of the conditions specified in this determination are strictly met.

As a condition to this Determination, the structure is to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 M, Obstruction Marking and Lighting, marked-Chapters 3(Marked),14(Temporary),&15.

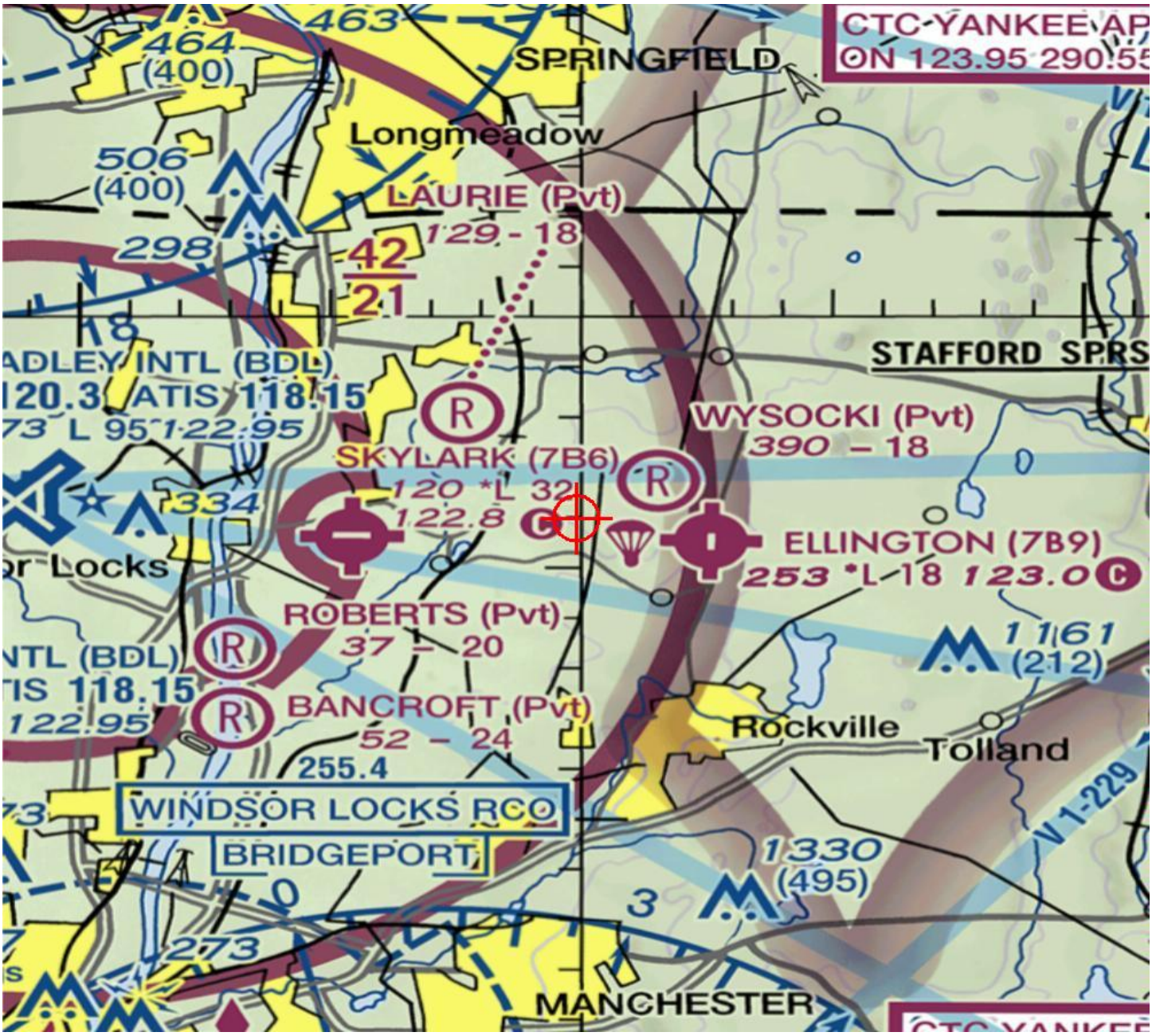
Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

It is required that the manager of SKYLARK AIRPARK, (413) 537-5121 be notified at least 3 business days prior to the temporary structure being erected and again when the structure is removed from the site.

This determination expires on 06/11/2022 unless extended, revised, or terminated by the issuing office.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

Sectional Map for ASN 2020-ANE-6945-OE



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Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANE-6946-OE

Issued Date: 12/11/2020

Bradley J. Parsons, PE, PMP
All-Points Technology Corporation - Engineering
3 Saddlebrook Dr
Killingworth, CT 06419

****DETERMINATION OF NO HAZARD TO AIR NAVIGATION FOR TEMPORARY STRUCTURE****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Crane Point 4
Location:	Ellington, CT
Latitude:	41-55-59.34N NAD 83
Longitude:	72-30-09.36W
Heights:	230 feet site elevation (SE)
	22 feet above ground level (AGL)
	252 feet above mean sea level (AMSL)

This aeronautical study revealed that the temporary structure does not exceed obstruction standards and would not be a hazard to air navigation provided the condition(s), if any, in this letter is (are) met:

SEE ATTACHMENT FOR ADDITIONAL CONDITION(S) OR INFORMATION

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of a structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this temporary structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Aviation Administration Flight Procedures Office if the structure is subject to the issuance of a Notice To Airman (NOTAM).

If you have any questions, please contact our office at (404) 305-6582, or Stephanie.Kimmel@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-6946-OE

Signature Control No: 458488126-459151987 (TMP)
Stephanie Kimmel
Specialist

Additional Condition(s) or Information for ASN 2020-ANE-6946-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 320 feet above mean sea level.

Location: The structure will be located 2.1 nautical miles west of 7B9 Airport reference point.

Part 77 Obstruction Standard(s) Exceeded and Aeronautical Impacts, if any:

Aeronautical study revealed that the temporary structure will not exceed any Part 77 obstruction standard. Aeronautical study confirmed that the temporary structure will have no effect on any existing or proposed arrival, departure or en route instrument/visual flight rules (IFR/VFR) operations or procedures. Additionally, aeronautical study confirmed that the temporary structure will have no physical or electromagnetic effect on the operation of air navigation and communications facilities and will not impact any airspace and routes used by the military. Based on this aeronautical study, the FAA finds that the temporary structure will have no adverse effect on air navigation and will not impact any aeronautical operations or procedures.

Based on this aeronautical study, the structure would not constitute a substantial adverse effect on aeronautical operations or procedures because it will be temporary. The temporary structure would not be considered a hazard to air navigation provided all of the conditions specified in this determination are strictly met.

