



ENVIRONMENTAL ASSESSMENT

PROPOSED
WATERTOWN SOLAR ONE, LLC
SOLAR PROJECT

PLATT ROAD
WATERTOWN, CONNECTICUT
LITCHFIELD COUNTY

Prepared for:

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1 Introduction

All-Points Technology Corporation, P.C. ("APT") prepared this Environmental Assessment ("EA") on behalf of Watertown Solar One, LLC (hereinafter referred to as the "Petitioner") for the proposed installation of a solar-based electric generating facility having an output of ± 1.975 megawatts¹ ("Project" or "Facility") located in the Town of Watertown, 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.

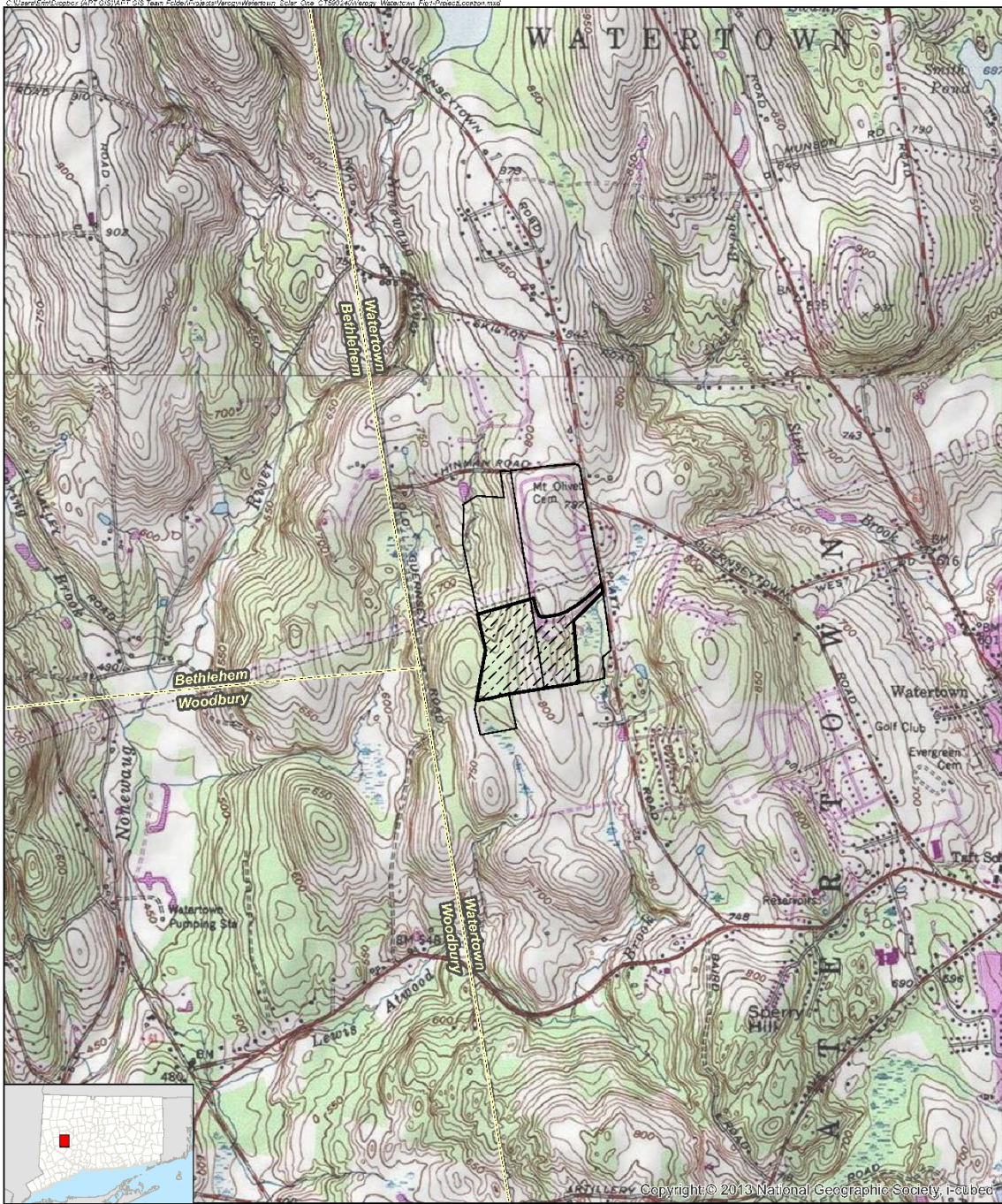
The results of this assessment demonstrate that the proposed development will comply with the Connecticut Department of Energy and Environmental Protection's ("DEEP") air and water quality standards and will not have an undue adverse effect on the existing environment and ecology.

The Project will be south-centrally located within two parcels totaling approximately 154 acres (collectively, the "Property") west of Platt Road and south of Hinman Road in Watertown, Connecticut. The northeast portion of the Property contains a cemetery and associated buildings; the western and southern portions are primarily wooded. An electric transmission line bisects the properties in a generally east-west direction. The privately-owned Property is located in the Residential R-70 zoning district as well as within the overlay Town's Aquifer Protection Zone.

For purposes of this assessment, APT established a study area in the southern portion of the Property ("Site") surrounding the area proposed for development.

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

¹ The output referenced is Alternating Current (AC).



- Legend**
-  Site
 -  Properties
 -  Municipal Boundary

Map Notes:
 Base Map Source: USGS 7.5 Minute Topographic
 Quadrangle Maps: Woodbury (1984), CT
 Map Scale: 1 inch = 2,000 feet
 Map Date: June 2020

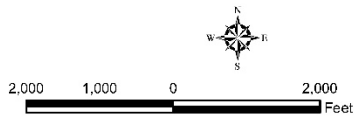


Figure 1
Project Location Map

Proposed Solar Facility - Watertown Solar One
 669 Platt Road
 Watertown, Connecticut

Watertown Solar One, LLC



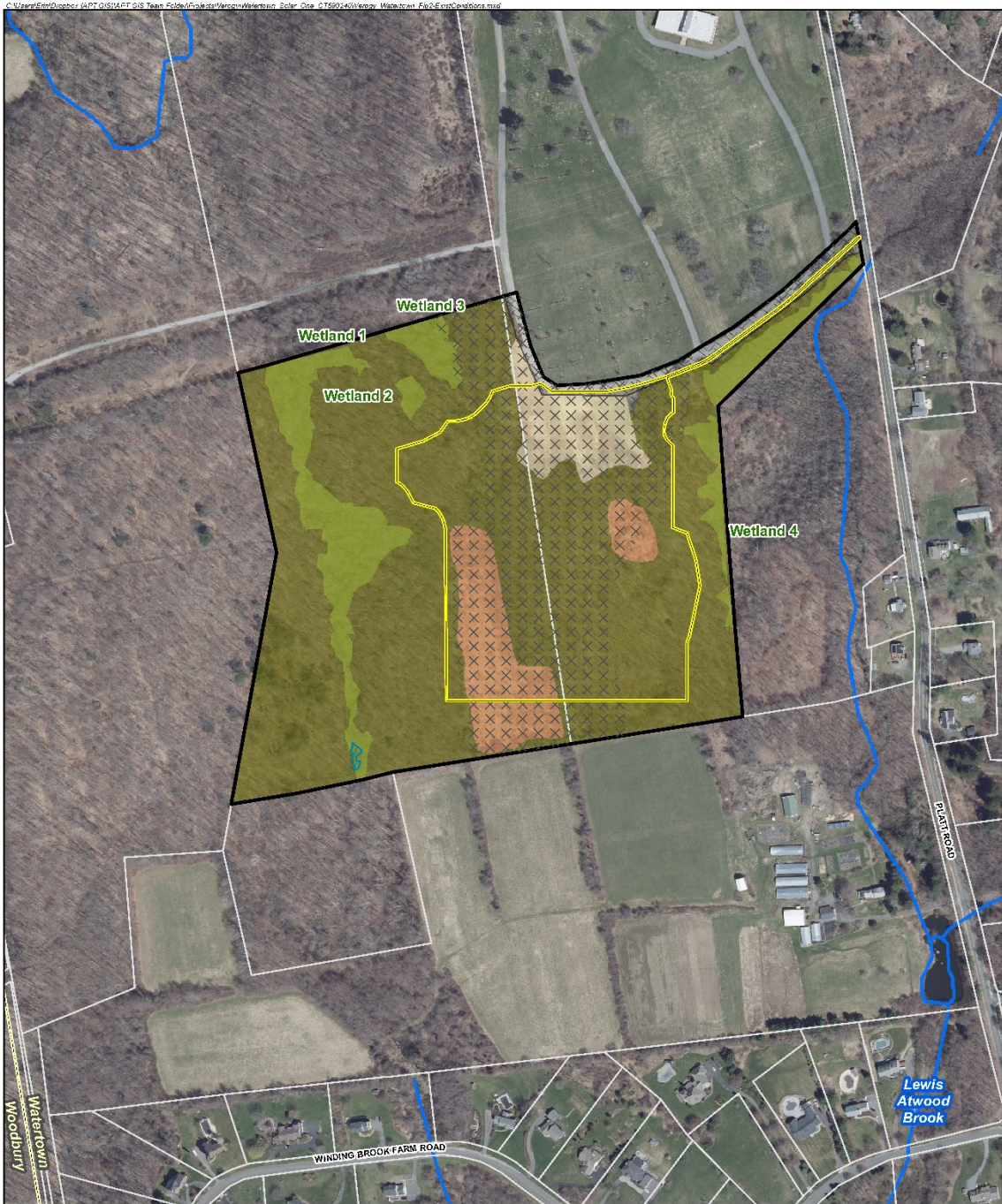
2 Proposed Project

2.1 Project Setting

The Project will be located west of Platt Road. The Site is primarily wooded, with cleared areas in the southwest and northern portions. The Site contains four (4) wetlands, three (3) to the north and west of the Project and one (1) to the east.

Site topography generally grades down to the east and west from a central high point, with slopes of varying degrees. Ground elevations range from approximately 670 feet AMSL to 845 feet AMSL.

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



- Legend**
- Site
 - Approx. Parcel Boundary (CTDEEP)
 - Municipal Boundary
 - Project Area
 - Delineated Wetland Boundary
 - Delineated Wetland Area
 - Vernal Pool
 - Watercourse (CTDEEP)
 - Prime Farmland Soils
 - Habitat Cover Type
 - Developed
 - Old Field
 - Mixed Hardwood Forest
 - Disturbed / Scarified

Figure 2
Existing Conditions Map
 Proposed Solar Facility - Watertown Solar One
 669 Platt Road
 Watertown, Connecticut
 Watertown Solar One, LLC

Map Notes:
 Base Map Source: CTECO 2019 Aerial Photograph
 Map Scale: 1 inch = 400 feet
 Map Date: June 2020



Mount Olivet Cemetery is immediately north of the Site, within the bounds of the Property. Surrounding land use beyond the cemetery and to the east, west and south is a mixture of farm and residential. The municipal boundaries of Woodbury and Bethlehem are to the west beyond an abutting, heavily wooded and undeveloped property.

2.2 Project Development and Operation

Upon its completion, the solar energy generating Facility will consist of approximately 7,176 photovoltaic modules ("panels"), 5,616 Trina 390W and 1,560 Risen 380W models; 15 Solectria Solar's XGI 1500-125/125 inverters and one Chint CPS SCH100KTL-DO/US-600 inverter; one (1) pad mounted switchgear; one (1) transformer; and one (1) service interconnection line. A ground-mounted racking system will be used to secure the panel arrays. The Facility will be surrounded by a 6-foot tall chain link security fence with black vinyl coating. The proposed electrical interconnection will originate from Platt Road and extend west underground alongside the cemetery's existing southern drive approximately 1065 feet to the Facility. A landscaped berm will separate the northern extent of the Facility from the cemetery road. Access will be from Platt Road over the southern cemetery road; a new gravel drive will extend from the southwest corner of the cemetery road south behind the berm and then south through the entire Facility. The Facility will occupy approximately 9.00 acres of the Site, with an additional 7.6 acres of clearing beyond the fenced Facility limits, for a total Project limits of disturbance of 16.6 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 grading and excavations to incorporate stormwater management features (basins and swales); racking and module installation; utility trenching; and new access road development. Grading within the Project Area has been minimized to the extent feasible in order to limit the amount of excess material generated during construction. Excess soil will be used to construct the berm.

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 Roads

From the adjacent cemetery road, a new gravel road will extend south through a narrow break in the proposed berm, then extend south through the entire Facility, to provide access for construction, service and maintenance vehicles. A temporary construction entrance will be established off Platt Road to access the existing cemetery road. See Figure 3, *Proposed Conditions Map*.

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 system will be remotely monitored and will have the ability to remotely de-energize in the case of an emergency.

The Facility will be enclosed by a 6-foot tall chain link fence. The entrance to the Facility will be gated, limiting access to authorized personnel only. All Town emergency response personnel will be provided access via a Knox Pad lock.

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 Zoning Regulations, to the extent feasible. Development of the Facility meets the intent and purpose of the Regulations, Article I, Section 1, "to encourage energy efficient patterns of development, the use of solar and other renewable forms of energy, and energy conservation." Although the Project will be located within the Town's overlay Aquifer

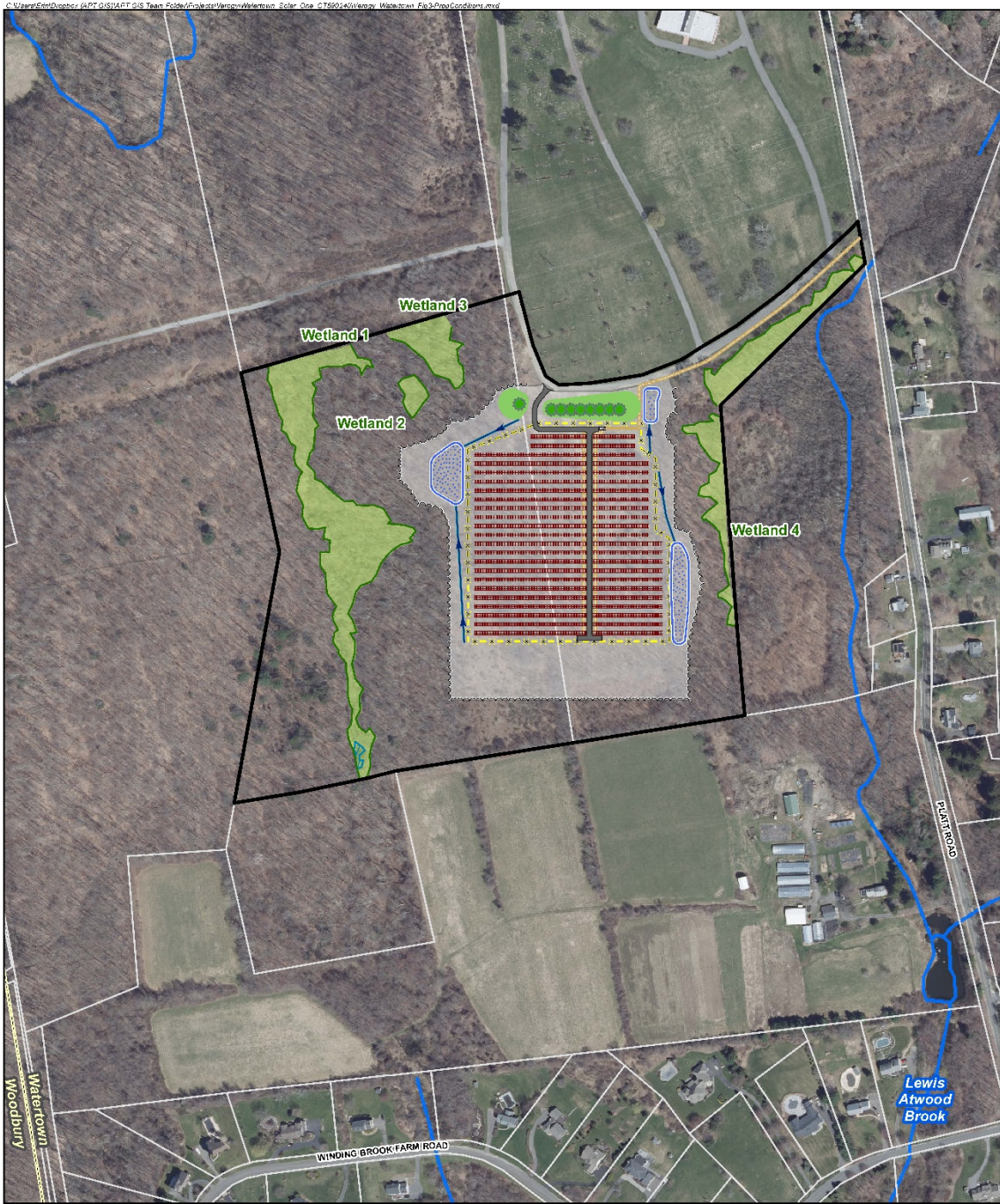
Protection Zone, it does not constitute a “regulated activity” under the Aquifer Protection Level ‘A’ Area Regulations. In general, the Town’s 2017 Plan of Conservation and Development supports the provision of a variety of energy production facilities, with specific reference to renewable energy sources. (Objective 7-3). As a cemetery, the Property is identified as a protected property and generally classified as open space. The Project will not impede the current use of the cemetery by members of the community for walking and bicycling.

The Project will benefit the local community by improving electrical service for existing and future development in the Town through the availability of enhanced local generating capacity that does not rely on the congested regional electrical transmission networks.

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 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.

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



- Legend**
- | | | |
|----------------------------------|----------------------|----------------------------------|
| Approx. Parcel Boundary (CTDEEP) | Limit Of Disturbance | Treeline (Clearing Limit) |
| Site | Solar Modules | Perimeter Fence |
| Municipal Boundary | Conc. Equipment Pad | Stormwater Swale |
| Vernal Pool | Gravel Access Road | Interconnection Path |
| Delineated Wetland Boundary | Grass Berm | Landscape Screening (Evergreens) |
| Delineated Wetland Area | Stormwater Basin | Watercourse (CTDEEP) |

Map Notes:
 Base Map Source: CTECD 2019 Aerial Photograph
 Map Scale: 1 inch = 400 feet
 Map Date: June 2020



Figure 3
Proposed Conditions Map
 Proposed Solar Facility - Watertown Solar One
 669 Platt Road
 Watertown, Connecticut
 Watertown Solar One, LLC



3.1 Habitat and Wildlife

Four habitat types (including three vegetative communities) have been identified on the Site; all are found within the Project Area. Transitional ecotones separate these distinct habitat types, and 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.

- Mixed Hardwood Forest;
- Old Field;
- Disturbed/Scarified;
- Developed.

Please see Figure 2, *Existing Conditions Map*, for a depiction of each habitat's location on the Site.

3.1.1 Habitat Types

Mixed Hardwood Forest

The dominant habitat type located on the Site is Mixed Hardwood Forest, consisting of second-growth forest typically occurring in Connecticut's Northwest Hills Ecoregion. Tree size classes are predominantly sawtimber (trees 11.5 inches diameter at breast height ["DBH"] and greater) with scattered poletimber (trees 5.5 to 11.5 inches DBH). Saplings (trees 0.5 to 5.5 inches DBH) range from sparse to moderately dense, occupying the shrub and midstory (i.e., sub-canopy) strata.

The forest type present varies based on the slope position and corresponding soil moisture regime. The ridgetop that occupies the east-central portion of the Site consists of more xeric forest dominated by species that favor drier growing conditions. This area has a relatively open understory and sparsely vegetated groundcover. The dominant tree species include white oak (*Quercus alba*), pignut hickory (*Carya glabra*), shagbark hickory (*Carya ovata*), black birch (*Betula lenta*) and red oak (*Quercus rubra*). Vegetation within the shrub and herbaceous layers includes mapleleaf viburnum (*Viburnum acerifolium*), lowbush blueberry (*Vaccinium angustifolium*), American chestnut (*Castanea dentata*), Christmas fern (*Polystichum acrostichoides*), Pennsylvania sedge (*Carex pennsylvanica*) and Canada mayflower (*Maianthemum canadense*).

As the elevation slopes downward to the east and west towards wetlands, the soil moisture increases and the forest transitions to more mesic species. Additionally, the shrub and herbaceous layers become more densely vegetated. The dominant tree species include red maple (*Acer rubrum*), sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), musclewood (*Carpinus caroliniana*), green ash (*Fraxinus pennsylvanica*), eastern hemlock (*Tsuga canadensis*), American elm (*Ulmus americana*), yellow birch (*Betula alleghaniensis*) and basswood (*Tilia americana*). The shrub and herbaceous layers include spicebush (*Lindera benzoin*), arrowwood (*Viburnum dentatum*), cinnamon fern (*Osmunda cinnamomea*), Virginia creeper (*Parthenocissus quinquefolia*) and poison ivy (*Toxicodendron radicans*). Invasive non-native species in the shrub and herbaceous layer include Japanese barberry (*Berberis thunbergii*), garlic mustard (*Alliaria petiolata*), Asiatic bittersweet (*Celastrus orbiculatus*) and burning bush (*Euonymus alatus*).

Within both the southeast and northeast corners of the Project Area, patches of younger forest are present. These areas consist predominantly of dense young black birch, with trees less than five inches DBH. As these habitat inclusions are generally small and isolated in nature, limiting the habitat functions and values they provide, they have not been considered as a separate habitat type for the purposes of this discussion.

Wetland forested habitat inclusions are present along the eastern and western extents of the Site within the larger Mixed Hardwood Forest habitat type. A detailed discussion of these wetland habitats is provided in Section 3.3.1.

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*², depicts one small extension of core forest into the Project Area. Field observations confirm that this area is no longer forested. The second dataset, UConn’s Center for Land Use Education and Research’s (“CLEAR”) Forest Fragmentation Analysis (“FFA”)³ study, designates “core forest” as greater than

² 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.

³ CLEAR’s FFA: http://clear.uconn.edu/projects/landscape/forestfrag/forestfrag_public%20summary.pdf

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).

The Project Area does not contain any forested habitats identified as “core” forest. However, based on the FFA criteria, two small core forest blocks are embedded within the contiguous forest located on and surrounding the Site to the west and east. Together, these blocks total approximately 26.2 acres. The majority of forest on the Site, and all within the Project Area are classified as edge forest. See Figure 4, *Existing Contiguous Forest Map*.



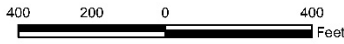
- Legend**
- Site
 - Approx. Parcel Boundary (CTDEEP)
 - Municipal Boundary
 - Project Area
 - Watercourse (CTDEEP)
- Existing Forest Block (+/- 128.3 Acres)**
- Core Forest (+/- 26.2 Acres)
 - Edge Forest (+/- 102.1 Acres)

Figure 4
Existing Contiguous Forest Map

Proposed Solar Facility - Watertown Solar One
669 Platt Road
Watertown, Connecticut

Watertown Solar One, LLC

Map Notes:
Base Map Source: CTECO 2019 Aerial Photograph
Map Scale: 1 inch = 400 feet
Map Date: June 2020



Old Field

Two small areas of late Old Field habitat are located in the southwestern and east-central areas of the Site. These areas consist of dense herbaceous meadow vegetation with scattered sapling trees and dense shrubs. Species composition is characterized by shade-intolerant plants that colonize recently cleared lands, typically following agricultural uses.

The dominant tree species are bebb willow (*Salix bebbiana*) and gray birch (*Betula populifolia*). The shrub layer is dominated by two invasive plant species, autumn olive (*Elaeagnus umbellata*) and multiflora rose (*Rosa multiflora*). The herbaceous cover consists predominantly of goldenrod (*Solidago spp.*).

The Project will cover nearly the entirety of this habitat. However, the existing, dominant herbaceous open field vegetation will continue to subsist in-between the proposed arrays and, to a lesser degree, under the panels. As a result, impacts to this habitat will be minimized. Limited existing shrub/sapling vegetation will be removed for development of the Project, resulting in some loss of vertical vegetative structure within the habitat. However, dense sapling/shrub vegetation will persist along the Project margins, thereby minimizing the impact of this structural habitat loss.

Disturbed/Scarified

This habitat occupies the northeast portion of the Project Area. The land is associated with the active cemetery to the north, being currently utilized as a material stockpile yard for piles of sand/soil used for burial backfill. The area appears to experience frequent heavy machinery traffic/disturbance. As a result, it is sparsely vegetated. The margins of the area are dominated by colonizing weedy species, primarily mugwort (*Artemisia vulgaris*).

As this habitat experiences routine disturbance and does not support any substantial habitat value, the Project would cause no significant negative impact.

Developed Area

Within the Site, a developed area consists of the existing paved cemetery road adjacent to the Project. The Project would have no substantive adverse impacts to this developed area.

Table 1: Habitat Assessment and Effects Table

Table 1: Habitat Assessment and Effects		
Habitat Type	Total Area On-Site (+/- ac.)	Area Affected by Project (+/- ac.)
Mixed Hardwood Forest	36.98	11.86
Old Field	3.43	2.58
Disturbed / Scarified	2.10	1.93
Developed	1.44	0.20

3.1.2 Wildlife Habitat

The proposed Facility will alter three of the four habitat types located on-Site.

The Mixed Hardwood Forest habitat on this Site, in combination with larger forested habitat to the west, is of suitable size and continuity to support forest-dependent wildlife species and higher species biodiversity. However, the Site is dominated by edge forest, and Platt Road and associated residential development to the east represent an ecological barrier to additional forested habitat beyond. Existing land uses surrounding the Site have created substantial habitat fragmentation. 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.

Edge forest habitat is prevalent on Site, and provides higher quality habitat for species that are more tolerant of human disturbance, habitat fragmentation and "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.

The small size and geometric patch nature of the existing Old Field habitat limits its potential wildlife utilization. The existing environment does not support habitat specialists, including mammals and birds, that require large contiguous Old Field habitat blocks.

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*.

Due to localized forest fragmentation, the Site is not part of a medium or large core forest (i.e., over 250 acres). Species that utilize small core forest blocks include the wood thrush (*Hylocichla mustelina*) and ovenbird (*Seiurus aurocapilla*), both of which were observed on-Site in May of 2020. 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, with the understanding that similar species would also likely be present. Although the forest block is small, the forest structure was observed to be of good quality for forest-dwelling songbirds due to the presence of varied canopy types, along with areas of well-developed shrub and midstory strata for nesting and feeding habitat. Additionally, Wetland 1 supports the Louisiana waterthrush (*Parkesia motacilla*), an early-season warbler that inhabits large forested wetlands with embedded streams. Red-shouldered hawk (*Buteo lineatus*), another wetland-dependent bird species, was also observed within the northern portions of Wetland 1.

Early-Successional

The Site contains limited Old Field habitat (<5 acres). Typically, this habitat can support shrubland-Old Field dependent GCN species, which include several species that are declining statewide and are of high conservation value. Species in such environs commonly include the blue-winged warbler (*Vermivora cyanoptera*), prairie warbler (*Setophaga discolor*) and indigo bunting (*Passerina cyanea*). However, due to the small size of this habitat patch (approximately 3.4 acres), its suitability for early-successional habitat specialists (as opposed to habitat generalists) is low, particularly at the northern limits of the habitat patch where it narrows. In addition, little “interior” habitat is present between the bordering forest. Overall, these areas of the Site are more likely to attract species that favor forest ecotones as opposed to true shrubland-Old Field specialists. Examples of species likely to occur include the great-crested flycatcher (*Myiarchus crinitus*) and Baltimore oriole (*Icterus galbula*).

3.1.3 Habitat Enhancement Area

Once the perimeter fence has been installed, a strip of land between the fence and the proposed forest edge will need to remain clear of mature trees to prevent shading of the solar arrays. This Habitat Enhancement Area can 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. In addition, this area will provide important connectivity between wetland resources and larger forested areas. Should soils become disturbed during construction activities, a pollinator-friendly seed mix will be used to revegetate those areas.

3.2 Rare Species

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 for 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) areas on the maps. Exact locations have been masked to protect sensitive species from collection and disturbance and to protect landowner’s rights whenever species occur on private property.

APT reviewed the most recent DEEP NDDB mapping (June 2020) to determine if any such species or habitats occur on or within 0.25-mile of the Site. Based on the NDDB mapping, neither condition exists with respect to the Site.

3.2.2 USFWS Consultation

The northern long-eared bat (“NLEB”; *Myotis septentrionalis*) is a federally-listed⁴ threatened species also known to occur in the vicinity of the Site. The NLEB’s range encompasses the entire

⁴ Listing under the federal Endangered Species Act

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 Morris/Litchfield, approximately 4.4 miles to the north.

The Project will result in the removal of a number of trees with greater than three (3) inches DBH.⁵ 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 take⁶ of NLEB and does not require a permit from USFWS. A letter confirming compliance was received by USFWS on January 9, 2020 thus no further consultation with USFWS is required for the proposed activity.

A full review of the *Endangered Species Act (ESA) Compliance Determination* is provided in Appendix C, *USFWS and NDDDB Compliance Statement*.

3.3 Water Resources

3.3.1 Wetlands and Watercourses

An APT Professional Soil Scientist identified four (4) wetlands on the Site during a field inspection and wetland delineation completed on November 11 and 19, 2019. The results of the field delineation are summarized below. The locations of these resources are depicted on Figure 2, *Existing Conditions Map*.

Wetland 1 is located west of the Project Area, embedded within the Mixed Hardwood Forest. It consists of a broad south to north flowing drainageway with an interior intermittent stream. Areas of seasonal flooding result from hillside seepage draining from south to north predominantly from

⁵ Suitable NLEB roost habitat includes trees (live, dying, dead, or snag) with a diameter a DBH of three (3) inches or greater.

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.

the eastern slope. The southern end of the wetland contains a depression area with an interior cryptic vernal pool (see Section 3.3.3).

Wetland 2 is a small hillside groundwater slope wetland with seasonally saturated hydrology located northwest of the Project Area. The wetland is bordered by marginally saturated areas consisting of Woodbridge soils. This wetland is formed at a seep break along the base of a significant slope break. As topography steepens to the east, hydrology that forms this wetland is lost and the delineated feature terminates.

Wetland 3 is located to the northwest of the Project Area along the Site's northern boundary. It consists of a hillside groundwater slope wetland with seasonally saturated hydrology. The wetland is bordered by marginally saturated areas of Woodbridge soils. This wetland is formed at a seep break along the base of a significant slope break. Wetland 3 continues off-Site to the north as part of a larger headwater seep system.

Wetland 4 is located to the east of the Project Area along the Site's eastern boundary and confined to the north by a fill slope associated with the cemetery. It is a forested hillside groundwater slope wetland with seasonally saturated hydrology. The wetland is bordered by marginally saturated areas of Woodbridge soils. This wetland is formed at a seep break along the base of a slope break and continues east beyond the Project Area into a large headwater wetland system. This feature generally drains east forming the headwaters to Lewis Atwood Brook, located farther to the east remote from the Project Area.

3.3.2 Wetland Impacts

No wetlands or watercourses will be directly impacted by the Project. Portions of the Project Area will require grading proximate to these resources to facilitate installation of stormwater features, solar arrays and permanent chain link fencing. Clearing and grading limits for the Facility's infrastructure (solar arrays, associated equipment and fencing) would maintain a minimum setback of approximately ± 80 feet to wetlands and watercourses, except for the electrical interconnection work that will occur north of Wetland 4. Table 2, *Wetlands Summary Table* provides distances to wetland resources.

Table 2: Wetlands Summary Table

Wetlands Summary		
Project Proximity to Wetlands (from LOD*)	Distance (ft.)	Direction (of wetland from LOD*)
Project Proximity to Wetland 1	80	West
Project Proximity to Wetland 2	80	North
Project Proximity to Wetland 3	100	North
Project Proximity to Wetland 4	15**	South
Project Proximity to Vernal Pool	300	West

*Limit of disturbance

**Interconnection along existing access road.

To promote protection of wetlands and watercourses during construction, safeguards have been developed to avoid unintentional impacts to these resources, including a Project-specific wetland protection plan (see Appendix B, *Resource Protection Plan*) and the installation and maintenance of erosion and sedimentation (E&S) controls in accordance with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*. By implementing these management techniques throughout the duration of construction, potential adverse impacts to wetland resources will be mitigated.

Potential long-term secondary impacts to wetland resources associated with the operation of this Facility are minimized by several factors. The development will be unstaffed (generating negligible traffic), utilize a gravel/dirt access road (to avoid creation of impervious surfaces), and treat the majority of the ground beneath the solar arrays with native grass/vegetation (providing ample opportunity for surface water to infiltrate or slow prior to discharge to surrounding resources). As such, the Project will not have a likely adverse impact to wetland resources.

3.3.3 Vernal Pools

A single vernal pool is present on the Site, embedded within the southern portion of Wetland 1. With respect to vernal pool habitat within Wetlands 2, 3, and 4, these areas did not have sufficient standing water to support amphibian egg and larval development. Vernal pool surveys were conducted on March 18 and 30, and April 7, 2020. Survey methods included audial surveys to record chorusing frogs, visual surveys to search for adults, egg masses and larvae, and dip-netting to identify species within the water column and benthic material. Egg mass searches were

conducted by slowly and methodically wading through the open water in a parallel transect-like pattern using polarized sunglasses under bright sunny skies.

The vernal pool supports two indicator species, the wood frog (*Lithobates sylvaticus*) and the spotted salamander (*Ambystoma maculatum*). These two species are the most common vernal pool indicator species, occurring statewide across all ecoregions. A total of 33 wood frog egg masses and nine (9) spotted salamander egg masses were present. The egg masses were located within shrubby vegetation consisting of sweet pepperbush (*Clethra alnifolia*) and winterberry (*Ilex verticillata*). The maximum observed water depth was approximately 10 inches.

The biological value of the vernal pool was assessed using the methodology developed by Calhoun and Klemens (2002) as described in *Best Development Practices: Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States* (“the BDP”, hereinafter). The BDP rates vernal pools using a designation of Tier 1 through Tier 3. Tier 1 pools are the highest in value, while Tier 3 pools are the lowest value. The biological value is rated based on the presence of state-listed species and/or the abundance (based on total egg masses) and species richness of vernal pool indicator species. Based on the presence of two vernal pool indicator species, coupled with the total number of egg masses, this pool met the biological value criteria for a Tier 1 vernal pool.

The limits of the vernal pool were field located using a Trimble GPS unit and plotted using ESRI ArcMap software. Indicator species observed, including egg mass tallies, are summarized in Table 3 below.

Table 3: Vernal Pool Indicator Species and Egg Mass Totals

Indicator Species	Egg Masses/Larvae
Vernal Pool (Wetland 1)	
Wood Frog	33 masses
Spotted Salamander	9 masses

Construction and operation of the Facility would not result in direct physical impact to the vernal pool. It is widely documented that vernal pool dependent amphibians are not solely reliant upon the actual vernal pool habitat for breeding (i.e., egg and larval development) but do require surrounding upland forest habitat for most of their adult lives. Accepted studies recommend

protection of adjacent habitat up to 750 feet from the vernal pool edge for obligate pool-breeding amphibians.⁷

In order to evaluate potential impacts to this vernal pool and its surrounding upland habitat, the resource was assessed using methodology developed by Calhoun and Klemens⁸ (2002). This methodology assesses vernal pool ecological significance based on two parameters: 1) biological value of the vernal pool; and 2) conditions of the critical terrestrial habitat. The biological rating is based on the presence of state-listed species and abundance and diversity of vernal pool indicator species. The terrestrial habitat is assessed based on the integrity of the vernal pool envelope (within 100 feet of the pool's edge; "VPE") and the critical terrestrial habitat (within 100-750 feet of the pool's edge; "CTH").

The landscape condition of the vernal pool was then evaluated to determine the existing and proposed quality of the terrestrial (non-breeding) habitat. Pools with 25% or less developed areas in the CTH are identified as having high priority for maintaining this development percentage (including site clearing, grading and construction). Based on the results of the landscape analysis, the existing area of development within the CTH does not exceed the 25% threshold.

The Project will not impact the VPE but will increase development within the CTH by approximately 10%. The vernal pool lies within a larger complex of forested wetland and upland habitats. Much of the area occupied by the Project consists of upland forest bordering the vernal pool. Although the Project will result in a conversion of this optimal forested habitat to habitat more consistent with suboptimal open fields, this increase in development would not exceed the 25% threshold.

Petitioner proposes to establish a Habitat Enhancement Area peripheral to the Facility and the vernal pool through natural revegetation to promote a more natural ecotone transition. In addition, the Petitioner is proposing a Resource Protection Plan that will mitigate potential impacts to the Vernal Pool and dependent wildlife during construction. As such, it is APT's opinion that the proposed increase in development within the CTH may be considered de minimis and that the Project will not result in a likely adverse impact to the on-Site vernal pool.

⁷ Calhoun, A.J.K. and M.W. Klemens. 2002. Best Development Practices (BDPs): Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States. WCS/MCA Technical Paper No. 5.

⁸ Ibid.

Results of the vernal pool impact analysis are graphically depicted in Figure 5, *Vernal Pool Analysis Map*. Table 4 summarizes the results of the impact analysis, comparing existing conditions and proposed impact calculations within the CTH.

Table 4: Vernal Pool Impact Table

Vernal Pool Impact Analysis		
Vernal Pool Area: +/- 0.03 ac.		
Total Vernal Pool Envelope (VPE) Area: +/- 1.18 ac. Project Area Within VPE Area: None		
Total 100'-750' Critical Terrestrial Habitat (CTH) Area: +/-42.7 ac. Project Area Within CTH Area: +/- 4.1 ac.		
Existing VPE Areas: <i>(no proposed habitat changes to VPE Areas)</i>	Area within "Site" (+/- ac.)	Area within "Site" (+/-%)
Forested	3.66	100%
Existing CTH Areas:	Area within "Site" (+/- ac.)	Area within "Site" (+/-%)
Agricultural Field	8.8	20%
Developed	0.0	0%
Forested	31.0	73%
Old Field	2.9	7%
Proposed CTH Areas:	Area within "Site" (+/- ac.)	Area within "Site" (+/-%)
Agricultural Field	8.8	20%
Developed	4.1	10%
Forested	28.9	68%
Old Field	0.9	2%

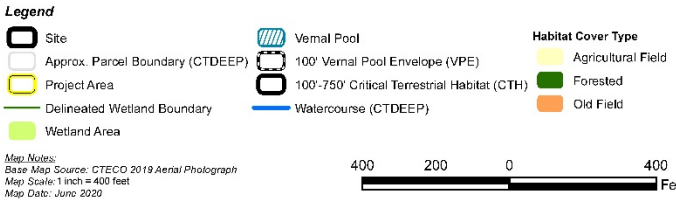
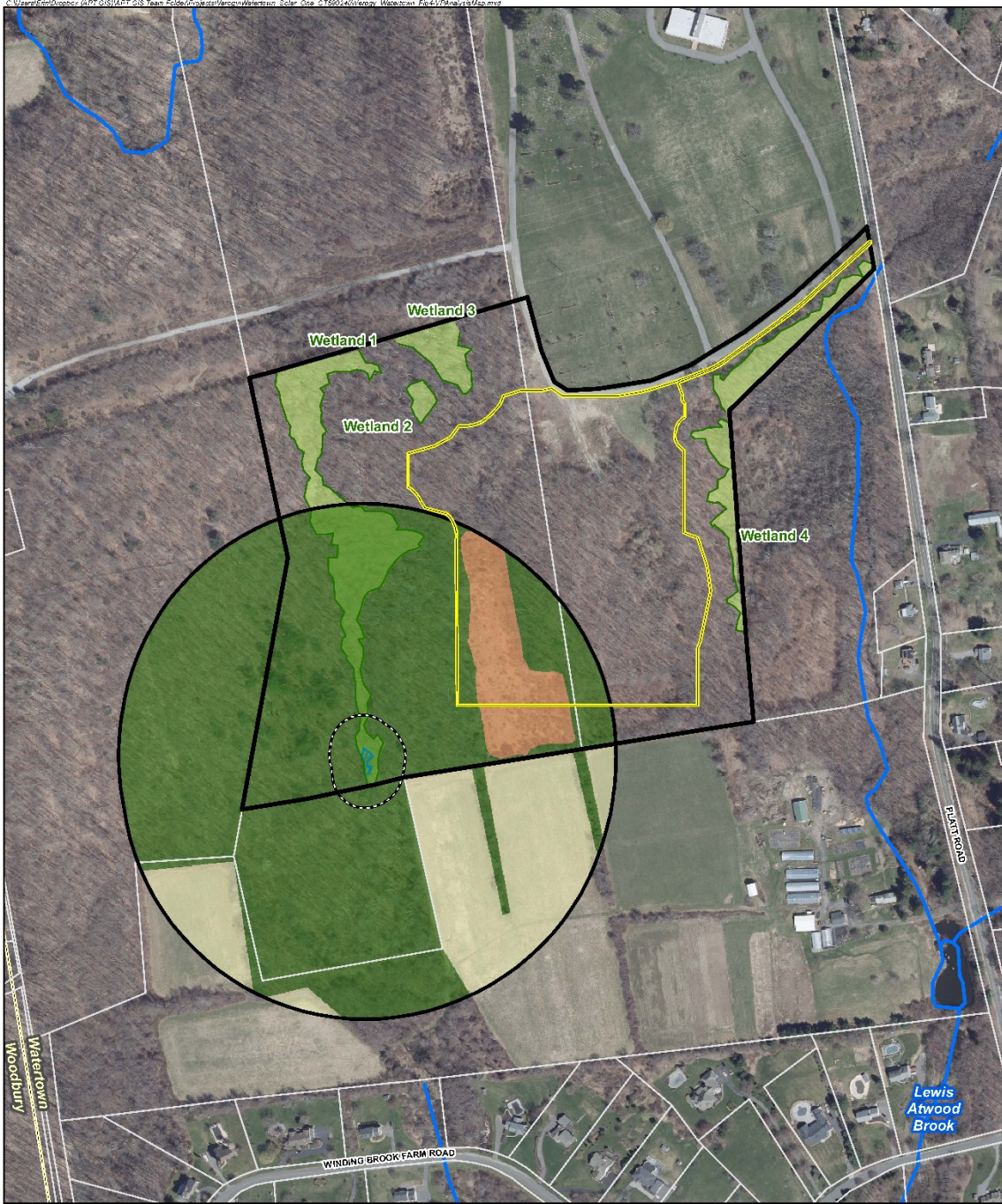


Figure 5
Vernal Pool Analysis Map
 Proposed Solar Facility - Watertown Solar One
 669 Platt Road
 Watertown, Connecticut
 Watertown Solar One, LLC

Potential short-term impacts to herpetofauna associated with nearby vernal pool habitat are possible should migrating individuals enter the Project Area during construction. Any short-term impacts associated with the proposed development within the vernal pool CTH would be minimized/avoided by proper installation and maintenance of E&S controls in accordance with *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*, combined with implementation of the proposed Resource Protection Plan.

3.3.4 Floodplain Areas

APT reviewed the United States Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Maps ("FIRM") for the Site. A FIRM is the official map of a community on which FEMA has delineated both the special hazard areas and risk premium zones applicable to the community. The Site is mapped on FIRM PANEL #0900580009B, dated November 5, 1980. Based upon the reviewed mapping, the Site is classified as an area of minimal flooding, typically above the 500-year flood level.

The Project Area is outside the influence of 100- and 500-year floodplains and will have no effect on these resources. No special considerations or precautions relative to flooding are required for the Project.

3.4 Water Quality

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. Once operative, the 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 DEEP as "GA". This classification indicates groundwater within the area is presumed to be suitable for human consumption without treatment.⁹ Based upon a review of available DEEP mapping, the Site is not located within a mapped preliminary or final Aquifer Protection Area.

⁹ Designated uses in GA classified areas include existing private and potential public or private supplies of water suitable for drinking without treatment and base flow for hydraulically connected surface waterbodies.

The Site is in the Town's Aquifer Protection Zone, an overlay zone as depicted on the Town's Zoning Map. The proposed Project would not be a regulated activity under the Town's Aquifer Protection Level 'A' Area Regulations, as such activities by definition "are located or conducted, wholly or partially, in an aquifer protection area." Section 2(36)

The Project will have no adverse environmental effect on groundwater quality.

3.4.2 Surface Water

Based upon a review of DEEP mapping, the Site is located in Major Drainage Basin 6 (Housatonic); Regional Basin 68 (Pomperaug), Sub Regional Drainage Basin 6802, and Local Drainage Basins 6802-02 and 6802-03.

Based upon publicly available mapping, no surface waterbodies are found on the Site. Lewis Atwood Brook runs in a north-south direction approximately 440 feet to the east of the Facility fence and approximately 85 feet south of the underground interconnection line. It is classified by DEEP as Class A¹⁰. The Project will have no effect on this surface waterbody.

Therefore, the Project will have no adverse environmental effect on surface water quality.

3.4.3 Stormwater Management

The Project has been designed to meet the current draft of DEEP's *Appendix I, Stormwater Management at Solar Array Construction Projects*. Preparation for the Project development requires approximately 11.34 acres of tree clearing and grubbing, and approximately 2.83 acres of clearing (stumps to remain). An additional approximately 2.54 acres of existing brush/field will require minimal clearing. Existing soil stockpiles in the northern portion of the Project Area will be leveled.

Due to the conversion of woodland to meadow and incorporating a reduction in Hydrologic Soil Group to comply with criteria in Appendix I, there will be an increase in runoff. In order to manage this increase, three grass-lined stormwater management basins with outlet structures and overflow weirs would be installed at the northeast and northwest corners and along the southeastern edge of the Project Area. Four associated grass swales will also be employed to

¹⁰ Designated uses for A classified waterbodies include potential drinking water supply, fish and wildlife habitat, recreational use, agricultural and industrial supply and other legitimate uses including navigation.

direct water flow to the basins. All areas disturbed during construction will be seeded with a low growth seed mix, New England semi-shade grass and forbs mix (or equal). The post-development design of the Site is intended to mimic the pre-development condition to the extent possible.

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.

The incorporation of these measures into Project development activities will protect water quality.

3.5 Air Quality

The Site is currently undeveloped and as such, no air emissions are generated.

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 and will consider reducing exhaust emissions by utilizing effective controls.

3.6 Soils and Geology

Surficial materials on and within the vicinity of the Site are comprised of glacial ice laid deposits (late Wisconsinan and Illinoian) as well as glacial till (thick till in the western portion of the Site and till in the eastern portion of the Site). Soils located on and within the vicinity of the Site include Saco silt loam, Ridgebury, Leicester, and Whitman stony soils, Woodbridge fine sandy loam, Paxton and Montauk fine sandy loams, and Canton and Charlton soils. Woodbridge and Paxton/Montauk soils predominate within the Project Area. Woodbridge fine sandy loam is a moderately well drained coarse-loamy lodgment till derived soil from gneiss, granite, and/or schist parent material. Paxton and Montauk fine sandy loams are well drained coarse-loamy lodgment till derived soils from gneiss, granite, and/or schist parent material.

Bedrock geology beneath the Site is identified as Nonewaug Granite. Nonewaug Granite is described as a white to pink, fine to very coarse-grained granite, with parts pegmatitic. The Petitioner does not anticipate encountering bedrock during Project development.

Once clearing and grubbing activities are completed, excavation activities will occur to install the proposed stormwater basins and swales. After the stormwater management features are installed, grading is required to complete the remainder of the Project.

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*.

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,¹¹ much of the Project Area contains Prime Farmland Soils. (See Figure 2, *Existing Conditions Map*). The Project Area is primarily wooded, and has not been in agricultural use.

¹¹ Connecticut Environmental Conditions Online (CTECO) Resource Guide www.cteco.uconn.edu.

Recognizing that the Project has a useful life and could be considered temporary in nature, the Petitioner has proposed using minimally intrusive methods for construction of the Facility (i.e., the use of pile-driven mounts for installation of the racking mounts and solar panels to limit compaction). Beyond the Facility's fence lines, the installation of the stormwater basins and swales will require displacement of topsoil. The excavated material will either be used to cap the berm at the northern Project boundary, or be spread around the Facility perimeter as top dressing for reestablishing vegetation in this area. No topsoil will leave the Site. Implementation of these proposed design strategies demonstrates that the Project will not materially affect Prime Farmland Soils.

3.7 Historic and Archaeological Resources

Heritage Consultants LLC ("Heritage Consultants") of Newington, Connecticut, reviewed relevant historic and archaeological information and conducted a pedestrian survey to determine whether the Site holds potential cultural resource significance. Their review of historic maps and aerial images of the Site and examination of files maintained by the Connecticut State Historic Preservation Office ("SHPO") revealed that no previously identified archaeological sites or properties listed on the National or State Register of Historic Places are within one (1) mile of the Project Area. This information was documented in Phase 1A Cultural Resources Assessment Survey ("Phase 1A").

Because the eastern portion of the Project Area contains low slopes and contains soils often correlated with prehistoric and historic period archaeological sites, it was determined that the Project Area has the potential to contain intact archaeological deposits in the subsoil. At the request of the Petitioner, Heritage Consultants performed a Phase 1B Cultural Resources Reconnaissance Survey ("Phase 1B") in April, 2020.

Fieldwork for the Phase 1B assessment included a pedestrian survey, photo-documentation, and the excavation of 65 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 May 6, 2020. A response from SHPO, dated June 1, 2020, "concur[s] with the findings of the

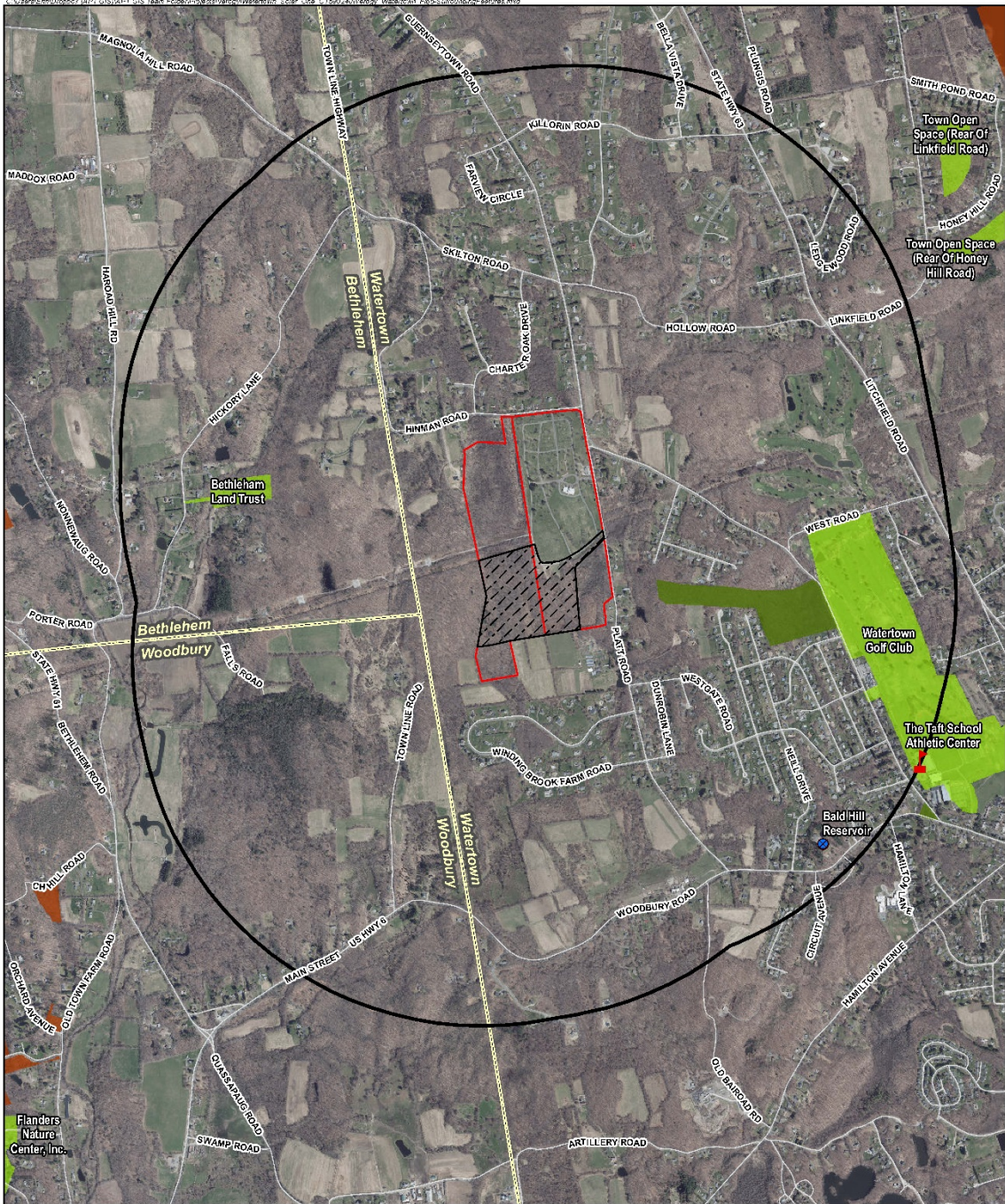
report that additional archeological investigations of the project areas are not warranted and that no historic properties will be affected by the proposed activities.”

Copies of the Phase 1A and Phase 1B reports, as well as the SHPO’s concurrence letter, are included in Appendix D, *Historic and Archaeological Resources Determination*.

3.8 Scenic and Recreational Areas

No state or local designated scenic roads or scenic areas are located near the Site. See Figure 6, *Surrounding Features Map*, for other resources located within one mile of the Site.

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



- Legend**
- Properties
 - Municipal Boundary
 - 1-Mile Radius
 - Site
 - Surrounding Features**
 - ▲ School
 - Water Tank
 - Municipal Open Space Property
 - Private Open Space Property
 - State Open Space Property

Figure 6
Surrounding Features Map
 Proposed Solar Facility - Watertown Solar One
 669 Platt Road
 Watertown, Connecticut
 Watertown Solar One, LLC

Map Notes:
 Base Map Source: CTECO 2019 Aerial Photograph
 Map Scale: 1 inch = 2,000 feet
 Map Date: June 2020



3.9 Noise

With the exception of the cemetery, the Site is undeveloped; no unusual noise sources presently exist.

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. The Town Code of Ordinances restricts construction activities to Monday through Saturday from 6:00 a.m. to 8:00 p.m. and Sunday and legal holidays from 9:00 a.m. to 6:00 p.m. (Town of Watertown Code of Ordinances, Chapter 12, Article II, Section 12-32). Construction noise is exempted from the requirements of the State of Connecticut noise control regulations. R.C.S.A § 22a-69-1.8(g).

Once operational, noise from the Project will be minimal and meet applicable State noise standards.¹² The Site is located within a residential zone and is abutted by residential and farm uses, as well as the cemetery. Conservatively, the Facility would be considered an Industrial noise emitter to Residential receptors. As such, it is subject to noise standards of 61 dBA during the daytime and 51 dBA at night at property lines.

The only noise generating equipment planned at the Facility are the inverters and transformers. Based on the most conservative information provided by equipment manufacturers, the loudest piece of equipment could be a 2,000 kVA transformer that will generate a maximum sound level of approximately 68 dBA measured at one (1) foot away.

Sound reduces with distance and the inverters and transformers are inactive at night. The closest property line to the Project Area is the Site's southern boundary, approximately 261 feet to the south. The nearest house is at 441 Platt Road; its property line is approximately 638 feet to the east of the Facility.

¹² Conn. Agencies Regs. Sec. 22a-69-3.5. Noise zone standards

APT applied the Inverse Square Law¹³ to evaluate the relative sound level of the largest transformer at the nearest property lines. Based on these calculations, nearby receptors are of sufficient distances from the proposed Project-related equipment and noise levels during Facility operation will be below 51 dBA at surrounding property lines.

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

3.10 Lighting

The Site is undeveloped; no light sources currently exist.

No exterior lighting is planned for the Facility. 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 based on the several points to define the extent of the Project. The FAA provided Determinations of No Hazard to Air Navigation on April 23, 2020. See Appendix F, *FAA Determination*. Based on this determination, there is no need to conduct a glare analysis.

3.12 Visibility

The Facility will consist of 7,176 non-reflective solar panels measuring approximately 10 feet above final grade surrounded by a chain link security fence. The proposed electrical interconnection will be installed underground.

Year-round visibility of the proposed Facility will be confined to areas within the immediate vicinity of the Facility, primarily from within Mt. Olivet Cemetery. In order to minimize the visual impact of the Project from locations within the cemetery, an 11-foot tall earthen berm planted with

¹³ 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.

evergreens will be placed at the northern Project boundary. A narrow break in the western portion of the berm will allow access into the Facility.

Predicted year-round visibility will also be experienced from portions of open fields to the south of the Site and from a small area along Platt Road near the cemetery entrance.

In general, wooded areas to the east, west and south will limit off-Site visibility. Limited seasonal views, when the leaves are off of the deciduous trees, could extend beyond the Site approximately 0.30 mile to the south, .38 mile to the north and between 0.08 and 0.12 mile to the east and west. Currently, the dominant visual features in the immediate area are several tall electrical transmission structures located on the Property, north of the Project Area. In general, views of the Facility would be fairly diminished due to its low height 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 30 degrees, thereby further reducing reflectivity.

Please see Appendix G, *Viewshed Maps and Photo-Simulation* for a viewshed analysis and visual simulation of the proposed Project.

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.

Much of the Project Area is currently wooded and will require clearing. However, no core forest will be affected by the Project. The Project is not expected to result in a significant negative impact to existing habitats or wildlife use of the Site.

The Project Area is 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 and limiting the amounts of cuts/fills and grading to the extent feasible. Once the Facility has reached the end of its projected useful life, the panels and equipment can be removed.

No wetlands or watercourses will be directly impacted by the Project. Installation of the interconnection route from the Facility to Platt Road will take place approximately 15 feet from Wetland 4 adjacent to the existing cemetery road. E&S controls will be installed and maintained throughout construction in accordance with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*. Implementing these management techniques will mitigate the potential for adverse impacts to wetland resources. To further promote protection of nearby wetlands and watercourses during construction, a project-specific Resource Protection Plan will be implemented.

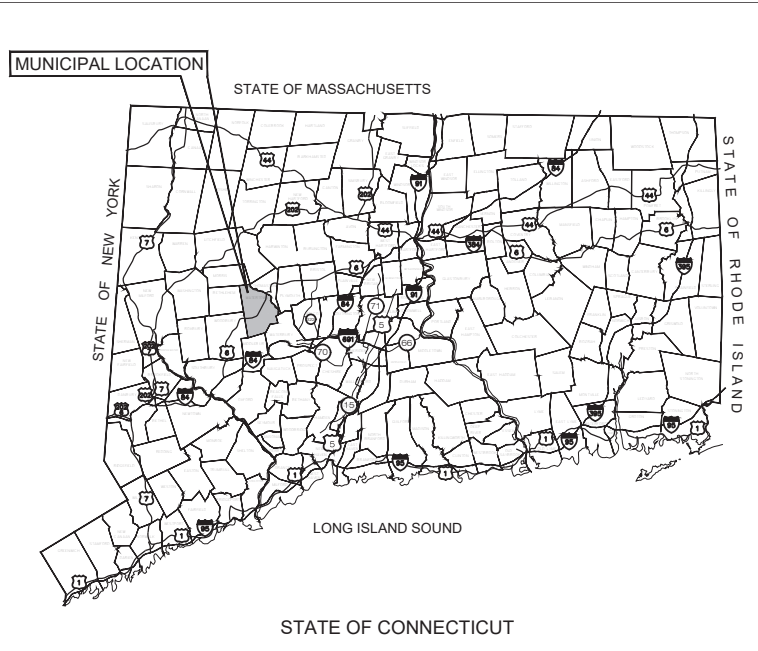
No State-listed species have been identified as potentially occurring within the vicinity of the Site. Northern long-eared bat was identified as potentially occurring within the vicinity of the Site. No adverse impact to any federal or state threatened, endangered or special concern species is anticipated.

Portions of the Facility will be seen from surrounding areas, primarily to the north within Mt. Olivet Cemetery, along Platt Road and in portions of open fields to the south. An earthen berm with evergreen screening will minimize views from the north and northeast.

Overall, the Project's design minimizes the creation of impervious surfaces. The Project has been designed to adequately handle stormwater runoff and mitigate any impacts to water quality through the creation of several stormwater basins. Grading will be required on Site to allow for installation of the solar racking, stormwater basins, and construction of the access drive. The Project has been designed in accordance with the DEEP's *General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities*. 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.

APPENDIX A

PROJECT PLANS



WATERTOWN SOLAR ONE, LLC

"WATERTOWN SOLAR ONE, LLC"

HINMAN ROAD & PLATT ROAD

WATERTOWN, CT 06795

PERMITTING PLAN SET

JUNE 30, 2020

LIST OF DRAWINGS

- T-1 TITLE SHEET & INDEX
- 1 & 2 OF 2 PROPERTY AND TOPOGRAPHIC SURVEY
- GN-1 GENERAL NOTES
- GN-2 ENVIRONMENTAL NOTES RESOURCE PROTECTION MEASURES
- OP-0 OVERALL LOCUS MAP
- OP-1 PARTIAL SITE PLAN
- EC-1 SEDIMENTATION & EROSION CONTROL NOTES
- EC-2 SEDIMENTATION & EROSION CONTROL DETAILS
- EC-3 TO EC-5 PHASE 1 SEDIMENTATION & EROSION CONTROL PLANS
- EC-6 TO EC-8 PHASE 2 SEDIMENTATION & EROSION CONTROL PLANS
- EC-9 TO EC-11 PHASE 3 FINAL GRADING & DRAINAGE PLANS
- SP-1 TO SP-3 SITE & UTILITY PLANS
- DN-1 SITE DETAILS
- DN-2 SITE DETAILS

SITE INFORMATION

SITE NAME: "WATERTOWN SOLAR ONE, LLC"

LOCATION: HINMAN ROAD & PLATT ROAD
WATERTOWN, CT 06795

SITE TYPE/DESCRIPTION: ADD (1) GROUND MOUNTED SOLAR PANEL ARRAY W/ ASSOCIATED EQUIPMENT, GRAVEL ACCESS ROAD, AND STORMWATER MANAGEMENT.

PROPERTY OWNER: CATHOLIC CEMETERIES
669 PLATT ROAD
WATERTOWN, CT 06795

APPLICANT: WATERTOWN SOLAR ONE, LLC
150 TRUMBULL STREET, 4TH FLOOR
HARTFORD, CT 06103

ENGINEER CONTACT: BRADLEY J. PARSONS, P.E.
(860) 663-1697 x208

LATITUDE: 41°36'51.98" N
LONGITUDE: 73°09'01.63" W
ELEVATION: 800± AMSL

MBLU: 59-9-2 & 67-9-3
ZONE: R-70
EXISTING LAND USE: RESIDENTIAL - CEMETERY
PROPOSED LAND USE: COMMUNICATIONS, TRANSPORTATION AND PUBLIC UTILITY USES
- LARGE SCALE GROUND MOUNTED SOLAR PHOTOVOLTAIC INSTALLATIONS

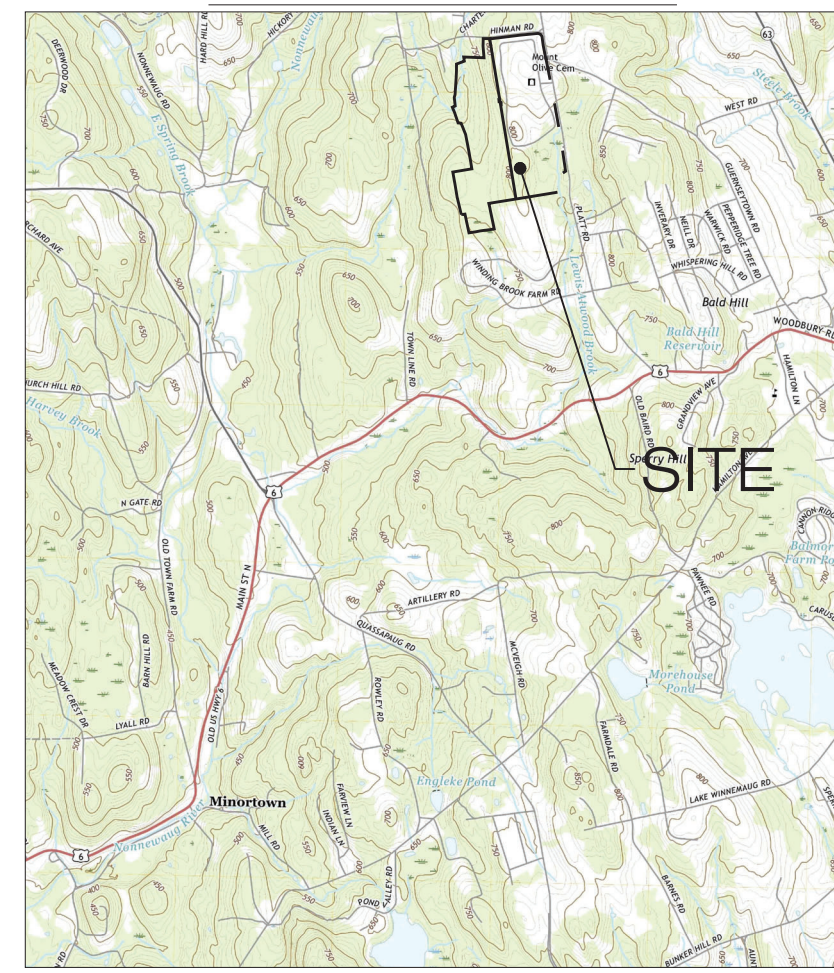
TOTAL SITE ACERAGE: 154.3± AC.
TOTAL DISTURBED AREA: 16.70± AC.

PROP. SITE GRADING
APPROX. VOLUME OF CUT : 14,015± CY
APPROX. VOLUME OF FILL: 14,015± CY

APPROX. OVERALL NET VOLUME: 0± CY OF FILL

PROP. GRAVEL ACCESS ROAD: 940± LINEAR FEET
PROP. FILTER SOCK: 7,950± LINEAR FEET
TREE CLEARING AREA: 14.16± ACRE
IMPERVIOUS AREA: 15,817± SQUARE FEET

USGS TOPOGRAPHIC MAP



SCALE : 1" = 2000± SOURCE: USGS 7.5 BRISTOL QUADRANGLE, CT 2012

WATERTOWN SOLAR ONE, LLC
150 TRUMBULL STREET
4TH FLOOR
HARTFORD, CT, 06103



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

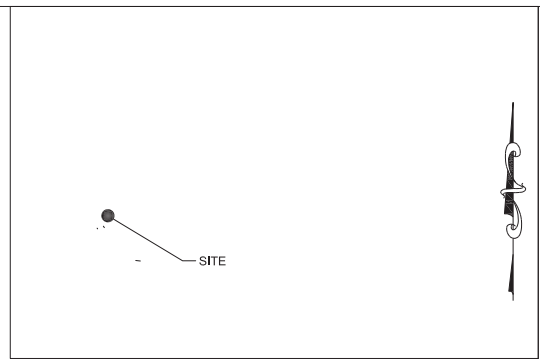
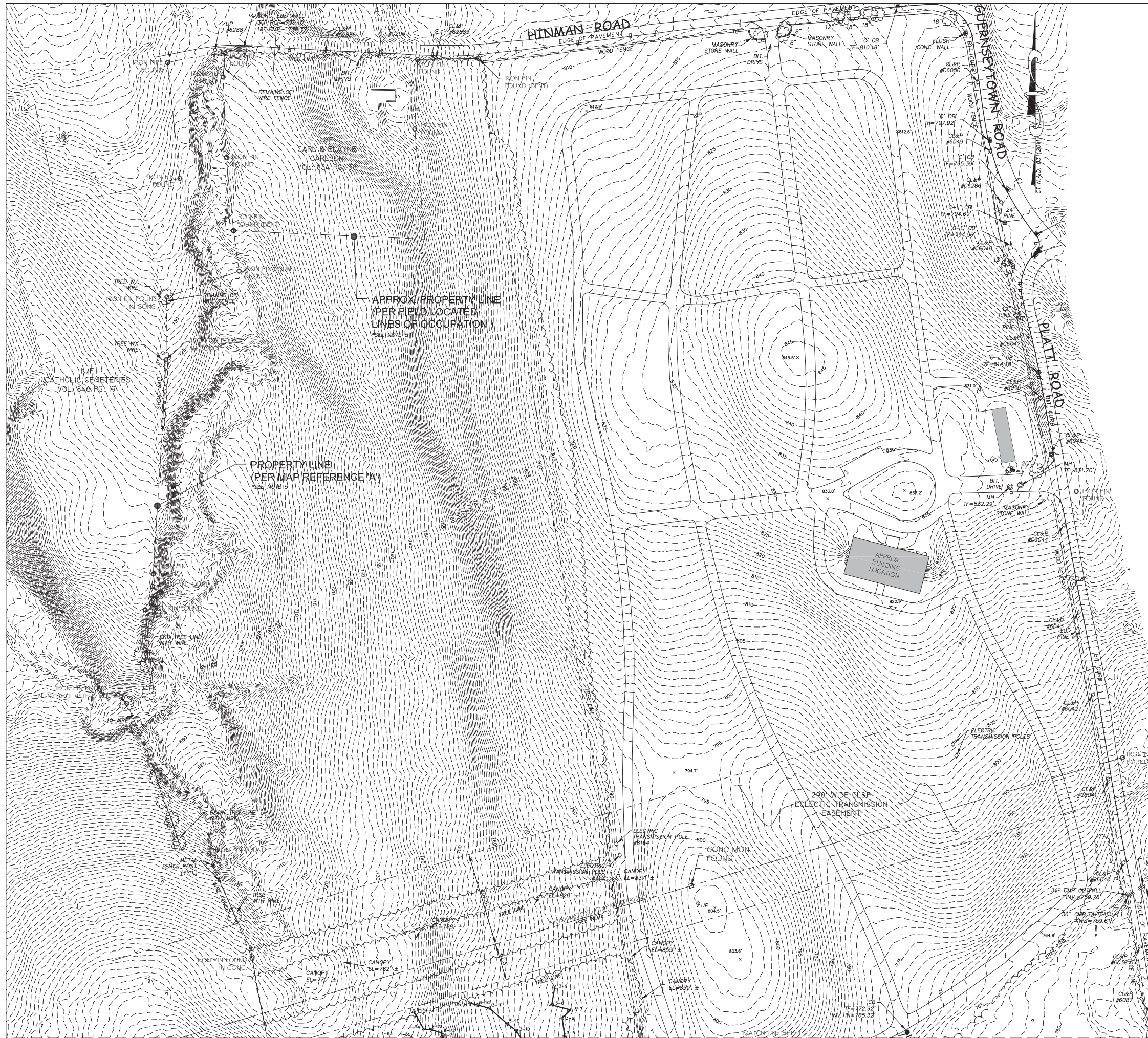
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NO	DATE	REVISION
0	06/30/20	FOR CLIENT REVIEW
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DESIGN PROFESSIONAL OF RECORD
 PROF: BRADLEY J. PARSONS P.E.
 COMP: ALL-POINTS TECHNOLOGY CORPORATION
 ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311
 WATERFORD, CT 06385
 OWNER: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD
 WATERTOWN, CT 06795

WATERTOWN SOLAR ONE, LLC
 SITE HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERTOWN, CT 06795
 APT FILING NUMBER: CT590240
 DATE: 06/30/20
 DRAWN BY: CSH
 CHECKED BY: BJP

SHEET TITLE:
TITLE SHEET & INDEX

SHEET NUMBER:
T-1

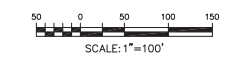


- MAP NOTES:**
- THIS MAP AND SURVEY HAVE BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND "THE MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" ADOPTED JUNE 21, 1996; AMENDED OCTOBER 26, 2018.
 - THE TYPE OF SURVEY PERFORMED AND THE MAPPED FEATURES DEPICTED HEREON ARE IN ACCORDANCE WITH THE REQUIREMENTS OF A PROPERTY AND TOPOGRAPHIC SURVEY.
 - THE HORIZONTAL BASELINE CONFORMS TO A CLASS A-2 ACCURACY. THE VERTICAL BASELINE CONFORMS TO A CLASS V-2 ACCURACY. THE TOPOGRAPHIC FEATURES CONFORM TO A CLASS T-2 ACCURACY.
 - THE PROPERTY/BOUNDARY LINES DEPICTED HEREON CONFORM TO A CLASS 'D' AND HAVE BEEN COMPILED FROM RECORD MAPS, LIMITED RESEARCH, AND LIMITED FIELD MEASUREMENTS. IT IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD SURVEY AND IS SUBJECT TO SUCH CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE.
 - ACCESS TO PUBLIC RECORDS HAS BEEN LIMITED DUE TO THE COVID-19 PANDEMIC OF 2020. FURTHER RESEARCH AND A RE-EVALUATION OF THE BOUNDARY/PROPERTY LINES DEPICTED HEREON IS RECOMMENDED AT A LATER DATE WHEN SAID RECORDS BECOME AVAILABLE.
 - THE GROUND RELIEF CONTOURS AND SPOT ELEVATIONS DEPICTED HEREON ARE BASED UPON THE ORTHOPHOTOGRAPHY LIDAR DATA SET OF 2016 BY THE STATE OF CONNECTICUT AVAILABLE AT CTeco.JCONN.EDU
 - THE NORTH ARROW AND BEARINGS ARE BASED UPON THE CONNECTICUT STATE COORDINATE SYSTEM N.A.D. 1983 (2011). THE ELEVATIONS ARE BASED UPON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) USING GEOID 12B. COORDINATES AND ELEVATIONS WERE DETERMINED FROM RTK GPS OBSERVATIONS MADE ON MARCH 9, 2020, USING THE CT DOT RTK NETWORK KNOWN AS ACORN (CTBR BASE), HAVING THE FOLLOWING VALUES:
 LATITUDE = N 41° 29' 49.86427"
 LONGITUDE = W 73° 25' 05.67391"
 ELLIPSOID HEIGHT = 53.32M
 - UNDERGROUND UTILITIES, STRUCTURES AND FACILITY LOCATIONS DEPICTED AND NOTED HEREON ARE BASED UPON OBSERVABLE EVIDENCE WHILE CONDUCTING THE FIELD SURVEY. THESE LOCATIONS MUST BE CONSIDERED AS APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE, THE EXISTENCE WHICH IS UNKNOWN TO MARTIN SURVEYING ASSOCIATES, LLC. ALL CONTRACTORS ARE REQUIRED TO CONTACT CALL-BEFORE-YOU-DIG AT 1-800-922-4455 FOR LOCATION AND OR STAKEOUT OF ANY UTILITY PRIOR TO ANY EXCAVATION.
 - THE WETLANDS DEPICTED HEREON ARE BASED UPON A DELINEATION CONDUCTED ON NOVEMBER 16, 2019 AND NOVEMBER 19, 2019 BY ALL-POINTS TECHNOLOGY CORPORATION.

- MAP REFERENCES:**
- "RECORD SUBDIVISION MAP, SCHIENDA FARM SUBDIVISION, HINMAN ROAD, WATERTOWN, CONNECTICUT" (SHEET 1 OF 5) SCALE: 1"=100'; DATED: JUNE 22, 2016; BY: ROBERT GREEN ASSOCIATES, LLC.
 - "PROPERTY SURVEY, MAP SHOWING REVISION TO LOT LINE, LANDED OWNED BY JOSEPH SCHIENDA AND LAND OWNED BY JOSEPH L. AND ROBERTA S. SCHIENDA, HINMAN ROAD, WATERTOWN, CONNECTICUT" (SHEET 2 OF 2) SCALE: 1"=100'; DATED: APRIL 25, 2014; BY ROBERT GREEN ASSOCIATES, LLC.

SEE NOTE 5

SUBJECT PARCEL
 LAND OF
 CATHOLIC CEMETERIES
 VOLUME 350 PAGE: 54
 VOLUME 846 PAGE 191



TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

DEAN MARTIN 70147 LICENSE NO.

THIS DOCUMENT AND COPIES THEREOF ARE VALID ONLY IF THEY BEAR THE SIGNATURE AND EMBOSSED SEAL OF THE DESIGNATED LICENSED PROFESSIONAL. UNAUTHORIZED ALTERATIONS TO THIS PLAN RENDER THE DECLARATION HEREON NULL AND VOID.

LEGEND:

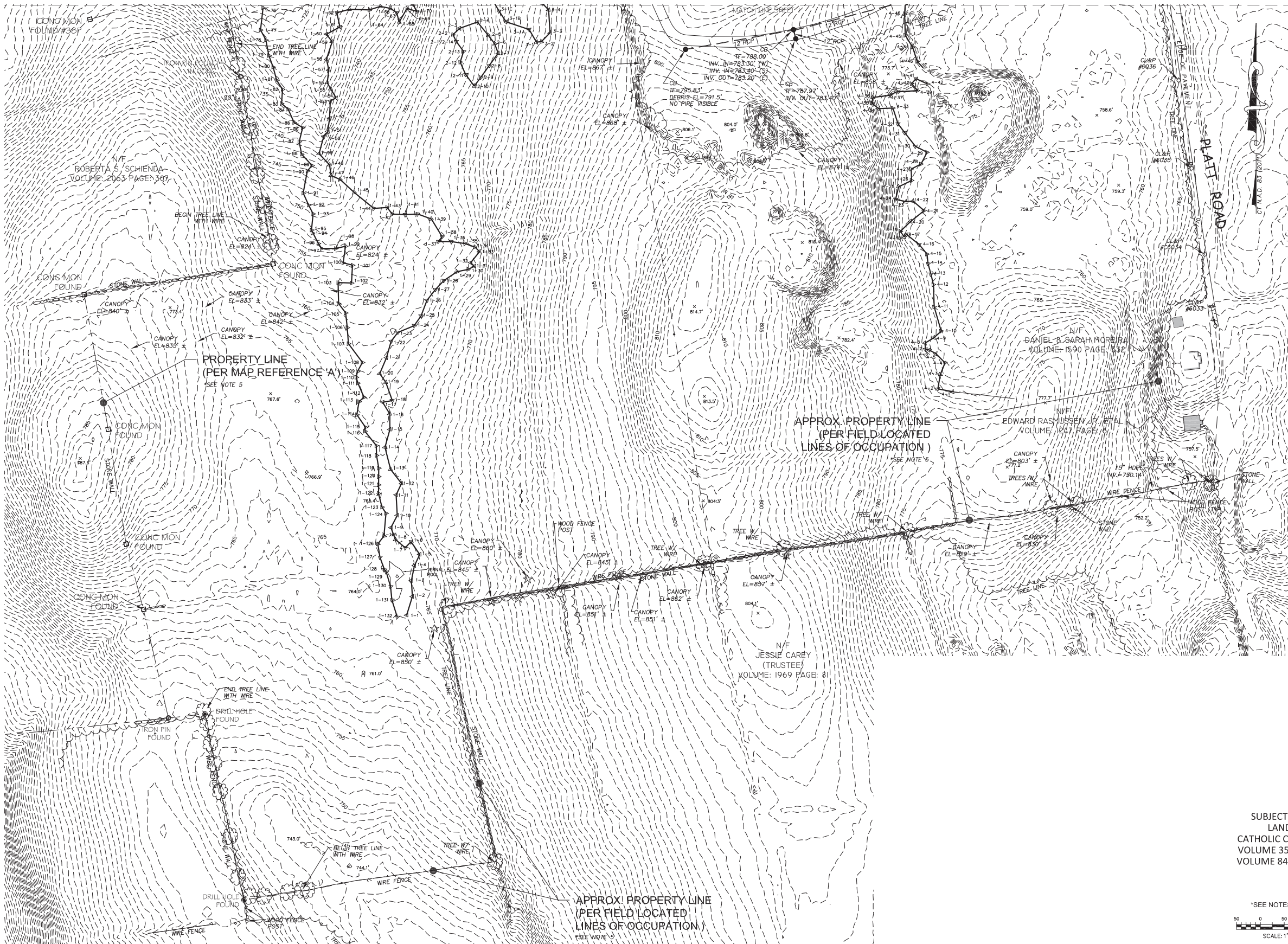
● IRON PIN (FOUND)	△ SIGN
● Rebar/Drill Hole (To Be Set)	○ POST
□ MONUMENT (FOUND)	○ LIGHT POLE
⊙ MANHOLE	○ GUY ANCHOR
⊕ DRAINAGE MANHOLE	○ UTILITY POLE
⊙ SANITARY MANHOLE	○ WATER GATE
⊙ ELEC. MANHOLE	○ WATER METER
⊙ TELE. MANHOLE	○ GAS VALVE
■ "C" CATCH BASIN	○ GAS METER
□ "C-L" CATCH BASIN	○ TRANSFORMER
○ DECIDUOUS TREES	○ ELEC. METER
★ EVERGREEN TREES	○ MAIL BOX
☀ SHRUB/BUSH	○ HAND HOLE
○ FLAG POLE	○ BUTTON BOX
⊠ TRAFFIC CONTROL BOX	○ A.C. UNIT
	○ TRAFFIC LIGHT POLE

M martin
 Surveying Associates, LLC
 201 CHRISTIAN LANE BERLIN, CT 06037
 860-832-9328 860-357-4604 (FAX)

REVISIONS:

**PROPERTY AND TOPOGRAPHIC SURVEY
 LAND OF
 CATHOLIC CEMETERIES ASSOCIATION OF THE
 ARCHDIOCESE OF HARTFORD, INC.
 PREPARED FOR
 WATERTOWN SOLAR ONE, LLC
 HINMAN ROAD & PLATT ROAD
 WATERTOWN, CONNECTICUT**

MSA PROJECT NO: 20-016	
SCALE: 1"=100'	DRAWN BY: G.S.D.
DATE: 4/13/2020	CHECKED BY: D.G.M.
SHEET: 1 OF 2	



LEGEND:

● IRON PIN (FOUND)	△ SIGN
● Rebar/Drill Hole (To Be Set)	○ POST
□ MONUMENT (FOUND)	☆ LIGHT POLE
⊙ MANHOLE	⊙ GUY ANCHOR
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	⊙ A.C. UNIT
	⊙ TRAFFIC LIGHT POLE

---	BOUNDARY LINE
---	GUARD RAIL
---	UNDERGROUND PIPING (San., Strm.)
G---	U/G GAS LINE
E---	U/G ELEC. LINE
W---	WATER LINE
---	OVERHEAD UTILITIES
---	U/G TELE. LINE
---	CHAIN LINK FENCE
---	TREE LINE

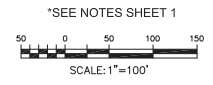
Martin
Surveying Associates, LLC
201 CHRISTIAN LANE BERLIN, CT 06037
860-832-9328 860-357-4604 (FAX)

REVISIONS:

**PROPERTY AND TOPOGRAPHIC SURVEY
LAND OF
CATHOLIC CEMETERIES ASSOCIATION OF THE
ARCHDIOCESE OF HARTFORD, INC.
PREPARE FOR
WATERTOWN SOLAR ONE, LLC
HINMAN ROAD & PLATT ROAD
WATERTOWN, CONNECTICUT**

MSA PROJECT NO: 20-016	DRAWN BY: G.S.D.
SCALE: 1"=100'	CHECKED BY: D.G.M.
DATE: 4/13/2020	SHEET:

SUBJECT PARCEL
LAND OF
CATHOLIC CEMETERIES
VOLUME 350 PAGE: 54
VOLUME 846 PAGE 191



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DEAN MARTIN 70147
LICENSE NO.

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GENERAL NOTES

- ALL CONSTRUCTION SHALL COMPLY WITH PROJECT DEVELOPER STANDARDS, TOWN OF WATERTOWN 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.
- IF NO PROJECT CONSTRUCTION SPECIFICATION PACKAGE IS PROVIDED BY THE PROJECT DEVELOPER OR THEIR REPRESENTATIVE, THE CONTRACTOR SHALL COMPLY WITH THE MANUFACTURE, TOWN OF WATERTOWN, OR CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, AND BE IN ACCORDANCE WITH ALL APPLICABLE OSHA, FEDERAL, STATE AND LOCAL REGULATIONS.
- THE PROJECT DEVELOPER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED BY GOVERNMENT AGENCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL TOWN OF WATERTOWN CONSTRUCTION PERMITS. THE CONTRACTOR SHALL POST ALL BONDS, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.
- 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.
- 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.
- 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.
- 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.
- THE CONTRACT LIMIT IS THE PROPERTY LINE UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE CONTRACT DRAWINGS.
- 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.
- THE CONTRACTOR SHALL COMPLY WITH OSHA CFR 29 PART 1926 FOR EXCAVATION TRENCHING AND TRENCH PROTECTION REQUIREMENTS.
- 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.
- 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 WATERTOWN.
- THE CONTRACTOR SHALL PROVIDE AS-BUILT RECORDS OF ALL CONSTRUCTION (INCLUDING UNDERGROUND UTILITIES) TO THE PROJECT DEVELOPER AT THE END OF CONSTRUCTION.
- 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.
- 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.
- NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.

SITE PLAN NOTES

- THE SURVEY WAS PROVIDED BY MARTIN SURVEYING ASSOCIATES, LLC DATED 04/13/20.
- THERE ARE WETLAND AREAS LOCATED ON THE SITE AS INDICATED ON THE PLANS. WETLAND AREA BOUNDARIES WERE FLAGGED AND LOCATED BY ALL POINTS TECHNOLOGY, IN NOVEMBER 2019.
- THERE WILL BE GRADING ON SITE FOR THE INSTALLATION OF STORMWATER MANAGEMENT FEATURES.
- 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.
- 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.
- 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.
- 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 WATERTOWN AND STATE OF CONNECTICUT.
- 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 DEVELOPERS ENVIRONMENTAL CONSULTANT PRIOR TO PROCEEDING WITH FURTHER WORK IN THE IMPACTED SOIL LOCATION UNTIL FURTHER INSTRUCTED BY THE PROJECT DEVELOPER AND/OR PROJECT DEVELOPERS ENVIRONMENTAL CONSULTANT.

UTILITY NOTES

- CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE TOWN OF WATERTOWN TO SECURE CONSTRUCTION PERMITS AND FOR PAYMENT OF FEES FOR STREET CUTS AND CONNECTIONS TO EXISTING UTILITIES.
- 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.
- UTILITY LOCATIONS AND PENETRATIONS ARE SHOWN FOR THE CONTRACTORS INFORMATION AND SHALL BE VERIFIED WITH THE ELECTRICAL ENGINEER AND THE PROJECT DEVELOPERS CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.
- 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.
- UTILITY CONNECTION DESIGN AS REFLECTED ON THE PLAN MAY CHANGE SUBJECT TO UTILITY PROVIDER AND GOVERNING AUTHORITY STAFF REVIEW.
- 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.
- 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.
- 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 WATERTOWN.
- ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENTS AND EVEN GRADES USING A PIPE LASER OR OTHER ACCURATE METHOD.
- RELOCATION OF UTILITY PROVIDER FACILITIES, SUCH AS POLES, SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY PROVIDER.
- 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.
- CONTRACTOR TO PROVIDE STEEL SLEEVES AND ANNULAR SPACE SAND FILL FOR UTILITY PIPE AND CONDUIT CONNECTIONS UNDER FOOTINGS.
- ALL UTILITY CONSTRUCTION IS SUBJECT TO INSPECTION FOR APPROVAL PRIOR TO BACKFILLING, IN ACCORDANCE WITH THE APPROPRIATE UTILITY PROVIDER REQUIREMENTS.
- 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.
- 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 WATERTOWN.
- 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.
- 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.
- ELECTRIC DRAWINGS AND REQUIREMENTS ARE NOT INCLUDED AS PART OF THIS DRAWING SET AND SHOULD BE OBTAINED FROM THE PROJECT DEVELOPER.
- 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.
- 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 WATERTOWN, UTILITY PROVIDERS AND GOVERNING AUTHORITIES.

GENERAL LEGEND		
	EXISTING	PROPOSED
PROPERTY LINE		
BUILDING SETBACK		
SOLAR SETBACK		
EASEMENT		
TREE LINE		
WETLAND		
WETLAND BUFFER		
VERNAL POOL		
VERNAL POOL BUFFER		
WATERCOURSE		
WATERCOURSE BUFFER		
MAJOR CONTOUR		
MINOR CONTOUR		
UNDERGROUND ELECTRIC		
OVERHEAD ELECTRIC		
GAS LINE		
WATER LINE		
BASIN		
SWALE		
FENCE		
LIMIT OF DISTURBANCE		
LIMIT OF CLEARING AND GRUBBING		
FILTER SOCK		
SILT FENCE		
BAFFLE		

WATERTOWN SOLAR ONE, LLC
150 TRUMBULL STREET
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CSC PERMIT SET

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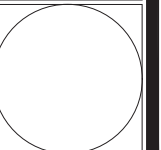
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SHEET TITLE:

GENERAL NOTES

SHEET NUMBER:

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ENVIRONMENTAL NOTES

RESOURCE PROTECTION PLAN

ENVIRONMENTAL NOTES

RESOURCE PROTECTION PLAN

AS A RESULT OF THE PROPOSED DEVELOPMENTS LOCATION IN THE VICINITY OF WETLANDS AND VERNAL POOL HABITATS, THE FOLLOWING BEST MANAGEMENT PRACTICES ("BMPS") ARE RECOMMENDED TO AVOID UNINTENTIONAL IMPACT TO WETLAND HABITATS OR MORTALITY TO VERNAL POOL HERPETOFAUNA (I.E., SPOTTED SALAMANDER, WOOD FROG, TURTLES, ETC.) DURING CONSTRUCTION ACTIVITIES. THIS PLAN INCLUDES ELEMENTS THAT WILL PROTECT HERPETOFAUNA SHOULD CONSTRUCTION ACTIVITIES OCCUR DURING PEAK AMPHIBIAN MOVEMENT PERIODS (EARLY SPRING BREEDING [MARCH 1ST TO MAY 15TH] AND LATE SUMMER DISPERSAL [JULY 15TH TO SEPTEMBER 15TH]) AS WELL AS WETLANDS REGARDLESS OF THE TIME OF YEAR. COMPLETE DETAILS OF THE RECOMMENDED BMPS ARE PROVIDED BELOW, WHICH WILL BE INCORPORATED INTO THE CONSTRUCTION DRAWINGS TO ENSURE THE CONTRACTOR IS FULLY AWARE OF THE PROJECT'S ENVIRONMENTALLY SENSITIVE SETTING.

A WETLAND SCIENTIST FROM ALL-POINTS TECHNOLOGY CORP. ("APT") EXPERIENCED IN COMPLIANCE MONITORING OF CONSTRUCTION ACTIVITIES WILL SERVE AS THE ENVIRONMENTAL MONITOR FOR THIS PROJECT TO ENSURE THAT THE FOLLOWING BMPS ARE IMPLEMENTED PROPERLY. THE PROPOSED RESOURCE PROTECTION PROGRAM CONSISTS OF SEVERAL COMPONENTS INCLUDING: ISOLATION OF THE PROJECT PERIMETER; PERIODIC INSPECTION AND MAINTENANCE OF EROSION CONTROLS AND ISOLATION STRUCTURES; HERPETOFAUNA SWEEPS; EDUCATION OF ALL CONTRACTORS AND SUB-CONTRACTORS PRIOR TO INITIATION OF WORK ON THE SITE; PROTECTIVE MEASURES; AND, REPORTING.

1. EROSION AND SEDIMENTATION CONTROLS

- PLASTIC NETTING WITH LARGE MESH OPENINGS (> ¼") USED IN A VARIETY OF EROSION CONTROL PRODUCTS (I.E., EROSION CONTROL BLANKETS, FIBER ROLLS [WATTLES], REINFORCED SILT FENCE) HAS BEEN FOUND TO ENTANGLE WILDLIFE, INCLUDING REPTILES, AMPHIBIANS, BIRDS AND SMALL MAMMALS. NO PERMANENT EROSION CONTROL PRODUCTS OR REINFORCED SILT FENCE WILL BE USED ON THE PROJECT. TEMPORARY EROSION CONTROL PRODUCTS THAT WILL BE EXPOSED AT THE GROUND SURFACE REPRESENT A POTENTIAL FOR WILDLIFE ENTANGLEMENT WILL USE EITHER EROSION CONTROL BLANKETS AND FIBER ROLLS COMPOSED OF PROCESSED FIBERS MECHANICALLY BOUND TOGETHER TO FORM A CONTINUOUS MATRIX (NETLESS) OR NETTING WITH A MESH SIZE <¼" SUCH AS THAT TYPICALLY USED IN COMPOST FILTER SOCKS TO AVOID/MINIMIZE WILDLIFE ENTANGLEMENT.
- INSTALLATION OF EROSION AND SEDIMENTATION CONTROLS, REQUIRED FOR EROSION CONTROL COMPLIANCE AND CREATION OF A BARRIER TO POSSIBLE MIGRATING/DISPERSING HERPETOFAUNA, SHALL BE PERFORMED BY THE CONTRACTOR FOLLOWING CLEARING ACTIVITIES AND PRIOR TO ANY EARTHWORK. THE ENVIRONMENTAL MONITOR WILL INSPECT THE WORK ZONE AREA PRIOR TO AND FOLLOWING EROSION CONTROL BARRIER INSTALLATION TO ENSURE THE AREA IS FREE OF HERPETOFAUNA AND SATISFACTORILY INSTALLED. THE INTENT OF THE BARRIER IS TO SEGREGATE THE MAJORITY OF THE WORK ZONE FROM MIGRATING/DISPERSING HERPETOFAUNA. OFTENTIMES COMPLETE ISOLATION OF A WORK ZONE IS NOT FEASIBLE DUE TO ACCESSIBILITY NEEDS AND LOCATIONS OF STAGING/MATERIAL STORAGE AREAS, ETC. IN THOSE CIRCUMSTANCES, THE BARRIERS WILL BE POSITIONED TO DEFLECT MIGRATING/DISPERSAL ROUTES AWAY FROM THE WORK ZONE TO MINIMIZE POTENTIAL ENCOUNTERS WITH HERPETOFAUNA.
- IF A STAGING AREA FOR EQUIPMENT, VEHICLES OR CONSTRUCTION MATERIALS IS REQUIRED FOR THIS PROJECT, SUCH AREA(S) SHALL BE LOCATED OUTSIDE OF ANY WETLAND RESOURCE BUFFER ZONE AND SURROUNDED BY SILT FENCE TO ISOLATE THE AREA FROM POSSIBLE MIGRATING HERPETOFAUNA.
- ALL EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS OF COMPLETION OF WORK AND PERMANENT STABILIZATION OF SITE SOILS SO THAT HERPETOFAUNA MOVEMENTS BETWEEN UPLANDS AND WETLANDS ARE NOT RESTRICTED.

2. CONTRACTOR EDUCATION:

- PRIOR TO WORK ON SITE AND INITIAL DEPLOYMENT/MOBILIZATION OF EQUIPMENT AND MATERIALS, THE CONTRACTOR SHALL ATTEND AN EDUCATIONAL SESSION AT THE PRE-CONSTRUCTION MEETING WITH THE ENVIRONMENTAL MONITOR. THIS ORIENTATION AND EDUCATIONAL SESSION WILL CONSIST OF INFORMATION SUCH AS, BUT NOT LIMITED TO: REPRESENTATIVE PHOTOGRAPHS OF TYPICAL HERPETOFAUNA THAT MAY BE ENCOUNTERED, RARE THAT COULD BE ENCOUNTERED (IF POSSIBLE), TYPICAL SPECIES BEHAVIOR, AND PROPER PROCEDURES TO PROTECT SUCH SPECIES IF THEY ARE ENCOUNTERED. THE MEETING WILL FURTHER EMPHASIZE THE NON-AGGRESSIVE NATURE OF THESE SPECIES, THE ABSENCE OF NEED TO DESTROY SUCH ANIMALS AND THE NEED TO FOLLOW PROTECTIVE MEASURES AS DESCRIBED IN SECTION 4 BELOW. THE CONTRACTOR WILL DESIGNATE ONE OF ITS WORKERS AS THE "PROJECT MONITOR", WHO WILL RECEIVE MORE INTENSE TRAINING ON THE IDENTIFICATION AND PROPER HANDLING OF HERPETOFAUNA.
- THE PROJECT MONITOR WILL BE RESPONSIBLE FOR THE DAILY "SWEEPS" FOR HERPETOFAUNA WITHIN THE WORK ZONE EACH MORNING, DURING ANY AND ALL TRANSPORTATION OF VEHICLES ALONG THE ACCESS DRIVE, AND FOR ANY GROUND DISTURBANCE WORK. THIS INDIVIDUAL WILL RECEIVE MORE INTENSE TRAINING FROM THE ENVIRONMENTAL MONITOR ON THE IDENTIFICATION AND PROTECTION OF HERPETOFAUNA IN ORDER TO PERFORM SWEEPS. ANY HERPETOFAUNA DISCOVERED WILL BE REPORTED TO THE ENVIRONMENTAL MONITOR, PHOTOGRAPHED IF POSSIBLE, AND RELOCATED OUTSIDE THE WORK ZONE IN THE GENERAL DIRECTION THE ANIMAL WAS ORIENTED.
- THE ENVIRONMENTAL MONITOR WILL ALSO POST CAUTION SIGNS THROUGHOUT THE PROJECT SITE AND MAINTAIN THEM FOR THE DURATION OF CONSTRUCTION TO PROVIDE NOTICE OF THE ENVIRONMENTALLY SENSITIVE NATURE OF THE WORK AREA. THE POTENTIAL FOR ENCOUNTERING VARIOUS AMPHIBIANS AND REPTILES AND PRECAUTIONS TO BE TAKEN TO AVOID INJURY TO OR MORTALITY OF THESE ANIMALS.
- THE CONTRACTOR WILL BE PROVIDED WITH THE ENVIRONMENTAL MONITOR'S CELL PHONE AND EMAIL CONTACT INFORMATION TO IMMEDIATELY REPORT ANY ENCOUNTERS WITH HERPETOFAUNA.

3. PETROLEUM MATERIALS STORAGE AND SPILL PREVENTION

- CERTAIN PRECAUTIONS ARE NECESSARY TO STORE PETROLEUM MATERIALS, REFUEL AND CONTAIN AND PROPERLY CLEAN UP ANY INADVERTENT FUEL OR PETROLEUM (I.E., OIL, HYDRAULIC FLUID, ETC.) SPILL DUE TO THE PROJECT'S LOCATION IN PROXIMITY TO SENSITIVE WETLAND RESOURCES.
- A SPILL CONTAINMENT KIT CONSISTING OF A SUFFICIENT SUPPLY OF ABSORBENT PADS AND ABSORBENT MATERIAL WILL BE MAINTAINED BY THE CONTRACTOR AT THE CONSTRUCTION SITE THROUGHOUT THE DURATION OF THE PROJECT. IN ADDITION, A WASTE DRUM WILL BE KEPT ON SITE TO CONTAIN ANY USED ABSORBENT PADS/MATERIAL FOR PROPER AND TIMELY DISPOSAL OFF SITE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL LAWS.
- THE FOLLOWING PETROLEUM AND HAZARDOUS MATERIALS STORAGE AND REFUELING RESTRICTIONS AND SPILL RESPONSE PROCEDURES WILL BE ADHERED TO BY THE CONTRACTOR.
 - PETROLEUM AND HAZARDOUS MATERIALS STORAGE AND REFUELING
 - REFUELING OF VEHICLES OR MACHINERY SHALL TAKE PLACE ON AN IMPERVIOUS PAD WITH SECONDARY CONTAINMENT DESIGNED TO CONTAIN FUELS.
 - ANY REFUELING DRUMS/TANKS OR HAZARDOUS MATERIALS THAT MUST BE KEPT ON SITE SHALL BE STORED ON AN IMPERVIOUS SURFACE UTILIZING SECONDARY CONTAINMENT A MINIMUM OF 100 FEET FROM WETLANDS OR WATERCOURSES.
 - INITIAL SPILL RESPONSE PROCEDURES
 - STOP OPERATIONS AND SHUT OFF EQUIPMENT.
 - REMOVE ANY SOURCES OF SPARK OR FLAME.
 - CONTAIN THE SOURCE OF THE SPILL.
 - DETERMINE THE APPROXIMATE VOLUME OF THE SPILL.
 - IDENTIFY THE LOCATION OF NATURAL FLOW PATHS TO PREVENT THE RELEASE OF THE SPILL TO SENSITIVE NEARBY WATERWAYS OR WETLANDS.
 - ENSURE THAT FELLOW WORKERS ARE NOTIFIED OF THE SPILL.
 - SPILL CLEAN UP & CONTAINMENT
 - OBTAIN SPILL RESPONSE MATERIALS FROM THE ON-SITE SPILL RESPONSE KIT. PLACE ABSORBENT MATERIALS DIRECTLY ON THE RELEASE AREA.
 - LIMIT THE SPREAD OF THE SPILL BY PLACING ABSORBENT MATERIALS AROUND THE PERIMETER OF THE SPILL.
 - ISOLATE AND ELIMINATE THE SPILL SOURCE.
 - CONTACT THE APPROPRIATE LOCAL, STATE AND/OR FEDERAL AGENCIES, AS NECESSARY.
 - CONTACT A DISPOSAL COMPANY TO PROPERLY DISPOSE OF CONTAMINATED MATERIALS.
 - REPORTING
 - COMPLETE AN INCIDENT REPORT.
 - SUBMIT A COMPLETED INCIDENT REPORT TO LOCAL, STATE AND FEDERAL AGENCIES, AS REQUIRED.