As a condition to this Determination, the structure is to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 M, Obstruction Marking and Lighting, marked-Chapters 3(Marked),14(Temporary),&15.

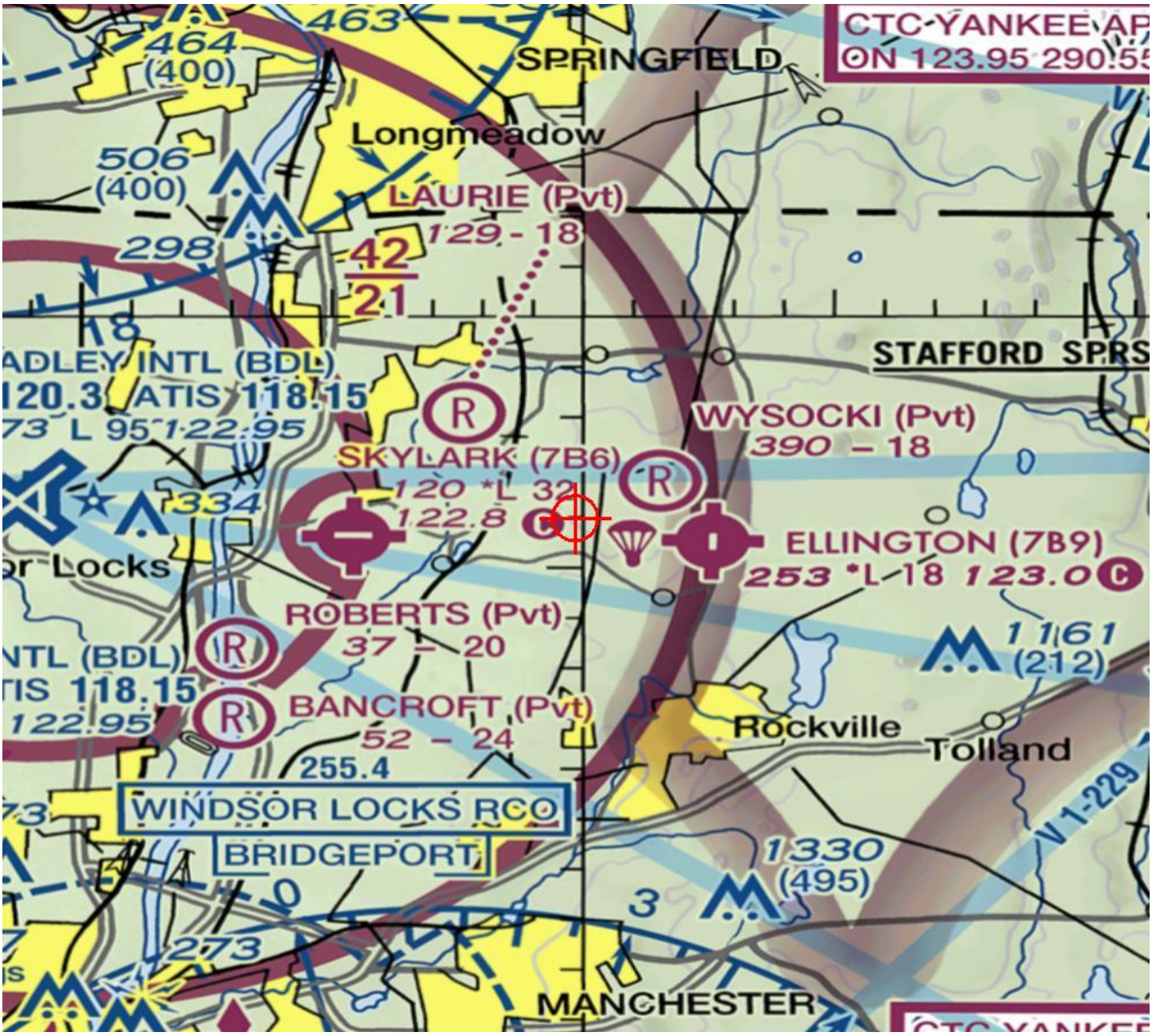
Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

It is required that the manager of SKYLARK AIRPARK, (413) 537-5121 be notified at least 3 business days prior to the temporary structure being erected and again when the structure is removed from the site.

This determination expires on 06/11/2022 unless extended, revised, or terminated by the issuing office.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

Sectional Map for ASN 2020-ANE-6946-OE



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Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANE-6947-OE

Issued Date: 12/11/2020

Bradley J. Parsons, PE, PMP
All-Points Technology Corporation - Engineering
3 Saddlebrook Dr
Killingworth, CT 06419

****DETERMINATION OF NO HAZARD TO AIR NAVIGATION FOR TEMPORARY STRUCTURE****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Crane Point 5
Location:	Ellington, CT
Latitude:	41-56-02.62N NAD 83
Longitude:	72-30-15.62W
Heights:	242 feet site elevation (SE)
	22 feet above ground level (AGL)
	264 feet above mean sea level (AMSL)

This aeronautical study revealed that the temporary structure does not exceed obstruction standards and would not be a hazard to air navigation provided the condition(s), if any, in this letter is (are) met:

SEE ATTACHMENT FOR ADDITIONAL CONDITION(S) OR INFORMATION

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of a structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this temporary structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Aviation Administration Flight Procedures Office if the structure is subject to the issuance of a Notice To Airman (NOTAM).

If you have any questions, please contact our office at (404) 305-6582, or Stephanie.Kimmel@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-6947-OE

Signature Control No: 458488128-459151985 (TMP)
Stephanie Kimmel
Specialist

Additional Condition(s) or Information for ASN 2020-ANE-6947-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 320 feet above mean sea level.

Location: The structure will be located 2.1 nautical miles west of 7B9 Airport reference point.

Part 77 Obstruction Standard(s) Exceeded and Aeronautical Impacts, if any:

Aeronautical study revealed that the temporary structure will not exceed any Part 77 obstruction standard. Aeronautical study confirmed that the temporary structure will have no effect on any existing or proposed arrival, departure or en route instrument/visual flight rules (IFR/VFR) operations or procedures. Additionally, aeronautical study confirmed that the temporary structure will have no physical or electromagnetic effect on the operation of air navigation and communications facilities and will not impact any airspace and routes used by the military. Based on this aeronautical study, the FAA finds that the temporary structure will have no adverse effect on air navigation and will not impact any aeronautical operations or procedures.

Based on this aeronautical study, the structure would not constitute a substantial adverse effect on aeronautical operations or procedures because it will be temporary. The temporary structure would not be considered a hazard to air navigation provided all of the conditions specified in this determination are strictly met.

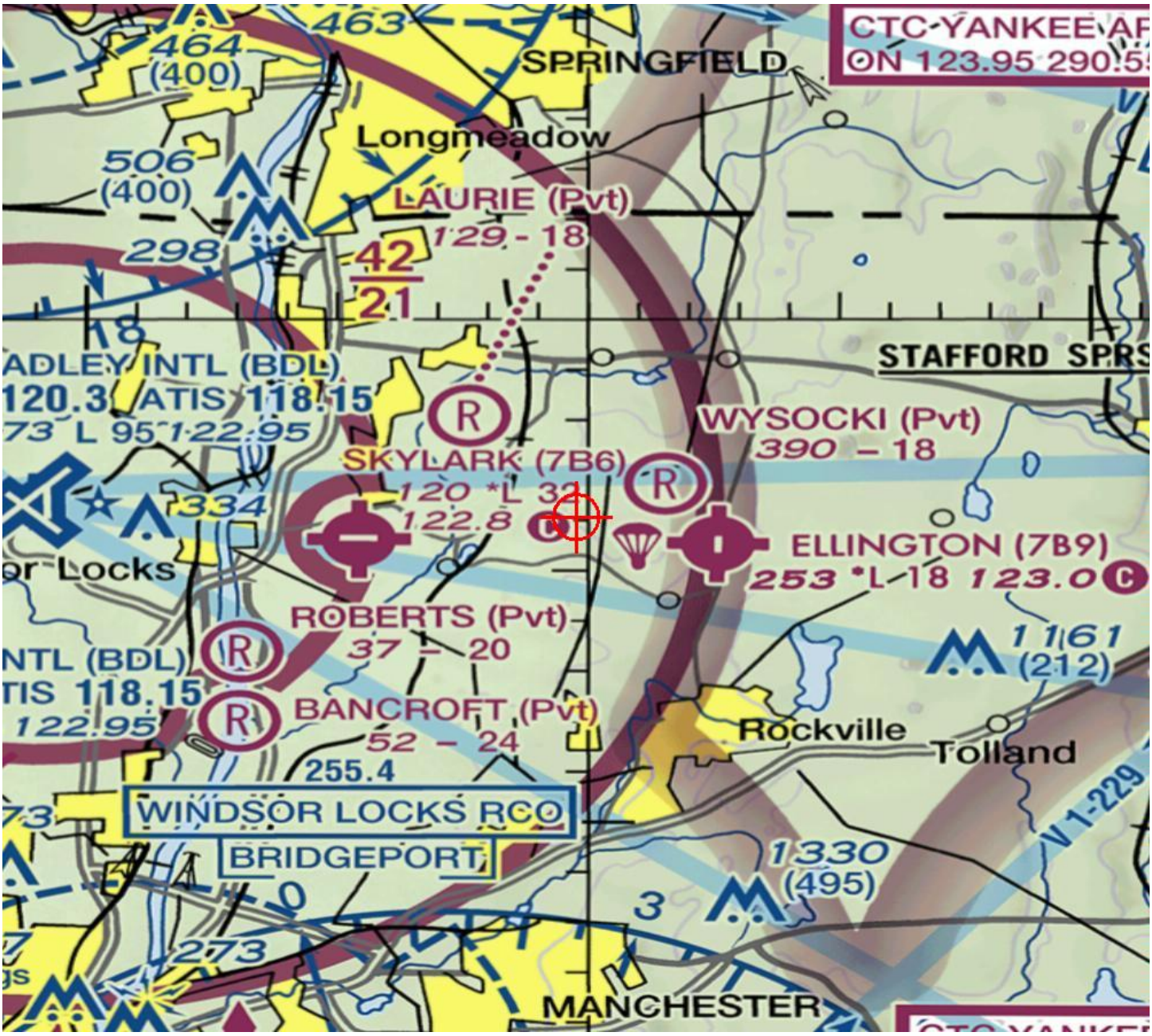
As a condition to this Determination, the structure is to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 M, Obstruction Marking and Lighting, marked-Chapters 3(Marked),14(Temporary),&15.

Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

It is required that the manager of SKYLARK AIRPARK, (413) 537-5121 be notified at least 3 business days prior to the temporary structure being erected and again when the structure is removed from the site.

This determination expires on 06/11/2022 unless extended, revised, or terminated by the issuing office.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.


SPRINGFIELD
Longmeadow
LAURIE (Pvt)
129 - 18
STAFFORD SPRS
WYSOCKI (Pvt)
390 – 18
SKYLARK (7B6)
120 *L 33
122.8
ELLINGTON (7B9)
253 *L 18 123.0
ROBERTS (Pvt)
37 – 20
BANCROFT (Pvt)
52 – 24
255.4
WINDSOR LOCKS RCO
BRIDGEPORT
Rockville
Tolland
MANCHESTER
ADLEY INTL (BDL)
120.3 ATIS 118.15
122.95
NTL (BDL)
TIS 118.15
122.95
or Locks
1330
(495)
1161
(212)
V1-229

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Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANE-6948-OE

Issued Date: 12/11/2020

Bradley J. Parsons, PE, PMP
All-Points Technology Corporation - Engineering
3 Saddlebrook Dr
Killingworth, CT 06419

****DETERMINATION OF NO HAZARD TO AIR NAVIGATION FOR TEMPORARY STRUCTURE****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Crane Point 6
Location:	Ellington, CT
Latitude:	41-56-12.98N NAD 83
Longitude:	72-30-15.59W
Heights:	245 feet site elevation (SE)
	22 feet above ground level (AGL)
	267 feet above mean sea level (AMSL)

This aeronautical study revealed that the temporary structure does not exceed obstruction standards and would not be a hazard to air navigation provided the condition(s), if any, in this letter is (are) met:

SEE ATTACHMENT FOR ADDITIONAL CONDITION(S) OR INFORMATION

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of a structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this temporary structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Aviation Administration Flight Procedures Office if the structure is subject to the issuance of a Notice To Airman (NOTAM).

If you have any questions, please contact our office at (404) 305-6582, or Stephanie.Kimmel@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-6948-OE

Signature Control No: 458488131-459151986 (TMP)
Stephanie Kimmel
Specialist

Additional Condition(s) or Information for ASN 2020-ANE-6948-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 320 feet above mean sea level.

Location: The structure will be located 2.1 nautical miles west of 7B9 Airport reference point.