4. PROTECTIVE MEASURES

- A THOROUGH COVER SEARCH OF THE CONSTRUCTION AREA WILL BE PERFORMED BY THE ENVIRONMENTAL MONITOR FOR HERPETOFAUNA PRIOR TO AND FOLLOWING INSTALLATION OF EROSION CONTROL MEASURES/SILT FENCING BARRIERS TO REMOVE ANY SPECIES FROM THE WORK ZONE PRIOR TO THE INITIATION OF CONSTRUCTION ACTIVITIES. ANY HERPETOFAUNA DISCOVERED WOULD BE RELOCATED OUTSIDE THE WORK ZONE IN THE GENERAL DIRECTION THE ANIMAL WAS ORIENTED. PERIODIC INSPECTIONS WILL BE PERFORMED BY THE ENVIRONMENTAL MONITOR THROUGHOUT THE DURATION OF CONSTRUCTION.
- THE CONTRACTOR'S PROJECT MONITOR WILL INSPECT THE WORK AREA EACH MORNING AND ESCORT INITIAL VEHICLE ACCESS INTO THE SITE EACH MORNING ALONG THE ACCESS DRIVE TO VISUALLY INSPECT FOR ANY HERPETOFAUNA. ANY HERPETOFAUNA DISCOVERED WOULD BE RELOCATED OUTSIDE THE WORK ZONE IN THE GENERAL DIRECTION THE ANIMAL WAS ORIENTED.
- ANY HERPETOFAUNA REQUIRING RELOCATION OUT OF THE WORK ZONE WILL BE CAPTURED WITH THE USE OF A NET OR CLEAN PLASTIC BAG THAT HAS BEEN MOISTENED WITH CLEAN WATER FOR CAREFUL HANDLING AND PLACEMENT OUT OF THE WORK ZONE IN THE GENERAL DIRECTION IT WAS OBSERVED HEADING.
- ANY STORMWATER MANAGEMENT FEATURES, RUTS OR ARTIFICIAL DEPRESSIONS THAT COULD HOLD WATER CREATED INTENTIONALLY OR UNINTENTIONALLY BY SITE CLEARING/CONSTRUCTION ACTIVITIES WILL BE PROPERLY FILLED IN AND PERMANENTLY STABILIZED WITH VEGETATION TO AVOID THE CREATION OF VERNAL POOL "DECOY POOLS" THAT COULD INTERCEPT AMPHIBIANS MOVING TOWARD THE VERNAL POOL. STORMWATER MANAGEMENT FEATURES SUCH AS LEVEL SPREADERS WILL BE CAREFULLY REVIEWED IN THE FIELD TO ENSURE THAT STANDING WATER DOES NOT ENDURE FOR MORE THAN A 24-HOUR PERIOD TO AVOID CREATION OF DECOY POOLS AND MAY BE SUBJECT TO FIELD DESIGN CHANGES. ANY SUCH PROPOSED DESIGN CHANGES WILL BE REVIEWED BY THE DESIGN ENGINEER TO ENSURE STORMWATER MANAGEMENT FUNCTIONS ARE MAINTAINED.

REPORTING

- INSPECTION REPORTS (BRIEF NARRATIVE AND APPLICABLE PHOTOS) WILL BE PREPARED BY THE ENVIRONMENTAL MONITOR DOCUMENTING EACH INSPECTION AND SUBMITTED TO THE PERMITTEE FOR COMPLIANCE VERIFICATION. ANY NON-COMPLIANCE OBSERVATIONS OF EROSION CONTROL MEASURES OR EVIDENCE OF EROSION OR SEDIMENT RELEASE WILL BE IMMEDIATELY REPORTED TO THE PERMITTEE AND ITS CONTRACTOR AND INCLUDED IN THE REPORTS.
- ANY INCIDENTS OF RELEASE OF SEDIMENT OR OTHER MATERIALS INTO WETLAND RESOURCE AREAS SHALL BE REPORTED BY THE PERMITTEE WITHIN 24 HOURS TO THE PERMITTEE.
- ANY OBSERVATIONS OF RARE SPECIES WILL BE REPORTED TO THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION'S NATURAL DIVERSITY DATA BASE PROGRAM.
- FOLLOWING COMPLETION OF THE PROJECT, A SUMMARY REPORT WILL BE PREPARED BY THE ENVIRONMENTAL MONITOR DOCUMENTING COMPLIANCE WITH THE RESOURCE PROTECTION PLAN AND SUBMITTED TO THE PERMITTEE, WHO SHALL SUBMIT A COPY TO THE CONNECTICUT SITING COUNCIL.

WATERTOWN SOLAR ONE, LLC
150 TRUMBULL STREET
4TH FLOOR
HARTFORD, CT, 06103



567 VAUXHAUL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PHONE: (860)-963-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-963-0935

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

OWNER: CATHOLIC CEMETERIES
ADDRESS: 669 PLATT ROAD
WATERTOWN, CT 06795

WATERTOWN SOLAR ONE, LLC

SITE HINMAN ROAD & PLATT ROAD
ADDRESS: WATERTOWN, CT 06795

APT FILING NUMBER: CT590240

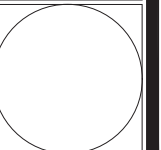
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DATE: 06/30/20	CHECKED BY: BJP

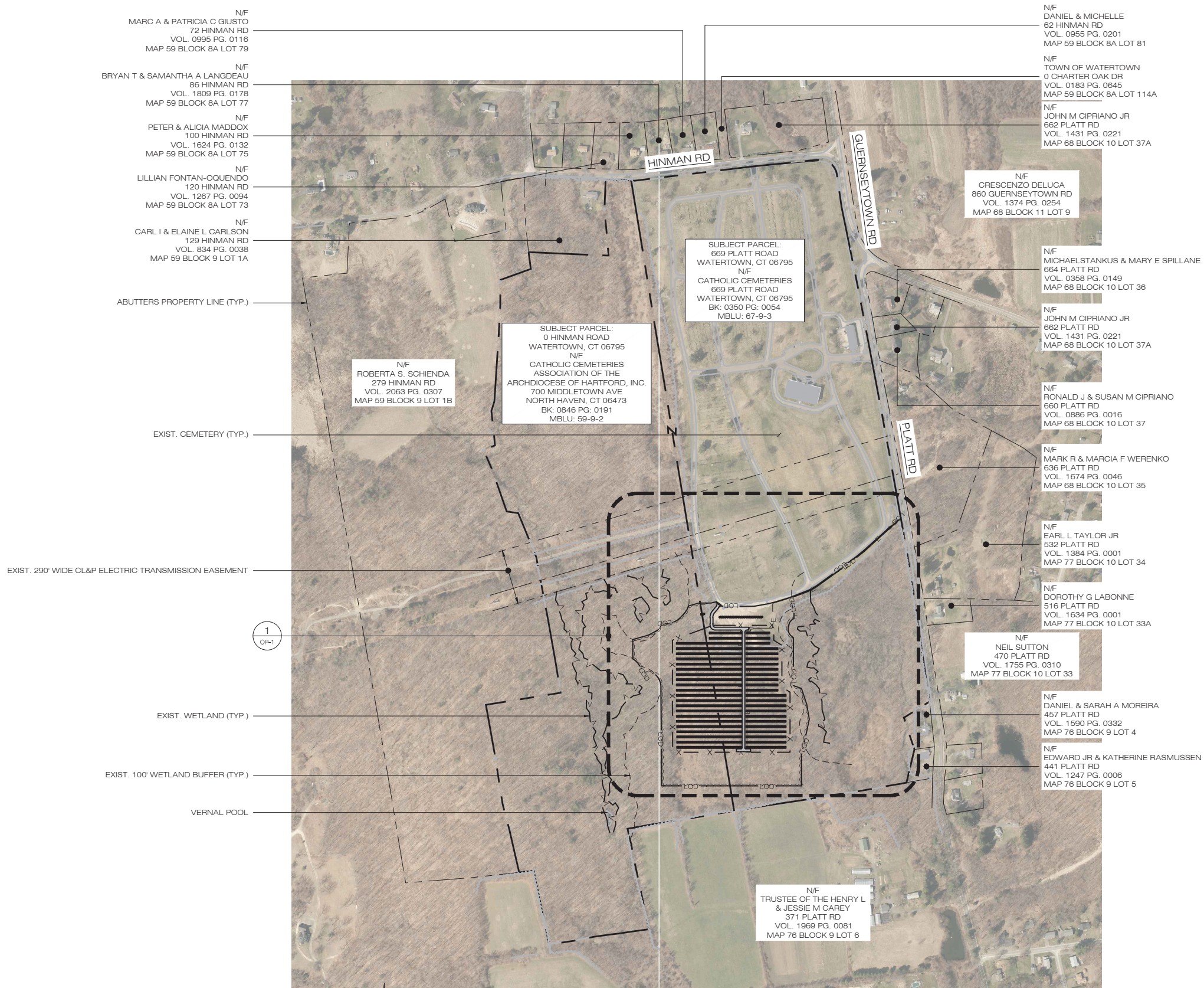
SHEET TITLE:

GENERAL NOTES

SHEET NUMBER:

GN-2





N/F
MARC A & PATRICIA C GIUSTO
72 HINMAN RD
VOL. 0995 PG. 0116
MAP 59 BLOCK 8A LOT 79

N/F
BRYAN T & SAMANTHA A LANGDEAU
86 HINMAN RD
VOL. 1809 PG. 0178
MAP 59 BLOCK 8A LOT 77

N/F
PETER & ALICIA MADDOX
100 HINMAN RD
VOL. 1624 PG. 0132
MAP 59 BLOCK 8A LOT 75

N/F
LILLIAN FONTAN-OQUEENDO
120 HINMAN RD
VOL. 1267 PG. 0094
MAP 59 BLOCK 8A LOT 73

N/F
CARL I & ELAINE L CARLSON
129 HINMAN RD
VOL. 834 PG. 0038
MAP 59 BLOCK 9 LOT 1A

ABUTTERS PROPERTY LINE (TYP.)

N/F
ROBERTA S. SCHIENDA
279 HINMAN RD
VOL. 2063 PG. 0307
MAP 59 BLOCK 9 LOT 1B

SUBJECT PARCEL:
0 HINMAN ROAD
WATERTOWN, CT 06795
N/F
CATHOLIC CEMETERIES
ASSOCIATION OF THE
ARCHDIOCESE OF HARTFORD, INC.
700 MIDDLETOWN AVE
NORTH HAVEN, CT 06473
BK: 0846 PG. 0191
MBLU: 59-9-2

SUBJECT PARCEL:
669 PLATT ROAD
WATERTOWN, CT 06795
N/F
CATHOLIC CEMETERIES
669 PLATT ROAD
WATERTOWN, CT 06795
BK: 0350 PG. 0054
MBLU: 67-9-3

N/F
DANIEL & MICHELLE
62 HINMAN RD
VOL. 0955 PG. 0201
MAP 59 BLOCK 8A LOT 81

N/F
TOWN OF WATERTOWN
0 CHARTER OAK DR
VOL. 0183 PG. 0645
MAP 59 BLOCK 8A LOT 114A

N/F
JOHN M CIPRIANO JR
662 PLATT RD
VOL. 1431 PG. 0221
MAP 68 BLOCK 10 LOT 37A

N/F
CRESCENZO DELUCA
860 GUENSEY TOWN RD
VOL. 1374 PG. 0254
MAP 68 BLOCK 11 LOT 9

N/F
MICHAELSTANKUS & MARY E SPILLANE
654 PLATT RD
VOL. 0358 PG. 0149
MAP 68 BLOCK 10 LOT 36

N/F
JOHN M CIPRIANO JR
662 PLATT RD
VOL. 1431 PG. 0221
MAP 68 BLOCK 10 LOT 37A

N/F
RONALD J & SUSAN M CIPRIANO
660 PLATT RD
VOL. 0886 PG. 0016
MAP 68 BLOCK 10 LOT 37

N/F
MARK R & MARCIA F WERENKO
636 PLATT RD
VOL. 1674 PG. 0046
MAP 68 BLOCK 10 LOT 35

N/F
EARL L TAYLOR JR
532 PLATT RD
VOL. 1384 PG. 0001
MAP 77 BLOCK 10 LOT 34

N/F
DOROTHY G LABONNE
516 PLATT RD
VOL. 1634 PG. 0001
MAP 77 BLOCK 10 LOT 33A

N/F
NEIL SUTTON
470 PLATT RD
VOL. 1755 PG. 0310
MAP 77 BLOCK 10 LOT 33

N/F
DANIEL & SARAH A MOREIRA
457 PLATT RD
VOL. 1590 PG. 0332
MAP 76 BLOCK 9 LOT 4

N/F
EDWARD JR & KATHERINE RASMUSSEN
441 PLATT RD
VOL. 1247 PG. 0006
MAP 76 BLOCK 9 LOT 5

N/F
TRUSTEE OF THE HENRY L
& JESSIE M CAREY
371 PLATT RD
VOL. 1969 PG. 0081
MAP 76 BLOCK 9 LOT 6

EXIST. 290' WIDE CL&P ELECTRIC TRANSMISSION EASEMENT

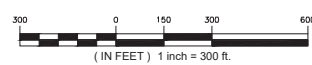
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OP-1

EXIST. WETLAND (TYP.)

EXIST. 100' WETLAND BUFFER (TYP.)

VERNAL POOL

1
OP-0
OVERALL LOCUS MAP
SCALE: 1" = 300'-0"



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APT FILING NUMBER: CT590240

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OVERALL LOCUS MAP

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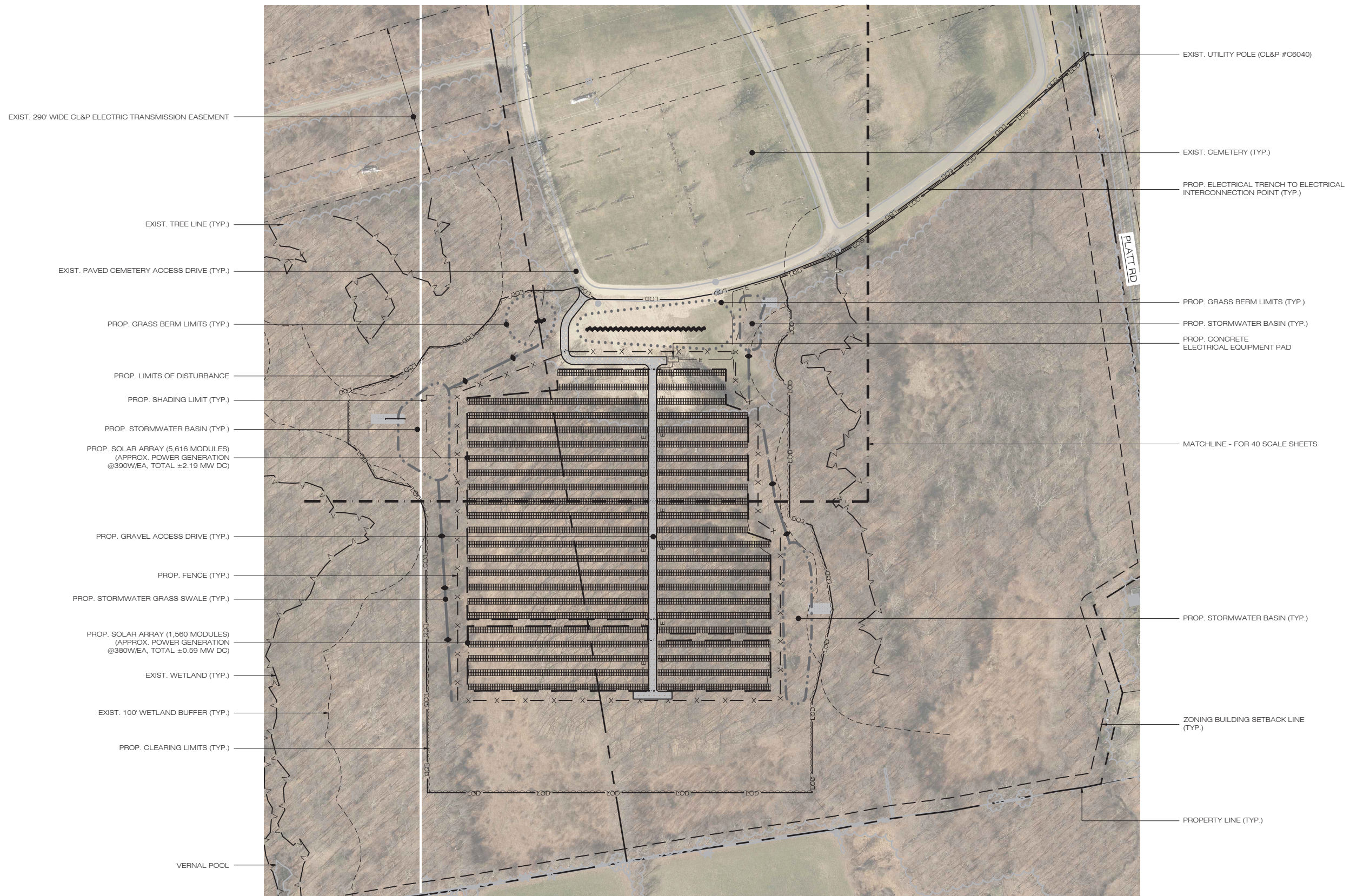
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SHEET TITLE:
PARTIAL SITE PLAN
 SHEET NUMBER:
OP-1



1 PARTIAL SITE PLAN
 OP-1 SCALE: 1" = 100'-0"
 (IN FEET) 1 inch = 100 ft.

EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROL PLAN NOTES

- 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 WATERTOWN, 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.
- 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.
- A BOND OR LETTER OF CREDIT MAY BE REQUIRED TO BE POSTED WITH THE GOVERNING AUTHORITY FOR THE EROSION CONTROL INSTALLATION AND MAINTENANCE.
- 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.
- 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 MANNER.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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 HYDROSEEDDED WITH TACKIFIER.
- 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.
- 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.
- 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.
- SEEDING MIXTURES SHALL BE NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX (SEE SITE DETAILS SHEET DN-1), OR APPROVED EQUAL BY OWNER.

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.
TEMPORARY SEDIMENT TRAP (W/ BAFFLES)	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.5"	REMOVE SEDIMENT ONCE IT HAS ACCUMULATED TO ONE HALF OF MINIMUM REQUIRED VOLUME OF THE WET STORAGE, DEWATERING AS NEEDED. RESTORE TRAP TO ORIGINAL DIMENSIONS. REPAIR/REPLACE BAFFLES WHEN FAILURE OR DETERIORATION IS OBSERVED.
TEMPORARY SOIL PROTECTION	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR ERODED OR BARE AREAS IMMEDIATELY. RESEED AND MULCH.

SEDIMENT & EROSION CONTROL NARRATIVE

- THE PROJECT INVOLVES THE CONSTRUCTION OF A GROUND MOUNTED SOLAR PANEL FACILITY WITH ASSOCIATED EQUIPMENT, INCLUDING THE CLEARING, GRUBBING AND GRADING OF APPROXIMATELY 16.70± ACRES OF EXISTING LOT.

THE PROPOSED PROJECT INVOLVES THE FOLLOWING CONSTRUCTION:

- CLEARING, GRUBBING, AND GRADING OF EXISTING LOT.
 - CONSTRUCTION OF 7,176 GROUND MOUNTED SOLAR PANELS AND ASSOCIATED EQUIPMENT.
 - THE STABILIZATION OF DISTURBED AREAS WITH PERMANENT VEGETATIVE TREATMENTS.
- FOR THIS PROJECT, THERE ARE APPROXIMATELY 16.70± ACRE OF THE SITE BEING DISTURBED WITH NEGLIGIBLE INCREASE IN THE IMPERVIOUS AREA OF THE SITE, AS ALL ACCESS THROUGH THE SITE WILL BE GRAVEL. IMPERVIOUS AREAS ARE LIMITED TO THE CONCRETE PADS FOR ELECTRICAL EQUIPMENT.
 - THE PROJECT SITE, AS MAPPED IN THE SOIL SURVEY OF STATE OF CONNECTICUT (NRCS, VERSION 18, DEC 6, 2018), CONTAINS TYPE 84B, AND 84C (HYDROLOGIC SOIL GROUP C), AND 45B, 46B AND 3 (HYDROLOGIC SOIL GROUP D) SOILS. ADDITIONAL INFORMATION CAN BE FOUND IN THE GEOTECHNICAL ENGINEERING REPORT BY DOWN TO EARTH CONSULTING, LLC, DATED MAY 2020.
 - IT IS ANTICIPATED THAT CONSTRUCTION WILL BE COMPLETED IN APPROXIMATELY 3-4 MONTHS.
 - REFER TO THE CONSTRUCTION SEQUENCING AND EROSION AND SEDIMENTATION NOTES FOR INFORMATION REGARDING SEQUENCING OF MAJOR OPERATIONS IN THE ON-SITE CONSTRUCTION PHASES.
 - STORMWATER MANAGEMENT DESIGN CRITERIA UTILIZES THE APPLICABLE SECTIONS OF THE 2004 CONNECTICUT STORMWATER QUALITY MANUAL AND THE TOWN OF WATERTOWN 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.
 - 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.
 - CONSERVATION PRACTICES TO BE USED DURING CONSTRUCTION:
 - STAGED CONSTRUCTION;
 - MINIMIZE THE DISTURBED AREAS TO THE EXTENT PRACTICABLE DURING CONSTRUCTION;
 - STABILIZE DISTURBED AREAS WITH TEMPORARY OR PERMANENT MEASURES AS SOON AS POSSIBLE, BUT NO LATER THAN 7-DAYS FOLLOWING DISTURBANCE;
 - MINIMIZE IMPERVIOUS AREAS;
 - UTILIZE APPROPRIATE CONSTRUCTION EROSION AND SEDIMENTATION MEASURES.
 - THE FOLLOWING SEPARATE DOCUMENTS ARE TO BE CONSIDERED A PART OF THE EROSION AND SEDIMENTATION PLAN:
 - STORMWATER MANAGEMENT REPORT DATED JULY, 2020.
 - SWPCP DATED JULY, 2020

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.

- 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.
- 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 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.
- NOTIFY CALL BEFORE YOU DIG AT 1-800-922-4455, AS REQUIRED, PRIOR TO THE START OF CONSTRUCTION.

PHASE 1

- REMOVE EXISTING IMPEDIMENTS AS NECESSARY AND PROVIDE MINIMAL CLEARING AND GRUBBING TO INSTALL THE REQUIRED CONSTRUCTION ENTRANCES.
- 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.
- INSTALL PERIMETER EROSION CONTROL
- INSTALL EROSION CONTROL BELOW EQUIPMENT AREA AND INSTALL CONCRETE EQUIPMENT PADS AND CONDUITS PROTECTED BY THESE CONTROLS.
- INSTALL TEMPORARY SEDIMENT TRAP 1 AND ASSOCIATED SWALES. UPON COMPLETION INSTALLATION AND STABILIZATION OF THE BASIN AND SWALES PHASE 2 WORK UP GRADIENT CAN PROCEED.
- INSTALL TEMPORARY SEDIMENT TRAP 2 AND ASSOCIATED SWALES. UPON COMPLETION INSTALLATION AND STABILIZATION OF THE BASIN AND SWALES PHASE 2 WORK UP GRADIENT CAN PROCEED.
- INSTALL TEMPORARY SEDIMENT BASIN 3 AND ASSOCIATED SWALES. UPON COMPLETION INSTALLATION AND STABILIZATION OF THE BASIN AND SWALES PHASE 2 WORK UP GRADIENT CAN PROCEED.

PHASE 2

- UPON COMPLETION OF THE INSTALLATION EACH OF THE TEMPORARY SEDIMENT BASINS, THE AREA ABOVE THE BASIN CAN HAVE THE REMAINING ARRAY AREA CLEARING AND GRUBBING 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.
- TEMPORARILY SEED DISTURBED AREAS NOT UNDER CONSTRUCTION FOR THIRTY (30) DAYS OR MORE.
- INSTALL REMAINING ELECTRICAL CONDUIT.
- INSTALL RACKING POSTS FOR GROUND MOUNTED SOLAR PANELS
- INSTALL GROUND MOUNTED SOLAR PANELS AND COMPLETE ELECTRICAL INSTALLATION.
- AFTER SUBSTANTIAL COMPLETION OF THE INSTALLATION OF THE SOLAR PANELS, COMPLETE REMAINING SITE WORK, INCLUDING ANY REQUIRED LANDSCAPE SCREENING, AND STABILIZE ALL DISTURBED AREAS.
- FINE GRADE, RAKE, SEED AND MULCH ALL REMAINING DISTURBED AREAS.
- AFTER THE SITE IS STABILIZED AND WITH THE APPROVAL OF THE PERMITTEE AND TOWN OF WATERTOWN AGENT, REMOVE PERIMETER EROSION AND SEDIMENTATION CONTROLS.

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

OWNER: CATHOLIC CEMETERIES
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WATERTOWN SOLAR ONE, LLC

SITE HINMAN ROAD & PLATT ROAD
ADDRESS: WATERTOWN, CT 06795

APT FILING NUMBER: CT590240

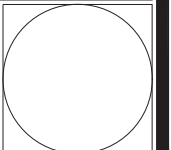
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DATE: 06/30/20	CHECKED BY: BJP

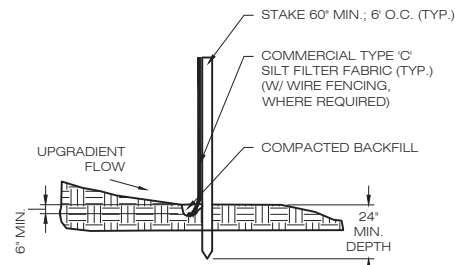
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SEDIMENTATION & EROSION CONTROL NOTES

SHEET NUMBER:

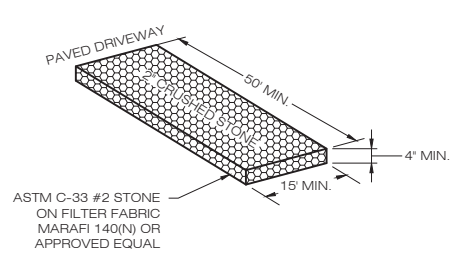
EC-1



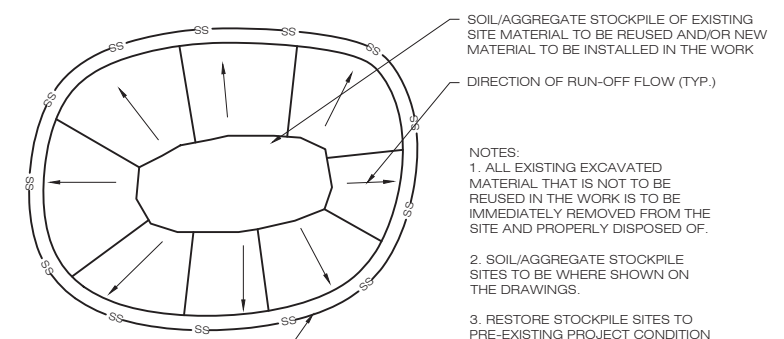


NOTE: SILT FENCE SHALL BE LAPPED ONLY WHEN NECESSARY PER THE MANUFACTURER RECOMMENDATIONS.

1 SILT FENCE DETAIL
SCALE: N.T.S.



2 CONSTRUCTION ENTRANCE DETAIL
SCALE: N.T.S.



SOIL/AGGREGATE STOCKPILE OF EXISTING SITE MATERIAL TO BE REUSED AND/OR NEW MATERIAL TO BE INSTALLED IN THE WORK

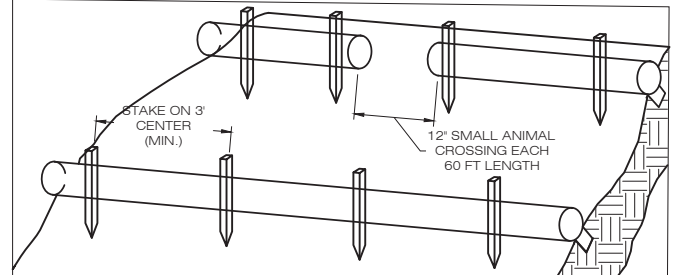
DIRECTION OF RUN-OFF FLOW (TYP.)

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.

SINGLE ROW OF COMPOST FILTER SOCK

3 MATERIALS STOCKPILE DETAIL
SCALE: N.T.S.

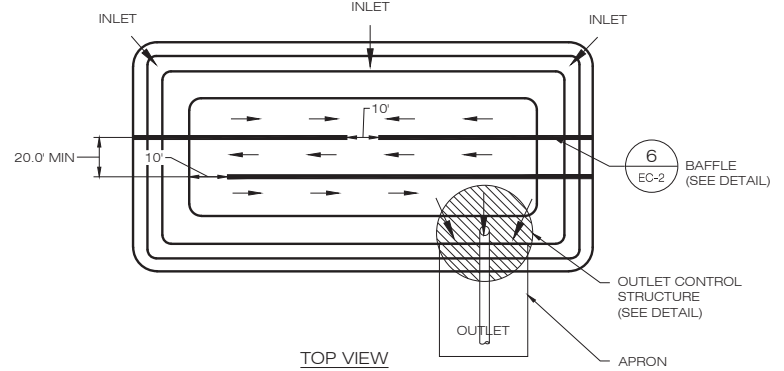


1. BEGIN AT THE LOCATION WHERE THE SOCK IS TO BE INSTALLED BY EXCAVATING A 2'-3" (5-7.5 CM) DEEP X 9" (22.9 CM) WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UPSLOPE FROM THE ANCHOR TRENCH.

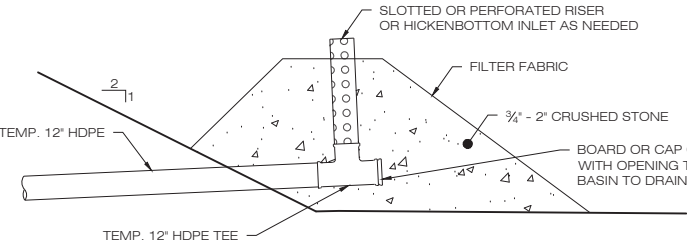
2. PLACE THE SOCK IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE SOCK ON THE UPSLOPE SIDE. SOCKS SHALL BE INSTALLED IN 60 FT CONTINUOUS LENGTHS WITH ADJACENT SOCKS TIGHTLY ABUT. EVERY 60 FT THE SOCK ROW SHALL BE SPACED 12 INCHES CLEAR, END TO 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.

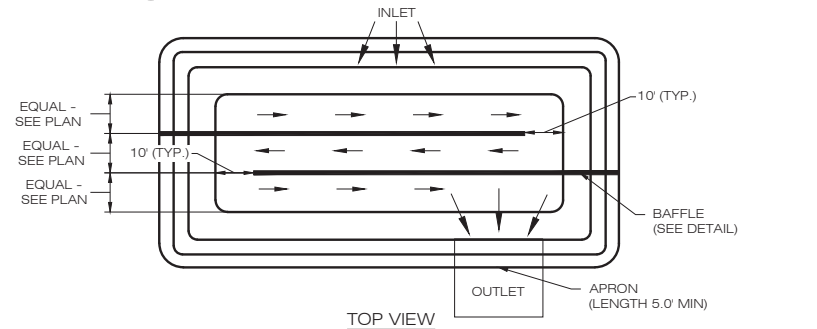
4 COMPOST FILTER SOCK SEDIMENTATION CONTROL BARRIER
SCALE: N.T.S.



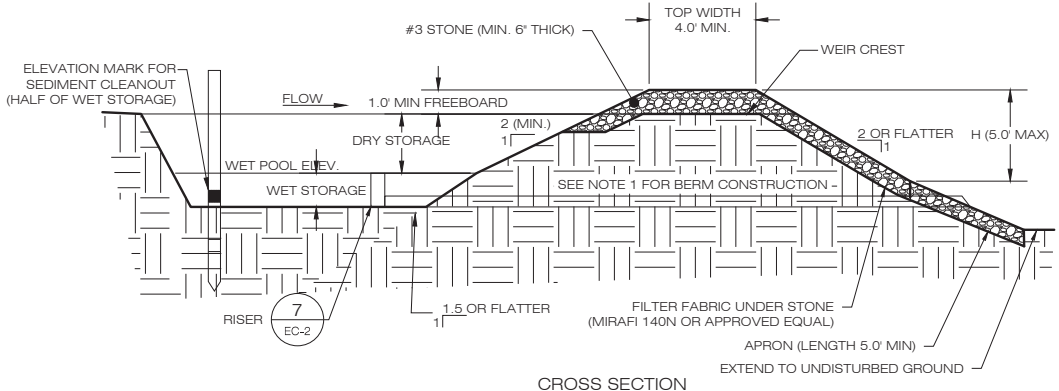
TOP VIEW



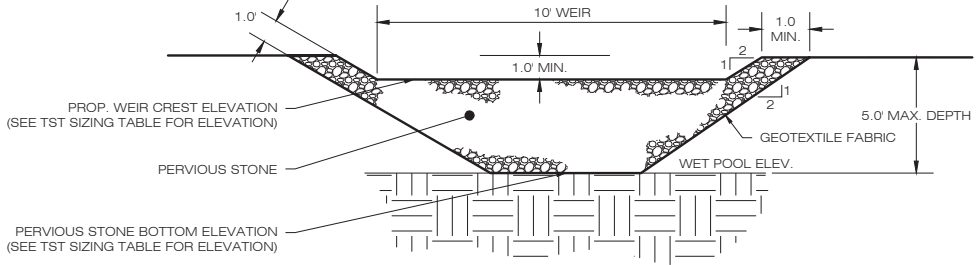
7 RISER DETAIL
SCALE: N.T.S.



TOP VIEW



CROSS SECTION

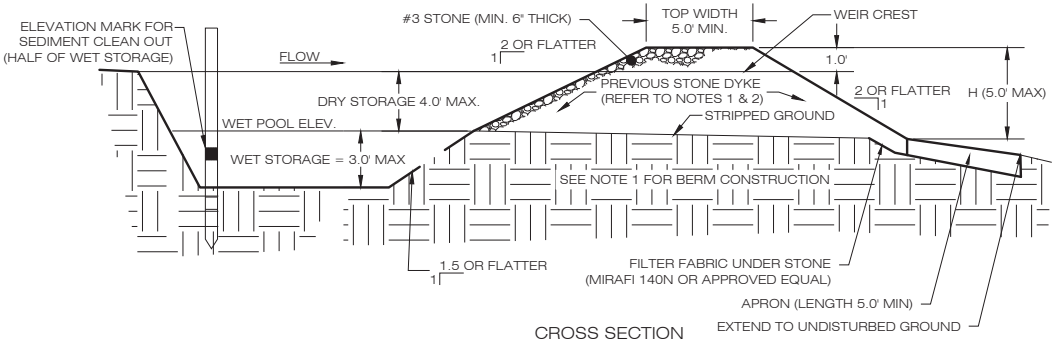


OUTLET ELEVATION

NOTES:

1. CONSTRUCT TEMPORARY SEDIMENT BASIN BERMS AND SIDEWALLS PER THE INFILTRATION BASIN DETAIL.
2. SEDIMENT BAFFLES SHALL BE INSTALLED AS SHOWN ON EC-3 & EC-4.
3. SEE TST SIZING TABLE FOR WET AND DRY STORAGE VOLUMES.

5 TEMPORARY SEDIMENT BASIN
SCALE: N.T.S.



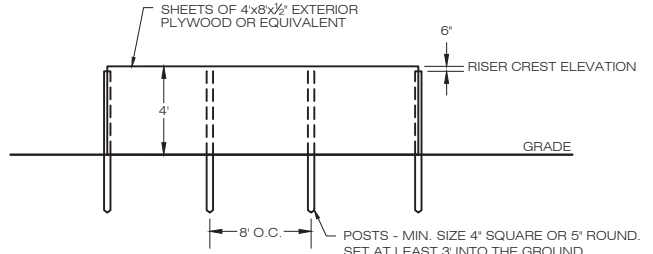
CROSS SECTION

NOTES:

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

8 TEMPORARY SEDIMENT TRAP
SCALE: N.T.S.

NAME	DRAINAGE AREA (AC)	REQ. DRY VOLUME (CF)	REQ. WET VOLUME (CF)	PROP. BTM. ELEV. (FT)	PROP. OUTLET RIM ELEV. (FT)	PROP. WEIR CREST ELEV. (FT)	PROP. TOP ELEV. (FT)	WET VOL. PROVIDED (CF)	DRY VOL. PROVIDED (CF)	TOTAL VOL. PROVIDED (CF)
TSB-3	5.617	4,494	8,987	777.00	778.60	779.00	781.00	11,293	10,389	21,682



6 SEDIMENT TRAP BAFFLE
SCALE: N.T.S.

NAME	DRAINAGE AREA (AC)	SEDIMENT VOLUME/ACRE AREA (CY)	REQ. VOLUME (CY)	REQ. WET VOLUME (CY)	PROP. BTM. ELEV. (FT)	PROP. STONE DIKE BTM. ELEV. (FT)	PROP. WEIR CREST ELEV. (FT)	PROP. TOP ELEV. (FT)	WET VOL. PROVIDED (CY)	TOTAL VOL. PROVIDED (CY)
TST-1	1.38	134 CYD	185	93	783.00	785.00	786.00	787.00	148	197
TST-2	3.83	134 CYD	514	257	779.00	781.50	782.50	783.50	475	818

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SHEET TITLE:
SEDIMENTATION & EROSION CONTROL DETAILS

SHEET NUMBER:
EC-2

WATERTOWN SOLAR ONE, LLC
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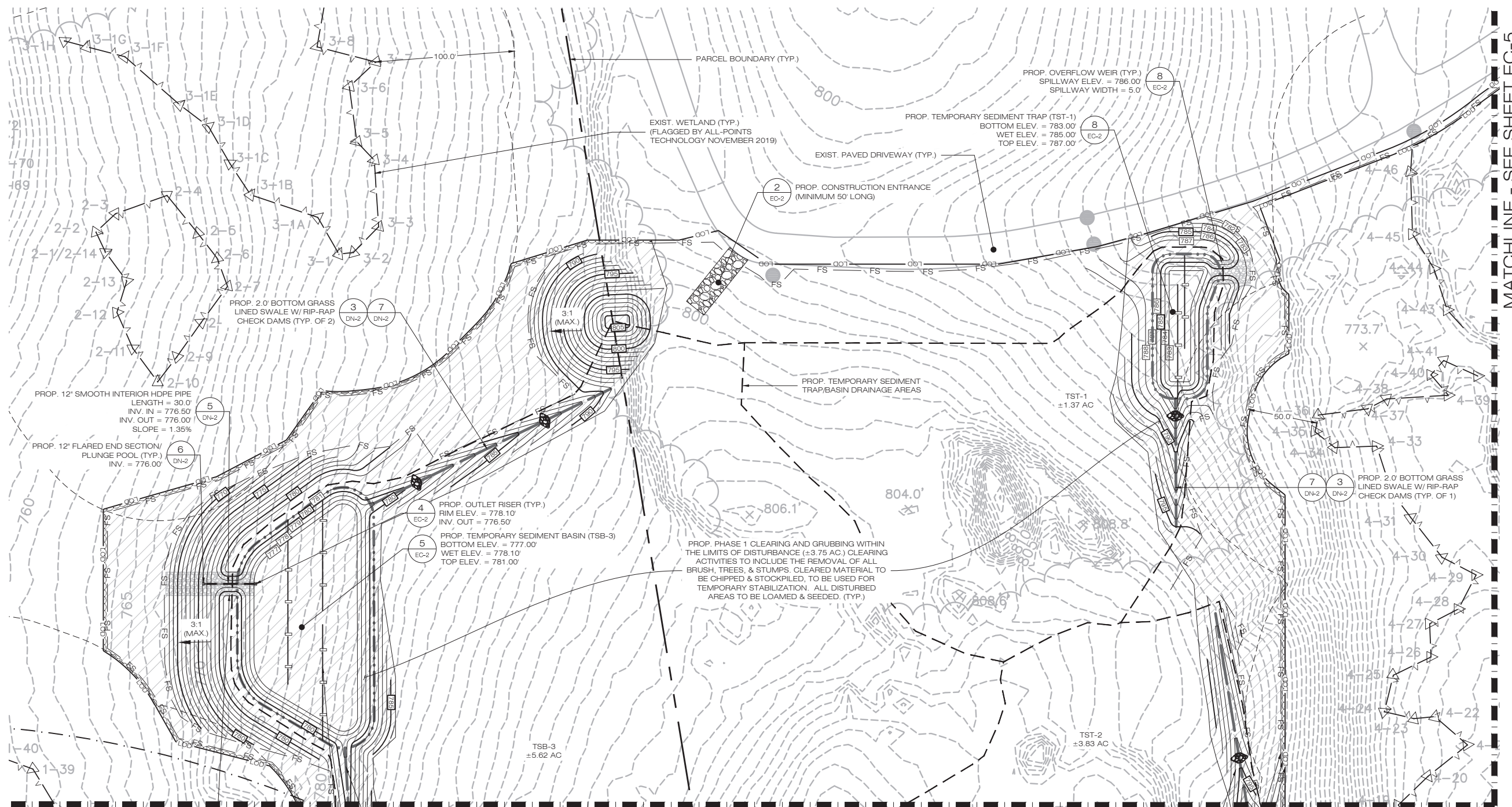
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SHEET TITLE:
**PHASE 1
 SEDIMENTATION &
 EROSION CONTROL PLAN**

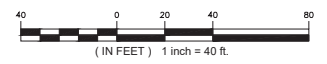
SHEET NUMBER:
EC-3



MATCHLINE - SEE SHEET EC-5

MATCHLINE - SEE SHEET EC-4

1 PHASE 1 - SEDIMENTATION & EROSION CONTROL PLAN
 EC-3 SCALE: 1" = 40'-0"



EXIST. WETLAND (TYP.)
(FLAGGED BY ALL-POINTS
TECHNOLOGY NOVEMBER 2019)

MATCHLINE - SEE SHEET EC-3

7 3
DN-2 DN-2
PROP. 2.0' BOTTOM GRASS
LINED SWALE W/ RIP-RAP
CHECK DAMS (TYP. OF 1)

6 5
EC-2 EC-2
PROP. SEDIMENT BAFFLE (TYP.)
(SEE DETAIL FOR LAYOUT
DIMENSIONS)

750' CRITICAL TERRESTRIAL HABITAT
TO VERNAL POOL

TSB-3
±5.62 AC

PARCEL BOUNDARY (TYP.)

TST-2
±3.83 AC

7 3
DN-2 DN-2
PROP. 2.0' BOTTOM GRASS
LINED SWALE W/ RIP-RAP
CHECK DAMS (TYP. OF 3)

PROP. PHASE 1 CLEARING AND GRUBBING WITHIN THE LIMITS OF
DISTURBANCE (±3.75 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.)

PROP. TEMPORARY SEDIMENT
TRAP/BASIN DRAINAGE AREAS

8
EC-2
PROP. OVERFLOW WEIR (TYP.)
SPILLWAY ELEV. = 782.50'
SPILLWAY WIDTH = 5.0'

8
EC-2
PROP. TEMPORARY SEDIMENT TRAP (TST-2)
BOTTOM ELEV. = 779.00'
WET ELEV. = 781.50'
TOP ELEV. = 783.50'

PROP. PHASE 1 CLEARING ONLY (2.83± AC.)
CLEARING ACTIVITIES TO INCLUDE THE REMOVAL
OF ALL BRUSH & TREES. ALL STUMPS TO REMAIN. CLEARED
MATERIAL TO BE CHIPPED & STOCKPILED, TO BE USED
FOR TEMPORARY STABILIZATION. (TYP.)

4
EC-2
PROP. 18" COMPOST FILTER SOCK (TYP.)

PROP. CLEARING LIMITS (TYP.)

PROP. LIMIT OF DISTURBANCE (TYP.)

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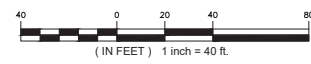
DESIGN PROFESSIONAL OF RECORD
 PROF: BRADLEY J. PARSONS, P.E.
 COMP: ALL-POINTS TECHNOLOGY CORPORATION
 ADD: 567 VAUXHAUL STREET
 EXTENSION - SUITE 311
 WATERFORD, CT 06385
 OWNER: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD
 WATERTOWN, CT 06795

WATERTOWN SOLAR ONE, LLC
 SITE HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERTOWN, CT 06795
 APT FILING NUMBER: CT590240
 DRAWN BY: CSH
 DATE: 06/30/20 CHECKED BY: BJP

SHEET TITLE:
**PHASE 1
 SEDIMENTATION &
 EROSION CONTROL PLAN**

SHEET NUMBER:
EC-4

1
EC-4
PHASE 1 - SEDIMENTATION & EROSION CONTROL PLAN
 SCALE: 1" = 40'-0"



WATERTOWN SOLAR ONE, LLC
 150 TRUMBULL STREET
 4TH FLOOR
 HARTFORD, CT, 06103



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

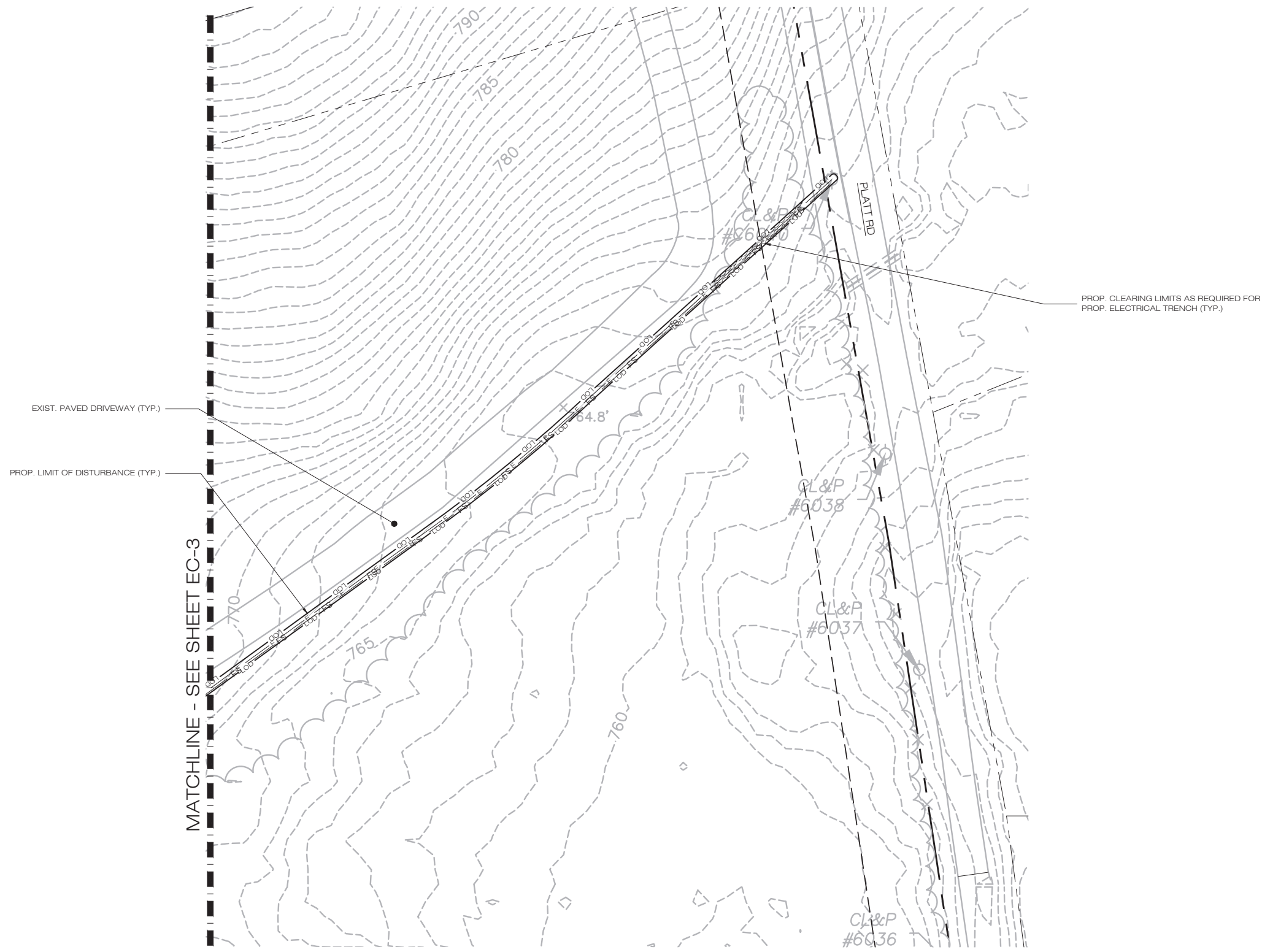
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NO	DATE	REVISION
0	06/30/20	FOR CLIENT REVIEW
1	07/06/20	CSC SUBMISSION
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DESIGN PROFESSIONAL OF RECORD
 PROF: BRADLEY J. PARSONS P.E.
 COMP: ALL-POINTS TECHNOLOGY CORPORATION
 ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385
 OWNER: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD WATERFORD, CT 06795

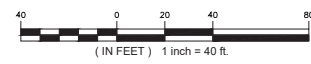
WATERTOWN SOLAR ONE, LLC
 SITE HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERFORD, CT 06795
 APT FILING NUMBER: CT590240
 DRAWN BY: CSH
 DATE: 06/30/20 CHECKED BY: BJP

SHEET TITLE:
**PHASE 1
 SEDIMENTATION &
 EROSION CONTROL PLAN**

SHEET NUMBER:
EC-5



1
 EC-5 **PHASE 1 - SEDIMENTATION & EROSION CONTROL PLAN**
 SCALE: 1" = 40'-0"



WATERTOWN SOLAR ONE, LLC
 150 TRUMBULL STREET
 4TH FLOOR
 HARTFORD, CT, 06103



567 VAUXHAUL STREET EXTENSION - SUITE 311
 WATERFORD, CT 06385 PHONE: (860)-963-1697
 WWW.ALLPOINTSTECH.COM FAX: (860)-963-0935

CSC PERMIT SET

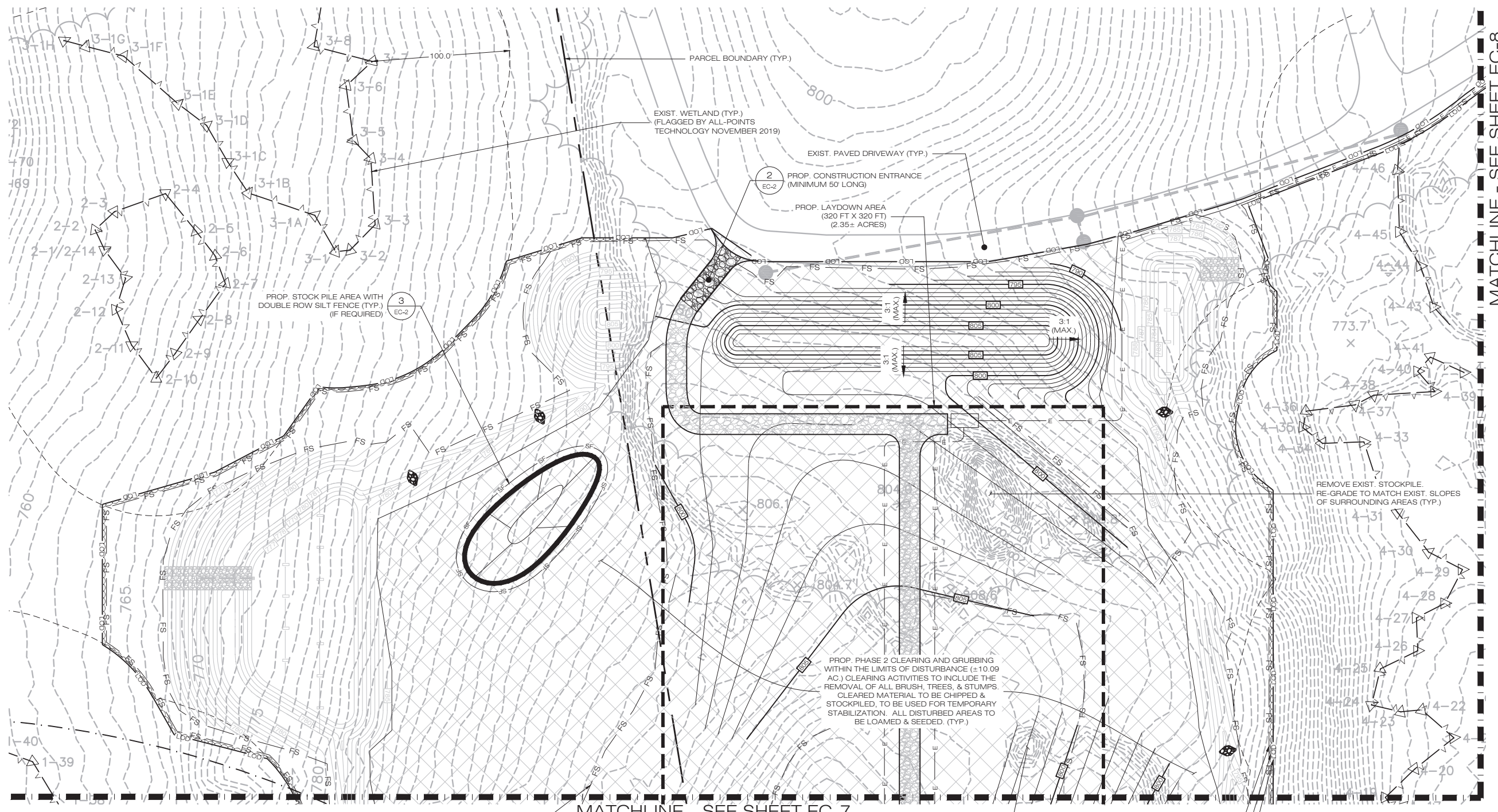
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DESIGN PROFESSIONAL OF RECORD
 PROF: BRADLEY J. PARSONS, P.E.
 COMP: ALL-POINTS TECHNOLOGY CORPORATION
 ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385
 OWNER: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD WATERFORD, CT 06795

WATERTOWN SOLAR ONE, LLC
 SITE HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERFORD, CT 06795
 APT FILING NUMBER: CT590240
 DRAWN BY: CSH
 DATE: 06/30/20 CHECKED BY: BJP

SHEET TITLE:
**PHASE 2
 SEDIMENTATION &
 EROSION CONTROL PLAN**

SHEET NUMBER:
EC-6



MATCHLINE - SEE SHEET EC-8

MATCHLINE - SEE SHEET EC-7

PROP. STRAW WATTLE (TYP.)
 (TO BE PLACED ON CONTOUR APPROX.
 HALFWAY DOWN SLOPE)
 REMOVE AND REPLACE AS REQ.
 DURING CONSTRUCTION

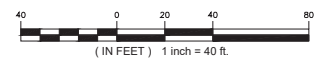
REMOVE EXIST. STOCKPILE.
 RE-GRADE TO MATCH EXIST. SLOPES
 OF SURROUNDING AREAS (TYP.)