Part 77 Obstruction Standard(s) Exceeded and Aeronautical Impacts, if any:

Aeronautical study revealed that the temporary structure will not exceed any Part 77 obstruction standard. Aeronautical study confirmed that the temporary structure will have no effect on any existing or proposed arrival, departure or en route instrument/visual flight rules (IFR/VFR) operations or procedures. Additionally, aeronautical study confirmed that the temporary structure will have no physical or electromagnetic effect on the operation of air navigation and communications facilities and will not impact any airspace and routes used by the military. Based on this aeronautical study, the FAA finds that the temporary structure will have no adverse effect on air navigation and will not impact any aeronautical operations or procedures.

Based on this aeronautical study, the structure would not constitute a substantial adverse effect on aeronautical operations or procedures because it will be temporary. The temporary structure would not be considered a hazard to air navigation provided all of the conditions specified in this determination are strictly met.

As a condition to this Determination, the structure is to be marked/lighted in accordance with FAA Advisory circular 70/7460-1 M, Obstruction Marking and Lighting, marked-Chapters 3(Marked),14(Temporary),&15.

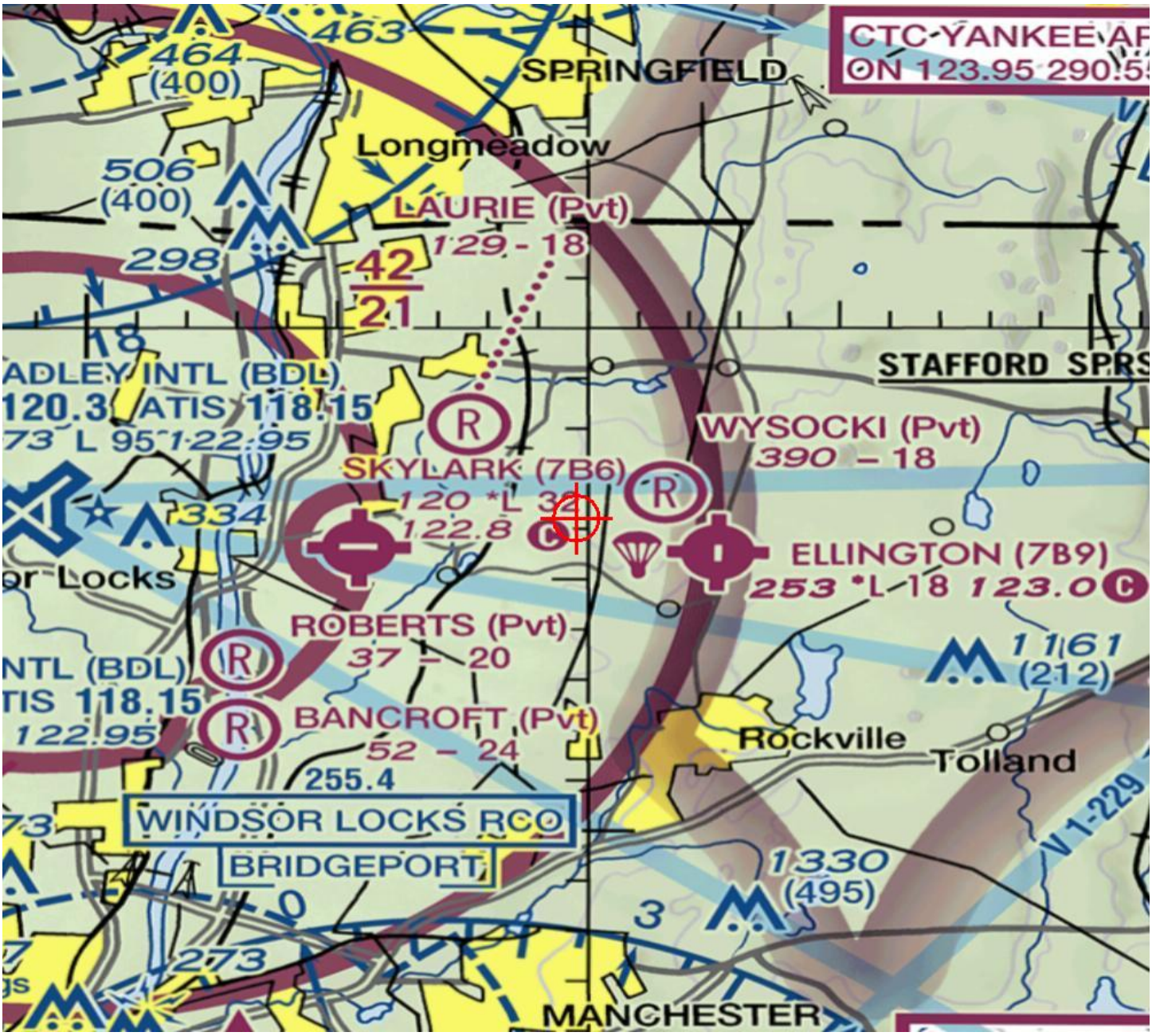
Any failure or malfunction that lasts more than thirty (30) minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to (877) 487-6867 so a Notice to Airmen (NOTAM) can be issued. As soon as the normal operation is restored, notify the same number.

It is required that the manager of SKYLARK AIRPARK, (413) 537-5121 be notified at least 3 business days prior to the temporary structure being erected and again when the structure is removed from the site.

This determination expires on 06/11/2022 unless extended, revised, or terminated by the issuing office.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

Sectional Map for ASN 2020-ANE-6948-OE



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Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANE-6949-OE

Issued Date: 12/11/2020

Bradley J. Parsons, PE, PMP
All-Points Technology Corporation - Engineering
3 Saddlebrook Dr
Killingworth, CT 06419

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Point 1 (Also HP)
Location:	Ellington, CT
Latitude:	41-56-12.94N NAD 83
Longitude:	72-30-04.64W
Heights:	298 feet site elevation (SE)
	10 feet above ground level (AGL)
	308 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part 1)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 06/11/2022 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

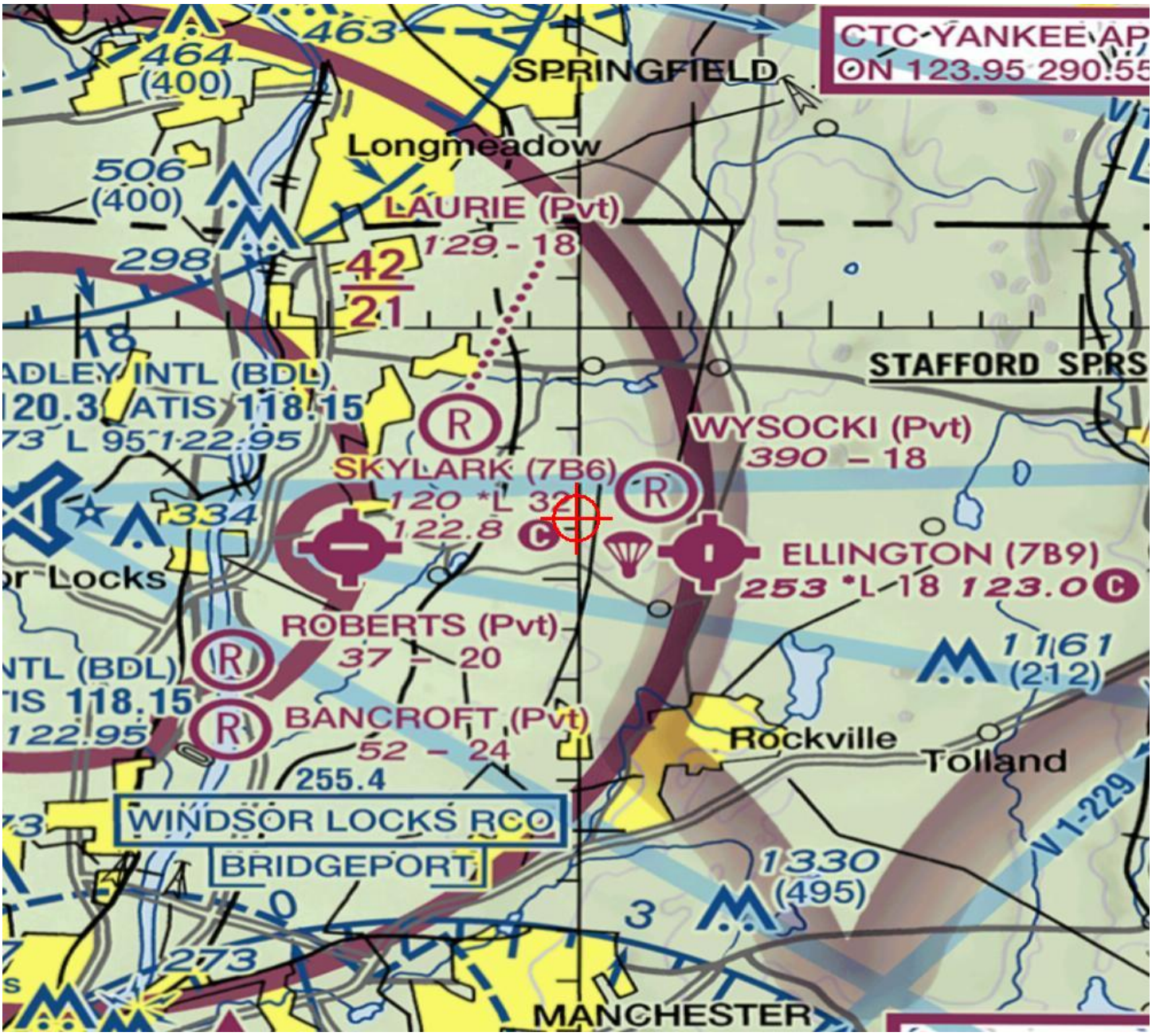
This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (404) 305-6582, or Stephanie.Kimmel@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-6949-OE.

Signature Control No: 458494367-459152051 (DNE)
Stephanie Kimmel
Specialist

Attachment(s)
Map(s)

Sectional Map for ASN 2020-ANE-6949-OE



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Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANE-6950-OE

Issued Date: 12/11/2020

Bradley J. Parsons, PE, PMP
All-Points Technology Corporation - Engineering
3 Saddlebrook Dr
Killingworth, CT 06419

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Point 2
Location:	Ellington, CT
Latitude:	41-56-10.43N NAD 83
Longitude:	72-30-04.68W
Heights:	288 feet site elevation (SE)
	10 feet above ground level (AGL)
	298 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part 1)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 06/11/2022 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

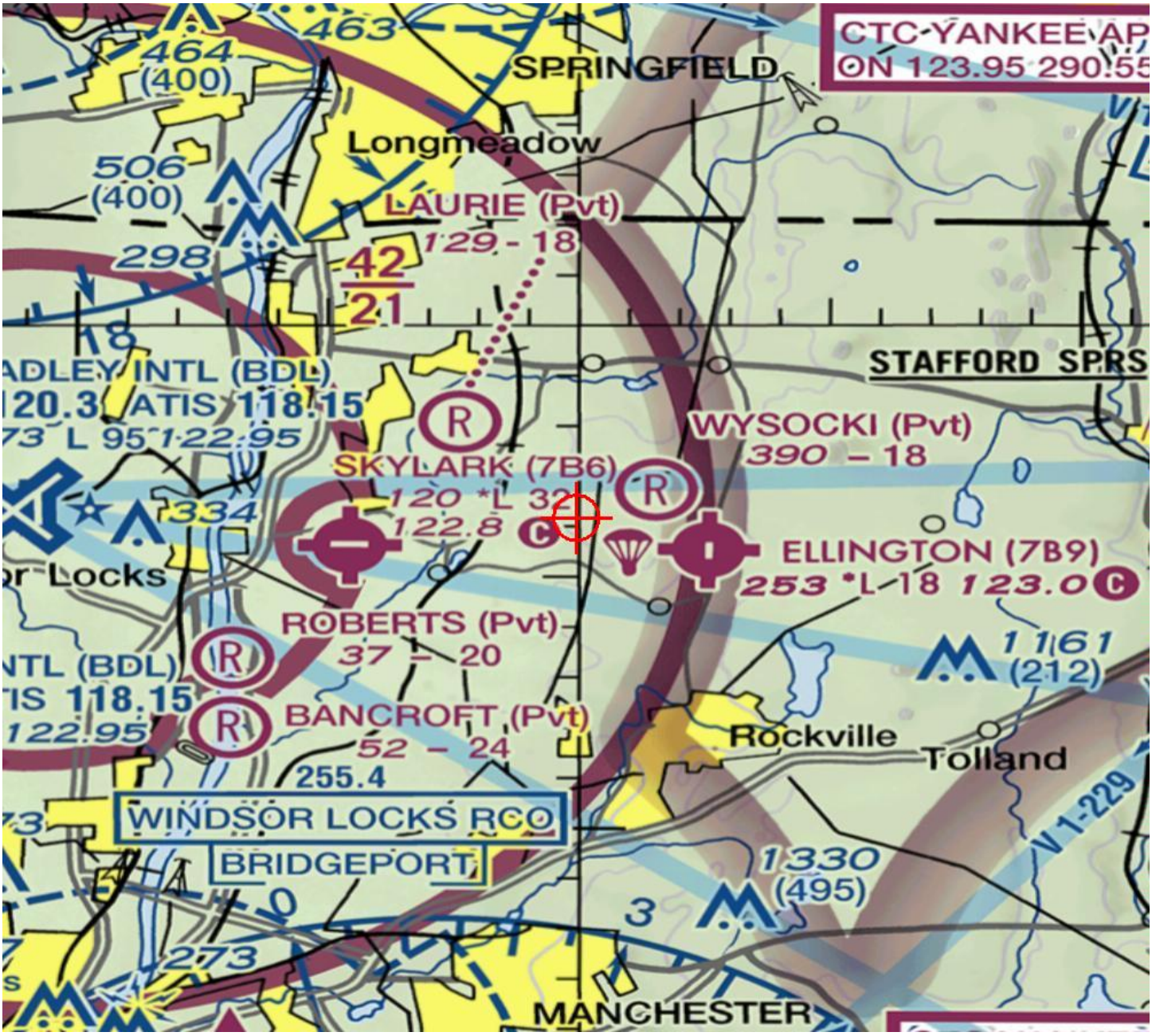
This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (404) 305-6582, or Stephanie.Kimmel@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-6950-OE.