PROP. 18" COMPOST FILTER SOCK (TYP.)

PROP. CLEARING LIMITS (TYP.)

PROP. LIMIT OF DISTURBANCE (TYP.)

1 PHASE 2 - SEDIMENTATION & EROSION CONTROL PLAN
 EC-6 SCALE: 1" = 40'-0"



WATERTOWN SOLAR ONE, LLC
 150 TRUMBULL STREET
 4TH FLOOR
 HARTFORD, CT, 06103

ALL-POINTS
 TECHNOLOGY CORPORATION
 567 VAUXHAUL STREET EXTENSION - SUITE 311
 WATERFORD, CT 06385 PHONE: (860)-963-1697
 WWW.ALLPOINTSTECH.COM FAX: (860)-963-0935

CSC PERMIT SET

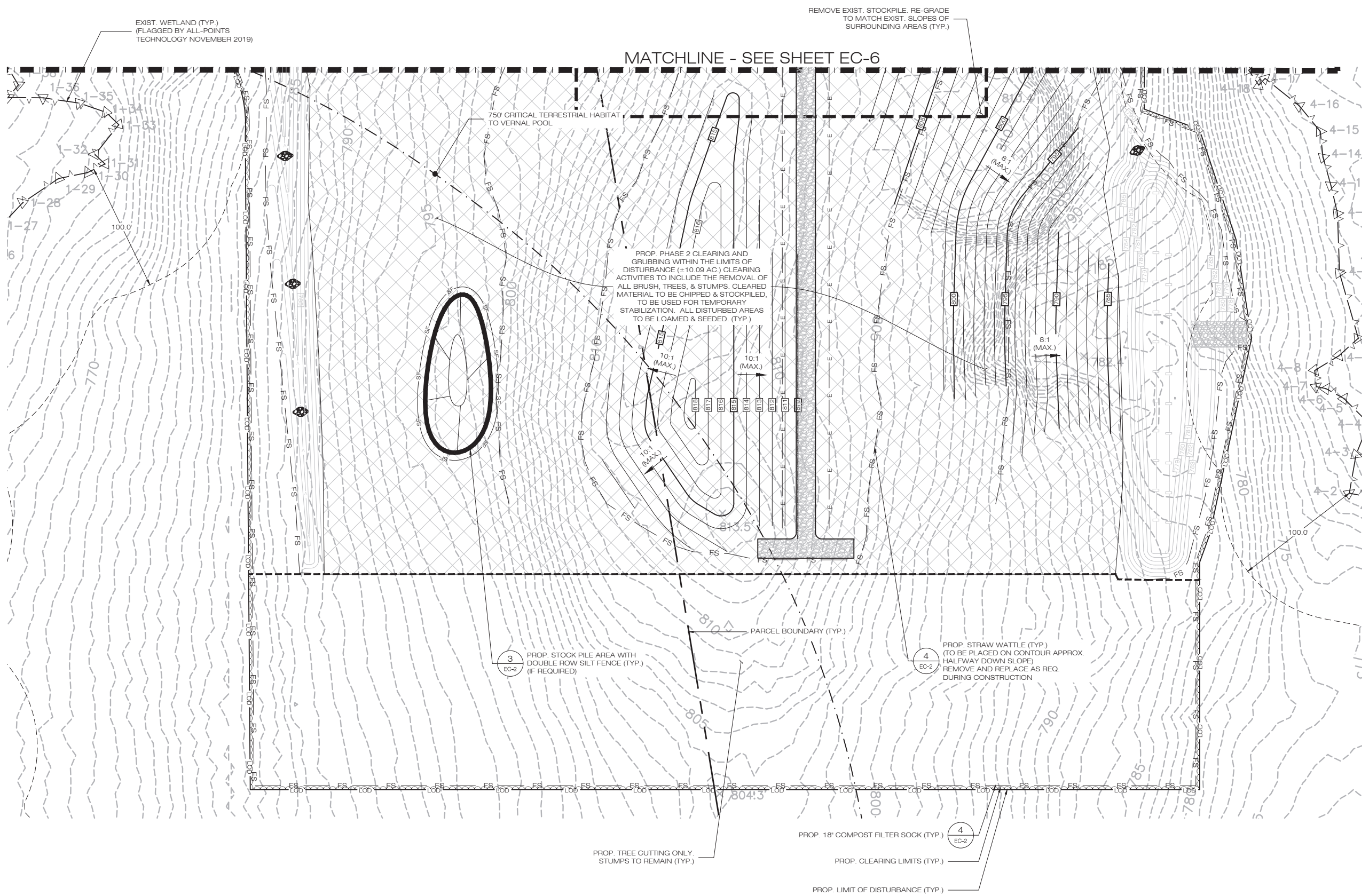
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 WATERFORD, CT 06385
 OWNER: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD
 WATERTOWN, CT 06795

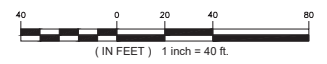
WATERTOWN SOLAR ONE, LLC
 SITE HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERTOWN, CT 06795
 APT FILING NUMBER: CT590240
 DRAWN BY: CSH
 DATE: 06/30/20 CHECKED BY: BJP

SHEET TITLE:
**PHASE 2
 SEDIMENTATION &
 EROSION CONTROL PLAN**

SHEET NUMBER:
EC-7



1
 EC-7 **PHASE 2 - SEDIMENTATION & EROSION CONTROL PLAN**
 SCALE: 1" = 40'-0"



WATERTOWN SOLAR ONE, LLC
 150 TRUMBULL STREET
 4TH FLOOR
 HARTFORD, CT, 06103



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

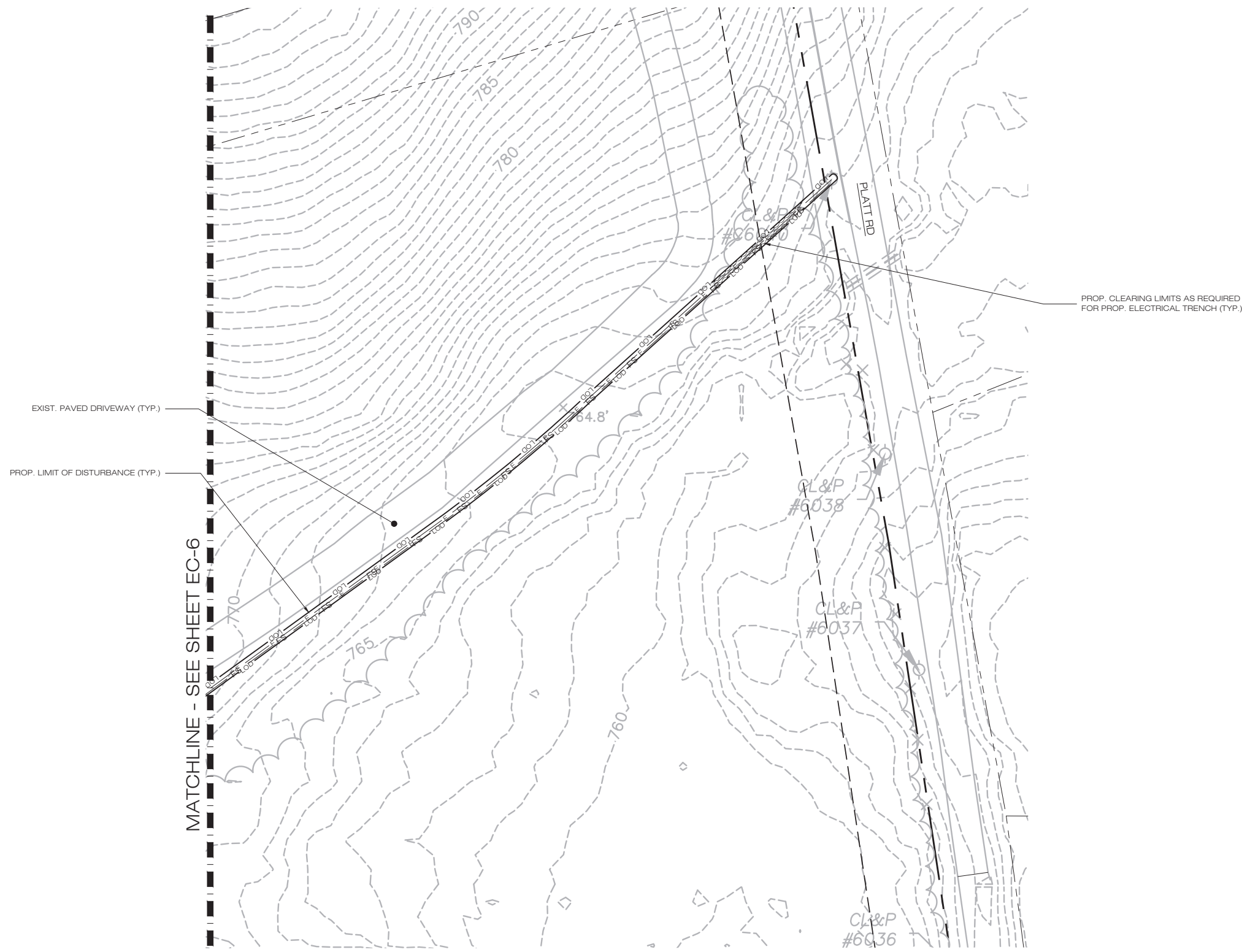
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NO	DATE	REVISION
0	06/30/20	FOR CLIENT REVIEW
1	07/06/20	CSC SUBMISSION
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DESIGN PROFESSIONAL OF RECORD
 PROF: BRADLEY J. PARSONS P.E.
 COMP: ALL-POINTS TECHNOLOGY CORPORATION
 ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385
 OWNER: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD WATERFORD, CT 06795

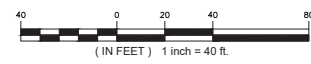
WATERTOWN SOLAR ONE, LLC
 SITE HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERFORD, CT 06795
 APT FILING NUMBER: CT590240
 DRAWN BY: CSH
 DATE: 06/30/20 CHECKED BY: BJP

SHEET TITLE:
**PHASE 2
 SEDIMENTATION &
 EROSION CONTROL PLAN**

SHEET NUMBER:
EC-8



1
 EC-8
PHASE 2 - SEDIMENTATION & EROSION CONTROL PLAN
 SCALE: 1" = 40'-0"



WATERTOWN SOLAR ONE, LLC
 150 TRUMBULL STREET
 4TH FLOOR
 HARTFORD, CT, 06103



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	06/30/20	FOR CLIENT REVIEW
1	07/06/20	CSC SUBMISSION
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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: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD
 WATERTOWN, CT 06795

WATERTOWN SOLAR ONE, LLC

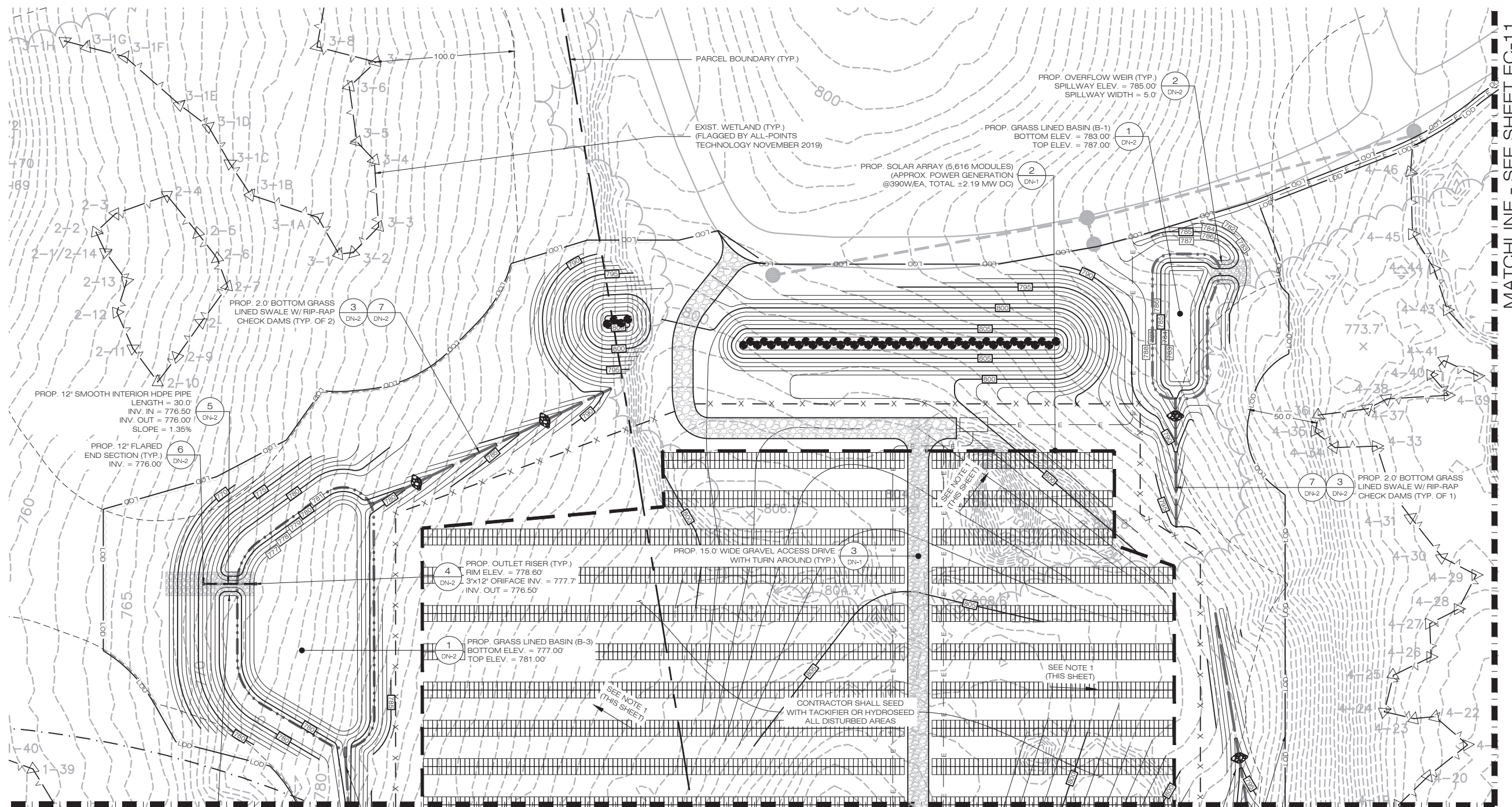
SITE: HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERTOWN, CT 06795

APT FILING NUMBER: CT590240

DRAWN BY: CSH
 DATE: 06/30/20 CHECKED BY: BJP

SHEET TITLE:
**PHASE 3
 FINAL GRADING &
 DRAINAGE PLAN**

SHEET NUMBER:
EC-9

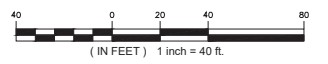


MATCHLINE - SEE SHEET EC-11

MATCHLINE - SEE SHEET EC-10

- NOTES:
- GRADE/SHAPE AREA TO MAINTAIN EXIST. DRAINAGE PATTERNS.
 - CONTRACTOR SHALL REMOVE ALL BAFFLES AND SEDIMENT BASINS AND SWALES.
 - CONTRACTOR SHALL REPLACE TEMPORARY SEDIMENT BASIN OUTLET WITH GRAVEL OVERFLOW WEIR UPON THE SITE OR DRAINAGE AREA BEING DEEMED STABILIZED PER THE SWPCP.
 - CONTRACTOR SHALL MODIFY/REPLACE THE TEMPORARY SEDIMENT BASIN RISER AS NEEDED UPON THE SITE OR DRAINAGE AREA BEING DEEMED STABILIZED PER THE SWPCP.

1 PHASE 3 - FINAL GRADING & DRAINAGE PLAN
 EC-9 SCALE: 1" = 40'-0"



WATERTOWN SOLAR ONE, LLC
150 TRUMBULL STREET
4TH FLOOR
HARTFORD, CT, 06103

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

CSC PERMIT SET

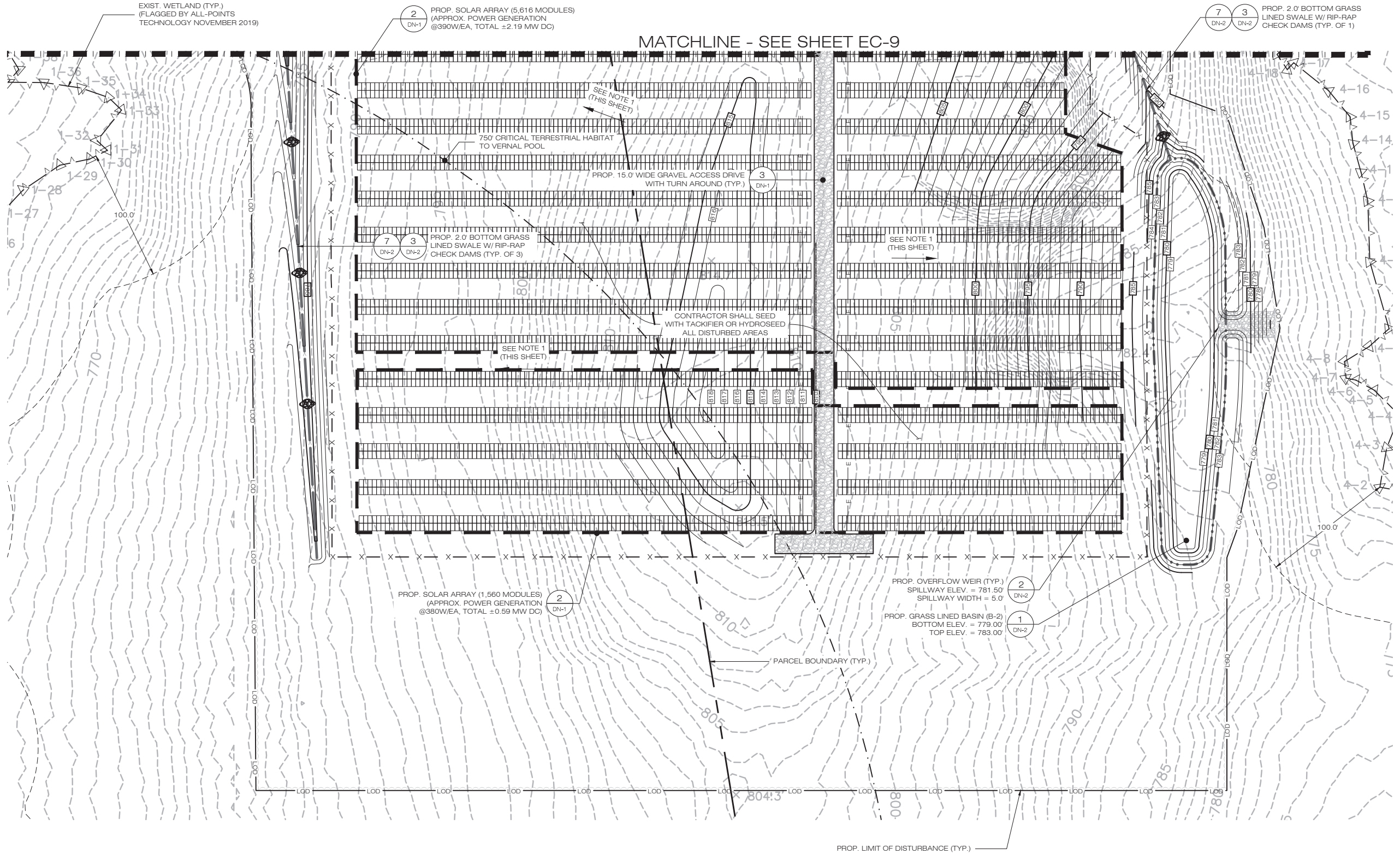
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1	07/06/20	CSC SUBMISSION
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DESIGN PROFESSIONAL OF RECORD
 PROF: BRADLEY J. PARSONS P.E.
 COMP: ALL-POINTS TECHNOLOGY CORPORATION
 ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385
 OWNER: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD WATERFORD, CT 06795

WATERTOWN SOLAR ONE, LLC
 SITE HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERFORD, CT 06795
 APT FILING NUMBER: CT590240
 DRAWN BY: CSH
 DATE: 06/30/20 CHECKED BY: BJP

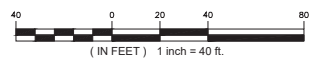
SHEET TITLE:
PHASE 3
FINAL GRADING &
DRAINAGE PLAN

SHEET NUMBER:
EC-10



NOTES:
 1. GRADE/SHAPE AREA TO MAINTAIN EXIST. DRAINAGE PATTERNS.
 2. CONTRACTOR SHALL REMOVE ALL BAFFLES AND SEDIMENT BASINS AND SWALES.
 3. CONTRACTOR SHALL REPLACE TEMPORARY SEDIMENT BASIN OUTLET WITH GRAVEL OVERFLOW WEIR UPON THE SITE OR DRAINAGE AREA BEING DEEMED STABILIZED PER THE SWPCP.
 4. CONTRACTOR SHALL MODIFY/REPLACE THE TEMPORARY SEDIMENT BASIN RISER AS NEEDED UPON THE SITE OR DRAINAGE AREA BEING DEEMED STABILIZED PER THE SWPCP.

1 PHASE 3 - FINAL GRADING & DRAINAGE PLAN
 EC-10 SCALE: 1" = 40'-0"



WATERTOWN SOLAR ONE, LLC
 150 TRUMBULL STREET
 4TH FLOOR
 HARTFORD, CT, 06103



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

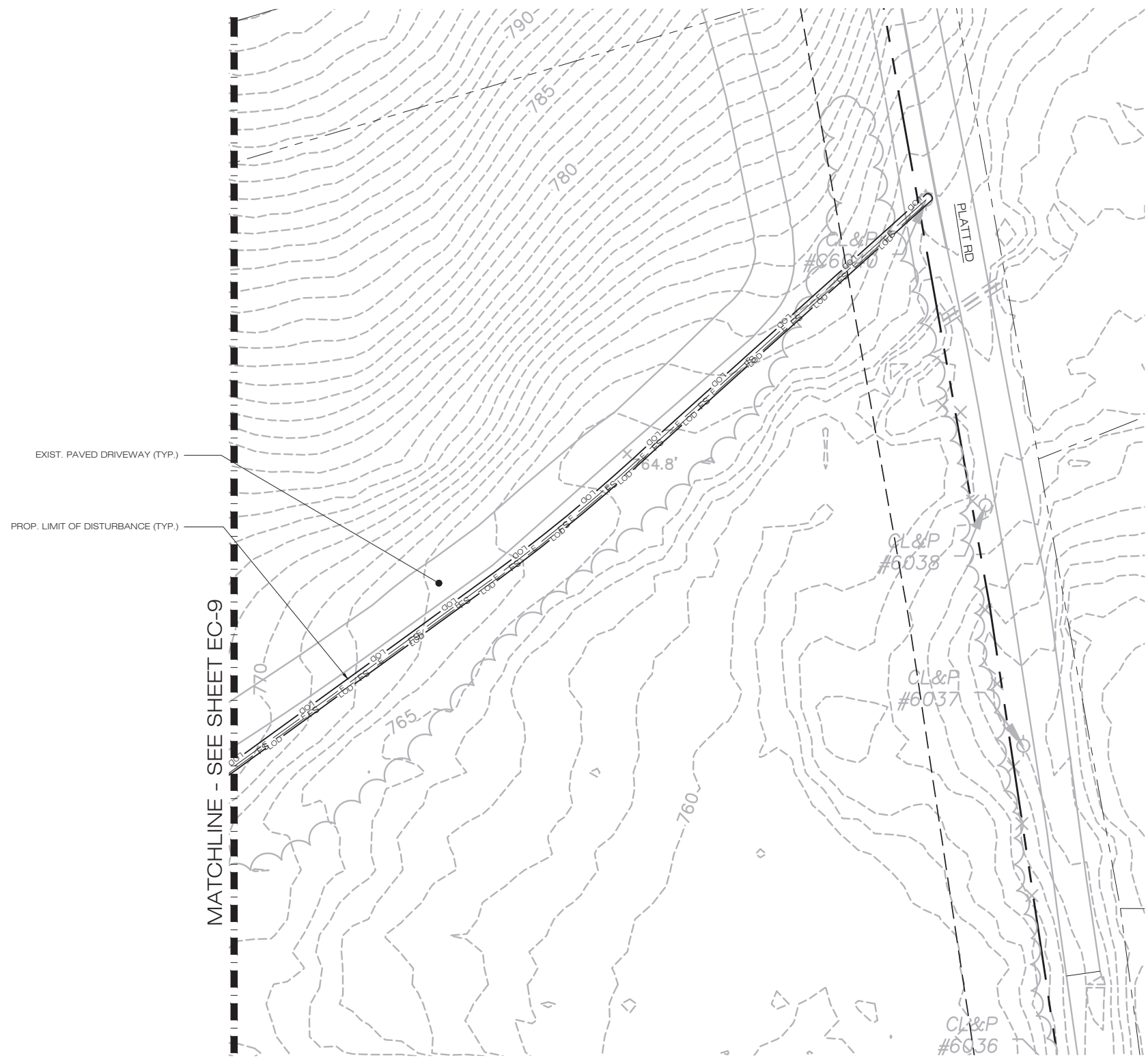
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DESIGN PROFESSIONAL OF RECORD
 PROF: BRADLEY J. PARSONS P.E.
 COMP: ALL-POINTS TECHNOLOGY CORPORATION
 ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385
 OWNER: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD WATERFORD, CT 06795

WATERTOWN SOLAR ONE, LLC
 SITE HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERFORD, CT 06795
 APT FILING NUMBER: CT590240
 DRAWN BY: CSH
 DATE: 06/30/20 CHECKED BY: BJP

SHEET TITLE:
**PHASE 3
 FINAL GRADING &
 DRAINAGE PLAN**

SHEET NUMBER:
EC-11



1 PHASE 3 - FINAL GRADING & DRAINAGE PLAN
 SCALE: 1" = 40'-0"
 (IN FEET) 1 inch = 40 ft.

WATERTOWN SOLAR ONE, LLC
 150 TRUMBULL STREET
 4TH FLOOR
 HARTFORD, CT, 06103



567 VAUXHAUL STREET EXTENSION - SUITE 311
 WATERFORD, CT 06385 PHONE: (860)-963-1697
 WWW.ALLPOINTS TECH.COM FAX: (860)-963-0935

CSC PERMIT SET

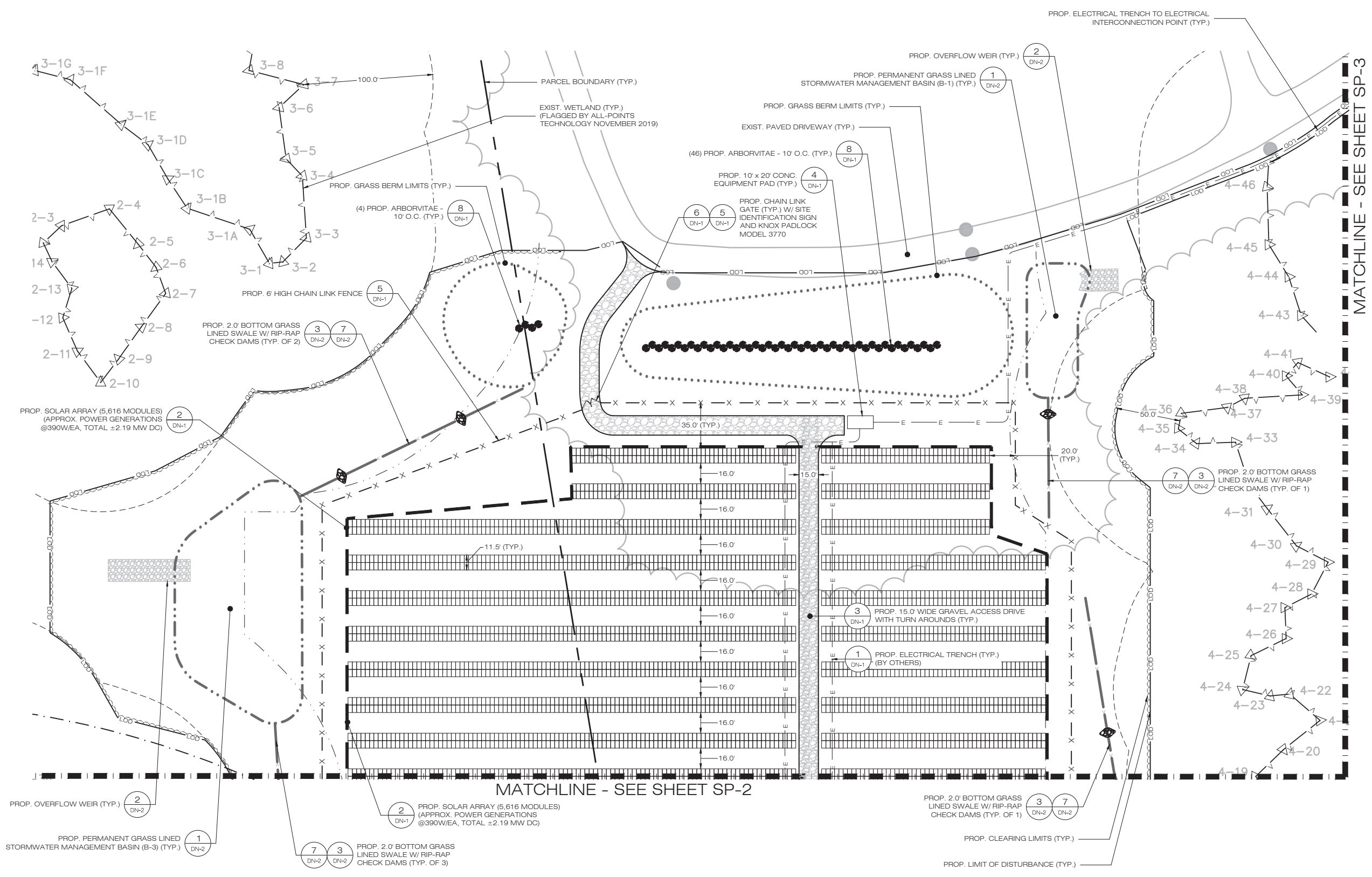
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 PROF: BRADLEY J. PARSONS, P.E.
 COMP: ALL-POINTS TECHNOLOGY CORPORATION
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 OWNER: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD WATERFORD, CT 06795

WATERTOWN SOLAR ONE, LLC
 SITE HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERFORD, CT 06795
 APT FILING NUMBER: CT590240
 DRAWN BY: CSH
 DATE: 06/30/20 CHECKED BY: BJP

SHEET TITLE:
 SITE & UTILITY PLAN

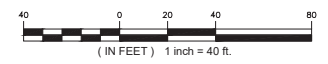
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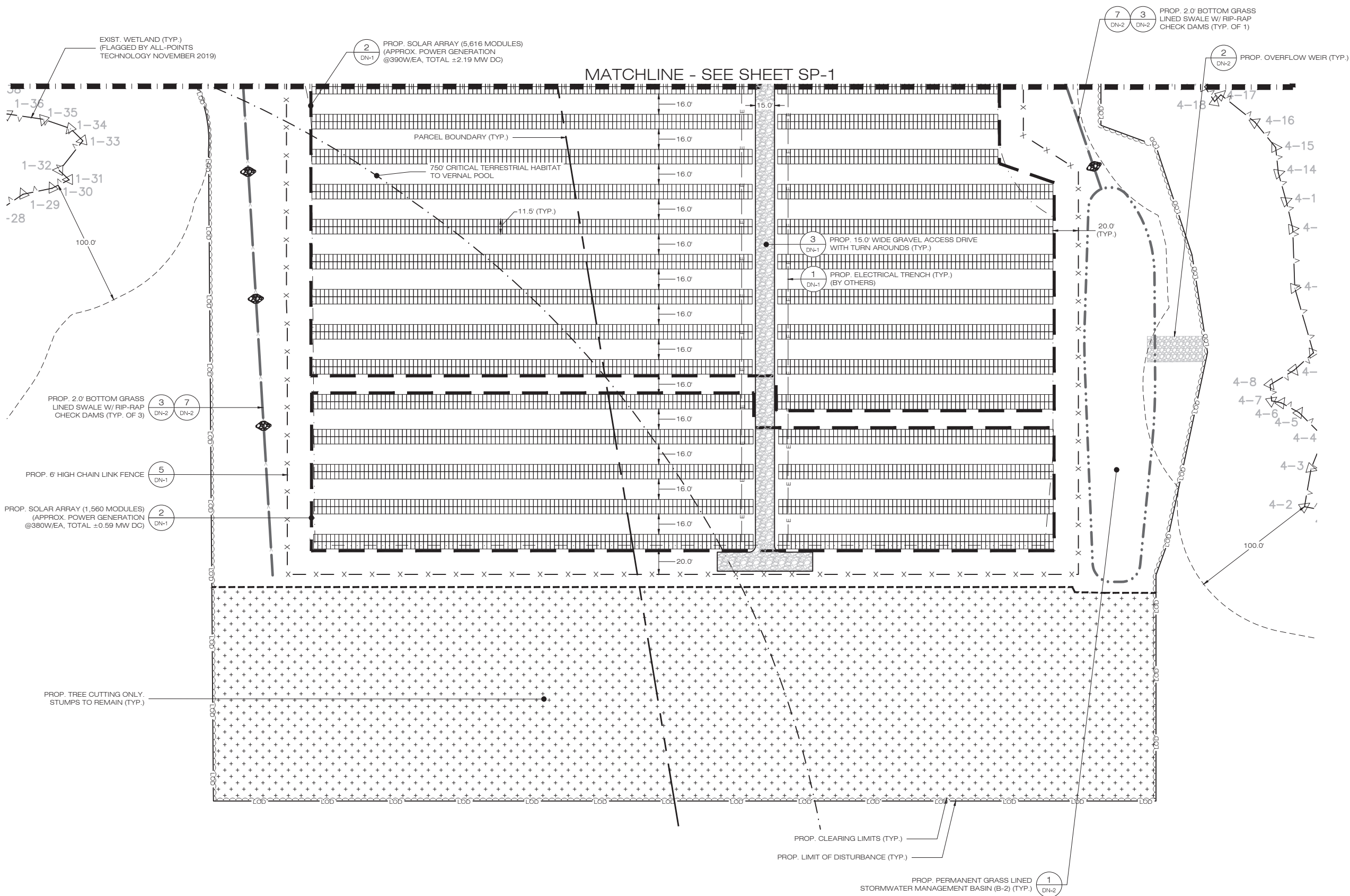


MATCHLINE - SEE SHEET SP-2

MATCHLINE - SEE SHEET SP-3

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





WATERTOWN SOLAR ONE, LLC
 150 TRUMBULL STREET
 4TH FLOOR
 HARTFORD, CT, 06103

ALL-POINTS TECHNOLOGY CORPORATION
 567 VAUXHAUL STREET EXTENSION - SUITE 311
 WATERFORD, CT 06385 PHONE: (860)-953-1697
 WWW.ALLPOINTS TECH.COM FAX: (860)-953-0935

CSC PERMIT SET

NO	DATE	REVISION
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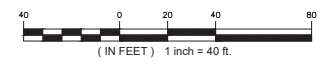
DESIGN PROFESSIONAL OF RECORD
 PROF: BRADLEY J. PARSONS P.E.
 COMP: ALL-POINTS TECHNOLOGY CORPORATION
 ADD: 567 VAUXHAUL STREET EXTENSION - SUITE 311
 WATERFORD, CT 06385
 OWNER: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD
 WATERFORD, CT 06795

WATERTOWN SOLAR ONE, LLC
 SITE HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERFORD, CT 06795
 APT FILING NUMBER: CT590240
 DRAWN BY: CSH
 DATE: 06/30/20 CHECKED BY: BJP

SHEET TITLE:
 SITE & UTILITY PLAN

SHEET NUMBER:
 SP-2

1 SITE & UTILITY PLAN
 SP-2 SCALE: 1" = 40'-0"



WATERTOWN SOLAR ONE, LLC
 150 TRUMBULL STREET
 4TH FLOOR
 HARTFORD, CT, 06103



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 WATERFORD, CT 06385 PHONE: (860)-663-1697
 WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

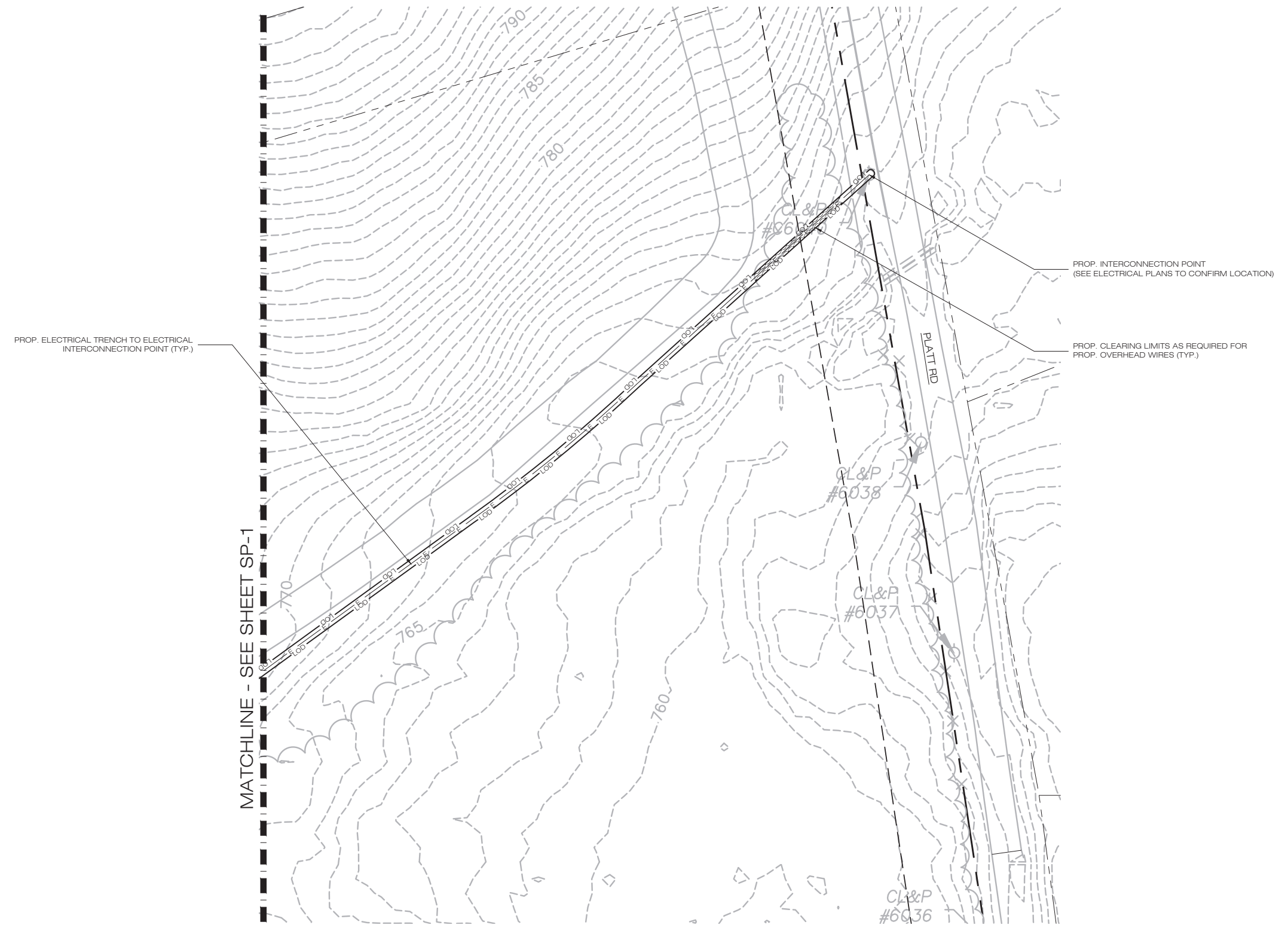
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 EXTENSION - SUITE 311
 WATERFORD, CT 06385
 OWNER: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD
 WATERTOWN, CT 06795

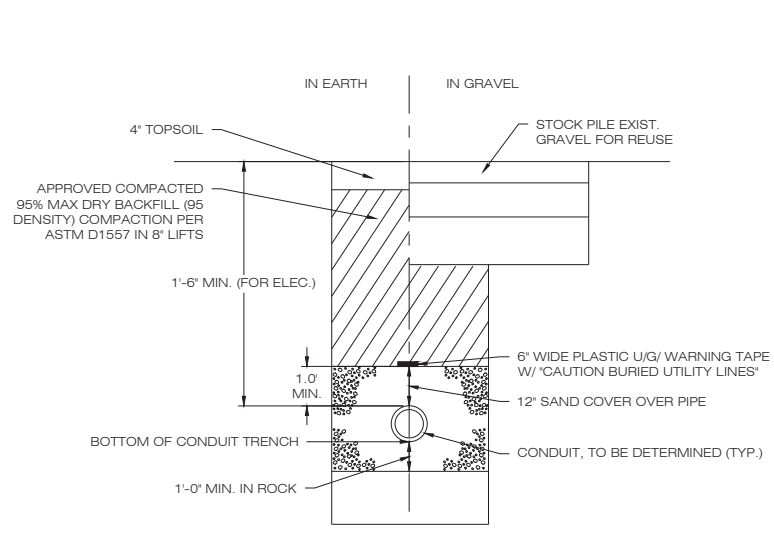
WATERTOWN SOLAR ONE, LLC
 SITE HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERTOWN, CT 06795
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 DATE: 06/30/20 CHECKED BY: BJP

SHEET TITLE:
SITE & UTILITY PLAN

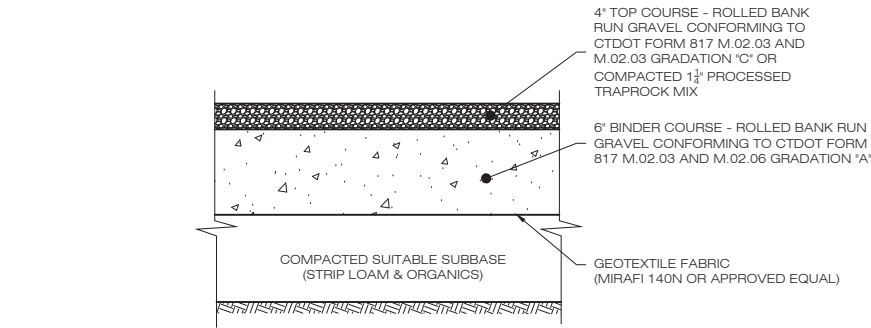
SHEET NUMBER:
SP-3



1
SCALE: 1" = 40'-0"
(IN FEET) 1 inch = 40 ft.

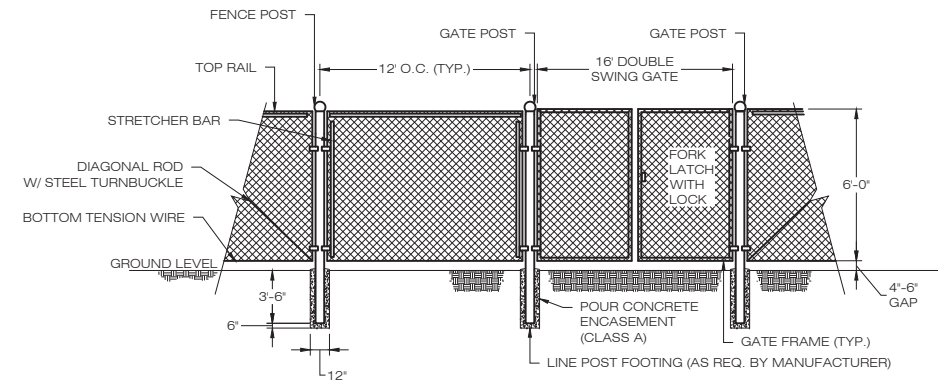


1 ELECTRICAL TRENCH DETAIL
SCALE : N.T.S.

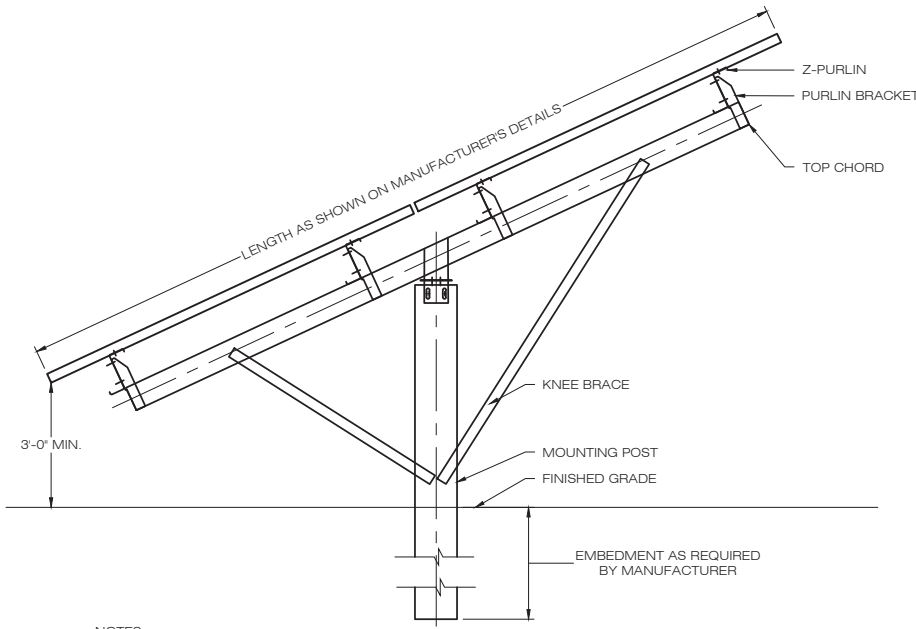


NOTES:
1. SUBBASE MAY CONSIST OF NATIVE MATERIALS IF FOUND ACCEPTABLE BY THE ENGINEER. SUBBASE TO BE COMPACTED TO 95% MAX DRY DENSITY.
2. SUBBASE IS TO BE FREE FROM DEBRIS AND UNSUITABLE MATERIALS.

3 GRAVEL ACCESS DRIVE SECTION
SCALE : N.T.S.

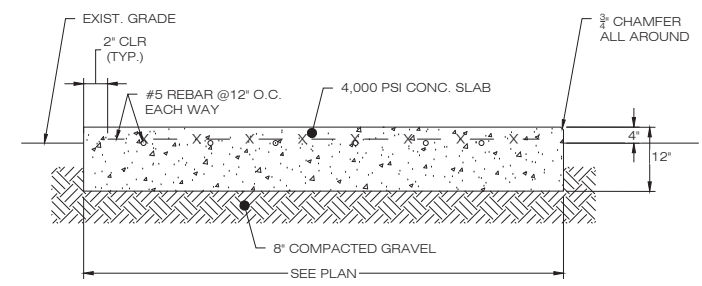


5 CHAIN-LINK FENCE & GATE DETAIL
SCALE : N.T.S.

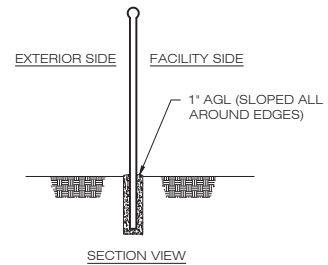


NOTES:
SEE MANUFACTURERS DETAIL SHEETS FOR ADDITIONAL INFORMATION REGARDING RACKING SYSTEM REQUIREMENTS AND INSTALLATION PROCEDURES. RACKING SYSTEM TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.

2 TYPICAL POST MOUNTED RACKING SYSTEM
SCALE : N.T.S.

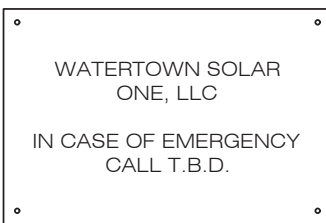


4 CONCRETE EQUIPMENT PAD
SCALE : N.T.S.



NOTES:
EMERGENCY CALL NUMBER TO BE PROVIDED ONCE DETERMINED.

6 NOTIFICATION SIGN DETAIL
SCALE : N.T.S.



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

Date: June 28, 2020

Showy Northeast Native Wildflower Mix - ERNMX-153-1

Botanical Name	Common Name	Price/lb
20.10 % <i>Echinacea purpurea</i>	Purple Coneflower	39.60
12.00 % <i>Coreopsis lanceolata</i>	Lanceleaf Coreopsis	26.40
12.00 % <i>Rudbeckia hirta</i> , Coastal Plain NC Ecotype	Black-eyed Susan, Coastal Plain NC Ecotype	22.90
10.00 % <i>Chamaecrista fasciculata</i> , PA Ecotype	Partridge Pea, PA Ecotype	6.60
7.00 % <i>Helopsis helianthoides</i> , PA Ecotype	Oxeye Sunflower, PA Ecotype	30.80
6.40 % <i>Tradescantia ohiensis</i> , PA Ecotype	Ohio Spiderwort, PA Ecotype	231.00
5.00 % <i>Liatris spicata</i>	Marsh Blazing Star	231.00
3.50 % <i>Aster oblongifolius</i> , PA Ecotype	Aromatic Aster, PA Ecotype	396.00
3.50 % <i>Aster prenanthoides</i> , PA Ecotype	Zigzag Aster, PA Ecotype	396.00
3.00 % <i>Zizia aurea</i> , PA Ecotype	Golden Alexanders, PA Ecotype	264.00
2.00 % <i>Aster laevis</i> , NY Ecotype	Smooth Blue Aster, NY Ecotype	396.00
2.00 % <i>Aster novae-angliae</i> , PA Ecotype	New England Aster, PA Ecotype	396.00
2.00 % <i>Baptisia australis</i> , Southern WV Ecotype	Blue False Indigo, Southern WV Ecotype	88.30
1.50 % <i>Asclepias tuberosa</i>	Butterfly Milkweed	396.00
1.50 % <i>Pycnanthemum tenuifolium</i>	Narrowleaf Mountainmint	154.00
1.50 % <i>Senna hebecarpa</i> , VA & WV Ecotype	Wild Senna, VA & WV Ecotype	26.40
1.20 % <i>Monarda fistulosa</i> , Fort Indiantown Gap-PA Ecotype	Wild Bergamot, Fort Indiantown Gap-PA Ecotype	105.50
1.10 % <i>Solidago nemoralis</i> , PA Ecotype	Gray Goldenrod, PA Ecotype	396.00
1.00 % <i>Cuscutaria coelestinum</i> , VA Ecotype	Hemiflower, VA Ecotype	281.00
1.00 % <i>Geum canadense</i> , PA Ecotype	White Avena, PA Ecotype	176.00
1.00 % <i>Penstemon digitalis</i> , PA Ecotype	Tall White Beardtongue, PA Ecotype	176.00
0.60 % <i>Coreopsis tripteris</i> , PA Ecotype	Tall Coreopsis, PA Ecotype	308.00
0.50 % <i>Senna marilandica</i>	Maryland Senna	26.40
0.20 % <i>Oenothera fruticosa</i> var. <i>fruticosa</i>	Sundrops	330.00
0.20 % <i>Solidago odora</i> , PA Ecotype	Licorice Scented Goldenrod, PA Ecotype	352.00
0.10 % <i>Penstemon hirsutus</i>	Hairy Beardtongue	440.00
0.10 % <i>Rudbeckia fulgida</i> var. <i>fulgida</i> , Northern VA Ecotype	Orange Coneflower, Northern VA Ecotype	352.00

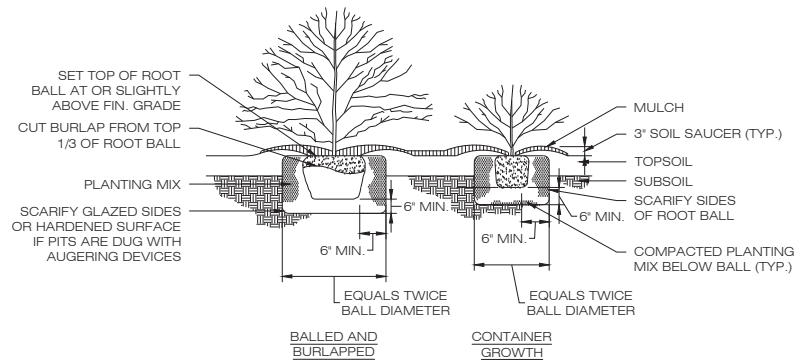
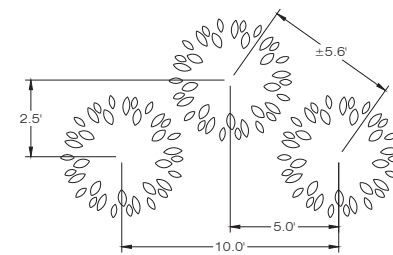
100.00 % Mix Price/lb Bulk: \$120.90

Seeding Rate: 5-10 lb per acre with 20 lb per acre of a cover crop (grain oats, Jan 1-Aug 1; grain rye, Aug 1-Jan 1)

Pollinator Favorites; Uplands & Meadows

Contains the showiest native forbs common in the Northeast. Excellent for wildlife food and shelter, including pollinators. 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.

7 SEMI-SHADE MIX
SCALE : N.T.S.



NOTES:
IN AREAS OF MASS PLANTINGS, CONTINUOUSLY EXCAVATE AND MULCH ENTIRE BED..

8 TYPICAL PLANTING DETAIL
SCALE : N.T.S.

WATERTOWN SOLAR ONE, LLC
150 TRUMBULL STREET
4TH FLOOR
HARTFORD, CT, 06103



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

CSC PERMIT SET

NO	DATE	REVISION
0	06/30/20	FOR CLIENT REVIEW
1	07/06/20	CSC SUBMISSION
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: CATHOLIC CEMETERIES
ADDRESS: 669 PLATT ROAD
WATERTOWN, CT 06795

WATERTOWN SOLAR ONE, LLC

SITE HINMAN ROAD & PLATT ROAD
ADDRESS: WATERTOWN, CT 06795

APT FILING NUMBER: CT590240

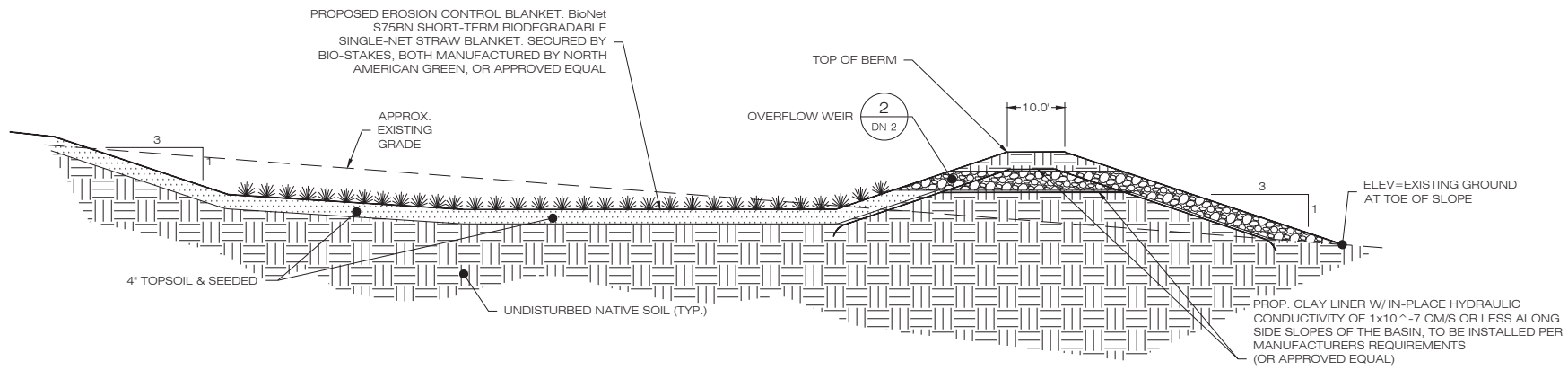
DATE: 06/30/20 DRAWN BY: CSH
CHECKED BY: BJP

SITE DETAILS

SHEET NUMBER:
DN-1

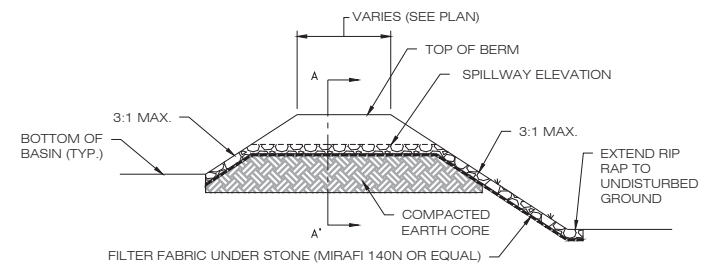
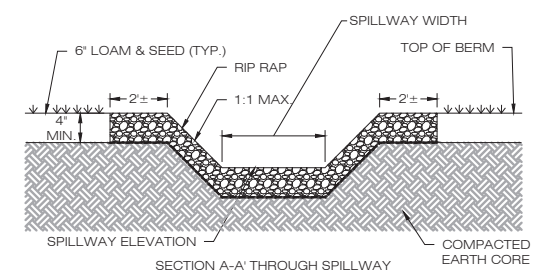
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ALL-POINTS TECHNOLOGY CORPORATION
 567 VAUXHAUL STREET EXTENSION - SUITE 311
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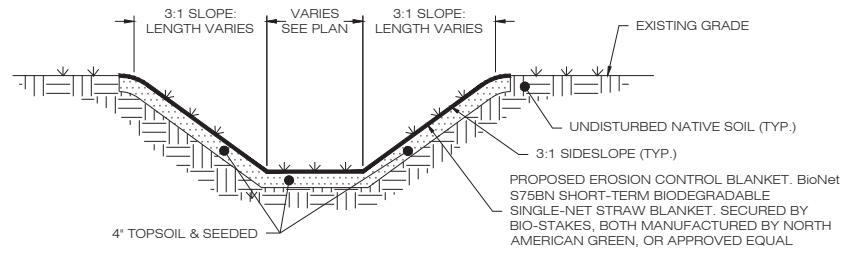
- NOTES:
- SEED MIX TO BE NEW ENGLAND EROSION CONTROL/ RESTORATION MIX FOR MOIST SITES ON THE BOTTOM OF THE BASIN AND NEW ENGLAND EROSION/RESTORATION MIX FOR DRY SITES ON THE SIDE SLOPES.
 - FOR CONVERTING TSB TO INFILTRATION BASIN, REMOVE BAFFLES, CLEAN OUT SEDIMENT, RESHAPE AS REQUIRED.
 - INSPECT AND CLEAN PIPES.

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



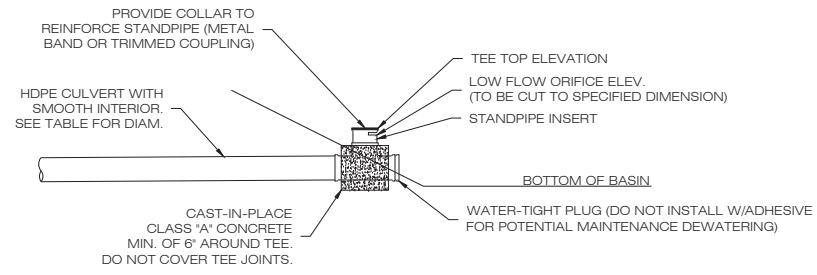
2 OVERFLOW WEIR DETAIL
 DN-2 SCALE : N.T.S.

HDPE OUTLET RISER SIZING TABLE								
BASIN	TEE TOP ELEV. (FT)	LOW FLOW ORIFICE ELEV. (FT)	LOW FLOW ORIFICE DIMENSION (FT)	OUTLET PIPE SIZE (IN.)	OUTLET PIPE LENGTH (FT)	OUTLET PIPE SLOPE (%)	OUTLET PIPE INV. AT STRUCTURE (FT)	OUTLET PIPE INV. AT OUTFALL (FT)
B-3	778.60	777.70	WIDTH = 12.0' HEIGHT = 3.0'	12	37.0	1.35	776.50	776.00



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

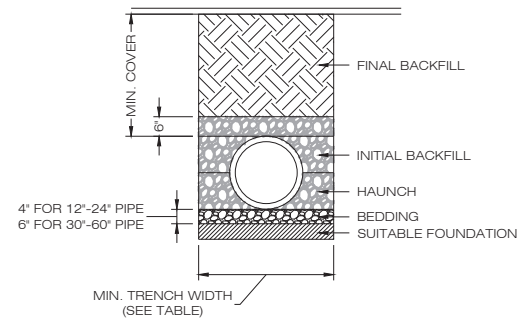
3 GRASS LINED SWALE
 DN-2 SCALE : N.T.S.



- NOTES:
- TEE TO BE ADS ADVANEDGE (TM) FABRICATED TEE OR APPROVED EQUAL. CONTRACTOR TO MODIFY TEE AS NEEDED.

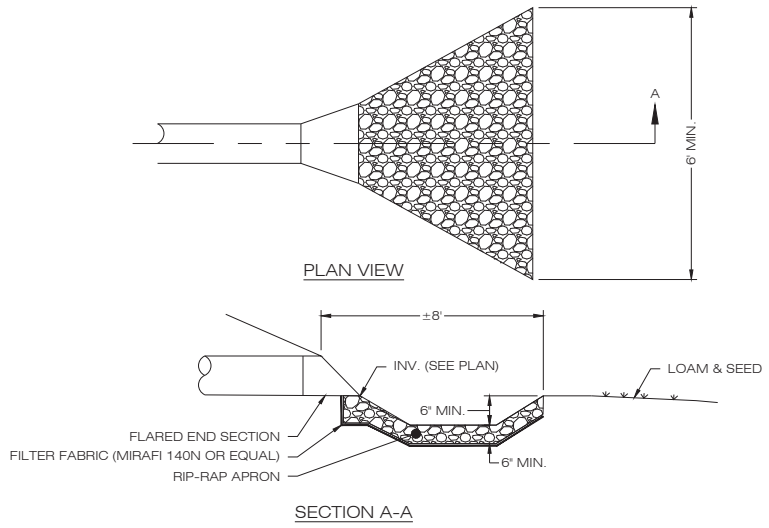
4 OUTLET RISER
 DN-2 SCALE : N.T.S.

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"

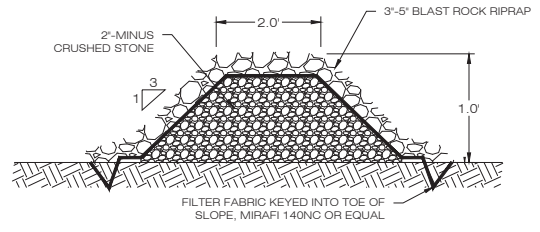


- NOTES:
- ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION.
 - MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
 - 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.
 - 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" (750mm-900mm).
 - 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.
 - 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 FLOATATION. 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 HDPE STORM DRAINAGE TRENCH DETAIL
 DN-2 SCALE : N.T.S.



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



- NOTES:
- STONE SHALL BE PLACED MECHANICALLY OR BY HAND. STONE SHALL NOT BE DUMPED DIRECTLY INTO FOREBAY. SEE GRADING AND DRAINAGE PLAN.

7 STONE CHECK DAM
 DN-2 SCALE : N.T.S.

CSC PERMIT SET

NO	DATE	REVISION
0	06/30/20	FOR CLIENT REVIEW
1	07/06/20	CSC SUBMISSION
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: CATHOLIC CEMETERIES
 ADDRESS: 669 PLATT ROAD
 WATERTOWN, CT 06795

WATERTOWN SOLAR ONE, LLC
 SITE HINMAN ROAD & PLATT ROAD
 ADDRESS: WATERTOWN, CT 06795
 APT FILING NUMBER: CT590240
 DRAWN BY: CSH
 DATE: 06/30/20
 CHECKED BY: BJP

SHEET TITLE:
SITE DETAILS

SHEET NUMBER:
DN-2

APPENDIX B

RESOURCE PROTECTION PLAN

ENVIRONMENTAL NOTES

Resource Protection Plan

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

A wetland scientist from All-Points Technology Corp. ("APT") experienced in compliance monitoring of construction activities will serve as the Environmental Monitor for this project to ensure that the following BMPs are implemented properly. The proposed resource protection program consists of several components including: isolation of the project perimeter; periodic inspection and maintenance of erosion controls and isolation structures; herpetofauna sweeps; education of all contractors and sub-contractors prior to initiation of work on the site; protective measures; and, reporting.

1. Erosion and Sedimentation Controls

- a. Plastic netting with large mesh openings ($> \frac{1}{4}$ "") used in a variety of erosion control products (i.e., erosion control blankets, fiber rolls [wattles], reinforced silt fence) has been found to entangle wildlife, including reptiles, amphibians, birds and small mammals. No permanent erosion control products or reinforced silt fence will be used on the project. Temporary erosion control products that will be exposed at the ground surface represent a potential for wildlife entanglement will use either erosion control blankets and fiber rolls composed of processed fibers mechanically bound together to form a continuous matrix (netless) or netting with a mesh size $< \frac{1}{4}$ " such as that typically used in compost filter socks to avoid/minimize wildlife entanglement.
- b. Installation of erosion and sedimentation controls, required for erosion control compliance and creation of a barrier to possible migrating/dispersing herpetofauna, shall be performed by the Contractor following clearing activities and prior to any earthwork. The Environmental Monitor will inspect the work zone area prior to and following erosion control barrier installation to ensure the area is free of herpetofauna and satisfactorily installed. The intent of the barrier is to segregate the majority of the work zone from migrating/dispersing herpetofauna. Oftentimes complete isolation of a work zone is not feasible due to accessibility needs and locations of staging/material storage areas, etc. In those circumstances, the barriers will be positioned to deflect migrating/dispersal routes away from the work zone to minimize potential encounters with herpetofauna.
- c. If a staging area for equipment, vehicles or construction materials is required for this project, such area(s) shall be located outside of any wetland resource Buffer Zone and surrounded by silt fence to isolate the area from possible migrating herpetofauna.
- d. All erosion control measures shall be removed within 30 days of completion of work and permanent stabilization of site soils so that herpetofauna movements between uplands and wetlands are not restricted.

2. Contractor Education:

- a. Prior to work on site and initial deployment/mobilization of equipment and materials, the Contractor shall attend an educational session at the pre-construction meeting with the Environmental Monitor. This orientation and educational session will consist of information such as, but not limited to: representative photographs of typical herpetofauna that may be encountered, rare that could be encountered (if possible), typical species behavior, and proper procedures to protect such species if they are encountered. The meeting will further emphasize the non-aggressive nature of these species, the absence of need to destroy such animals and the need to follow Protective Measures as described in Section 4 below. The Contractor will designate one of its workers as the "Project Monitor", who will receive more intense training on the identification and proper handling of herpetofauna.
- b. The Project Monitor will be responsible for the daily "sweeps" for herpetofauna within the work zone each morning, during any and all transportation of vehicles along the access drive, and for any ground disturbance work. This individual will receive more intense training from the Environmental Monitor on the identification and protection of herpetofauna in order to perform sweeps. Any herpetofauna discovered will be reported to the Environmental Monitor, photographed if possible, and relocated outside the work zone in the general direction the animal was oriented.
- c. The Environmental Monitor will also post caution signs throughout the project site and maintain them for the duration of construction to provide notice of the environmentally sensitive nature of the work area, the potential for encountering various amphibians and reptiles and precautions to be taken to avoid injury to or mortality of these animals.
- d. The Contractor will be provided with the Environmental Monitor's cell phone and email contact information to immediately report any encounters with herpetofauna.

3. Petroleum Materials Storage and Spill Prevention

- a. Certain precautions are necessary to store petroleum materials, refuel and contain and properly clean up any inadvertent fuel or petroleum (i.e., oil, hydraulic fluid, etc.) spill due to the project's location in proximity to sensitive wetland resources.
- b. A spill containment kit consisting of a sufficient supply of absorbent pads and absorbent material will be maintained by the Contractor at the construction site throughout the duration of the project. In addition, a waste drum will be kept on site to contain any used absorbent pads/material for proper and timely disposal off site in accordance with applicable local, state and federal laws.
- c. The following petroleum and hazardous materials storage and refueling restrictions and spill response procedures will be adhered to by the Contractor.
 - i. Petroleum and Hazardous Materials Storage and Refueling
 1. Refueling of vehicles or machinery shall take place on an impervious pad with secondary containment designed to contain fuels.
 2. Any refueling drums/tanks or hazardous materials that must be kept on site shall be stored on an impervious surface utilizing secondary containment a minimum of 100 feet from wetlands or watercourses.
 - ii. Initial Spill Response Procedures
 1. Stop operations and shut off equipment.
 2. Remove any sources of spark or flame.
 3. Contain the source of the spill.
 4. Determine the approximate volume of the spill.
 5. Identify the location of natural flow paths to prevent the release of the spill to sensitive nearby waterways or wetlands.

6. Ensure that fellow workers are notified of the spill.

iii. Spill Clean Up & Containment

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

iv. Reporting

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

4. Protective Measures

- a. A thorough cover search of the construction area will be performed by the Environmental Monitor for herpetofauna prior to and following installation of erosion control measures/silt fencing barriers to remove any species from the work zone prior to the initiation of construction activities. Any herpetofauna discovered would be relocated outside the work zone in the general direction the animal was oriented. Periodic inspections will be performed by the Environmental Monitor throughout the duration of construction.
- b. The Contractor's Project Monitor will inspect the work area each morning and escort initial vehicle access into the site each morning along the access drive to visually inspect for any herpetofauna. Any herpetofauna discovered would be relocated outside the work zone in the general direction the animal was oriented.
- c. Any herpetofauna requiring relocation out of the work zone will be captured with the use of a net or clean plastic bag that has been moistened with clean water for careful handling and placement out of the work zone in the general direction it was observed heading.
- d. Any stormwater management features, ruts or artificial depressions that could hold water created intentionally or unintentionally by site clearing/construction activities will be properly filled in and permanently stabilized with vegetation to avoid the creation of vernal pool "decoy pools" that could intercept amphibians moving toward the vernal pool. Stormwater management features such as level spreaders will be carefully reviewed in the field to ensure that standing water does not endure for more than a 24-hour period to avoid creation of decoy pools and may be subject to field design changes. Any such proposed design changes will be reviewed by the design engineer to ensure stormwater management functions are maintained.

Reporting

- e. Inspection reports (brief narrative and applicable photos) will be prepared by the Environmental Monitor documenting each inspection and submitted to the Permittee for compliance verification. Any non-compliance observations of erosion control measures or evidence of erosion or sediment release will be immediately reported to the Permittee and its Contractor and included in the reports.
- f. Any incidents of release of sediment or other materials into wetland resource areas shall be reported by the Permittee within 24 hours to the Permittee.
- g. Any observations of rare species will be reported to the Connecticut Department of Energy and

Environmental Protection's Natural Diversity Data Base Program.

- h. Following completion of the project, a summary report will be prepared by the Environmental Monitor documenting compliance with the Resource Protection Plan and submitted to the Permittee, who shall submit a copy to the Connecticut Siting Council.

APPENDIX C

USFWS/NDDB COMPLIANCE STATEMENT



USFWS & NDDB Compliance Determination

July 23, 2020

Mr. Steven DeNino, COO
Verogy
150 Trumbull Street, 4th Floor
Hartford, CT 06103

Re: Watertown Solar One, 669 Platt Road, Watertown, CT
APT Job No: CT590240

On behalf of Verogy, 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 Verogy proposes the construction of a solar energy generation facility to be located within a forested portion of two adjoining parcels that total ± 154 acres, located south of an existing cemetery, on the west side of Platt Road in Watertown, 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-listed¹ threatened species is known to occur in the vicinity of the Subject Property documented as the northern long-eared bat ("NLEB"; *Myotis septentrionalis*). As a result of this preliminary finding, APT performed an evaluation to determine if the proposed referenced Facility would result in a likely adverse effect to NLEB.

The proposed Facility would be located within a forest portion of the Subject Property and will require some forest clearing that could potentially impact habitat used by NLEB. A review of the Connecticut Department of Energy & Environmental Protection ("CTDEEP") Wildlife Division Natural Diversity Data Base ("NDDB") NLEB habitat map² 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 ± 4.4 miles to the north in Litchfield and Morris.

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 February 10, 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 (March 11, 2020), one may presume that the IPaC-assisted determination was correct and that the PBO satisfies and concludes Verogy'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, Verogy 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 CTDEEP NDDB Maps in the location of or within 0.25 mile of the proposed Verogy Facility. Please refer to the enclosed NDDB Map which depicts the nearest NDDB buffer ± 1.3 miles southwest of the Subject Property. Since the proposed Facility is not located within a NDDB buffer area, consultation with DEEP is not required in accordance with their review policy³ and since the NDDB buffer area is more than a 0.25-mile away, consultation is not required in accordance with the Connecticut Siting Council's review policy.

Therefore, the proposed Verogy solar energy generation facility is not anticipated to adversely impact any federal or state threatened, endangered or species of special concern.

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



Dean Gustafson
Senior Biologist

Enclosures

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

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: 421-20202159

February 10, 2020

Subject: Consistency letter for the 'Verogy Watertown Solar One' 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 February 10, 2020 your effects determination for the 'Verogy Watertown Solar One' (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

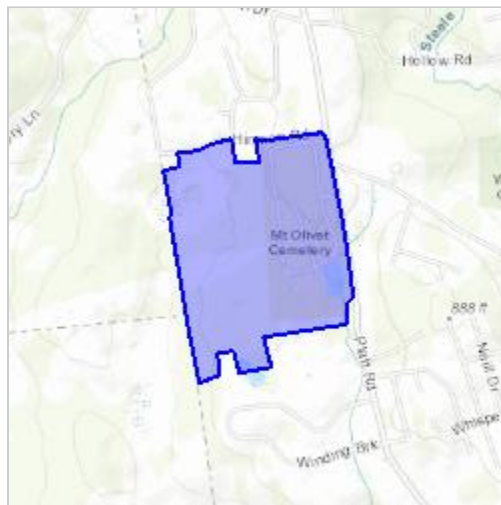
Verogy Watertown Solar One

2. Description

The following description was provided for the project 'Verogy Watertown Solar One':

Verogy is proposing the construction of a solar energy generation facility to be generally located within a forested portion of the subject property just southwest of a cemetery located on Platt Road in Waterford, Connecticut.

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/41.61537482550786N73.15288556225377W>

**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. 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/angered/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:

14.24

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

14.24

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

14.24

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

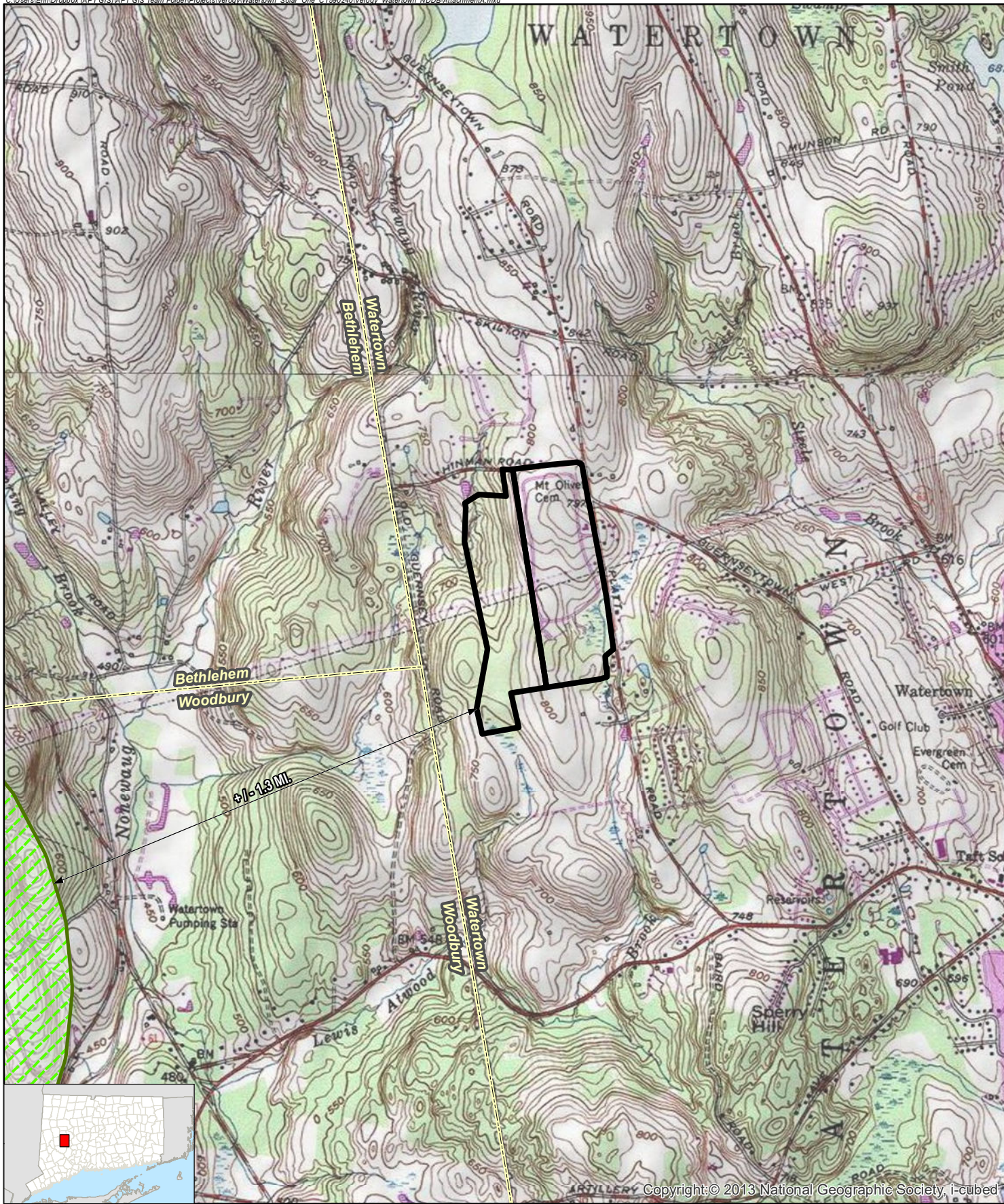
9. If known, estimated acres of prescribed fire from June 1 to July 31

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

NDDDB Map



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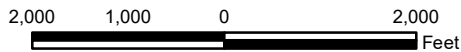
Legend

-  Site
-  Municipal Boundary
-  Natural Diversity Database Area (June 2020)

**NDDB Attachment A
Overview Map**

Proposed Solar Facility - Watertown Solar One
669 Platt Road
Watertown, Connecticut

Map Notes:
Base Map Source: USGS 7.5 Minute Topographic
Quadrangle Maps: Woodbury (1984), CT
Map Scale: 1:24,000
Map Date: June 2020



APPENDIX D

HISTORIC AND ARCHAEOLOGICAL RESOURCES DETERMINATION



June 1, 2020

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

Subject: Phase IA and Phase IB Cultural Resource Reconnaissance Survey
Watertown Solar One
Platt Road
Watertown, Connecticut
ENV-20-0697

Dear Mr. George:

The State Historic Preservation Office (SHPO) has reviewed the cultural resource reconnaissance surveys prepared by Heritage Consultants, LLC (Heritage), dated March 2020 and May 2020, respectively. 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 10.9 acre project area. The parcel is bordered to the north by Mt. Olivet Cemetery, to the west by forested areas, to the south by agricultural fields associated with Carey Shire Farm, and to the east by forested areas adjacent to Platt Road. In addition to solar panels and associated equipment, the facility is also to contain three swales, to be located at the northern, southern, and western edges of the project areas, as well as two stormwater basins, to be located west of the array field. The submitted reports are 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. Similarly, no properties listed or formally determined eligible for listing on either the State or National Register are located within one mile of the project area. Following a pedestrian survey, it was determined that approximately 3.4 acres of the project area was characterized as having low slopes, well-drained soils, and proximity to fresh water sources, Lewis Atwood Brook, and therefore, retained a moderate to high potential to contain intact archaeological deposits. A Phase IB reconnaissance survey was recommended and completed.

State Historic Preservation Office

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Department of Economic and
Community Development

State Historic Preservation Office

Phase IB of the reconnaissance survey consisted of subsurface testing of areas deemed to have moderate to high archaeological sensitivity during Phase IA, and that would be subject to ground disturbing impacts as part of the proposed undertaking. A total of 65 of 65 planned shovel tests were excavated successfully throughout the proposed work area. No cultural material from either prehistoric or historic periods, evidence of cultural features, or soil anomalies were identified during the reconnaissance survey.

As a result of the information submitted, SHPO concurs with the findings of the report that additional archeological investigations of the project areas are not warranted and that no historic properties will be affected by the proposed activities. However, please be advised that if construction plans change to include previously uninvestigated/undisturbed areas, this office should be contacted for additional consultation.

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,

A handwritten signature in black ink that reads "Mary B. Dunne". The signature is written in a cursive style with a long horizontal line extending to the right.

Mary B. Dunne
State Historic Preservation Officer

State Historic Preservation Office

450 Columbus Boulevard, Suite 5 | Hartford, CT 06103 | P: 860.500.2300 | DECD.org

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MARCH 2020

PHASE IA CULTURAL RESOURCES ASSESSMENT SURVEY OF
THE PROPOSED VEROGY SOLAR CENTER IN
WATERTOWN, CONNECTICUT

PREPARED FOR:



567 VAUXHALL STREET EXTENSION, SUITE 311
WATERFORD, CONNECTICUT 06385

PREPARED BY:



55 EAST CEDAR STREET
NEWINGTON, CONNECTICUT 06111

ABSTRACT

This report presents the results of a Phase IA cultural resources assessment survey of the proposed Verogy Solar Center in Watertown, Connecticut. The project area associated with this solar center encompasses approximately 10.9 acres of land and will be accessed from an agricultural field to the south. The current investigation consisted of: 1) preparation of an overview of the region's prehistory, history, and natural setting; 2) a literature search to identify and discuss previously recorded cultural resources in the region; 3) a review of readily available historic maps and aerial imagery depicting the project area to identify potential historic resources and/or areas of past disturbance; 4) a pedestrian survey and photo-documentation of the project area to determine its archaeological sensitivity; and 5) preparation of the current Phase IA cultural resources assessment survey report. The combined review of historic maps, aerial images, land deeds, and a pedestrian survey indicates that the eastern portion of the project area, which contains approximately 3.4 acres of land, retains a moderate/high sensitivity for archaeological deposits due to the presence of low slopes, well-drained soils, and proximity to Lewis Atwood Brook. It is recommended that the acreage comprising the moderate/high sensitivity areas be subjected to a Phase IB survey prior to construction. The remaining 7.5 acres of the project area contains steeper slopes and are positioned further way from Lewis Atwood Brook. These areas have been assessed as retaining a no/low archaeological sensitivity. No additional archaeological examination of the no/low areas is recommended.

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CHAPTER I

INTRODUCTION

This report presents the results of a Phase IA cultural resources assessment survey of the proposed Verogy Solar Center in Watertown, 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 center, which will occupy approximately 10.9 acres of land to the west of Platt Road and to the south of Mt. Olivet Cemetery. The project parcel is surrounded by forested areas to the east and west, as well as fields associated with Carey Shire Farm to the south. Heritage completed this investigation on behalf of All-Points in March 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 consist of solar center that will include the installation of rows of solar panels spaced 4.9 m (16 ft) apart across the proposed development area. The project area, which is located within a mostly wooded area, is situated at elevations ranging from 234.7 to 246.9 m (770 to 810 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 historic maps and aerial imagery depicting the project area in order to identify potential historic resources and/or areas of past disturbance; 4) a 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 historic maps and aerial images of the project area and files maintained by the CT-SHPO failed to detect any previously identified archaeological sites or National/State Register of Historic Places properties within 1.6 km (1 mi) of the project area. In addition a pedestrian survey also indicated that no above-ground historic resources (e.g., foundations, wells, privies, etc.) exist within the proposed development area. Heritage also combined historic map, aerial image, soils, and landscape data to stratify the project area into zones of no/low and/or moderate/high archaeological sensitivity. This combination revealed that the eastern portion of the project area, which contains approximately 3.4 acres of land, retains a moderate/high sensitivity for archaeological deposits due to the presence of low slopes and proximity to Lewis Atwood Brook. Soils in this area are mainly attributed to the Woodbridge and Paxton/Montauk series, which are often correlated with the locations of prehistoric and historic period archaeological sites. It is recommended that the acreage comprising the moderate/high sensitivity areas be subjected to a Phase IB survey prior to construction. The remainder of the project area contains steeper slopes and positioned further way from Lewis Atwood Brook. These areas, which comprised 7.5 acres of land, have been assessed as retaining a no/low archaeological sensitivity. No additional archaeological examination of the no/low areas is recommended.

Project Personnel

Key personnel for this project included Mr. David R. George, M.A., R.P.A, who served as Principal Investigator for this effort; he was assisted by Ms. Kelsey Tuller, M.A., and Mr. Matthew Denno, B.A., who completed the field work portion of the project. Ms. Christina Volpe, B.A., completed this historic background research of the project and contributed to the final report, while Mr. Stephen Anderson, B.A., completed all GIS tasks associated with the project. Finally, Ms. Elizabeth Correia, M.A., compiled the report and the associated figures.

Organization of the Report

The natural setting of the region encompassing the project area 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 in Chapter III. The history of the region encompassing the project area is chronicled in Chapter IV, while a discussion of previous archaeological investigations in the vicinity of the project area is presented in Chapter V. The methods used to complete this investigation are discussed in Chapter VI. Finally, the results of this investigation and management recommendations for the project area and the identified cultural resources are presented in Chapter VII.

CHAPTER II

NATURAL SETTING

Introduction

This chapter provides a brief overview of the natural setting of the region containing the project area in Watertown, Connecticut. Previous archaeological research has documented that a few specific environmental factors can be associated with both prehistoric and historic period site selection. These include general ecological conditions, as well as types of fresh water sources 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 very different natural characteristics than the coastline. Recognizing this fact, Dowhan and Craig (1976), as part of their study of the distribution of rare and endangered species in Connecticut, subdivided the state into various ecoregions. Dowhan and Craig (1976:27) defined an ecoregion as:

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

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

Northwest Hills Ecoregion

The Northwest Hills ecoregion consists of a hilly upland terrain characterized by “a moderately hilly landscape of intermediate elevation, with narrow valleys and local areas of steep and rugged topography” (Dowhan and Craig 1976:31). Elevations in the Northwest Hills ecoregion range from 228.6 to 304.8 m (750 to 1,000 ft) above sea level. The bedrock of the region is composed of schists and gneisses deposited during the Paleozoic (Dowhan and Craig 1976; Bell 1985). Soils in these uplands areas have developed on top of glacial till in upland locales, and on top of stratified deposits of sand, gravel, and silt in the local valleys (Dowhan and Craig 1976).

Hydrology in the Vicinity of the Project Area

The project area is situated within a region that contains to several sources of freshwater, including Lewis Atwood Brook, Steele Brook, and the Nonnewaug River, as well as unnamed streams, ponds, and wetlands. These freshwater sources may have served as resource extraction areas for Native American and

historic populations. Previously completed archaeological investigations in Connecticut have demonstrated that streams, rivers, and wetlands were focal points for prehistoric occupations because they provided access to transportation routes, sources of freshwater, and abundant faunal and floral resources.

Soils Comprising the Project Area

Soil formation is the direct result of the interaction of a number of variables, including climate, vegetation, parent material, time, and organisms present (Gerrard 1981). Once archaeological deposits are buried within the soil, they are subject to a number of diagenic processes. Different classes of artifacts may be preferentially protected, or unaffected by these processes, whereas others may deteriorate rapidly. Cyclical wetting and drying, freezing and thawing, and compression can accelerate chemically and mechanically the decay processes for animal bones, shells, lithics, ceramics, and plant remains. Lithic and ceramic artifacts are largely unaffected by soil pH, whereas animal bones and shells decay more quickly in acidic soils such as those that are present in within the current project area. 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 two major soil types: Woodbridge (45B and 46B) and Paxton/Montauk (84B) (Figure 2). A review of these soils shows that they consist of well-drained sandy loams; they are the types of soils that are typically correlated with prehistoric and historic use and occupation. Descriptive profiles for each soil type are presented below; they were gathered from the National Resources Conservation Service.

Woodbridge Soils:

A typical profile associated with Woodbridge soils is as follows: **Ap**--0 to 18 cm; very dark grayish brown (10YR 3/2) fine sandy loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many fine and medium roots; few very dark brown (10YR 2/2) earthworm casts; 5 percent gravel; moderately acid; abrupt wavy boundary; **Bw1**--18 to 46 cm; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; few very dark brown (10YR 2/2) earthworm casts; 10 percent gravel; moderately acid; gradual wavy boundary. **Bw2**--46 to 66 cm; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; few very dark brown (10YR 2/2) earthworm casts; 10 percent gravel; few medium prominent strong brown (7.5YR 5/6) masses of iron accumulation and light brownish gray (10YR 6/2) areas of iron depletion; moderately acid; gradual wavy boundary; **Bw3**--66 to 76 cm; light olive brown (2.5Y 5/4) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 10 percent gravel; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation and light brownish gray (10YR 6/2) areas of iron depletion; moderately acid; clear wavy boundary; **Cd1**--76 to 109 cm; light olive brown (2.5Y 5/4) gravelly fine sandy loam; weak thick plates of geogenic origin; very firm, brittle; 20 percent gravel; many medium prominent strong brown (7.5YR 5/8) masses of iron accumulation and light brownish gray (10YR 6/2) areas of iron depletion; moderately acid; gradual wavy boundary; **Cd2**--109 to 165 cm; light olive brown (2.5Y 5/4) gravelly fine sandy loam; weak thick plates of geogenic origin; very firm, brittle; few fine prominent very dark brown (10YR 2/2) coatings on plates; 25 percent gravel; common fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; moderately acid.

Paxton/Montauk Soils:

A typical profile for Paxton and Montauk soils is described as follows: **Ap**--0 to 20 cm; dark brown (10YR 3/3) fine sandy loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many fine roots; 5 percent gravel; strongly acid; abrupt smooth boundary; **Bw1**--20 to 38 cm; dark yellowish

brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; 5 percent gravel; few earthworm casts; strongly acid; gradual wavy boundary; **Bw2**--38 to 66 cm; olive brown (2.5Y 4/4) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 10 percent gravel; strongly acid; clear wavy boundary; and **Cd**--66 to 165 cm; olive (5Y 5/3) gravelly fine sandy loam; medium plate-like divisions; massive; very firm, brittle; 25 percent gravel; many dark coatings on plates; strongly acid.

Summary

The natural setting of the area containing the proposed Verogy Solar Center is common throughout the Northwest Hills ecoregion. Streams and rivers of this area empty into the Naugatuck River, which in turn drains into the Long Island Sound. Further, the landscape in general is dominated by sandy loamy soil with some wetland soils intermixed. In addition, low slopes dominate the region. Thus, in general, the project region was well suited to Native American occupation throughout the prehistoric era. This portion of Watertown was also used throughout the historic era, as evidenced by the presence of numerous historic residences and agricultural fields throughout the larger region; thus, archaeological deposits dating from the prehistoric and historic era may be expected near or within the proposed project area based on its landscape characteristics.

CHAPTER III

PREHISTORIC SETTING

Introduction

Prior to the late 1970s and early 1980s, very few systematic archaeological surveys of large portions of the state of Connecticut had been undertaken. Rather, the prehistory of the region was studied at the site level. Sites chosen for excavation were highly visible and they were located in such areas as the coastal zone, e.g., shell middens, and Connecticut River Valley. As a result, a skewed interpretation of the prehistory of Connecticut was developed. It was suggested that the upland portions of the state, i.e., the northeastern and northwestern hills ecoregions, were little used and rarely occupied by prehistoric Native Americans, while the coastal zone, i.e., the eastern and western coastal and the southeastern and southwestern hills ecoregions, were the focus of settlements and exploitation in the prehistoric era. This interpretation remained unchallenged until the 1970s and 1980s when several town-wide and regional archaeological studies were completed. These investigations led to the creation of several archaeological phases that subsequently were applied to understand the prehistory of Connecticut. The remainder of this chapter provides an overview of the prehistoric setting of the region encompassing the project 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 located in Washington, Connecticut and was occupied between 10,490 and 9,890 years ago (Moeller 1980). In addition to a single large and two small fluted points, the Templeton Site produced a stone tool assemblage consisting of graters, 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, graters, 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 located in Manchester, New Hampshire and studied by Dincauze (1976). Careful analysis of the Neville Site indicated that the Middle Archaic occupation dated from between ca., 7,700 and 6,000 years ago. In

fact, Dincauze (1976) obtained several radiocarbon dates from the Middle Archaic component of the Neville Site. The dates, associated with the then-newly named Neville type projectile point, ranged from 7,740 \pm 280 and 7,015 \pm 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 \pm 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 m² (5,383 ft²). 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.

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

The Early Woodland Period of the northeastern United States dates from ca., 2,700 to 2,000 B.P., and it has 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 the majority of the prehistoric era, local Native American groups practiced a subsistence pattern based on a mixed economy of hunting and gathering wild plant and animal resources. It is not until the Late Woodland Period that incontrovertible evidence for the use of domesticated species is available. Further, settlement patterns throughout the prehistoric era shifted from seasonal occupations of small co-residential groups to large aggregations of people in riverine, estuarine, and coastal ecozones. In terms of the region containing the proposed project 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

As stated in Chapter I, the project area consists of a parcel of land containing 10.9 acres in the town of Watertown, which is located in Litchfield County. This chapter provides both a broad overview history of the Watertown area, as well as data more specific to the proposed development area. The evidence reviewed indicates that the area was historically part of the fields system of a farm or farms in the early twentieth century, and almost certainly for many years before that.

Native American History

Historians who have researched the development of the larger Waterbury region believe that at the time of the first English exploration of the area, probably in the 1650s, there were no Native American settlements within the future limits of what later became known as Watertown. Rather, Watertown was used by the Native American residents of the Woodbury and Derby area as a hunting ground (Bronson 1858). De Forest says nothing concerning any Native Americans in the area except that they sold their lands in 1674 and 1684 (1852). In 1673, men from Farmington received permission from the General Assembly to look over Mattatuck, as the area was then called, and in 1674 were granted permission to establish a town there, but the outbreak of King Philip's War in 1675 delayed the settlement process (Barber 1836).

The clearing of any Indian claims to the region was later accomplished by a purchase from a group of Indians living at Tunxis in Farmington in 1674. This area encompassing a tract of land measuring 10 miles from north to south and six miles from east to west. A total of two additional parcels were added to the larger tract in 1684 on the north side of the first, which was granted largely from the same Indians as the 1674 purchase. In 1685, the town also cleared claims to previously purchased land by certain Derby area Indians; this was accomplished through an additional purchase. The final area measured 18 miles from north to south, nine miles from east to west at the northern end, and six miles from east to west at the southern end (Bronson 1858). This area today encompasses the towns of Watertown, Plymouth, and Waterbury, as well as parts of Oxford, Wolcott, Middlebury, Prospect, and Naugatuck.

Watertown History, Seventeenth and Eighteenth Centuries

The initial settlement of the Waterbury region was made on the east side of the Naugatuck River, where the center of the city of Waterbury is located today (Bronson 1858). The first settlers arrived in that area in 1677, and by 1687 the town was formally organized by the General Assembly and named Waterbury instead of Mattatuck. This event occurred only shortly before Governor Andros's suspension of the Connecticut charter government; a corrected document that was issued in 1720. Both patents, as they were called, contained measurement of the town area as slightly smaller than the Indian deeds suggested (Bronson 1858). The northwestern section of Waterbury that was first known as Wooster and then as Wooster Swamp, was probably named after one Edward Wooster who gathered wild hops there. It was later referred to as Westbury and finally as Watertown. Settlement of Watertown commenced in ca., 1700 when Obadiah Richards Sr., built a house to the southwest of the present town center (Crofut 1937).

Watertown was formally laid out in three tiers of lots in 1722 and was settled rapidly. Each lot measured half a mile in length (Crofut 1937). Overall, Barber referred to the town's landscape as "generally uneven, or rather hilly; but some sections are level" (Barber 1836:499). The first permanent Euroamerican residents of Watertown were the members of Jonathan Scott's family, who moved there just prior to 1710, the year he and two of his sons were captured by Indians and taken to Canada. The father returned after two years, and in 1722 he established the first sawmill in the Watertown (Watertown DAR 1907). The First Ecclesiastical Society of Westbury (Congregationalists) was first organized in 1738 and built its first church in 1741 at the town center; a second church was built in 1772, and the existing church had been built in 1839. An Anglican or Church of England congregation also was established in 1764 and built its first church near the Congregational church in 1765, replacing it in 1793 (Crofut 1937). The development of an Anglican church in the 1760s was part of a general trend toward religious diversification in the later eighteenth century, as dissatisfaction with Congregational traditions found outlets in revivals such as the Great Awakening in the 1740s (Rossano 1996).

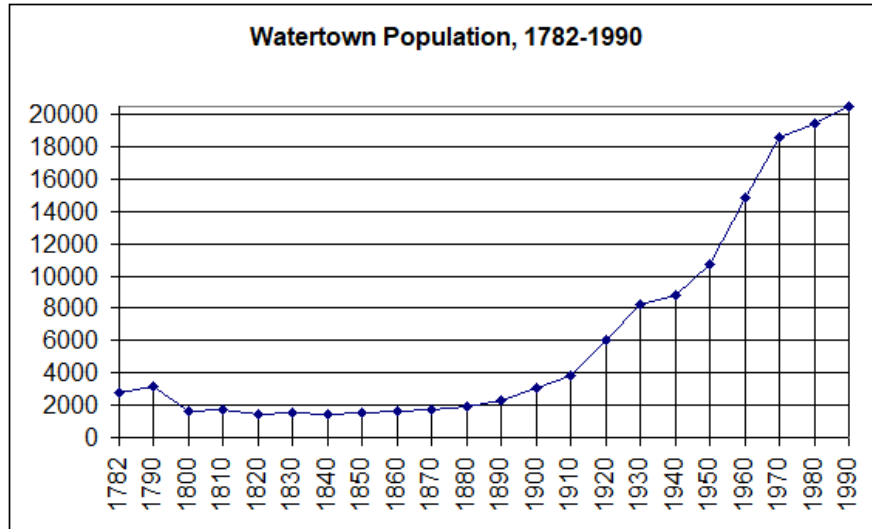
During the Revolutionary War, Waterbury supplied 152 men in 1775, and in total 689 men served throughout the war, including those members of the Twenty-Eighth Regiment of Connecticut (Crofut 1937). This was a difficult period for the western part of Connecticut, where disaffection from Britain was less pronounced and substantial loyalist activity occurred. Although Waterbury fulfilled its obligations in the matters of men and supplies, it also produced Moses Dunbar, a member of a Loyalist regiment who was caught on a recruiting mission in Connecticut and eventually executed for treason (Rossano 1996).

During the eighteenth century, facilities such as sawmills, gristmills, fulling mills (for finishing cloth) and carding mills (for cleaning wool) sufficed for the needs of an agricultural town. The nineteenth century saw some spillover from the burgeoning industries of Waterbury, so much so that central Watertown and the southerly villages of Rockdale and Oakville (which straddled the Waterbury line) developed various industrial enterprises, including a branch of Scovill, Buckingham & Company, which made brass goods, as well as the Oakville Pin Company and numerous others (Watertown DAR 1907). Both the Straits Turnpike (incorporated 1797) and the East Middle Turnpike (incorporated ca., 1803) passed through Watertown. These two roads intersected at the center of town, and the present-day Hamilton Avenue approximately follows the course of the East Middle Turnpike westward to the Woodbury line (Wood 1919). These road improvements were intended to, and generally did, increase the volume of trade in the areas through which they passed, in an era when increased demands for foodstuffs in war-torn Europe inspired substantial investments in infrastructure. The imposition of the Embargo Act of 1807 and then the War of 1812 interrupted these plans, but increased domestic commerce ensued nonetheless (Rossano 1996). Transportation and industry were further encouraged by the construction of the Watertown & Waterbury Railroad in 1869, a five-mile line that connected downtown Watertown with the Naugatuck Railroad, which in turn linked to the New York & New Haven Railroad. This short line has since been abandoned (Turner & Jacobus 1989).