Signature Control No: 458494368-459152052 (DNE)
Stephanie Kimmel
Specialist

Attachment(s)
Map(s)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Rockville
Tolland
WINDSOR LOCKS RCO
BRIDGEPORT
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Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2020-ANE-6951-OE

Issued Date: 12/11/2020

Bradley J. Parsons, PE, PMP
All-Points Technology Corporation - Engineering
3 Saddlebrook Dr
Killingworth, CT 06419

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Point 3
Location:	Ellington, CT
Latitude:	41-55-59.34N NAD 83
Longitude:	72-30-07.34W
Heights:	230 feet site elevation (SE)
	10 feet above ground level (AGL)
	240 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part 1)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 06/11/2022 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

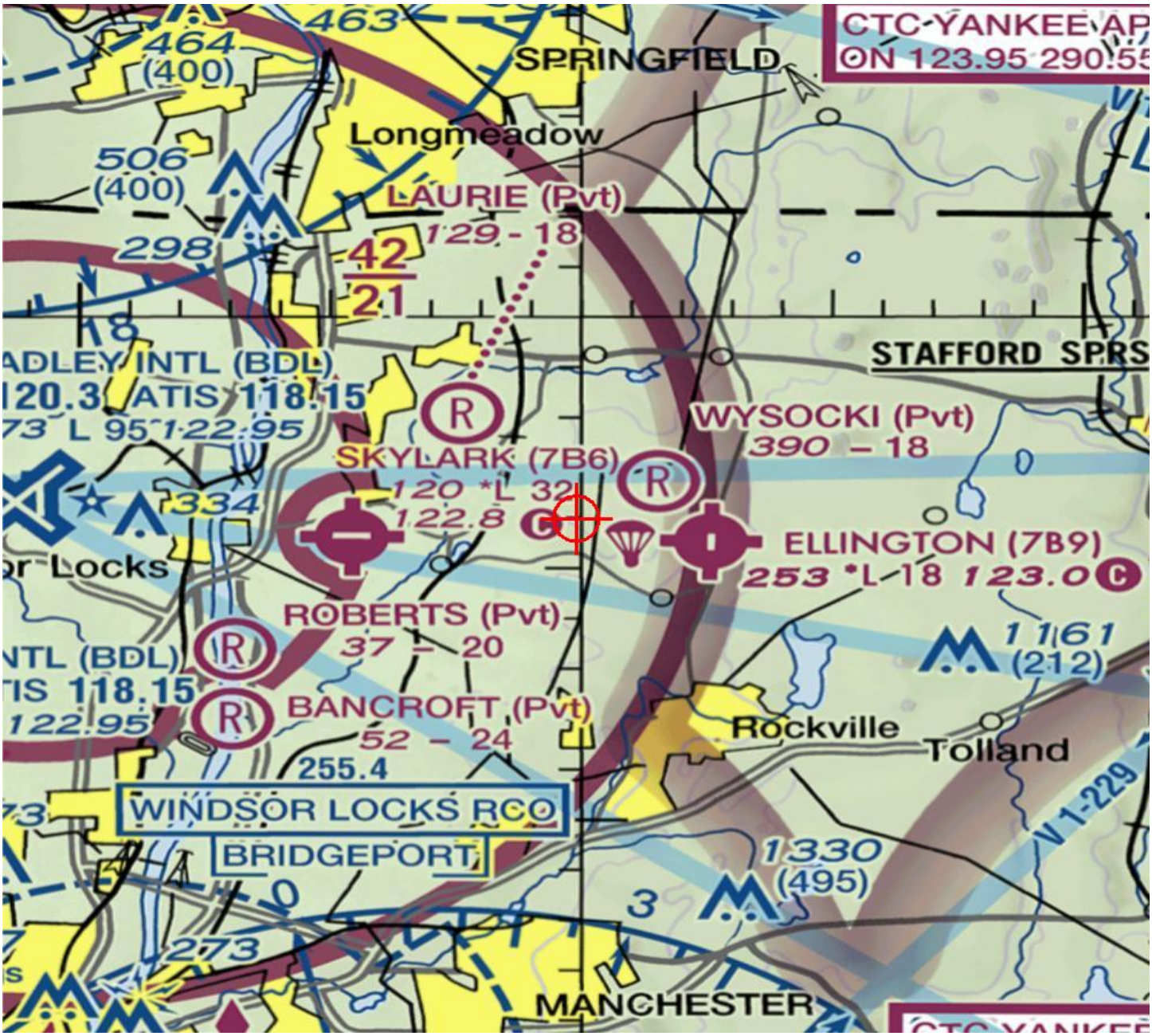
This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (404) 305-6582, or Stephanie.Kimmel@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-6951-OE.