The chart of the town's population shown below indicates that despite the turnpikes and proximity to Waterbury, Watertown did not experience major population growth until the very end of the nineteenth century. After the northern part of the town became the separate town of Plymouth in 1795, Watertown's population fell below 2,000 and remained below that mark until 1890 (MAGIC 1996).

Watertown History, Nineteenth and Twentieth Centuries

In its early days, Watertown had the usual assortment of grist mills, sawmills, and fulling mills to meet the local farmers' needs. In 1801, the town had three grist mills, five sawmills, an oil mill, a paper mill,



and a boring mill; the inhabitants' religious needs were met by a Congregational church (formed in 1740) and an Episcopal church (formed in 1765). In addition to its eight schools, the town had two public houses and four public libraries. Its products were primarily agricultural, including pork, beef, butter, cheese, various grains and live cattle, and a certain amount of hand-loomed cloth (Prindle 1801). An assessment of the town in 1836 noted the two churches but did not mention any industry (Barber 1836). After about 1830, various more industrial businesses appeared in town: factories for making pins and buttons, a carding and fulling mill, a wooden box factory, tannery and shoe-making operation, steel buckles, an early sewing machine factory, and sewing silk manufacturing, among other activities (Watertown DAR 1907). Cumulatively, it seems, these manufacturing efforts began to have the effect of drawing a larger population to the town by the end of the nineteenth century.

In an 1859 historic map of the region containing the project area there are several homesteads, the most notable being the Atwood homestead and farm (Figure 3). According to the 1860 United States Federal Census for Watertown, Chas A. Atwood was listed as a 67 year old white male farmer with real estate valued at \$8,000 and a personal estate valued at \$6,000. Living Atwood during this time were his wife Mary who was 67 years old and a 14 year old female named Martha Chase. As seen in Figure 3, the farm of Thomas Hungerford was recorded to the south of the Atwood farm. According to the census, Thomas Hungerford was as a 52 year old white male farmer with a real estate valued at \$3,300 and a personal estate valued at \$900. As of 1860, he lived with his 51 year old wife, who was named Abigail. Living next to Thomas Hungerford was his brother, Joel Hungerford, who was listed in the 1860 census as a 51 year old white male farmer with real estate valued at \$3,300 and a personal estate valued at \$900. He lived with his wife Mary who was 33 years old, their daughter Sarah who was a year old, Gavin Cowles who was 14 years old, and a 68 year old servant named Hilda Wallon.

The 1874 historic map shown in Figure 4 reveals that the Atwood real estate holdings increased by that time as documented by additional Atwood homesteads near the project area. The 1870 United States Federal Census listed James M. Atwood as a 41 year old white male farmer with real estate valued at \$10,000 and a personal estate valued at \$2,400. Living with him in 1870 were his wife Narcissa (age 39), a farm laborer listed as W. Wakeman (age 20), and a domestic servant named Ellen (age 18). Just across from the James Atwood homestead, and approximately 400 m (1,312 ft) to the north of the project were, are several other Atwood homesteads. Cleveland Atwood (age 26) was listed in the 1870 United

States Federal Census as a farmer and living with his wife Jane who was 21 years old. Next door there was Henry Atwood (age 25), a farmer with a real estate valued at \$600 and a personal estate valued at \$800. Living with Henry was his wife Helen, then age 20. Next door to Henry was Heniman Atwood (age 41), also a farmer; he lived with a woman Eliza (age 57). Finally, Willard Atwood was listed as a 30 year old white farmer who owned real estate valued at \$8,000 and a personal estate valued at \$1,500. Living with Willard were his wife Loraine (age 25) and their children Lanni (age 4), Florence (age 2), and an unnamed newborn. The Lewis Atwood Brook that runs east of the project is named for the Atwood Family.

Also represented in the 1874 map are the unchanged homesteads of father and son, Thomas and Joel Hungerford mentioned above. Thomas Hungerford, whose homestead is less than 400 m (1,312) ft from the project area, is listed on the 1870 United States Federal Census as a 62 year old farmer with real estate valued at \$5,000 and a personal estate valued at \$5,400. Living with Thomas Hungerford in 1870 was his wife Abigail (age 51). Thomas Hungerford died in 1876. Visible in the 1874 map and across from Thomas Hungerford's homestead, is the farm of his brother Joel Hungerford (Figure 4). Listed below his brother Thomas on the 1870 census, Joel Hungerford was a 54 year old white male farmer with real estate valued at \$7,000 and a personal estate value at \$3,190. Living with Joel in 1870 were his wife Mary (age 43) and their children Sarah (age 10), Charles (age 7), and James (age 5).

At the time of the 1934 aerial image shown in Figure 5, there appears to have been several cleared farm parcels within the vicinity of the project area and a possible stone wall dividing the project area down the middle from north to south. Some reforestation is visible within and surrounding the project area at this time; however, the 1934 aerial image contains no evidence of a dwelling structure within the project area. The subsequent 1951 aerial image similarly shows distinct farm parcels within the project area, with some evidence of reforestation (Figure 6). The most dramatic changes to the area surrounding the project area occurred between the 1951 and 1965 as seen in the aerial images. In the 1965 aerial image reforestation has taken over much of the internal project area, with one remaining distinct patch cleared for farming (Figure 7). There also appears to have been an access road or path extending into the project area from the northeastern. At this time, there is also clearing of the land to the north, likely for the development of the Mt. Olivet Cemetery, which is located at 669 Platt Road. Mt. Olivet Cemetery is owned and operated by the Archdiocese of Hartford, Inc., under the Catholic Cemeteries Association and was consecrated on 70 acres of the former Atwood farm land (ccacem.org).

In addition, in 1965, there appears to have been increased residential development within the vicinity of the project area. Little changes appear in the 1970 aerial; increased forestation surrounds the project area with one farm parcel remaining within the southwestern portion of the project area (Figure 8). In 2004, the farm parcel within the project area remains visible as increased forestation resumed in the surrounding area. Increased residential development is visible along Platt Road to the southeast of the project area (Figure 9). By 2018, reforestation has occurred throughout the project area. Mt. Olivet Cemetery is visible with increased use and distinct roadways (Figure 10). The 2018 aerial image remains consistent with the 2019 aerial image, which shows increased forestation with project area (Figure 11).

CHAPTER V

PREVIOUS INVESTIGATIONS

Introduction

This chapter presents an overview of previous archaeological research completed within the vicinity of the project area in Watertown, 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 12 and 13). The discussions presented below are based on information currently on file at the Connecticut State Historic Preservation Office in Hartford, Connecticut. In addition, the electronic site files maintained by Heritage also were examined during the course of this investigation. Both the quantity and quality of the information contained in the original cultural resources survey reports and State of Connecticut archaeological site forms are reflected below.

Previously Recorded Archaeological Sites 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 Connecticut State Historic Preservation Office, as well as the electronic site files maintained by Heritage, failed to detect any previously identified archaeological sites or National/State Register of Historic Places properties situated within 1.6 km (1 mi) of the project area (Figures 12 and 13). 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 at least the early twentieth century and there may be evidence of this historic occupation in the project area.

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 Watertown, Connecticut. The following tasks were completed during this investigation: 1) study of the region's prehistory, history, and natural setting, as presented in Chapters II through IV; 2) a literature search to identify and discuss previously recorded cultural resources in project region; 3) a review of historic maps, topographic quadrangles, and aerial imagery depicting the project area in order to identify potential historic resources and/or areas of past disturbance; and 4) a 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 identify assess the archaeological sensitivity of the project area, as well as to visually examine the development area for any unidentified cultural resources during the 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 A pedestrian survey, photo-documentation, and mapping (see below).

Archival Research & Literature Review

Background research for this project included a review of a variety of historic maps depicting the proposed project area; an examination of USGS 7.5' series topographic quadrangles; an examination 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 historic maps, aerial imagery, and information related to previous archaeological investigations, were gathered from the CT-SHPO. Finally, electronic databases and Geographic Information System files maintained by Heritage were employed during the course of this project, and they provided valuable data related to the project region, as well as data concerning previously identified archaeological sites and National and State Register of Historic Places properties within the general vicinity of the project 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 solar project in East Windsor, Connecticut. This included a pedestrian survey, photo-documentation, and mapping of the area containing the proposed solar center. 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 Watertown, Connecticut. As stated in the introductory section of this report, the goals of the investigation included completion of the following tasks: 1) a contextual overview of the region's prehistory, history, and natural setting (e.g., soils, ecology, hydrology, etc.); 2) a literature search to identify and discuss previously completed cultural resources surveys and previously recorded cultural resources in the project region; 3) a review of readily available historic maps and aerial imagery depicting the project area in order to identify potential historic resources and/or areas of past disturbance; 4) a pedestrian survey and photo-documentation of the project items in order to determine their archaeological sensitivity; and 5) preparation of the current Phase IA cultural resources assessment survey report.

Results of Phase IA survey

The project area measures approximately 76.2 m (250 ft) in width from east to west by 275 m (900 ft) in length from north to south. The project parcel abuts the Mt. Olivet Cemetery, but will be accessed from an agricultural field located to the south. At the time of survey, the project parcel was characterized by secondary forest that had re-occupied former farmland in places, especially in the south (Figures 14 through 22). This project area is situated at elevations ranging from approximately 234.7 to 246.9 m (770 to 810 ft) NGVD, and it contains a total of 10.9 acres of land. The predominant soil types located throughout the project area are Woodbridge and Paxton/Montauk sandy loams, which are found on slopes of 2 to 8 percent. As discussed in Chapter II of this report, this soil type is well-drained and contains small to medium sized stones throughout. The project area lies south of an existing powerline corridor, which will presumably serve as the connection point for the proposed solar facility.

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

With respect to the potential for identifying prehistoric archaeological sites, the project 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 historic period archaeological deposits is based not only on the above-defined landscape features but also on the presence or absence of previously identified historic period archaeological resources as identified during previous archaeological surveys, recorded on historic period maps, or captured in aerial images of the region under study. In this case, proposed project items that are situated within 100 m (328 ft) of a previously identified historic period archaeological site 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 historic period archaeological sensitivity.

The combined review of historic maps, aerial images, land deeds, and the pedestrian survey indicates that the eastern portion of the project area, which contains approximately 3.4 acres of land, retains a moderate/high sensitivity for archaeological deposits due to the presence of low slopes and proximity to Lewis Atwood Brook (see red polygon in Figure 23). Further, soils in this area are mainly attributed to the Woodbridge and Paxton/Montauk series, which consist of sandy loam that generally extends to ca., 165 cm (65 in) below surface. It is recommended that the acreage comprising the moderate/high sensitivity areas be subjected to a Phase IB survey prior to construction. The remainder of the project area contains steeper slopes and positioned further way from Lewis Atwood Brook (see yellow polygon in Figure 23). These areas have been assessed as retaining a no/low archaeological sensitivity and contain 7.5 acres of land. No additional archaeological examination of the no/low areas is recommended.

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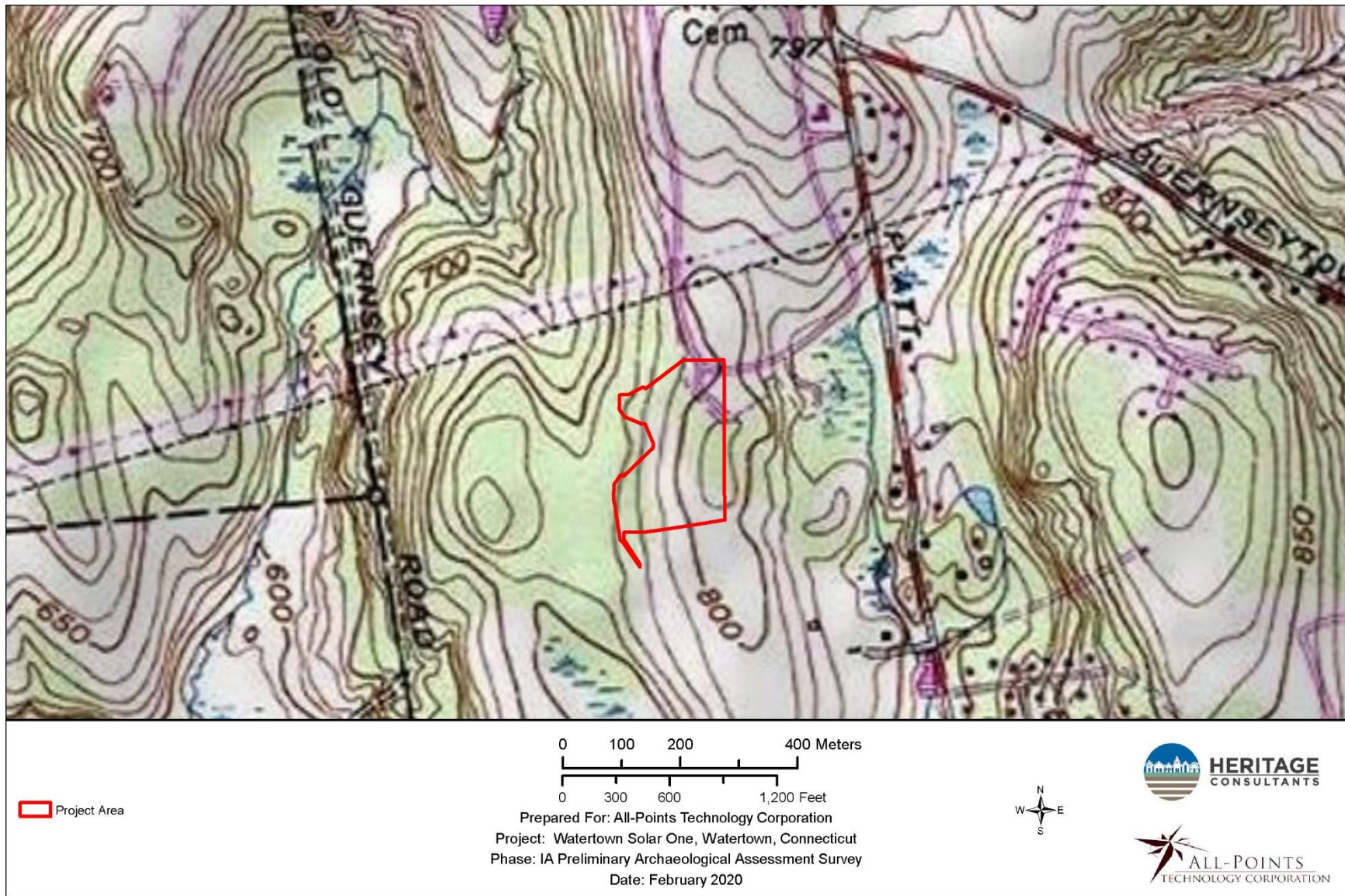


Figure 1. Excerpt from a USGS 7.5' series topographic quadrangle image showing the location of the project parcel in Watertown, Connecticut.

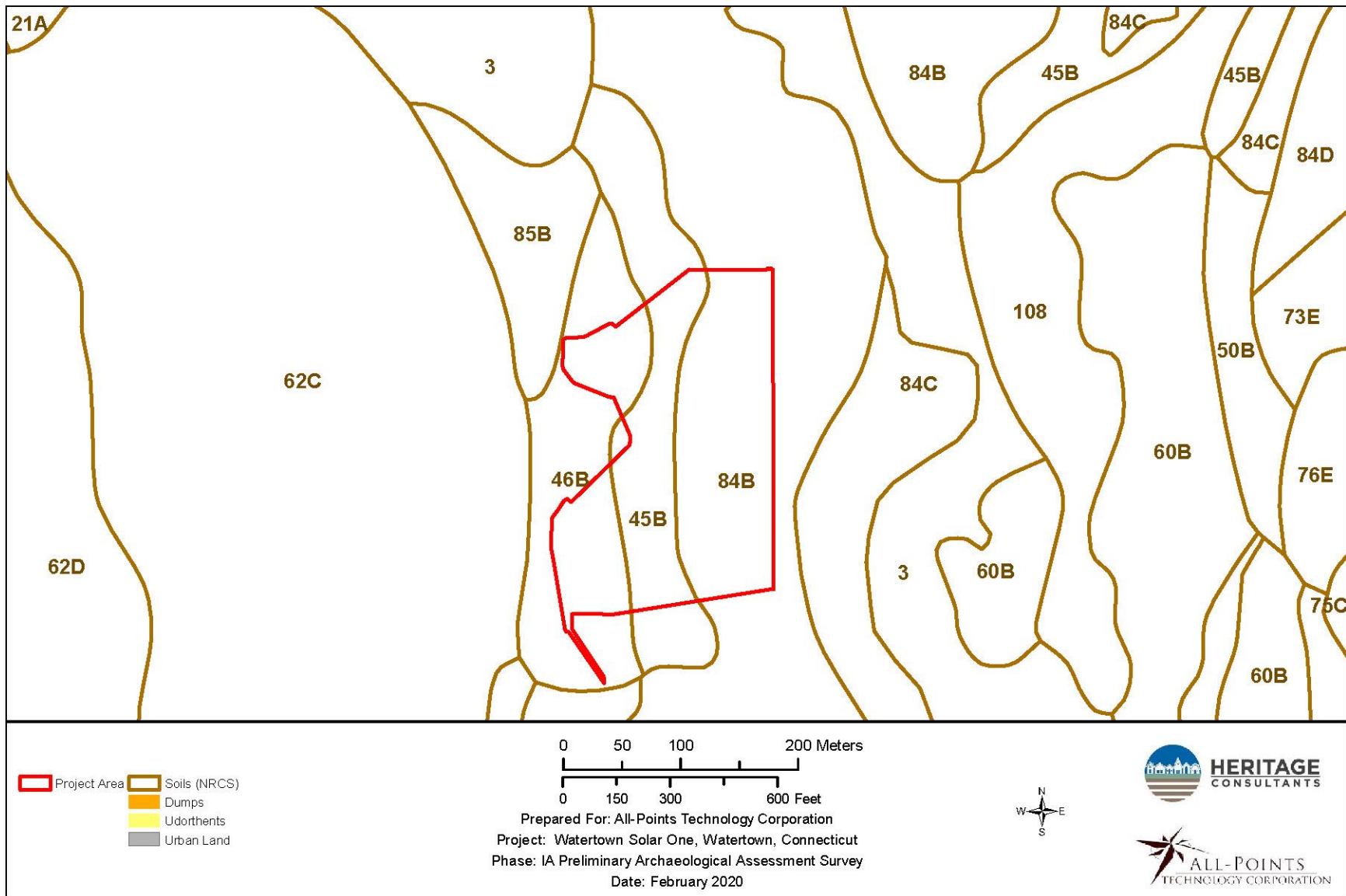


Figure 2. Map of soils located in the vicinity of the project parcel in Watertown, Connecticut.

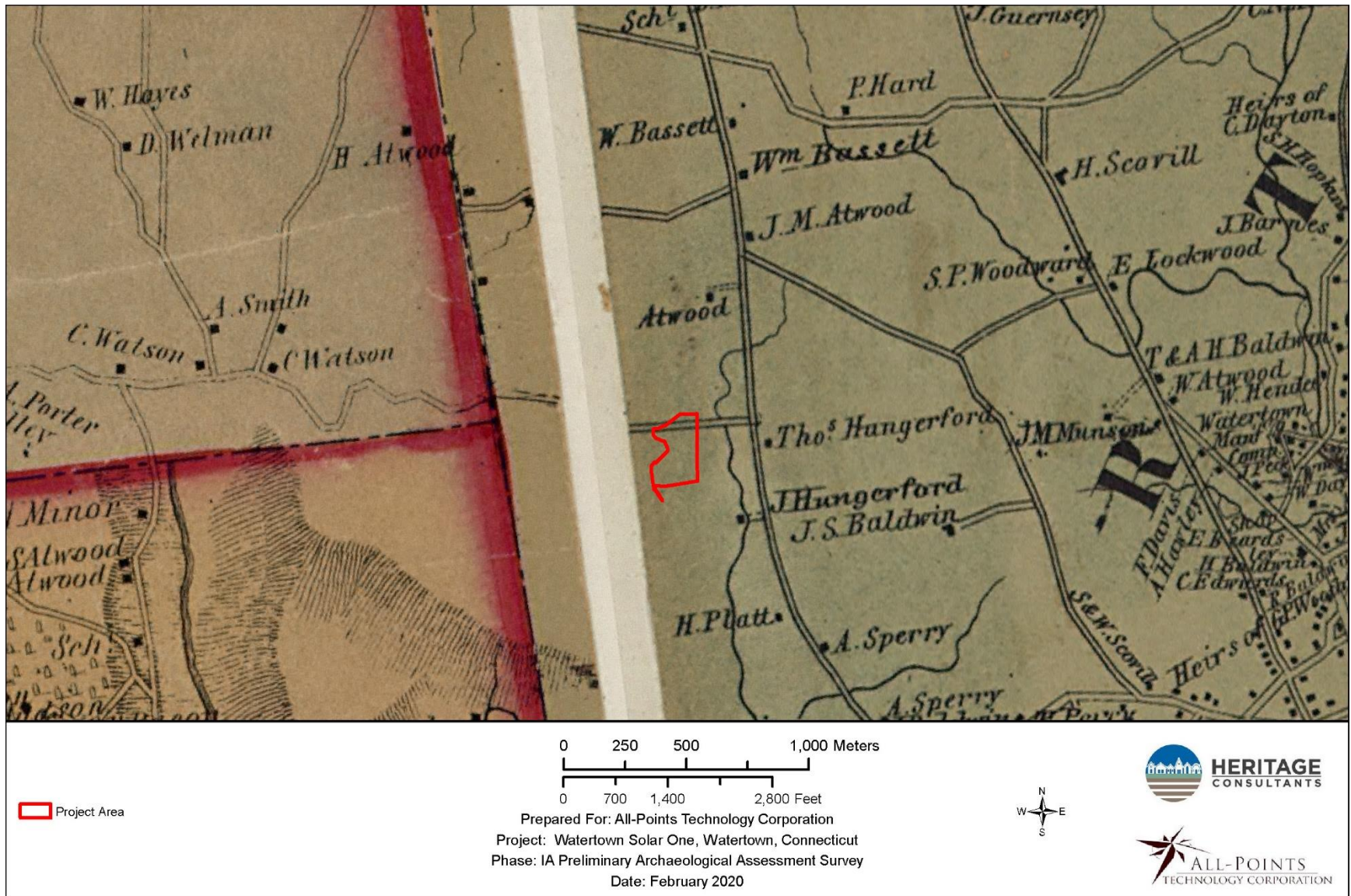


Figure 3. Excerpt from an 1859 historic map showing the location of the project parcel in Watertown, Connecticut.



Figure 4. Excerpt from an 1874 historic map showing the location of the project parcel in Watertown, Connecticut.

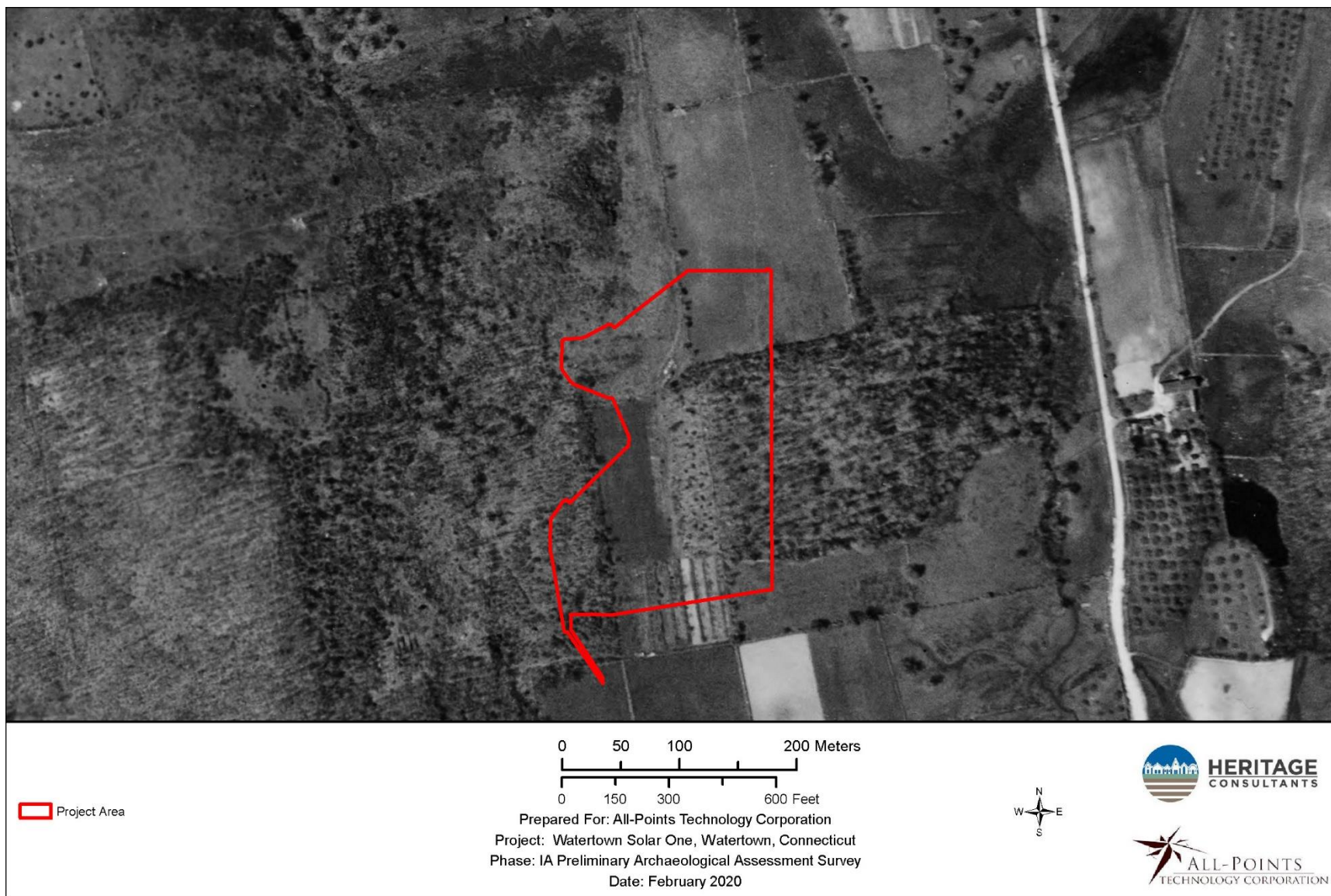


Figure 5. Excerpt from a 1934 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

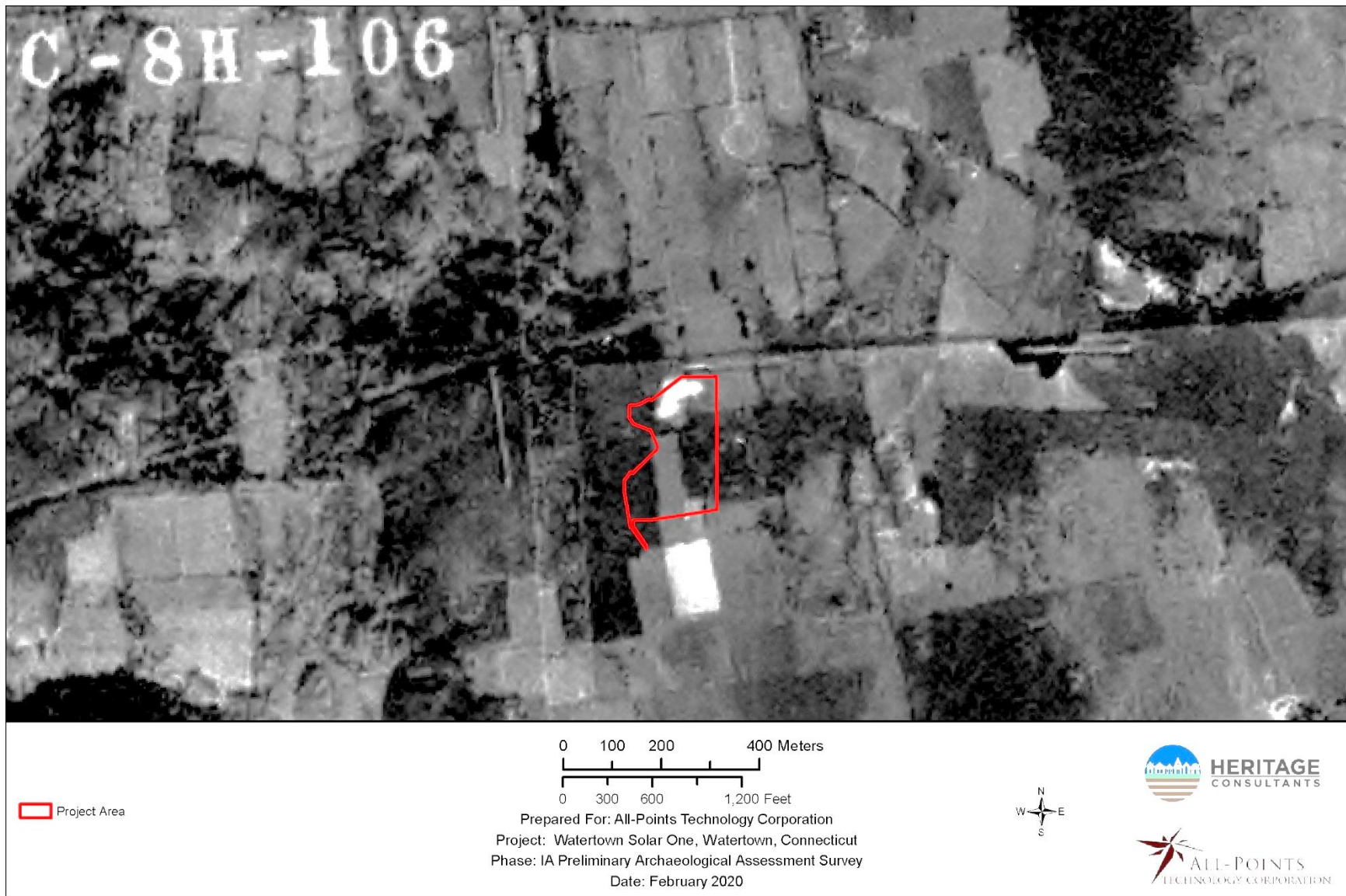


Figure 6. Excerpt from a 1951 aerial photograph showing the location of the project parcel in Watertown, Connecticut.



Figure 7. Excerpt from a 1965 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

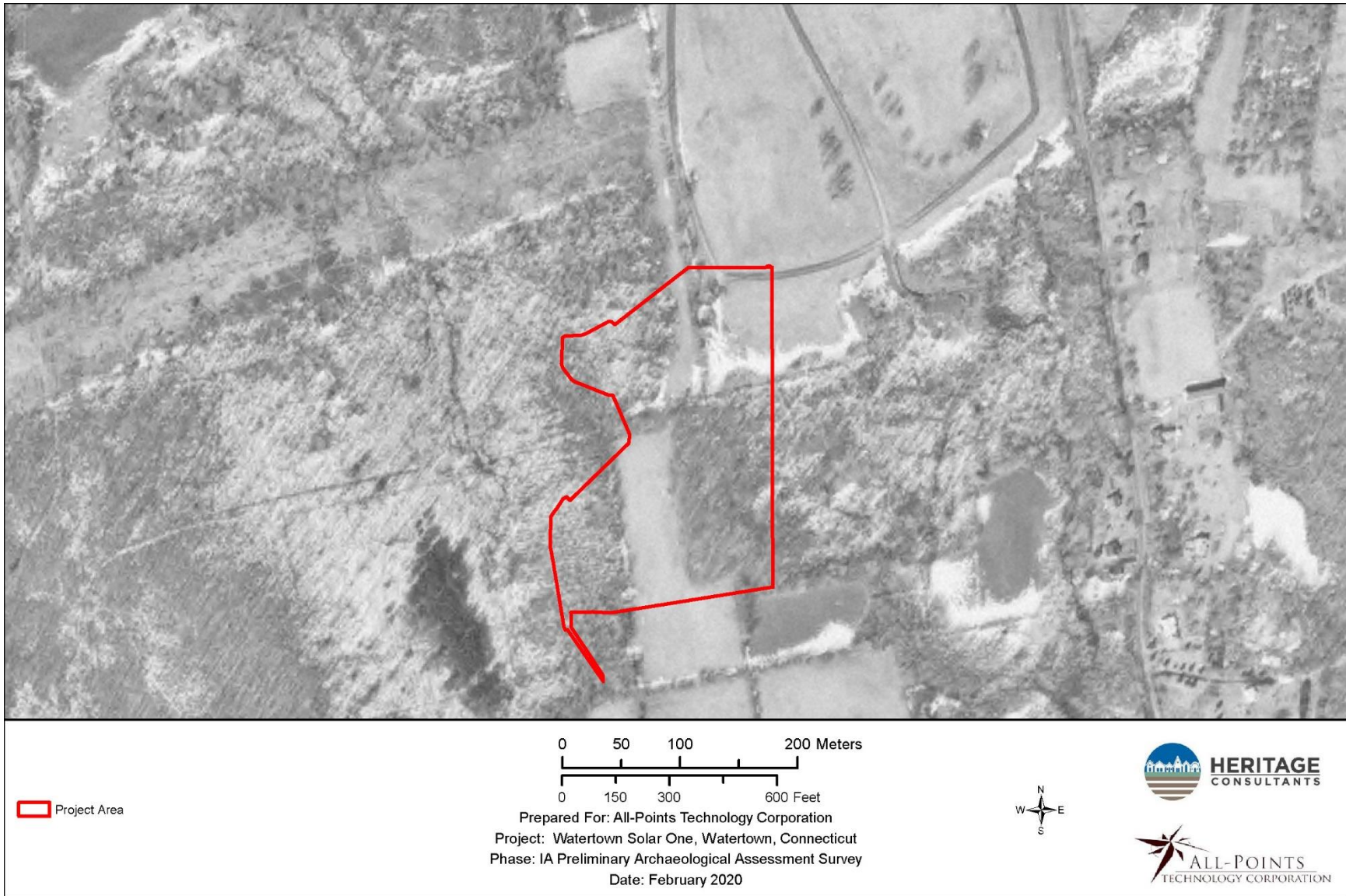


Figure 8. Excerpt from a 1970 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

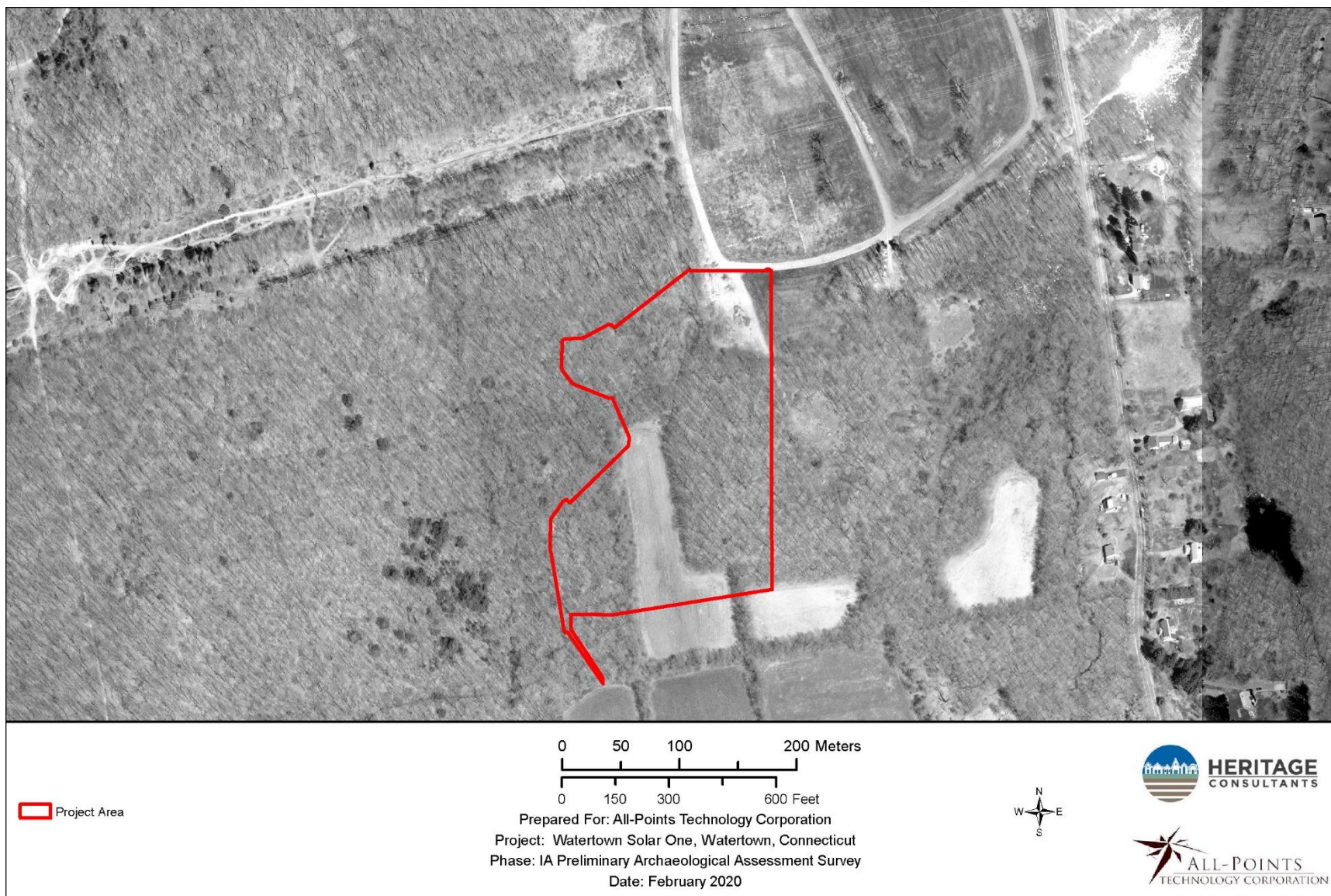


Figure 9. Excerpt from a 2004 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

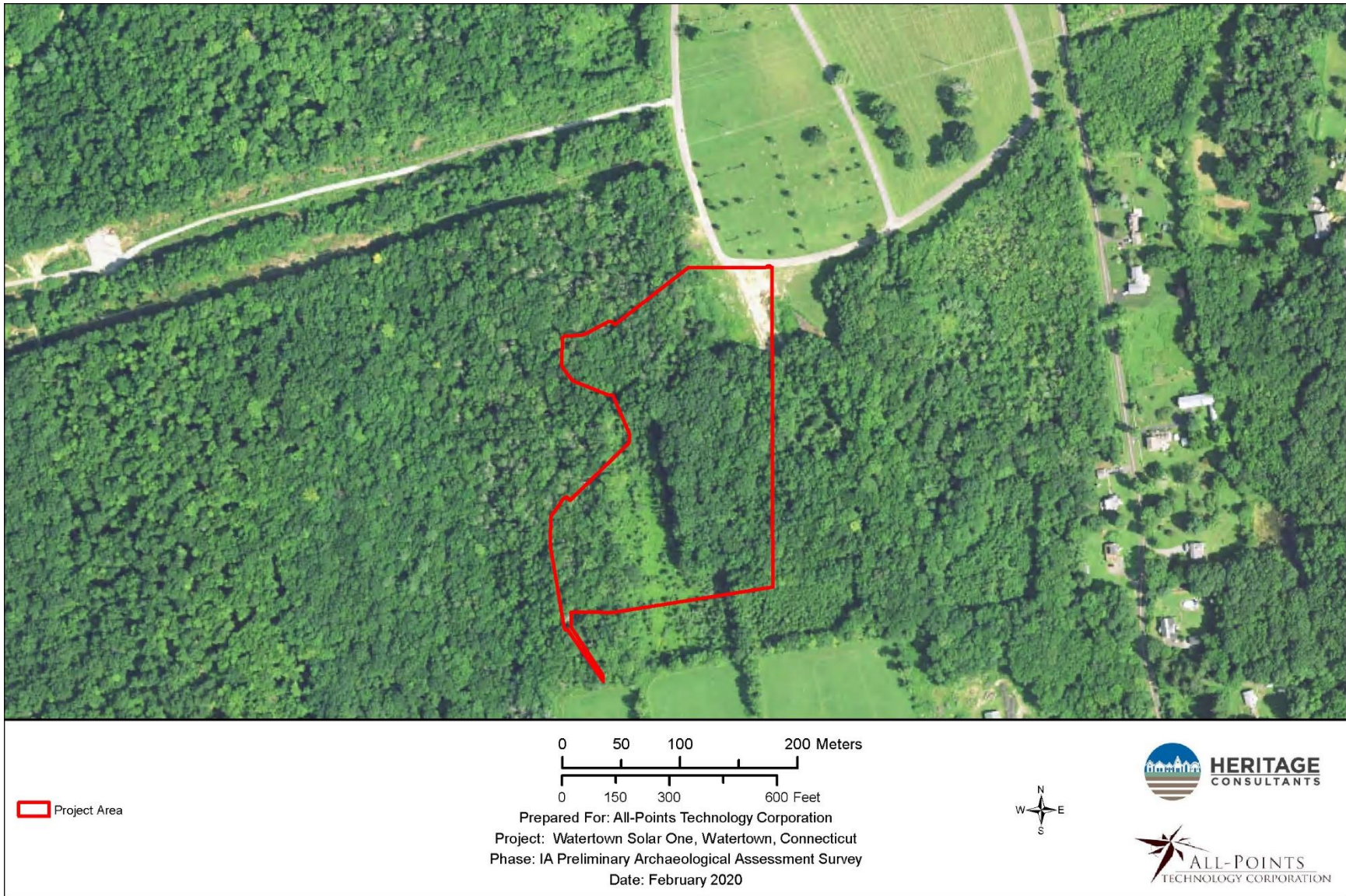


Figure 10. Excerpt from a 2018 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

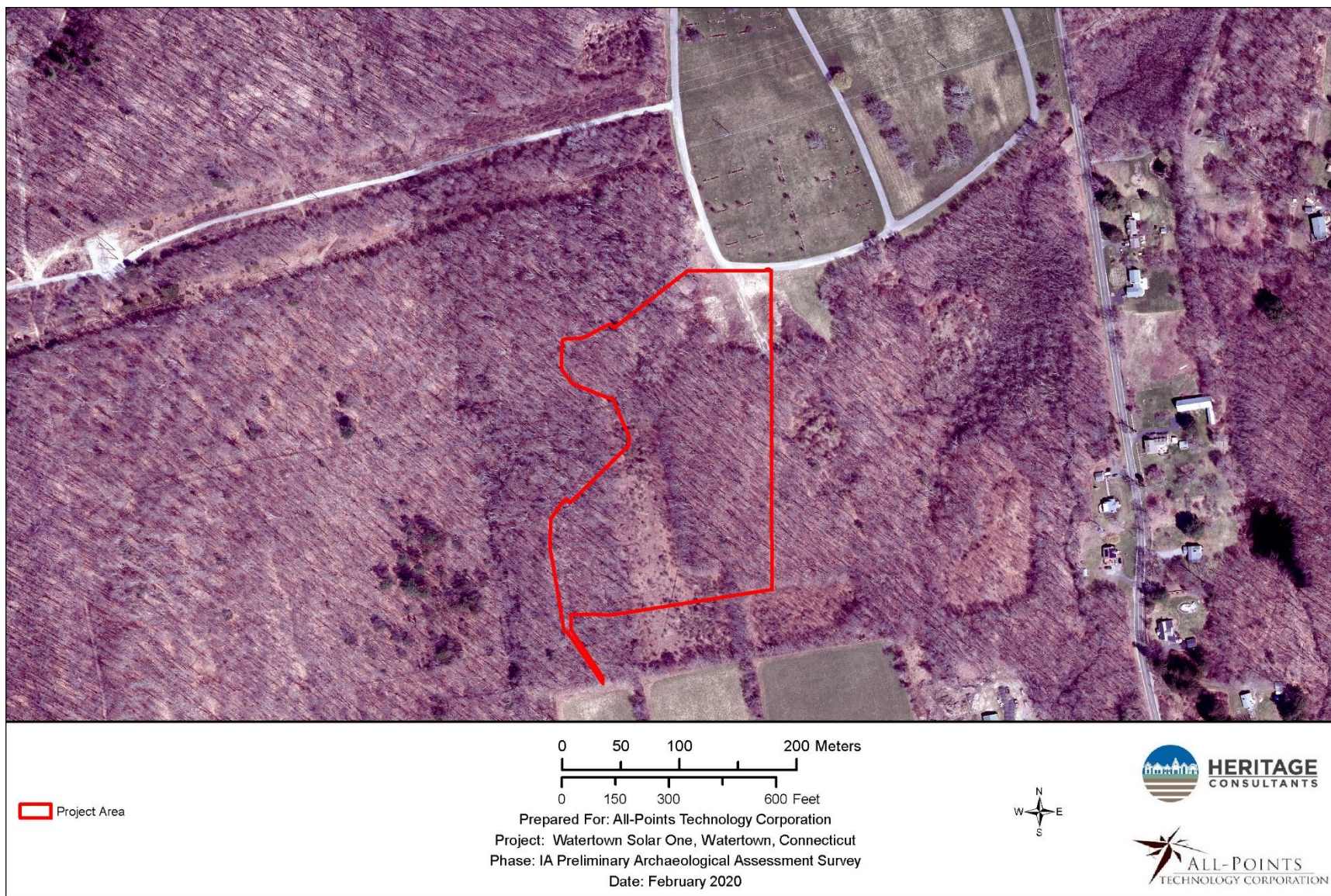


Figure 11. Excerpt from a 2019 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

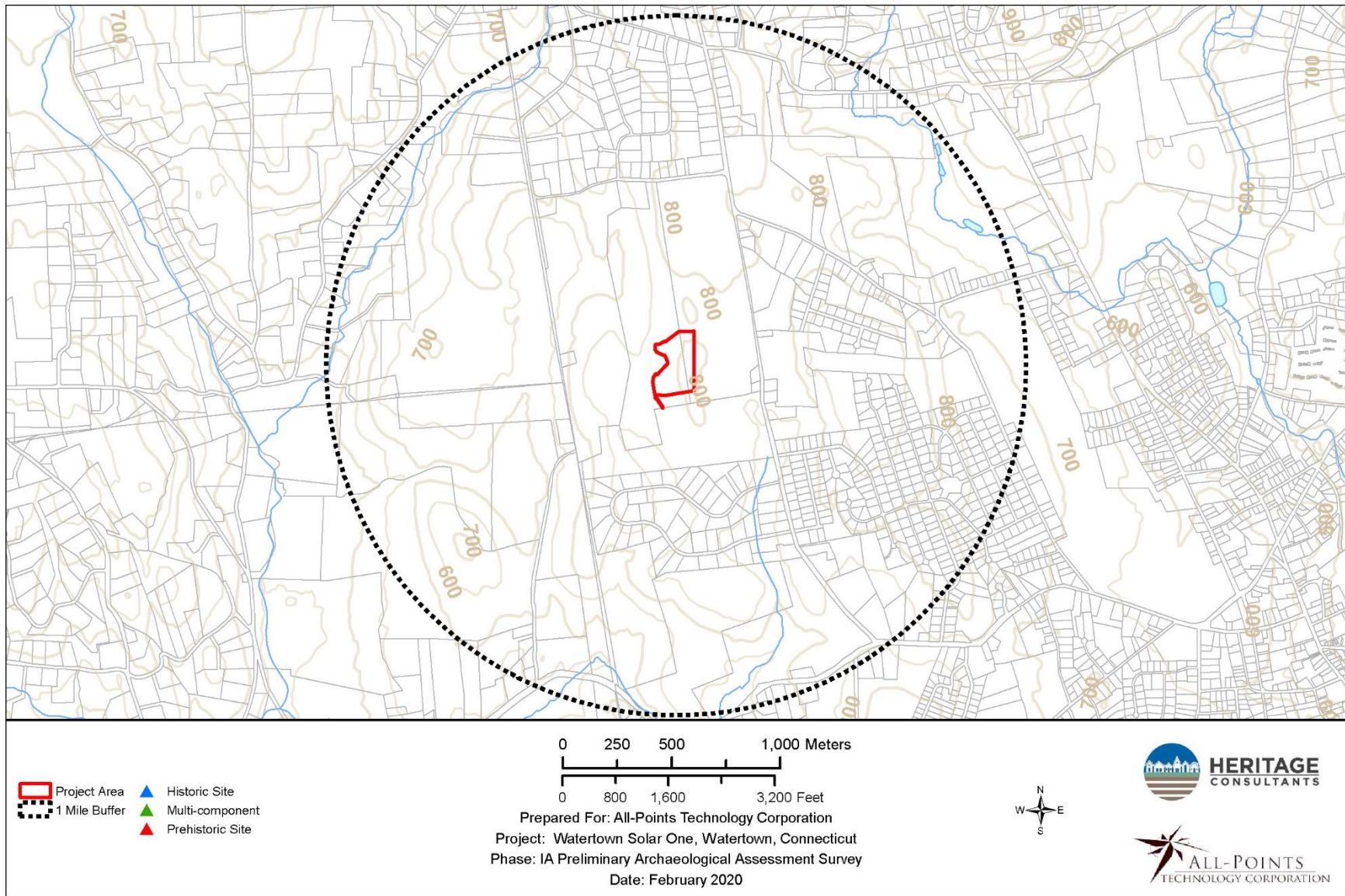


Figure 12. Digital map showing the location of previously identified archaeological sites in the vicinity of the project parcel in Watertown, Connecticut.

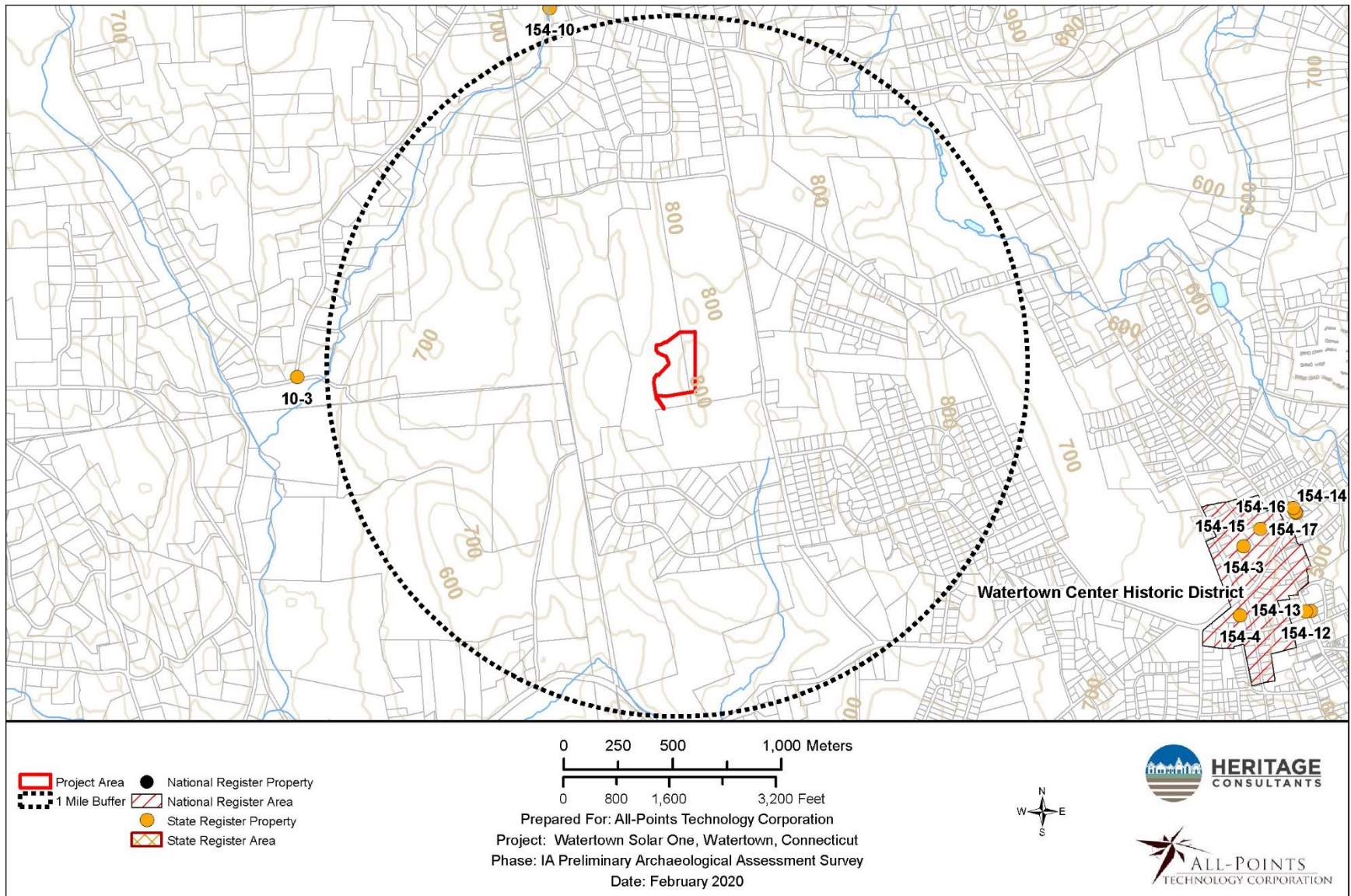


Figure 13. Digital map depicting the locations of previously identified National/State Register of Historic Places properties in the vicinity of the project parcel in Watertown, Connecticut.



Figure 14. Overview photo of the northeastern portion of the project parcel facing south.



Figure 15. Overview photo of the central portion of the project parcel facing southwest.



Figure 16. Overview of northwestern portion of the project parcel facing southeast.



Figure 17. Overview photo of the north central portion of the project parcel facing north.



Figure 18. Overview photo of the east central project parcel facing east.



Figure 19. Overview photo of the south central portion of project parcel facing south.



Figure 20. Overview photo of the west central portion of project parcel facing west.



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



Figure 22. Overview photo of the southwestern portion of project parcel facing northwest.

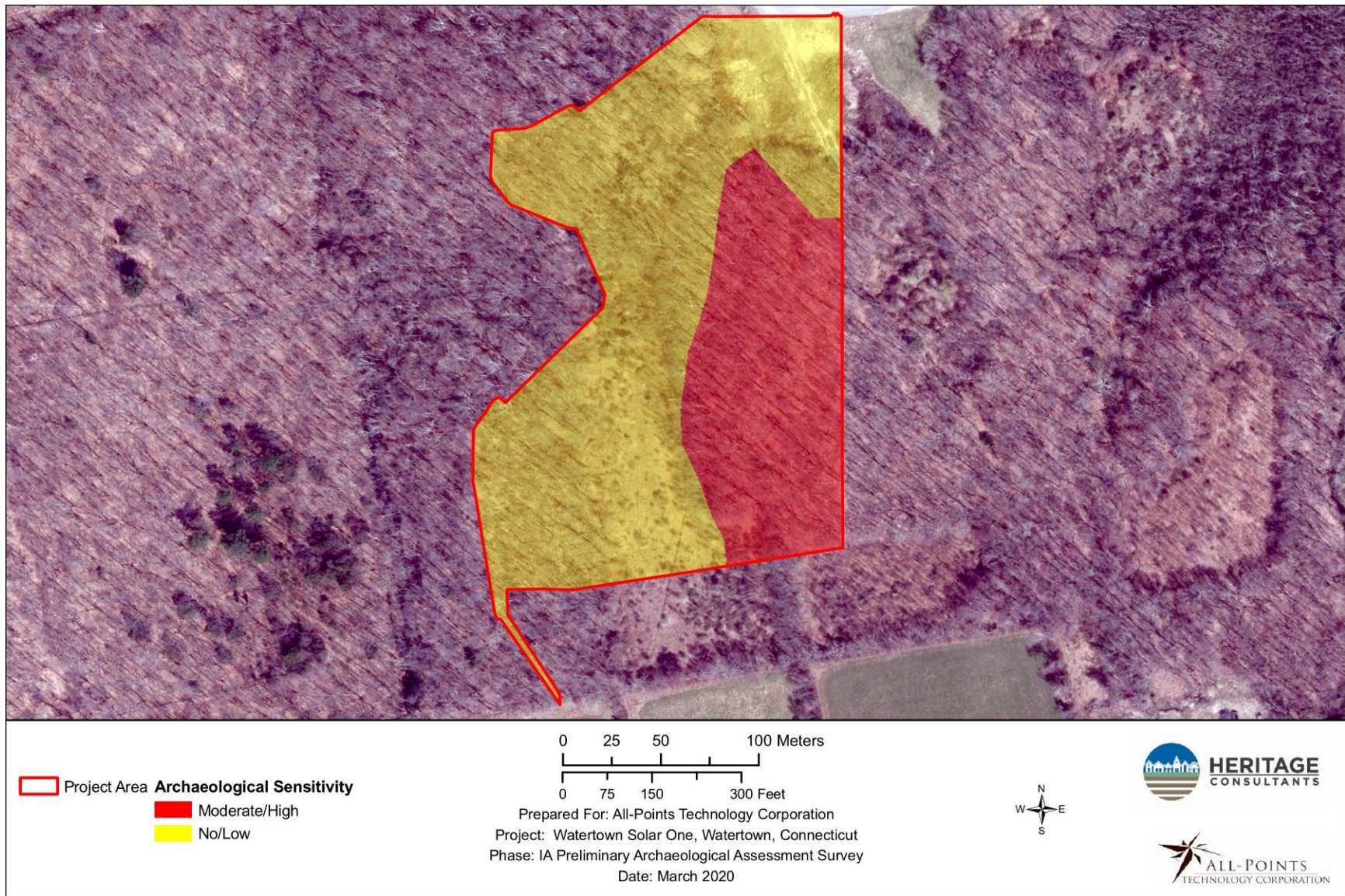


Figure 23. Excerpt from a 2019 aerial image showing the moderate/high and no/low archaeological sensitivity areas associated with the proposed solar facility in Watertown, Connecticut.

MAY 2020

PHASE IB CULTURAL RESOURCES RECONNAISSANCE SURVEY OF
THE PROPOSED WATERTOWN SOLAR ONE FACILITY IN
WATERTOWN, CONNECTICUT

PREPARED FOR:



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ABSTRACT

This report presents the results of a Phase IB cultural resources reconnaissance survey of the proposed Watertown Solar One Project in Watertown, Connecticut. Watertown Solar One, LLC working through its contractor, All-Points Technology Corporation, hired Heritage Consultants, LLC to complete the current project. The project area encompasses approximately 10.9 acres of land and will be accessed from an existing driveway that extends from Platt Road through a cemetery to the north of the proposed area. A previously completed Phase IA cultural resources reconnaissance survey determined that the eastern portion of the project area, which contains approximately 3.4 acres of land, retained a moderate/high sensitivity for archaeological deposits due to the presence of low slopes, well-drained soils, and proximity to Lewis Atwood Brook. A Phase IB reconnaissance survey was recommended for the moderate/high sensitivity area. A total of 65 planned shovel tests were excavated along six survey transects within the project area. No cultural materials, cultural features, or soil anomalies were identified during the survey. It was determined that no impacts to cultural resources are anticipated by construction of the proposed Watertown Solar One Facility and therefore, no additional archaeological examination of the project parcel 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 the proposed solar Watertown Solar One facility in Watertown, Connecticut (Figure 1). All-Points Technology Corporation (All-Points), on behalf of Watertown Solar One, LLC, requested that Heritage Consultants, LLC (Heritage) complete the reconnaissance survey as part of the planning process for the proposed development, which will occupy approximately 10.9 acres of land to the west of Platt Road and to the south of Mt. Olivet Cemetery. The project parcel is surrounded by forested areas to the east and west, as well as fields associated with Carey Shire Farm to the south. Heritage completed this investigation on behalf of All-Points in April 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 plan calls for the construction of a 7,410-module solar array that will include the installation of rows of solar panels spaced 4.9 m (16 ft) apart across the proposed development area (Figure 2). A total of three swales along the northern, southern and western edges of the project area and two stormwater management basins on the western boundary are also called for in the project plans. The project area, which is located within a mostly wooded area, is situated at elevations ranging from 234.7 to 246.9 m (770 to 810 ft) NGVD. Field methods employed during the investigation consisted of a pedestrian survey, mapping, photo-documentation, and subsurface testing throughout the array area. Field methods and results are reviewed below.

Project Results and Management Recommendations Overview

The review of historic maps and aerial images of the project area and files maintained by the CT-SHPO failed to detect any previously identified archaeological sites or National/State Register of Historic Places properties within 1.6 km (1 mi) of the project area. In addition, a pedestrian survey also indicated that no above-ground historic resources (e.g., foundations, wells, privies, etc.) exist within the proposed development area. However, Heritage personnel also combined historic map, aerial image, soils, and landscape data to stratify the project area into zones of no/low and/or moderate/high archaeological sensitivity. This part of the investigation revealed that the eastern portion of the project area, which contains approximately 3.4 acres of land, retained a moderate/high sensitivity for archaeological deposits due to the presence of low slopes and proximity to Lewis Atwood Brook. Soils in this area are mainly attributed to the Woodbridge and Paxton/Montauk series, which are sandy well drained soils that are often correlated with the locations of prehistoric and historic period archaeological sites. It was recommended that the acreage comprising the moderate/high sensitivity areas be subjected to a Phase IB survey prior to construction.

During the Phase IB survey, a total of 65 planned shovel tests were excavated along six survey transects placed systematically throughout the project area. Despite the testing effort, no cultural materials, cultural features, or soil anomalies were identified during the Phase IB reconnaissance survey. It was determined that no impacts to significant cultural resources are anticipated by construction of the proposed Watertown Solar One facility and therefore, no additional archaeological examination of the project parcel is recommended prior to construction.

Project Personnel

Heritage Personnel who contributed to the project include Mr. David R. George, M.A., R.P.A., (Principal Investigator); Ms. Renée Petruzelli, M.A., R.P.A. (Project Archaeologist); Ms. Kelsey Tuller, M.A., (Field Director); Mr. Stephen Anderson, B.A., (Geographic Information Specialist), and Ms. Christina Volpe, B.A., (Historian).

CHAPTER II

NATURAL SETTING

Introduction

This chapter provides a brief overview of the natural setting of the region containing the project area in Watertown, Connecticut. Previous archaeological research has documented that specific environmental factors can be associated with both prehistoric and historic period site selection. These include general ecological conditions, as well as types of fresh water sources 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: Northwest Hills ecoregion. A brief summary of this ecoregion is presented below. It is followed by a discussion of the hydrology and soils found in and adjacent to the project area.

Northwest Hills Ecoregion

The Northwest Hills ecoregion consists of a hilly upland terrain characterized by “a moderately hilly landscape of intermediate elevation, with narrow valleys and local areas of steep and rugged topography” (Dowhan and Craig 1976:31). Elevations in the Northwest Hills ecoregion range from 228.6 to 304.8 m (750 to 1,000 ft) above sea level. The bedrock of the region is composed of schists and gneisses deposited during the Paleozoic (Dowhan and Craig 1976; Bell 1985). Soils in these uplands areas have developed on top of glacial till in upland locales, and on top of stratified deposits of sand, gravel, and silt in the local valleys (Dowhan and Craig 1976).

Hydrology in the Vicinity of the Project Area

The project area is situated within a region that contains to several sources of freshwater, including Lewis Atwood Brook, Steele Brook, and the Nonnewaug River, as well as unnamed streams, ponds, and wetlands. These freshwater sources may have served as resource extraction areas for Native American and historic populations. Previously completed archaeological investigations in Connecticut have demonstrated that

streams, rivers, and wetlands were focal points for prehistoric occupations because they provided access to transportation routes, sources of freshwater, and abundant faunal and floral resources.

Soils Comprising the Project 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 two major soil types: Woodbridge (45B and 46B) and Paxton/Montauk (84B) (Figure 3). A review of these soils shows that they consist of well-drained sandy loams; they are the types of soils that are typically correlated with prehistoric and historic use and occupation. Descriptive profiles for each soil type are presented below; they were gathered from the National Resources Conservation Service.

Woodbridge Soils:

A typical profile associated with Woodbridge soils is as follows: **Ap**--0 to 18 cm; very dark grayish brown (10YR 3/2) fine sandy loam, light brownish gray (10YR 6/2) dry; moderate medium granular structure; friable; many fine and medium roots; few very dark brown (10YR 2/2) earthworm casts; 5 percent gravel; moderately acid; abrupt wavy boundary; **Bw1**--18 to 46 cm; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; few very dark brown (10YR 2/2) earthworm casts; 10 percent gravel; moderately acid; gradual wavy boundary. **Bw2**--46 to 66 cm; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; few very dark brown (10YR 2/2) earthworm casts; 10 percent gravel; few medium prominent strong brown (7.5YR 5/6) masses of iron accumulation and light brownish gray (10YR 6/2) areas of iron depletion; moderately acid; gradual wavy boundary; **Bw3**--66 to 76 cm; light olive brown (2.5Y 5/4) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 10 percent gravel; common medium prominent strong brown (7.5YR 5/6) masses of iron accumulation and light brownish gray (10YR 6/2) areas of iron depletion; moderately acid; clear wavy boundary; **Cd1**--76 to 109 cm; light olive brown (2.5Y 5/4) gravelly fine sandy loam; weak thick plates of geogenic origin; very firm, brittle; 20 percent gravel; many medium prominent strong brown (7.5YR 5/8) masses of iron accumulation and light brownish gray (10YR 6/2) areas of iron depletion; moderately acid; gradual wavy boundary; **Cd2**--109 to 165 cm; light olive brown (2.5Y 5/4) gravelly fine sandy loam; weak thick plates of geogenic origin; very firm, brittle; few fine prominent very dark brown (10YR 2/2) coatings on plates; 25 percent gravel; common fine prominent strong brown (7.5YR 5/8) masses of iron accumulation; moderately acid.

Paxton/Montauk Soils:

A typical profile for Paxton and Montauk soils is described as follows: **Ap**--0 to 20 cm; dark brown (10YR 3/3) fine sandy loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; many fine roots; 5 percent gravel; strongly acid; abrupt smooth boundary; **Bw1**--20 to 38 cm; dark yellowish brown (10YR 4/4) fine sandy loam; weak medium subangular blocky structure; friable; common fine roots; 5 percent gravel; few earthworm casts; strongly acid; gradual wavy boundary; **Bw2**--38 to 66 cm; olive brown (2.5Y 4/4) fine sandy loam; weak medium subangular blocky structure; friable; few fine roots; 10

percent gravel; strongly acid; clear wavy boundary; and **Cd**--66 to 165 cm; olive (5Y 5/3) gravelly fine sandy loam; medium plate-like divisions; massive; very firm, brittle; 25 percent gravel; many dark coatings on plates; strongly acid.

Summary

The natural setting of the area containing the proposed Watertown Solar One Facility is common throughout the Northwest Hills ecoregion. Streams and rivers of this area empty into the Naugatuck River, which in turn drains into the Long Island Sound. Further, the landscape in general is dominated by sandy loamy soil with some wetland soils intermixed. In addition, low slopes dominate the region. Thus, in general, the project region was well suited to Native American occupation throughout the prehistoric era. This portion of Watertown was also used throughout the historic era, as evidenced by the presence of numerous historic residences and agricultural fields throughout the larger region; thus, archaeological deposits dating from the prehistoric and historic era may be expected near or within the proposed project area based on its landscape characteristics.

CHAPTER III

PREHISTORIC SETTING

Introduction

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

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

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

While there have been numerous surface finds of Paleo-Indian projectile points throughout the State of Connecticut, only two sites, the Templeton Site (6-LF-21) in Washington, Connecticut and the Hidden Creek Site (72-163) in Ledyard, Connecticut, have been studied in detail and dated using the radiocarbon method (Jones 1997; Moeller 1980). The Templeton Site (6-LF-21) is in Washington, Connecticut and was occupied between 10,490 and 9,890 years ago (Moeller 1980). In addition to a single large and two small fluted points, the Templeton Site produced a stone tool assemblage consisting of graters, 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, graters, and end-scrapers. Based on the types and number of tools present, Jones (1997:77) has hypothesized that the Hidden Creek Site represented a short-term occupation, and that separate stone tool reduction and rejuvenation areas were present.

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

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

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

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

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

Like their Paleo-Indian predecessors, Early Archaic sites tend to be small and produce few artifacts, most of which are not temporally diagnostic. While Early Archaic sites in other portions the United States are represented by projectile points of the Kirk series (Ritchie and Funk 1973) and by Kanawha types (Coe 1964), sites of this age in southern New England are identified recognized on the basis of a series of ill-defined bifurcate-based projectile points. These projectile points are identified by the presence of their characteristic bifurcated base, and they generally are made from high quality raw materials. Moreover, finds of these projectile points have rarely been in stratified contexts. Rather, they occur commonly either as surface expressions or intermixed with artifacts representative of later periods. Early Archaic occupations, such as the Dill Farm Site and Sites 6LF64 and 6LF70 in Litchfield County, 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 \pm 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 m² (5,383 ft²). 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 that interior cord marked, grit tempered, thick walled ceramics with conoidal (pointed) bases made their initial appearance in the Native American toolkit. These are the first ceramics in the region, and they are named Vinette I (Ritchie 1969a; Snow 1980:242); this type of ceramic vessel appears with much more frequency during the ensuing Early Woodland Period. In addition, the adoption and widespread use of soapstone bowls, as well as the implementation subterranean storage, suggests that Terminal Archaic groups were characterized by reduced mobility and longer-term use of established occupation sites (Snow 1980:250).

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

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

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

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

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

Careful archaeological investigations of Early Woodland sites in southern New England have resulted in the recovery of narrow stemmed projectile points in association with ceramic sherds and subsistence remains, including specimens of White-tailed deer, soft and hard-shell clams, and oyster shells (Lavin and Salwen: 1983; McBride 1984:296-297; Pope 1952). McBride (1984) has argued that the combination of

the subsistence remains and the recognition of multiple superimposed cultural features at various sites indicates that Early Woodland Period settlement patterns were characterized by multiple re-use of the same sites on a seasonal basis by small co-residential groups.

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

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

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

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

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

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

Summary of Connecticut Prehistory

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

CHAPTER IV

HISTORIC OVERVIEW

Introduction

As stated in Chapter I, the project area consists of a parcel of land containing 10.9 acres in the town of Watertown, which is in Litchfield County. This chapter provides both a broad overview history of the Watertown area, as well as data more specific to the proposed development area. The evidence reviewed indicates that the area was historically part of the fields system of a farm or farms in the early twentieth century, and almost certainly for many years before that.

Native American History

Historians who have researched the development of the larger Waterbury region believe that at the time of the first English exploration of the area, probably in the 1650s, there were no Native American settlements within the future limits of what later became known as Watertown. Rather, Watertown was used by the Native American residents of the Woodbury and Derby area as a hunting ground (Bronson 1858). De Forest says nothing concerning any Native Americans in the area except that they sold their lands in 1674 and 1684 (1852). In 1673, men from Farmington received permission from the General Assembly to look over Mattatuck, as the area was then called, and in 1674 were granted permission to establish a town there, but the outbreak of King Philip's War in 1675 delayed the settlement process (Barber 1836).

The clearing of any Indian claims to the region was later accomplished by a purchase from a group of Indians living at Tunxis in Farmington in 1674. This area encompassed a tract of land measuring 10 miles from north to south and six miles from east to west. A total of two additional parcels were added to the larger tract in 1684 on the north side of the first, which was granted largely from the same Indians as the 1674 purchase. In 1685, the town also cleared claims to previously purchased land by certain Derby area Indians; this was accomplished through an additional purchase. The final area measured 18 miles from north to south, nine miles from east to west at the northern end, and six miles from east to west at the southern end (Bronson 1858). This area today encompasses the towns of Watertown, Plymouth, and Waterbury, as well as parts of Oxford, Wolcott, Middlebury, Prospect, and Naugatuck.

Watertown History, Seventeenth and Eighteenth Centuries

The initial settlement of the Waterbury region was made on the east side of the Naugatuck River, where the center of the city of Waterbury is located today (Bronson 1858). The first settlers arrived in that area in 1677, and by 1687 the town was formally organized by the General Assembly and named Waterbury instead of Mattatuck. This event occurred only shortly before Governor Andros's suspension of the Connecticut charter government; a corrected document that was issued in 1720. Both patents, as they were called, contained measurement of the town area as slightly smaller than the Indian deeds suggested (Bronson 1858). The northwestern section of Waterbury that was first known as Wooster and then as Wooster Swamp, was probably named after one Edward Wooster who gathered wild hops there. It was later referred to as Westbury and finally as Watertown. Settlement of Watertown commenced in ca., 1700 when Obadiah Richards Sr., built a house to the southwest of the present town center (Crofut 1937).

Watertown was formally laid out in three tiers of lots in 1722 and was settled rapidly. Each lot measured half a mile in length (Crofut 1937). Overall, Barber referred to the town's landscape as "generally uneven,

or rather hilly; but some sections are level" (Barber 1836:499). The first permanent Euroamerican residents of Watertown were the members of Jonathan Scott's family, who moved there just prior to 1710, the year he and two of his sons were captured by Indians and taken to Canada. The father returned after two years, and in 1722 he established the first sawmill in the Watertown (Watertown DAR 1907). The First Ecclesiastical Society of Westbury (Congregationalists) was first organized in 1738 and built its first church in 1741 at the town center; a second church was built in 1772, and the existing church had been built in 1839. An Anglican or Church of England congregation also was established in 1764 and built its first church near the Congregational church in 1765, replacing it in 1793 (Crofut 1937). The development of an Anglican church in the 1760s was part of a general trend toward religious diversification in the later eighteenth century, as dissatisfaction with Congregational traditions found outlets in revivals such as the Great Awakening in the 1740s (Rossano 1996).

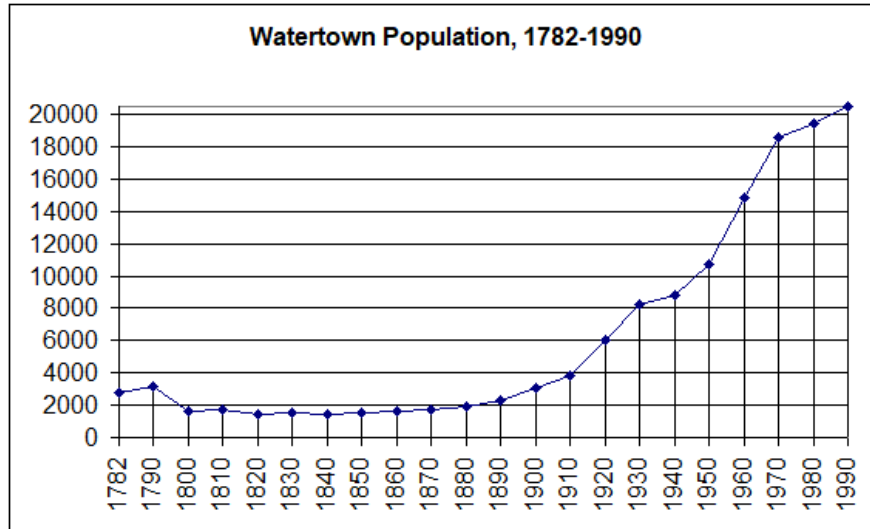
During the Revolutionary War, Waterbury supplied 152 men in 1775, and in total 689 men served throughout the war, including those members of the Twenty-Eighth Regiment of Connecticut (Crofut 1937). This was a difficult period for the western part of Connecticut, where disaffection from Britain was less pronounced and substantial loyalist activity occurred. Although Waterbury fulfilled its obligations in the matters of men and supplies, it also produced Moses Dunbar, a member of a Loyalist regiment who was caught on a recruiting mission in Connecticut and eventually executed for treason (Rossano 1996).

During the eighteenth century, facilities such as sawmills, gristmills, fulling mills (for finishing cloth) and carding mills (for cleaning wool) sufficed for the needs of an agricultural town. The nineteenth century saw some spillover from the burgeoning industries of Waterbury, so much so that central Watertown and the southerly villages of Rockdale and Oakville (which straddled the Waterbury line) developed various industrial enterprises, including a branch of Scovill, Buckingham & Company, which made brass goods, as well as the Oakville Pin Company and numerous others (Watertown DAR 1907). Both the Straits Turnpike (incorporated 1797) and the East Middle Turnpike (incorporated ca., 1803) passed through Watertown. These two roads intersected at the center of town, and the present-day Hamilton Avenue approximately follows the course of the East Middle Turnpike westward to the Woodbury line (Wood 1919). These road improvements were intended to, and generally did, increase the volume of trade in the areas through which they passed, in an era when increased demands for foodstuffs in war-torn Europe inspired substantial investments in infrastructure. The imposition of the Embargo Act of 1807 and then the War of 1812 interrupted these plans, but increased domestic commerce ensued nonetheless (Rossano 1996). Transportation and industry were further encouraged by the construction of the Watertown & Waterbury Railroad in 1869, a five-mile line that connected downtown Watertown with the Naugatuck Railroad, which in turn linked to the New York & New Haven Railroad. This short line has since been abandoned (Turner & Jacobus 1989).

The chart of the town's population shown below indicates that despite the turnpikes and proximity to Waterbury, Watertown did not experience major population growth until the very end of the nineteenth century. After the northern part of the town became the separate town of Plymouth in 1795, Watertown's population fell below 2,000 and remained below that mark until 1890 (MAGIC 1996).

Watertown History, Nineteenth and Twentieth Centuries

In its early days, Watertown had the usual assortment of grist mills, sawmills, and fulling mills to meet the local farmers' needs. In 1801, the town had three grist mills, five sawmills, an oil mill, a paper mill, and a boring mill; the inhabitants' religious needs were met by a Congregational church (formed in 1740) and an Episcopal church (formed in 1765). In addition to its eight schools, the town had two public houses and four public libraries. Its products were primarily agricultural, including pork, beef, butter, cheese, various



grains and live cattle, and a certain amount of hand-loomed cloth (Prindle 1801). An assessment of the town in 1836 noted the two churches but did not mention any industry (Barber 1836). After about 1830, various more industrial businesses appeared in town: factories for making pins and buttons, a carding and fulling mill, a wooden box factory, tannery and shoe-making operation, steel buckles, an early sewing machine factory, and sewing silk manufacturing, among other activities (Watertown DAR 1907). Cumulatively, it seems, these manufacturing efforts began to have the effect of drawing a larger population to the town by the end of the nineteenth century.

In an 1859 historic map of the region containing the project area there are several homesteads, the most notable being the Atwood homestead and farm (Figure 4). According to the 1860 United States Federal Census for Watertown, Chas. A. Atwood was listed as a 67-year-old white male farmer with real estate valued at \$8,000 and a personal estate valued at \$6,000. Living with Atwood during this time were his wife Mary who was 67 years old and a 14-year-old female named Martha Chase. As seen in Figure 3, the farm of Thomas Hungerford was recorded to the south of the Atwood farm. According to the census, Thomas Hungerford was a 52-year-old white male farmer with real estate valued at \$3,300 and a personal estate valued at \$900. As of 1860, he lived with his 51-year-old wife, who was named Abigail. Living next to Thomas Hungerford was his brother, Joel Hungerford, who was listed in the 1860 census as a 51-year-old white male farmer with real estate valued at \$3,300 and a personal estate valued at \$900. He lived with his wife Mary who was 33 years old, their daughter Sarah who was a year old, Gavin Cowles who was 14 years old, and a 68-year-old servant named Hilda Wallon.

The 1874 historic map shown in Figure 4 reveals that the Atwood real estate holdings increased by that time as documented by additional Atwood homesteads near the project area. The 1870 United States Federal Census listed James M. Atwood as a 41-year-old white male farmer with real estate valued at \$10,000 and a personal estate valued at \$2,400. Living with him in 1870 were his wife Narcissa (age 39), a farm laborer listed as W. Wakeman (age 20), and a domestic servant named Ellen (age 18). Just across from the James Atwood homestead, and approximately 400 m (1,312 ft) to the north of the project area are several other Atwood homesteads. Cleveland Atwood (age 26) was listed in the 1870 United States Federal Census as a farmer and living with his wife Jane who was 21 years old. Next door there was Henry Atwood (age 25), a farmer with real estate valued at \$600 and a personal estate valued at \$800. Living with Henry was his wife Helen, then age 20. Next door to Henry was Heniman Atwood (age 41), also a

farmer; he lived with a woman Eliza (age 57). Finally, Willard Atwood was listed as a 30-year-old white farmer who owned real estate valued at \$8,000 and a personal estate valued at \$1,500. Living with Willard were his wife Loraine (age 25) and their children Lanni (age 4), Florence (age 2), and an unnamed newborn. The Lewis Atwood Brook that runs east of the project is named for the Atwood Family.

Also represented in the 1874 map are the unchanged homesteads of father and son, Thomas and Joel Hungerford mentioned above. Thomas Hungerford, whose homestead is less than 400 m (1,312) ft from the project area, is listed on the 1870 United States Federal Census as a 62-year-old farmer with real estate valued at \$5,000 and a personal estate valued at \$5,400. Living with Thomas Hungerford in 1870 was his wife Abigail (age 51). Thomas Hungerford died in 1876. Visible in the 1874 map and across from Thomas Hungerford's homestead, is the farm of his brother Joel Hungerford (Figure 5). Listed below his brother Thomas on the 1870 census, Joel Hungerford was a 54-year-old white male farmer with real estate valued at \$7,000 and a personal estate value at \$3,190. Living with Joel in 1870 were his wife Mary (age 43) and their children Sarah (age 10), Charles (age 7), and James (age 5).

At the time of the 1934 aerial image shown in Figure 5, there appear to have been several cleared farm parcels within the vicinity of the project area and a possible stone wall dividing the project area down the middle from north to south. Some reforestation is visible within and surrounding the project area; however, the 1934 aerial image contains no evidence of a dwelling structure within the project area. The subsequent 1951 aerial image similarly shows distinct farm parcels within the project area, with some evidence of reforestation (Figure 7). The most dramatic changes to the area surrounding the project area occurred between 1951 and 1965 as seen in the aerial images. In the 1965 aerial image reforestation has taken over much of the internal project area, with one remaining distinct patch cleared for farming (Figure 8). There also appears to have been an access road or path extending into the project area from the northeast. At this time, there is also clearing of the land to the north, likely for the development of the Mt. Olivet Cemetery, which is located at 669 Platt Road. Mt. Olivet Cemetery is owned and operated by the Archdiocese of Hartford, Inc., under the Catholic Cemeteries Association and was consecrated on 70 acres of the former Atwood farmland (ccacem.org).

In addition, in 1965, there appears to have been increased residential development within the vicinity of the project area. Little changes appear in the 1970 aerial; increased forestation surrounds the project area with one farm parcel remaining within the southwestern portion of the project area (Figure 9). In 2004, the farm parcel within the project area remains visible as increased forestation resumed in the surrounding area. Increased residential development is visible along Platt Road to the southeast of the project area (Figure 10). By 2018, reforestation has occurred throughout the project area. Mt. Olivet Cemetery is visible with increased use and distinct roadways (Figure 11). The 2018 aerial image remains consistent with the 2019 aerial image, which shows increased forestation with the project area (Figure 12).

CHAPTER V

PREVIOUS INVESTIGATIONS

Introduction

This chapter presents an overview of previous cultural resources research completed within the vicinity of the project area in Watertown, Connecticut. This discussion provides the comparative data necessary for assessing the results of the current Phase IB 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, National/State Register of Historic Places properties, and inventoried historic standing structures over 50 years old situated in the project region. The discussions presented below are based on information currently on file at the CT-SHPO in Hartford, Connecticut. In addition, the electronic site files maintained by Heritage were examined. 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 Connecticut State Historic Preservation Office, as well as the electronic site files maintained by Heritage, failed to detect any previously identified archaeological sites or National/State Register of Historic Places properties situated within 1.6 km (1 mi) of the project area (Figures 13 and 14). 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 at least the early twentieth century and there may be evidence of this historic occupation in the project area.

CHAPTER VI

METHODS

Introduction

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

Research Design

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

Field Methods

Following the completion of all background research, the moderate/high sensitivity areas which were identified during the completed Phase IA survey were subsequently subjected to a Phase IB cultural resources reconnaissance survey. The Phase IB survey consisted of pedestrian survey, systematic shovel testing, photo-documentation, mapping, and GPS recordation. The field strategy was designed so that the moderate/high sensitivity areas were examined visually and photographed. The pedestrian survey portion included visual reconnaissance of moderate/high sensitivity areas scheduled for impacts by the proposed solar project. The field methods included subsurface testing of the moderate/high sensitivity areas, during which shovel tests were excavated at 15 m (49.2 ft) intervals along parallel survey transects spaced 20 m (65.6 ft) apart.

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

Curation

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

Dr. Sarah Sportman
Connecticut State Archaeologist
Office of Connecticut State Archaeology

Box U-1023
University of Connecticut
Storrs, Connecticut 06269

CHAPTER VII

RESULTS OF THE INVESTIGATION & MANAGEMENT RECOMMENDATIONS

Introduction

This chapter presents the results of the Phase IB cultural resources reconnaissance survey of the moderate/high archaeologically sensitive areas associated with the proposed Watertown Solar One facility in Watertown, Connecticut. The goals and methods 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 recorded cultural resources in the region encompassing the project area; 3) a review of readily available historic maps and aerial imagery depicting the project area in order to identify potential historic resources and/or areas of past disturbance; 4) pedestrian survey and photo-documentation of the project parcel; and 5) subsurface examination of the moderate/high archaeologically sensitive areas identified during the previously completed Phase IA cultural resources assessment survey (Heritage Consultants, LLC 2020).

The project area measures approximately 76.2 m (250 ft) in width from east to west by 275 m (900 ft) in length from north to south and will be accessed from Platt Road and through an existing driveway through a cemetery to the north of the project area. At the time of survey, the project parcel was characterized by secondary forest that had re-occupied former farmland in places, especially in the south (Figures 15 through 23). The project area, which is located within a mostly wooded area, is situated at elevations ranging from 234.7 to 246.9 m (770 to 810 ft) NGVD, and it contains a total of 10.9 acres of land. The project area lies south of an existing powerline corridor, which will presumably serve as the connection point for the proposed solar facility.

The proposed project plans consist of a 7,410-module solar array that will include the installation of rows of solar panels spaced 4.9 m (16 ft) apart across the proposed development area. The proposed project plans depict a total of three swales along the northern, southern and western edges of the project area and two stormwater management basins on the western boundary. Field methods employed during the current investigation consisted of pedestrian survey, mapping, photo-documentation, and subsurface testing throughout the array area. Field methods and results are discussed below.

Results of the Phase IB Cultural Resources Reconnaissance Survey & Management Recommendations

A total of 65 of 65 (100 percent) planned shovel tests were excavated along six survey transects across the project area (Figure 24). They were excavated at 15 m (49.2 ft) intervals along survey transects spaced 15 m (49.2 ft) apart. At the time of the survey, it was noted that the area was characterized by many boulders and cobbles on the surface. What appeared to be modern disturbance (push piles) was observed at the northern edge of the project close to the tree line.

A typical shovel test excavated within the project area exhibited three soil horizons in profile and reached to a depth of 55 cmbs (22 inbs). The uppermost soil horizon (A-Horizon) extended from 0 to 19 cmbs (to 7.5 inbs) and was described as a deposit of dark yellow brown (10YR 3/6) silty fine sand. It was underlain by a layer of subsoil (B-Horizon) that ranged in depth from 19 to 45 cmbs (7.5 to 17.7 inbs) and was described as a yellow brown (10YR 5/6) silty medium sand. Finally, the glacially derived C-Horizon reached from 44 to 55

cmbs (17.6 to 28 inbs) and was classified as a layer of light-yellow brown (10YR 6/4) sandy medium clay. Despite the field effort, no cultural material or evidence of cultural features were identified during the Phase IB survey. Thus, no impacts to cultural resources are expected by the construction of the solar facility, and no additional archaeological examination of the project area is recommended prior to the construction of the proposed Watertown Solar One facility.

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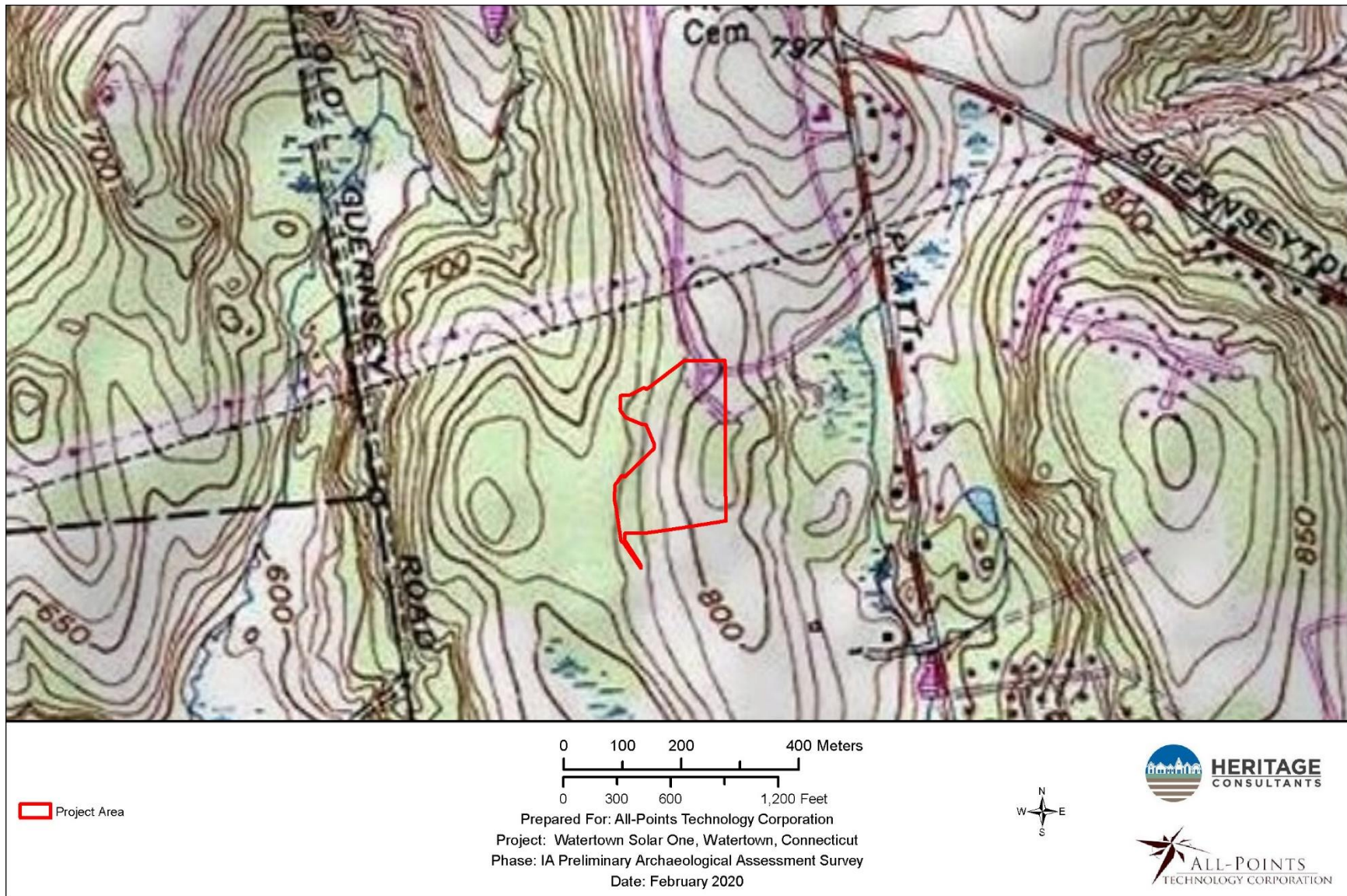
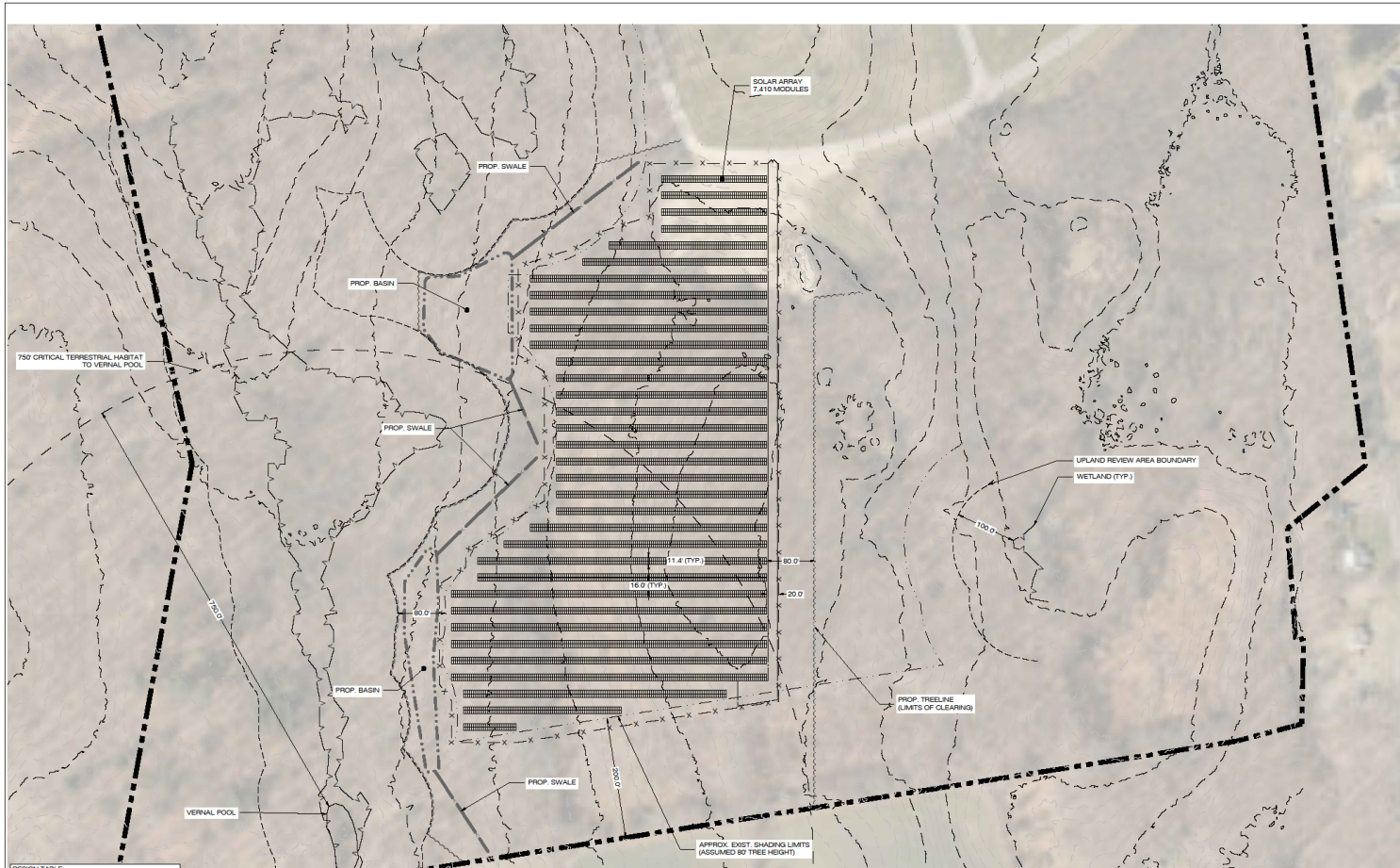


Figure 1. Excerpt from a USGS 7.5' series topographic quadrangle image showing the location of the project parcel in Watertown, Connecticut.

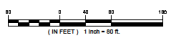


DESIGN TABLE:

MODULE MODEL - 724M G2 389W MODULE
PROP. TILT - 30 DEGREES
PROP. AZIMUTH - 180 DEGREES
INTER-ROW SPACING - 16 FEET
PROP. STRINGING - 1326 MODULES
TOTAL NUMBER OF MODULES - 7,410 MODULES



PRELIMINARY CONCEPT PLAN
SCALE: 1" = 80'



VEROGY

ALL-POINTS TECHNOLOGY CORPORATION
3 SADDLEBROOK DRIVE PHONE: (860)453-1851
KILLINGWORTH, CT 06419 FAX: (860)453-0351
WWW.ALLPOINTSTECH.COM

CONCEPT

NO.	DATE	REVISION
0	07/24/19	FOR REVIEW BLP
1	07/25/19	FOR REVIEW BLP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD
PROF. BRADLEY J. PARSONS P.E.
 COMP: ALL-POINTS TECHNOLOGY CORPORATION
 ADD: 3 SADDLEBROOK DRIVE
 KILLINGWORTH, CT 06419
 OWNER: _____
 ADDRESS: _____

WATERTOWN SOLAR ONE
 SITE: PLATT ROAD
 ADDRESS: WATERTOWN, CT
 APT FILING NUMBER: CT20020
 DATE: 07/24/19
 DRAWN BY: JT
 CHECKED BY: BLP

SHEET TITLE:
PRELIMINARY CONCEPT PLAN

SHEET NUMBER:
CP-1

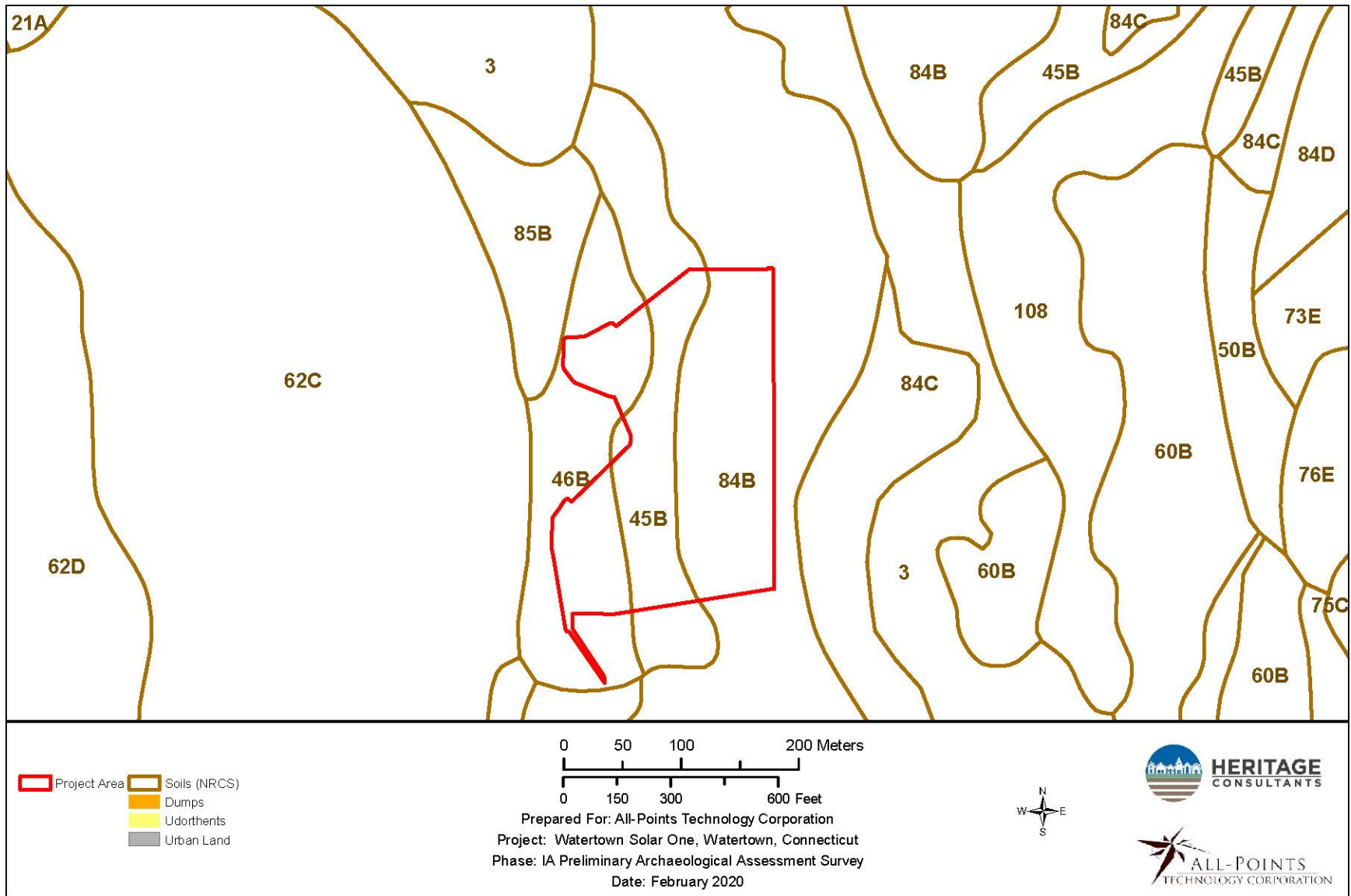


Figure 3. Map of soils located in the vicinity of the project parcel in Watertown, Connecticut.