Signature Control No: 458494369-459152050 (DNE)
Stephanie Kimmel
Specialist

Attachment(s)
Map(s)

Sectional Map for ASN 2020-ANE-6951-OE



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10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
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Issued Date: 12/11/2020

Bradley J. Parsons, PE, PMP
All-Points Technology Corporation - Engineering
3 Saddlebrook Dr
Killingworth, CT 06419

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Point 4
Location:	Ellington, CT
Latitude:	41-55-59.34N NAD 83
Longitude:	72-30-09.36W
Heights:	230 feet site elevation (SE) 10 feet above ground level (AGL) 240 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part 1)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 06/11/2022 unless:

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(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

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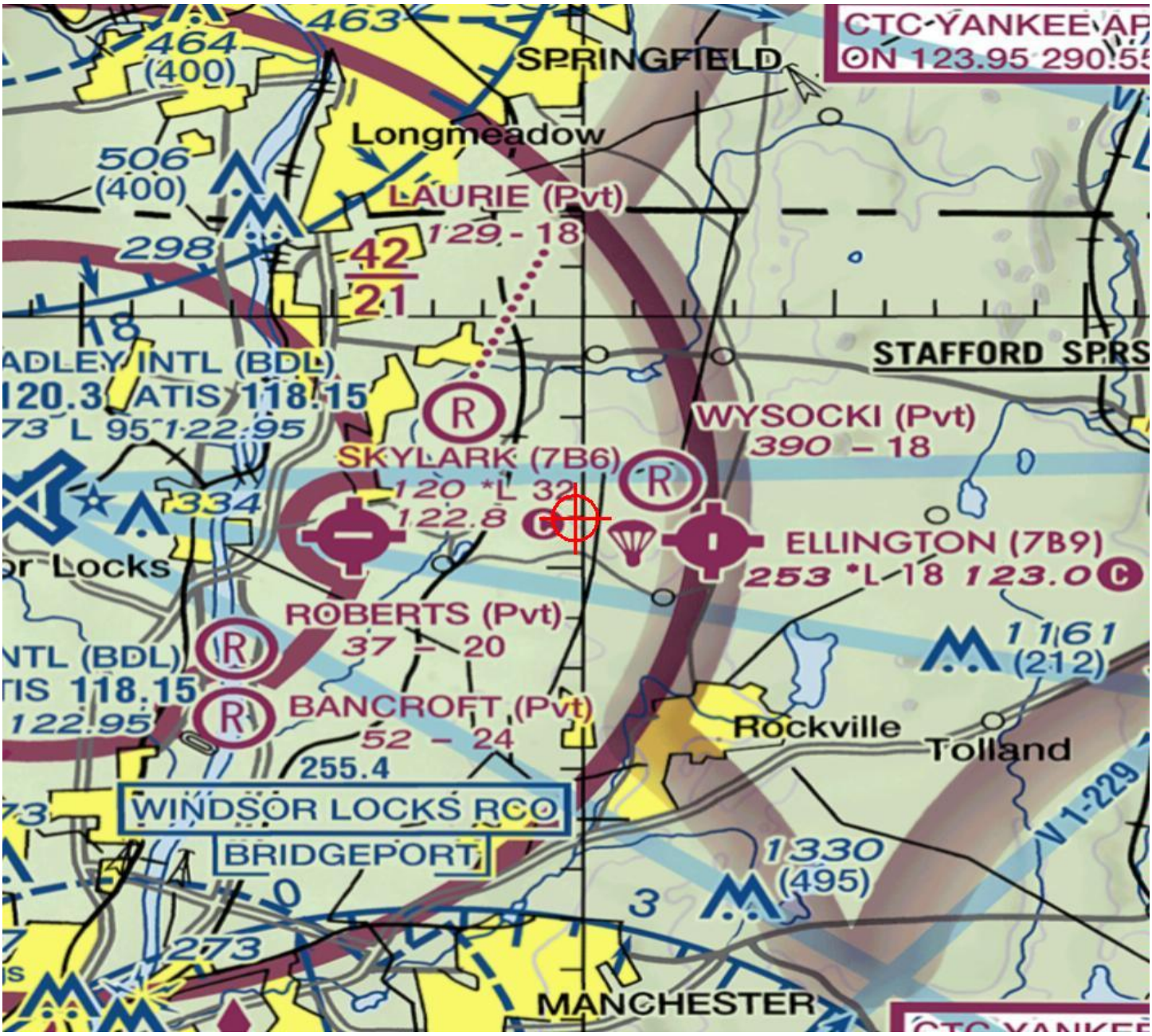
If we can be of further assistance, please contact our office at (404) 305-6582, or Stephanie.Kimmel@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-6952-OE.

Signature Control No: 458494370-459152049 (DNE)
Stephanie Kimmel
Specialist

Attachment(s)
Map(s)

Sectional Map for ASN 2020-ANE-6952-OE



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Bradley J. Parsons, PE, PMP
All-Points Technology Corporation - Engineering
3 Saddlebrook Dr
Killingworth, CT 06419

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Point 5
Location:	Ellington, CT
Latitude:	41-56-02.62N NAD 83
Longitude:	72-30-15.62W
Heights:	242 feet site elevation (SE)
	10 feet above ground level (AGL)
	252 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part 1)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

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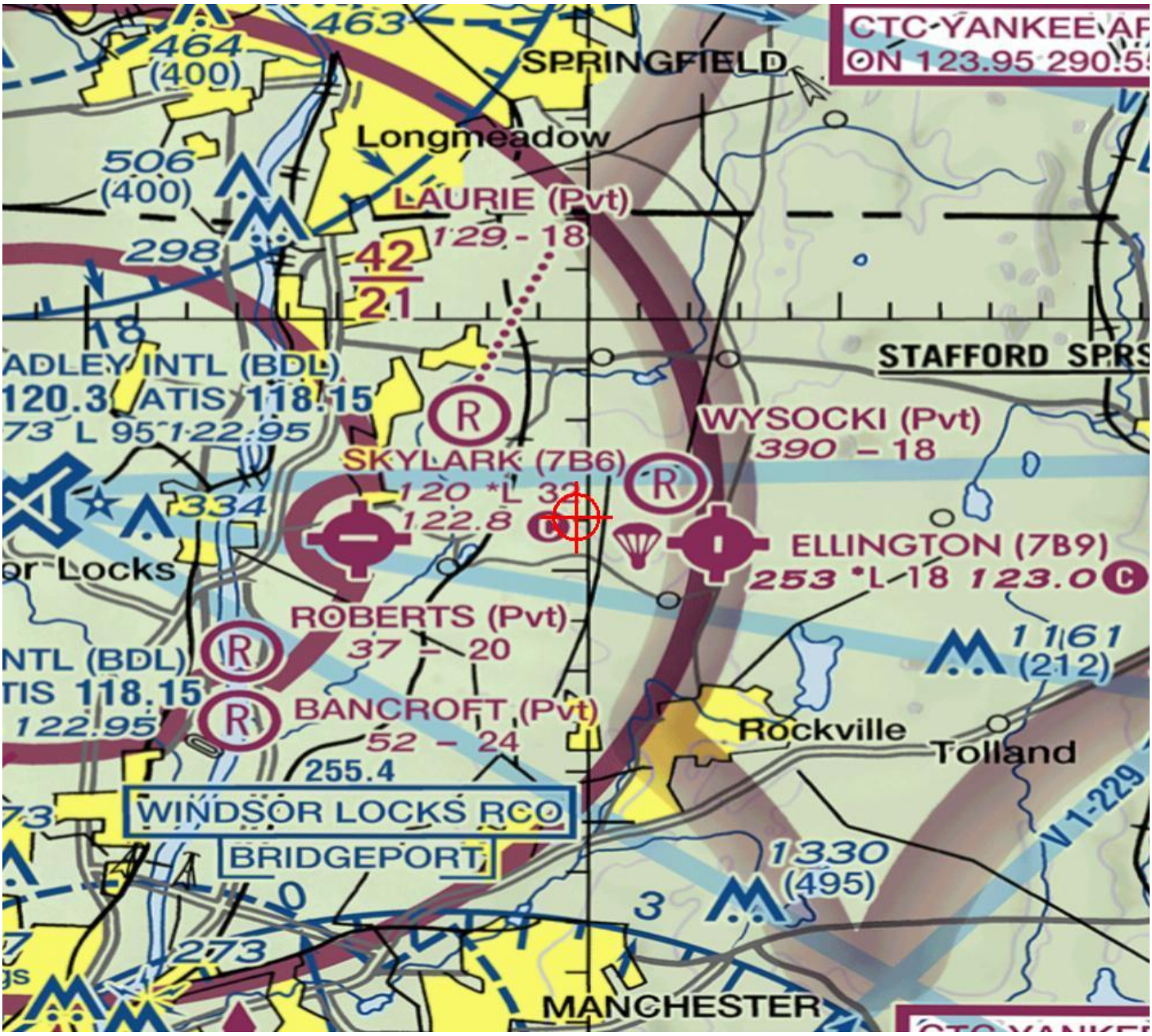
Signature Control No: 458494371-459152048 (DNE)
Stephanie Kimmel
Specialist

Attachment(s)
Map(s)

Sectional Map for ASN 2020-ANE-6953-OE



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All-Points Technology Corporation - Engineering
3 Saddlebrook Dr
Killingworth, CT 06419

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Point 6
Location:	Ellington, CT
Latitude:	41-56-12.98N NAD 83
Longitude:	72-30-15.59W
Heights:	245 feet site elevation (SE)
	10 feet above ground level (AGL)
	255 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

_____ At least 10 days prior to start of construction (7460-2, Part 1)
__X__ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

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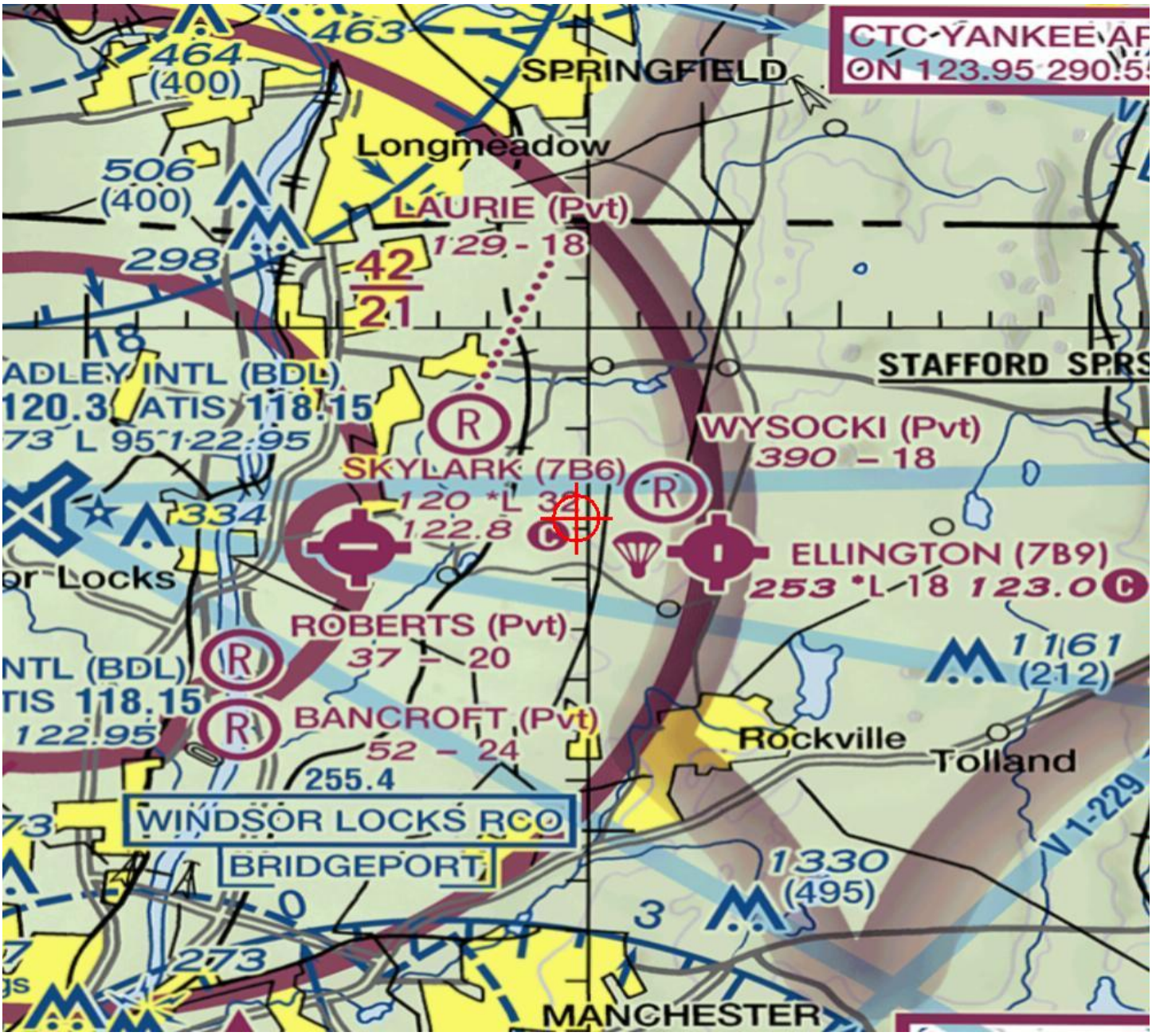
Signature Control No: 458494372-459152053 (DNE)
Stephanie Kimmel
Specialist

Attachment(s)
Map(s)


CTC-YANKEE AP
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