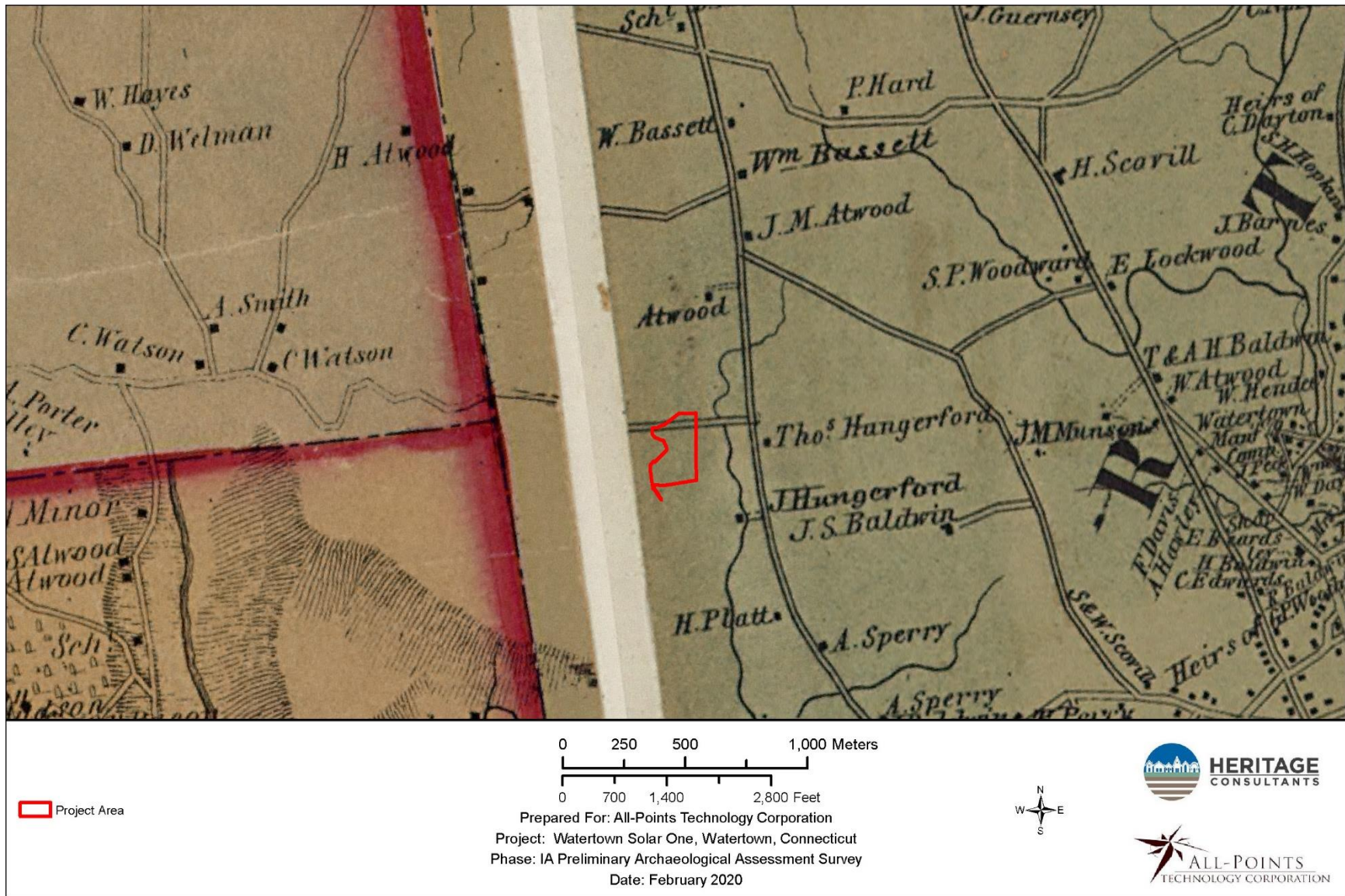


Figure 4. Excerpt from an 1859 historic map showing the location of the project parcel in Watertown, Connecticut.



Figure 5. Excerpt from an 1874 historic map showing the location of the project parcel in Watertown, Connecticut.



Figure 6. Excerpt from a 1934 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

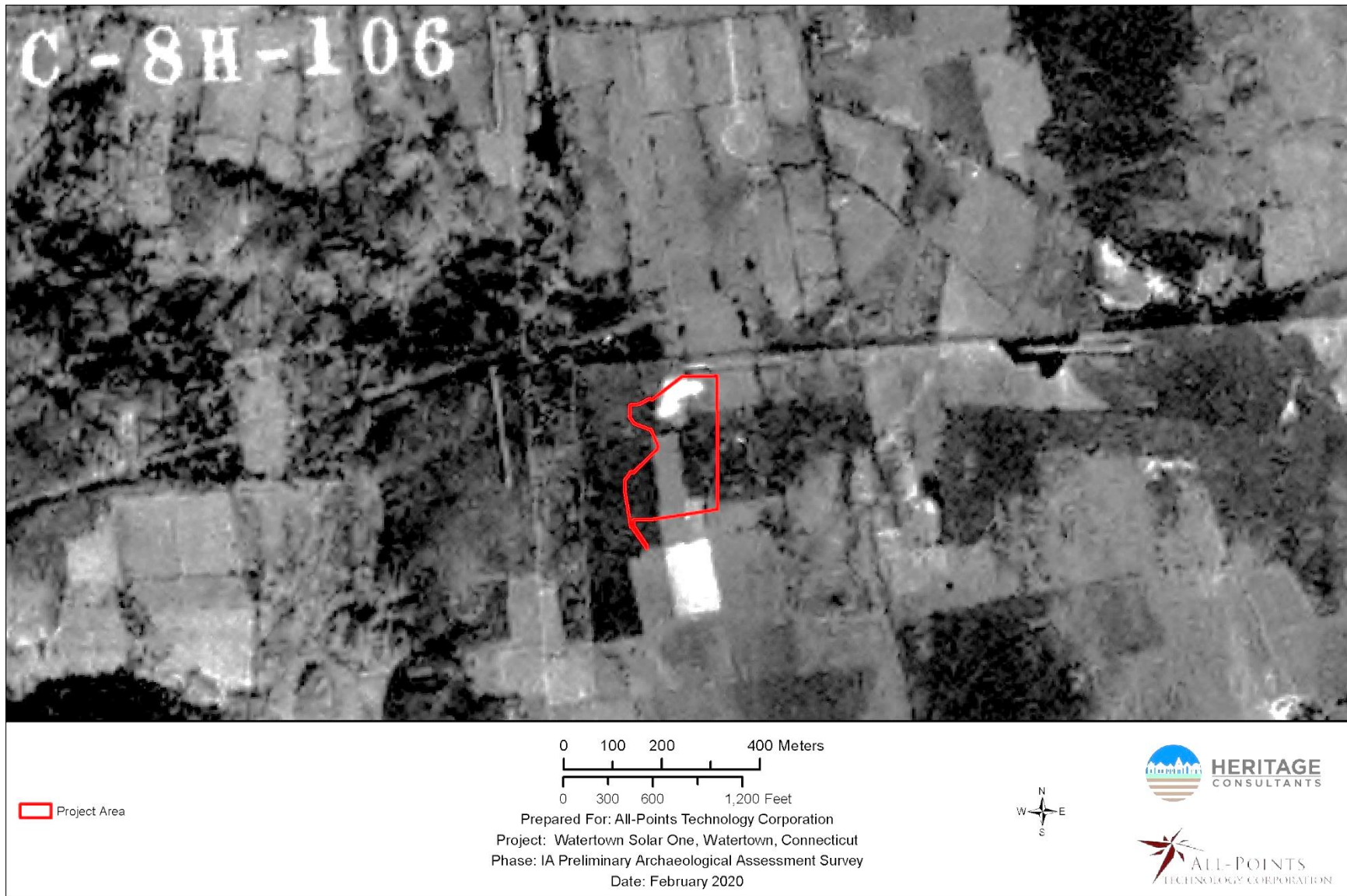


Figure 7. Excerpt from a 1951 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

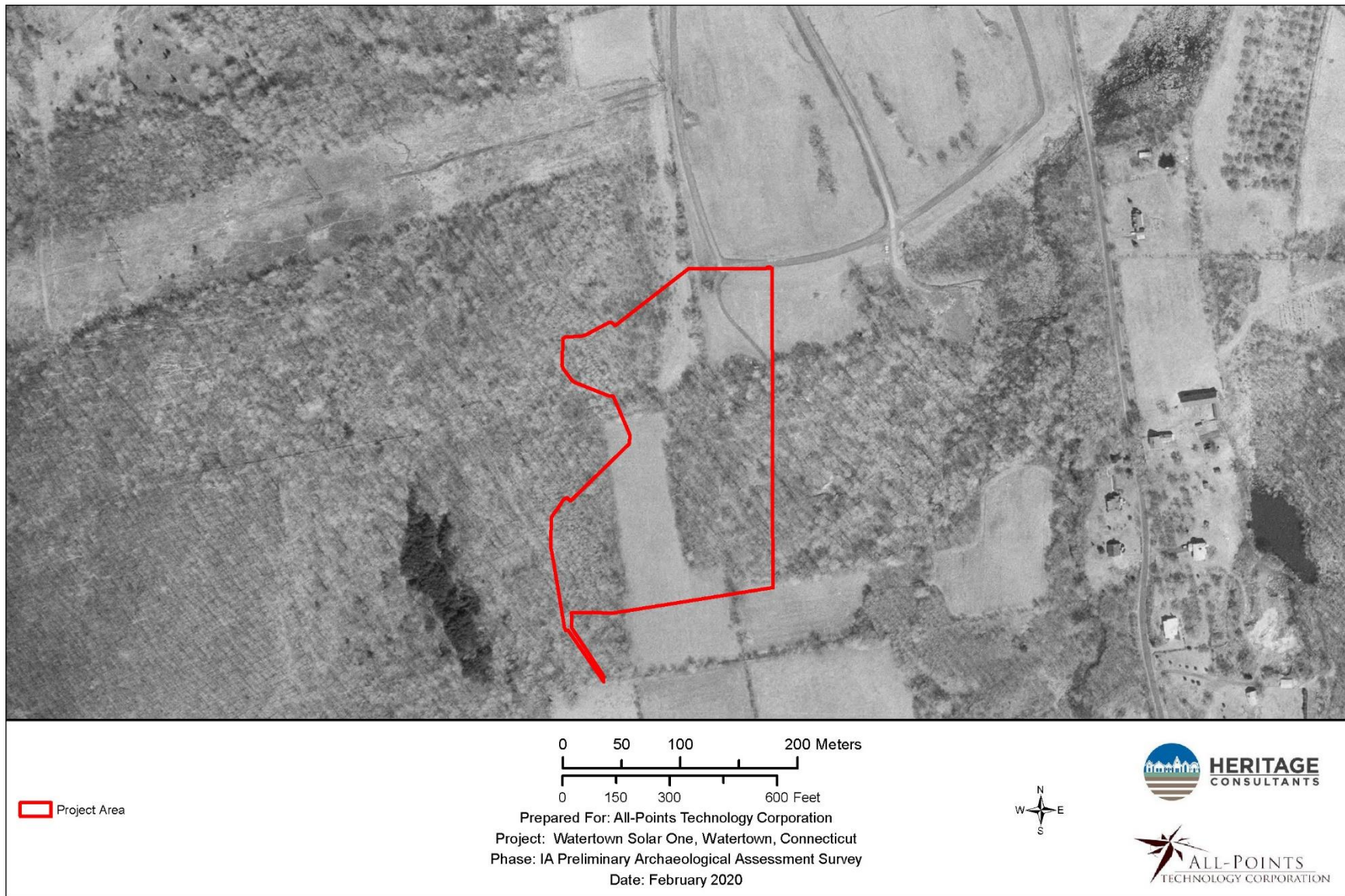


Figure 8. Excerpt from a 1965 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

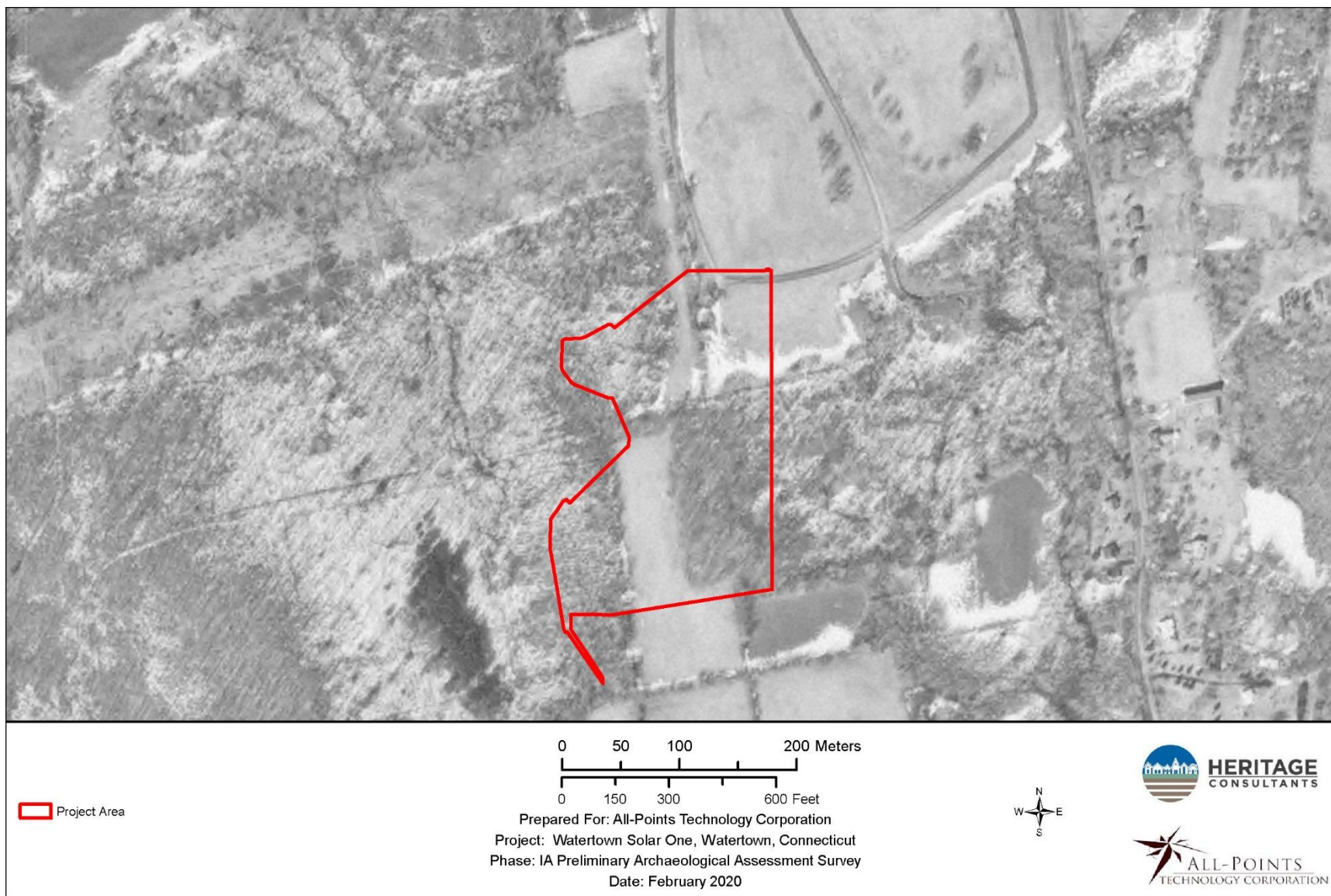


Figure 9. Excerpt from a 1970 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

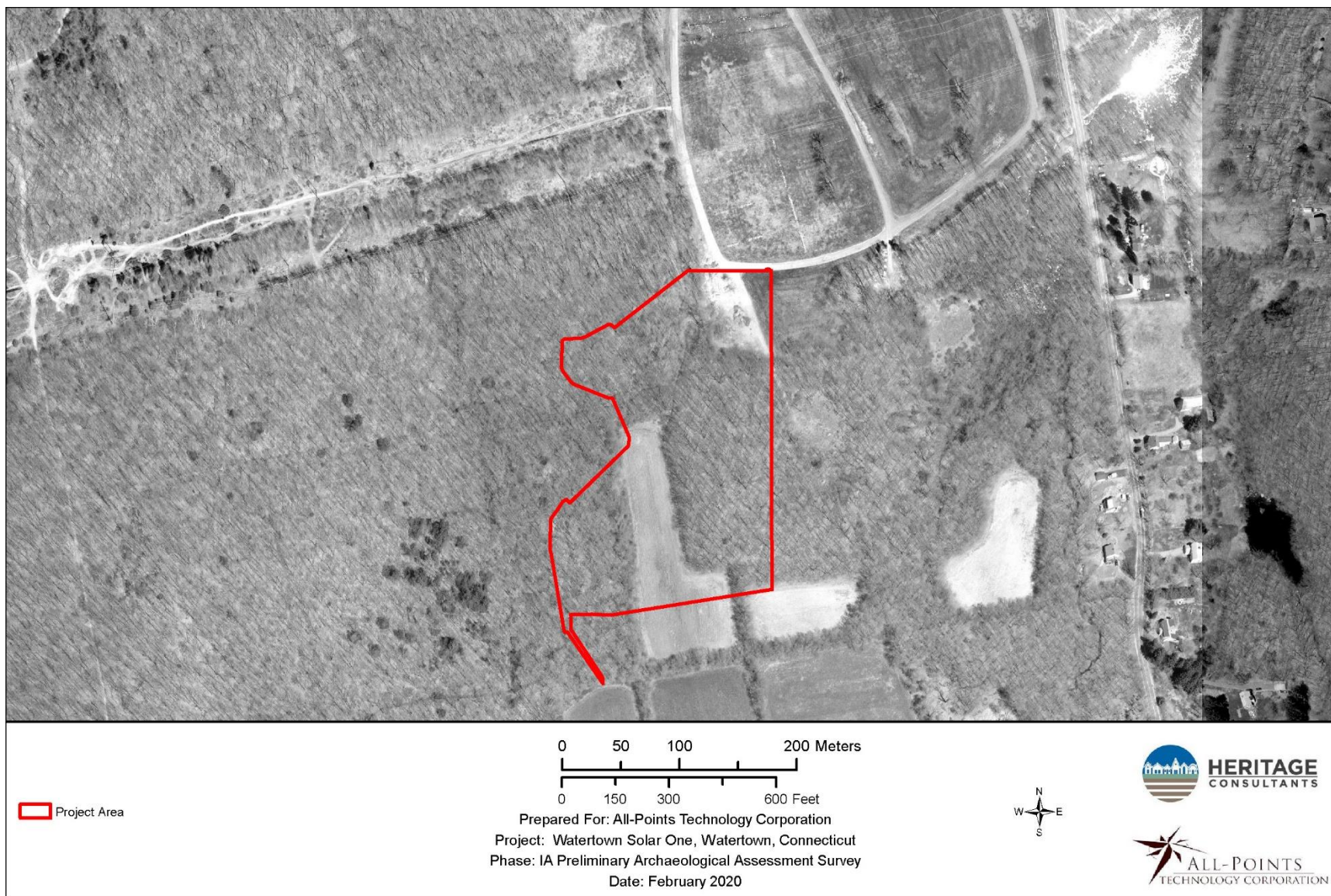


Figure 10. Excerpt from a 2004 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

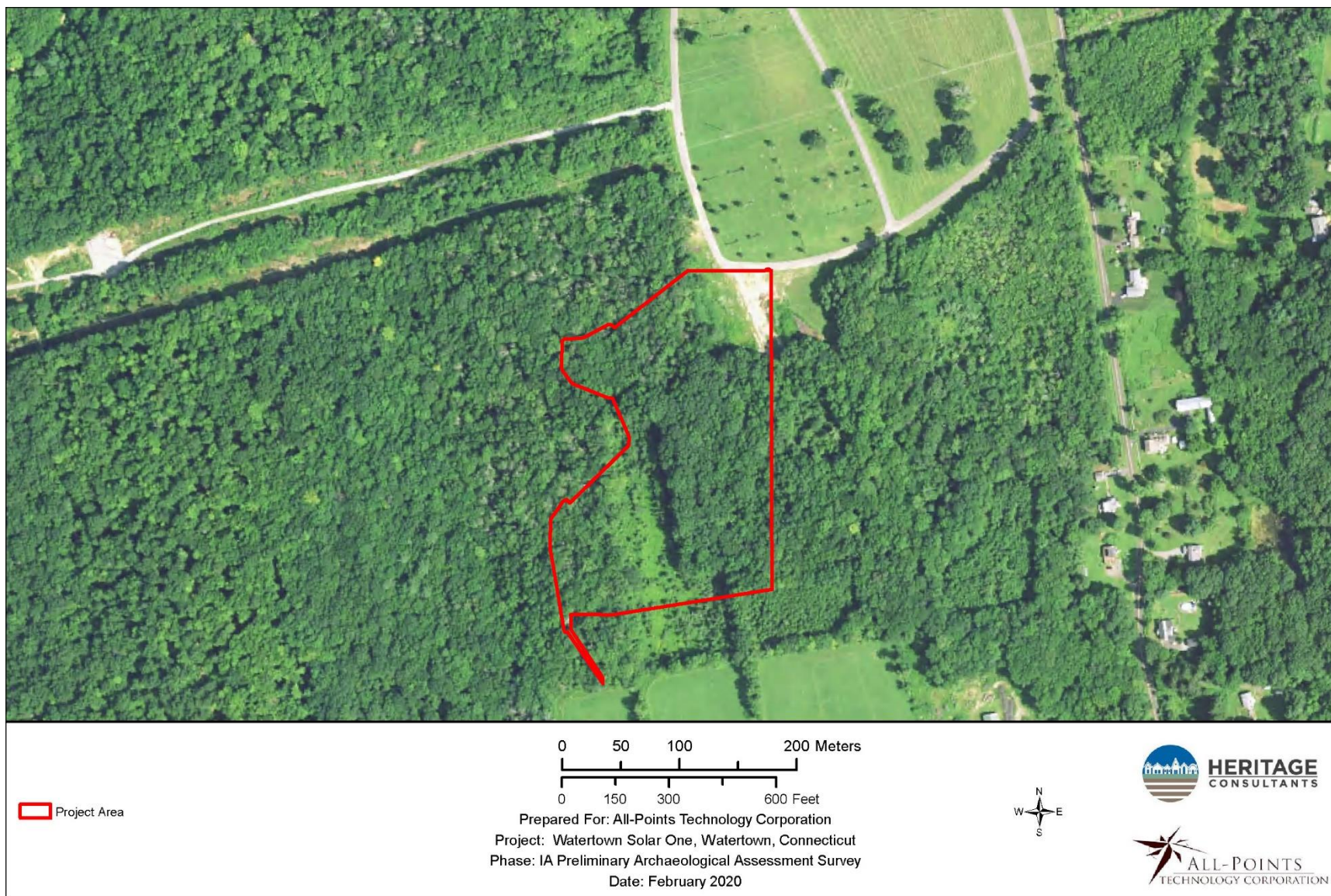


Figure 11. Excerpt from a 2018 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

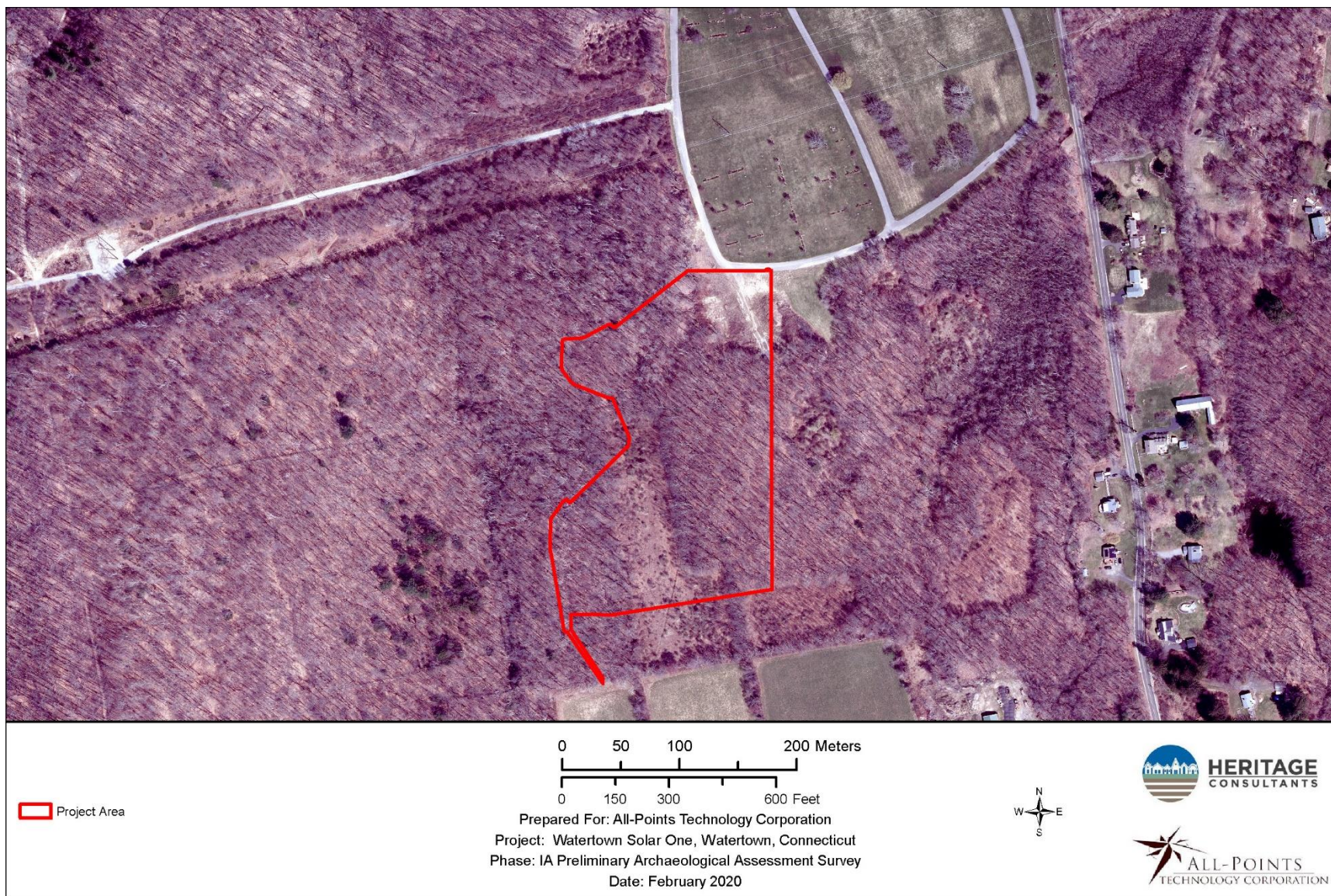


Figure 12. Excerpt from a 2019 aerial photograph showing the location of the project parcel in Watertown, Connecticut.

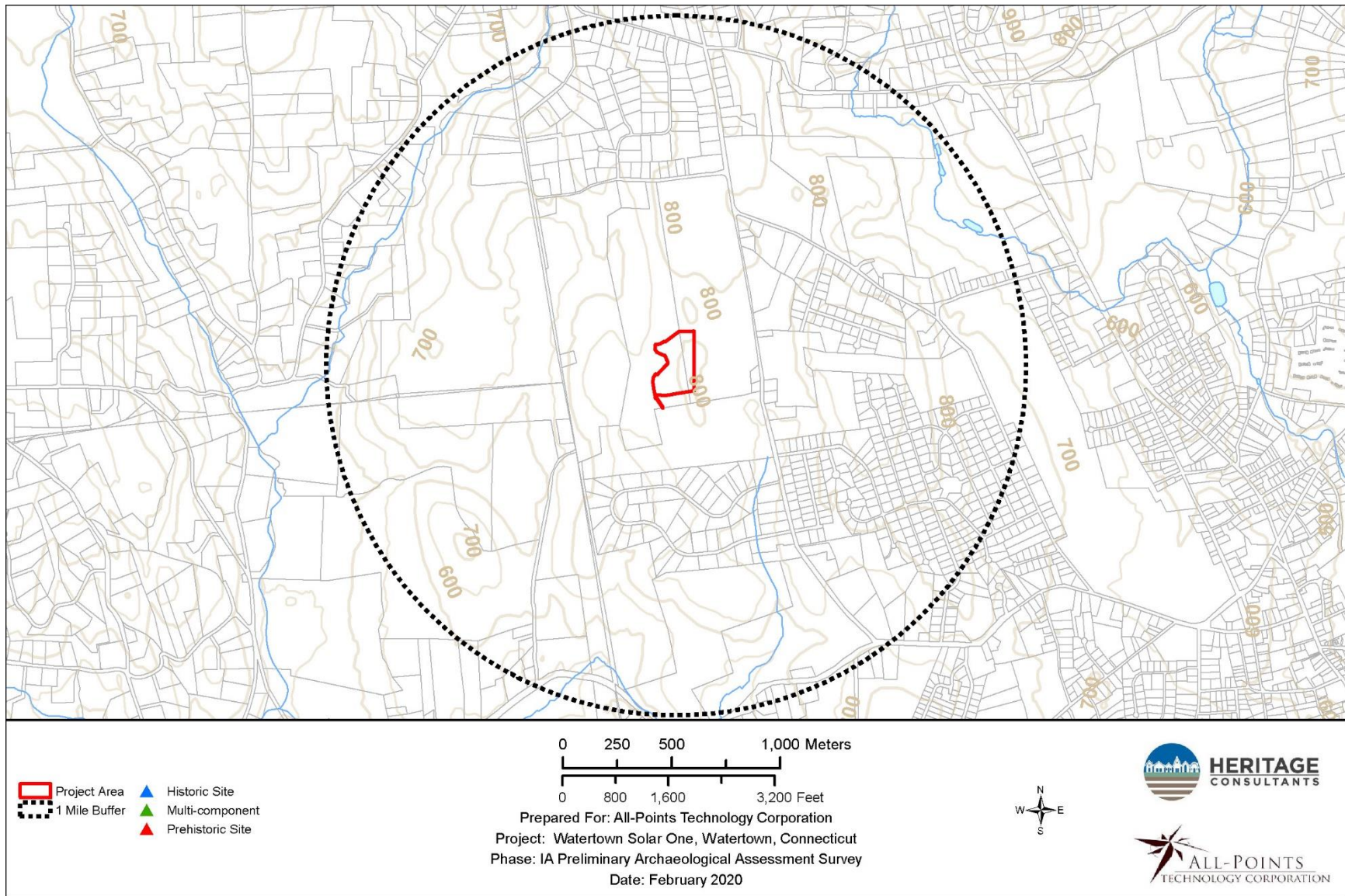


Figure 13. Digital map showing the location of previously identified archaeological sites in the vicinity of the project parcel in Watertown, Connecticut.

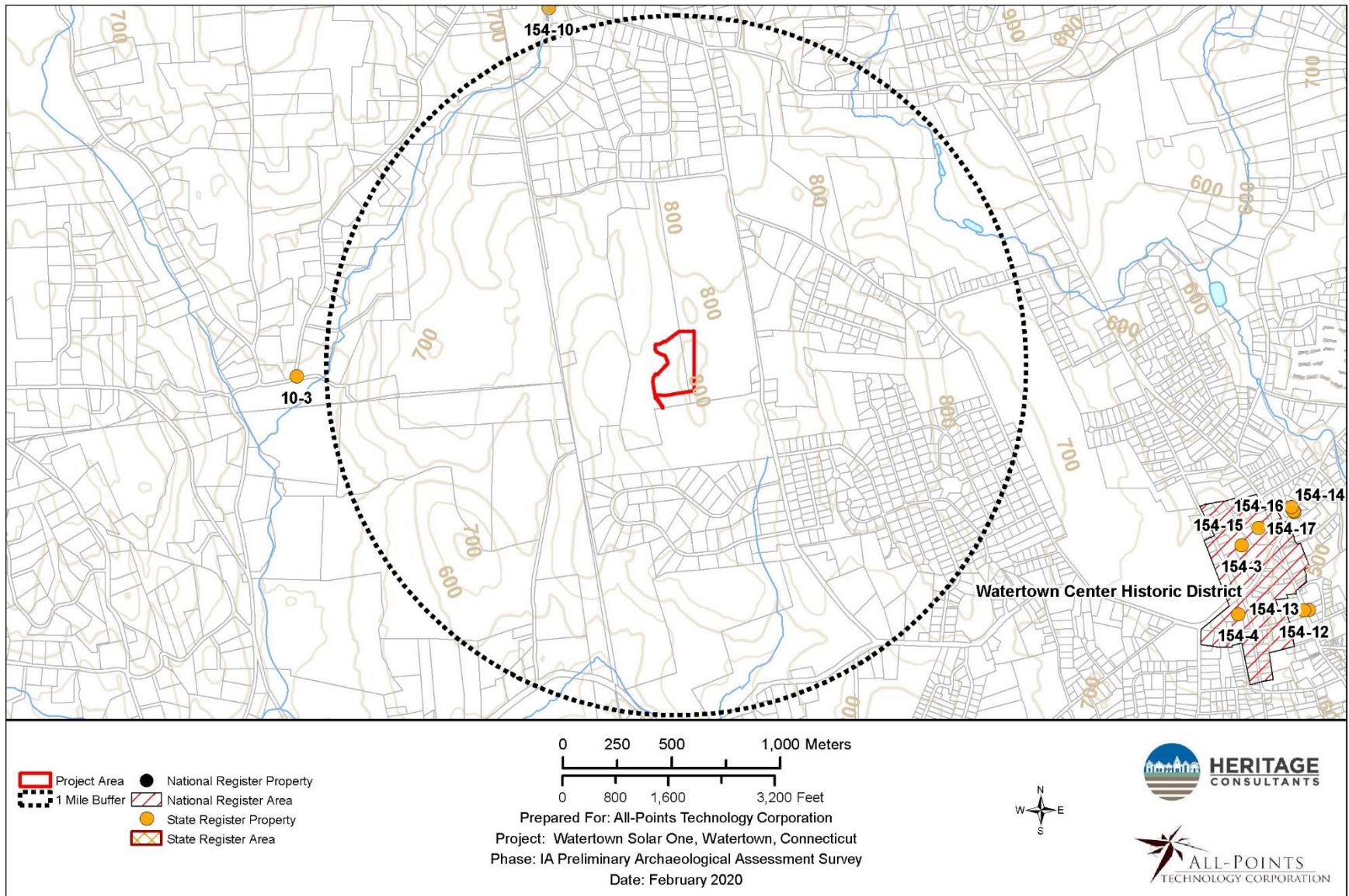


Figure 14. Digital map depicting the locations of previously identified National/State Register of Historic Places properties in the vicinity of the project parcel in Watertown, Connecticut.



Figure 15. Overview photo of the northeastern portion of the project parcel facing south.



Figure 16. Overview photo of the central portion of the project parcel facing southwest.



Figure 17. Overview of northwestern portion of the project parcel facing southeast.



Figure 18. Overview photo of the north central portion of the project parcel facing north.



Figure 19. Overview photo of the east central project parcel facing east.



Figure 20. Overview photo of the south-central portion of project parcel facing south.



Figure 21. Overview photo of the west central portion of project parcel facing west.



Figure 22. Overview photo of the south eastern portion of project parcel facing northwest.



Figure 23. Overview photo of the southwestern portion of project parcel facing northwest.

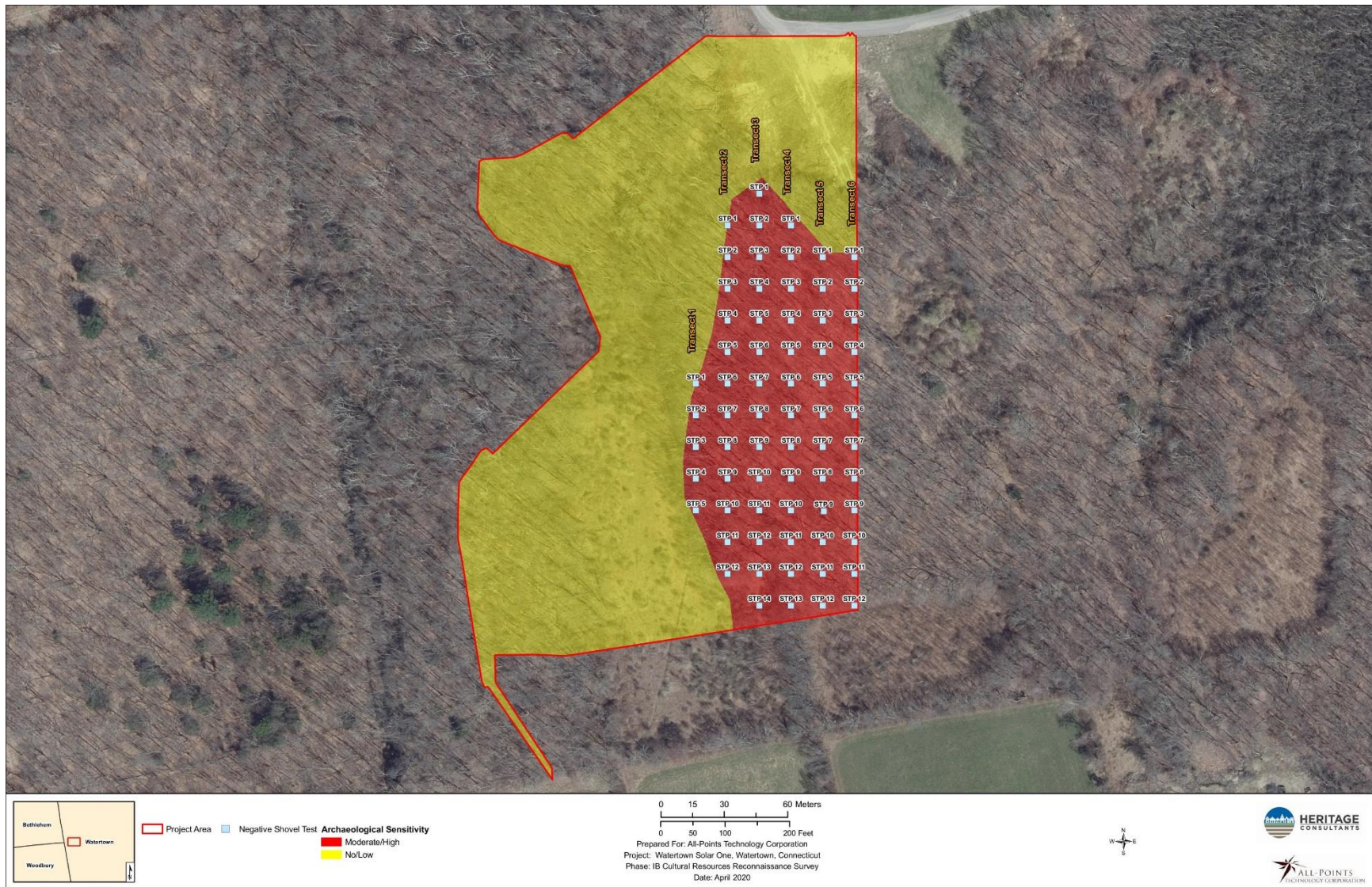


Figure 24. Excerpt from a 2019 aerial image showing the moderate/high and no/low archaeological sensitivity areas associated with the proposed solar facility in Watertown, Connecticut.

APPENDIX E

PRODUCT INFORMATION SHEETS

100/125kW, 1500Vdc String Inverters for North America



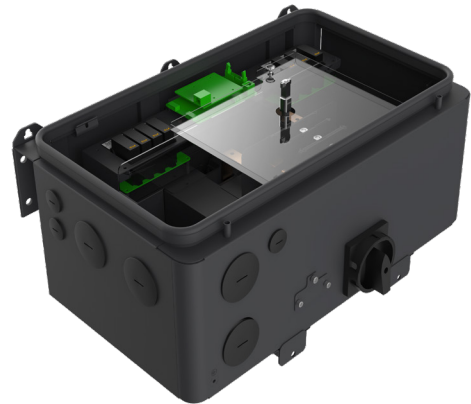
The 100 & 125kW high power CPS three phase string inverters are designed for ground mount applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 99.1% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 100/125kW products ship with the Standard or Centralized Wire-box, each fully integrated and separable with AC and DC disconnect switches. The Standard Wire-box includes touch safe fusing for up to 20 strings. The CPS Flex Gateway enables communication, controls and remote product upgrades.

Key Features

- NFPA 70, NEC 2014 and 2017 compliant
- Touch safe DC Fuse holders adds convenience and safety
- CPS Flex Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 1 MPPT with 20 fused inputs for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- Advanced Smart-Grid features (CA Rule 21 certified)
- kVA Headroom yields 100kW @ 0.9PF and 125kW @ 0.95PF
- Generous 1.87 and 1.5 DC/AC Inverter Load Ratios
- Separable wire-box design for fast service
- Standard 5 year warranty with extensions to 20 years



100/125KTL Standard Wire-box



100/125KTL Centralized Wire-box



Model Name	CPS SCH100KTL-DO/US-600	CPS SCH125KTL-DO/US-600
DC Input		
Max. PV Power	187.5kW	
Max. DC Input Voltage	1500V	
Operating DC Input Voltage Range	860-1450Vdc	
Start-up DC Input Voltage / Power	900V / 250W	
Number of MPP Trackers	1	
MPPT Voltage Range ¹	870-1300Vdc	
Max. PV Input Current (Isc x1.25)	275A	
Number of DC Inputs	20 PV source circuits, pos. & neg. fused (Standard Wire-box) 1 PV output circuit, 1-2 terminations per pole, non-fused (Centralized Wire-box)	
DC Disconnection Type	Load-rated DC switch	
DC Surge Protection	Type II MOV (with indicator/remote signaling), Up=2.5kV, In=20kA (8/20uS)	
AC Output		
Rated AC Output Power	100kW	125kW
Max. AC Output Power ²	100kVA (111KVA @ PF>0.9)	125kVA (132KVA @ PF>0.95)
Rated Output Voltage	600Vac	
Output Voltage Range ³	528-660Vac	
Grid Connection Type ⁴	3Φ / PE / N (Neutral optional)	
Max. AC Output Current @600Vac	96.2/106.8A	120.3/127.2A
Rated Output Frequency	60Hz	
Output Frequency Range ³	57-63Hz	
Power Factor	>0.99 (±0.8 adjustable)	>0.99 (±0.8 adjustable)
Current THD	<3%	
Max. Fault Current Contribution (1-cycle RMS)	41.47A	
Max. OCPD Rating	150A	175A
AC Disconnection Type	Load-rated AC switch	
AC Surge Protection	Type II MOV (with indicator/remote signaling), Up=2.5kV, In=20kA (8/20uS)	
System		
Topology	Transformerless	
Max. Efficiency	99.1%	
CEC Efficiency	98.5%	
Stand-by / Night Consumption	<4W	
Environment		
Enclosure Protection Degree	NEMA Type 4X	
Cooling Method	Variable speed cooling fans	
Operating Temperature Range	-22°F to +140°F / -30°C to +60°C (derating from +113°F / +45°C)	
Non-Operating Temperature Range ⁵	-40°F to +158°F / -40°C to +70°C maximum	
Operating Humidity	0-100%	
Operating Altitude	8202ft / 2500m (no derating)	
Audible Noise	<65dBA@1m and 25°C	
Display and Communication		
User Interface and Display	LED Indicators, WiFi + APP	
Inverter Monitoring	Modbus RS485	
Site Level Monitoring	CPS Flex Gateway (1 per 32 inverters)	
Modbus Data Mapping	SunSpec/CPS	
Remote Diagnostics / FW Upgrade Functions	Standard / (with Flex Gateway)	
Mechanical		
Dimensions (WxHxD)	45.28x24.25x9.84in (1150x616x250mm) with Standard Wire-box 39.37x24.25x9.84in (1000x616x250mm) with Centralized Wire-box	
Weight	Inverter: 121lbs / 55kg; Wire-box: 55lbs / 25kg (Standard Wire-box); 33lbs / 15kg (Centralized Wire-box)	
Mounting / Installation Angle	15 - 90 degrees from horizontal (vertical or angled)	
AC Termination	M10 Stud Type Terminal Block [3Φ] (Wire range: 1/0AWG - 500kcmil CU/AL, Lugs not supplied) Screw Clamp Terminal Block [N] (#12 - 1/0AWG CU/AL)	
DC Termination	Screw Clamp Fuse Holder (Wire range: #12 - #6AWG CU) - Standard Wire-box Busbar, M8 PEMserts (Wire range: #1AWG - 250kcmil CU/AL, Lugs not supplied) - Centralized Wire-box	
Fused String Inputs	15A or 20A fuses provided (Determined by product SKU)	
Safety		
Safety and EMC Standard	UL1741-SA-2016, 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 ⁶	5 years	
Extended Terms	10, 15 and 20 years	

1) See user manual for further information regarding MPPT Voltage Range when operating at non-unity PF

2) "Max. AC Apparent Power" rating valid within MPPT voltage range and temperature range of -30°C to +40°C (-22°F to +104°F) for 100KW PF ≥0.9 and 125KW PF ≥0.95

3) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.

4) Wye neutral-grounded, Delta may not be corner-grounded.

5) See user manual for further requirements regarding non-operating conditions.

6) 5 year warranty effective for units purchased after October 1st, 2019.

SOLECTRIA XGI 1500

Specifications

	XGI 1500-125/125	XGI 1500-125/150	XGI 1500-150/166	XGI 1500-166/166
DC Input				
Absolute Maximum Input Voltage	1500 VDC	1500 VDC	1500 VDC	1500 VDC
Maximum Power Input Voltage Range (MPPT)	860-1250 VDC	860-1250 VDC	860-1250 VDC	860-1250 VDC
Operating Voltage Range (MPPT)	860-1450 VDC	860-1450 VDC	860-1450 VDC	860-1450 VDC
Number of MPP Trackers	1 MPPT	1 MPPT	1 MPPT	1 MPPT
Maximum Operating Input Current	148.3 A	148.3 A	178.0 A	197.7 A
Maximum Operating PV Power	128 kW	128 kW	153 kW	170 kW
Maximum DC/AC Ratio Max Rated PV Power	2.0 250 kW	2.0 250 kW	1.66 250 kW	1.5 250 kW
Max Rated PV Short-Circuit Current ($\Sigma I_{sc} \times 1.25$)	320 A	320 A	320 A	320 A
AC Output				
Nominal Output Voltage	600 VAC, 3-Ph	600 VAC, 3-Ph	600 VAC, 3-Ph	600 VAC, 3-Ph
AC Voltage Range	-12% to +10%	-12% to +10%	-12% to +10%	-12% to +10%
Continuous Real Output Power	125 kW	125 kW	150 kW	166 kW
Continuous Apparent Output Power	125 kVA	150 kVA	166 kVA	166 kVA
Maximum Output Current	120 A	144 A	160 A	160 A
Nominal Output Frequency	60 Hz	60 Hz	60 Hz	60 Hz
Power Factor (Unity default)	+/- 0.80 Adjustable	+/- 0.80 Adjustable	+/- 0.80 Adjustable	+/- 0.80 Adjustable
Total Harmonic Distortion (THD) @ Rated Load	<3%	<3%	<3%	<3%
Grid Connection Type	3-Ph + N/GND	3-Ph + N/GND	3-Ph + N/GND	3-Ph + N/GND
Fault Current Contribution (1 cycle RMS)	144 A	173 A	192 A	192 A
Efficiency				
Peak Efficiency	98.9%	98.9%	99.0%	99.0%
CEC Average Efficiency	98.5%	98.5%	98.5%	98.5%
Tare Loss	<1 W	<1 W	<1 W	<1 W
Temperature				
Ambient Temperature Range	-40°F to 140°F (-40C to 60C)		-40°F to 140°F (-40C to 60C)	
De-Rating Temperature	122°F (50C)		113°F (45C)	
Storage Temperature Range	-40°F to 167°F (-40C to 75C)		-40°F to 167°F (-40C to 75C)	
Relative Humidity (non-condensing)	0 - 95%		0 - 95%	
Operating Altitude	9,840 ft (3 km)		9,840 ft (3 km)	
Communications				
Advanced Graphical User Interface	WiFi			
Communication Interface	Ethernet			
Third-Party Monitoring Protocol	SunSpec Modbus TCP/IP			
Web-Based Monitoring	Optional			
Firmware Updates	Remote and Local			
Testing & Certifications				
Safety Listings & Certifications	UL 1741, IEEE 1547, UL 1998			
Advanced Grid Support Functionality	Rule 21, UL 1741SA			
Testing Agency	ETL			
FCC Compliance	FCC Part 15, Class A			
Warranty				
Standard and Options	5 Years Standard; Option for 10 Years			
Enclosure				
Acoustic Noise Rating	56 dBA @ 3 m			
DC Disconnect	Integrated 2-Pole 250 A DC Disconnect			
Mounting Angle	Vertical only			
Dimensions	Height: 29.5 in. (750 mm) Width: 39.4 in. (1000 mm) Depth: 15.1 in. (380 mm) Specifications subject to change.			
Weight	270 lbs (122 kg)			
Enclosure Rating and Finish	Type 4X, Polyester Powder-Coated Aluminum			



SOLECTRIA SOLAR

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2/6/2020
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YASKAWA

YASKAWA

XGI 1500 COMBINERS

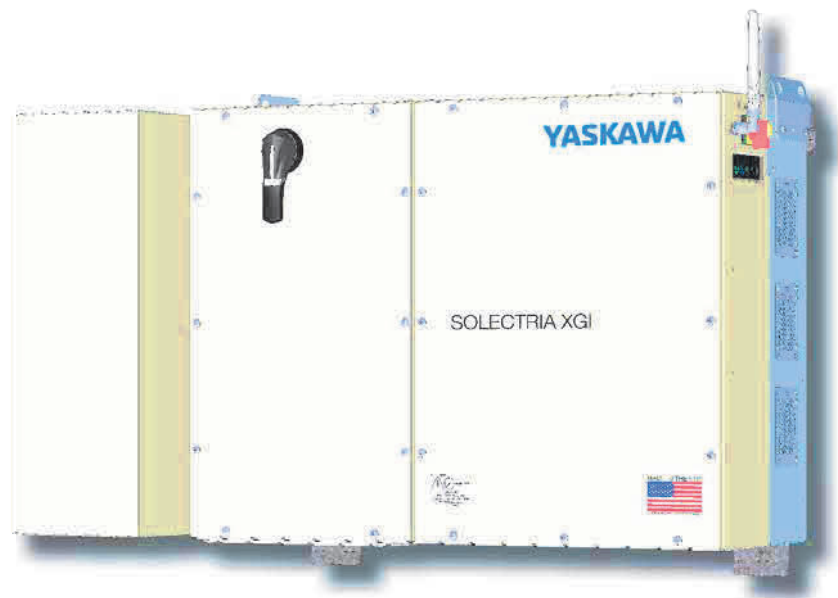
Increased Design Flexibility for SOLECTRIA XGI 1500

Features

- Made in the USA with global components
- Buy American Act (BAA) compliant
- Designed exclusively for use with XGI 1500 inverters
- Both poles fused and switched
- 16, 20, 24, 26, and 28 fuse positions
- 15 and 20 A fuse options for all models; 25 and 30 A fuse options for select models only
- Connection plates for compression terminals
- 90C terminal rating

Option

- Surge arrestor, both polarities



Yaskawa Solectria Solar offers two 1500V string combiners, Attachable & Remote, each designed to pair exclusively with SOLECTRIA XGI 1500 inverters. The 1500V Attachable Combiner is designed to mate directly to the XGI 1500 inverter for use in distributed PV systems where the combiner and inverter are located together throughout the array field. The 1500V Remote Combiner has similar features, but is designed for a centralized or clustered deployment of multiple XGI 1500 inverters where the combiners are distributed throughout the PV array field. Both combiner lines feature the highest quality and durability in the industry today.

Choose from models with 16 to 28 fused positions and either 15 or 20 A fuses. Specific models also available with 25 A fuses (20 positions) and 30 A fuses (16 positions). The combiners match the XGI 1500 in quality and appearance. Both models satisfy the National Electrical Code for systems with ungrounded PV source circuits. All Yaskawa Solectria Solar XGI inverters and combiners are Made in the USA with global components and are compliant with the Buy American Act.

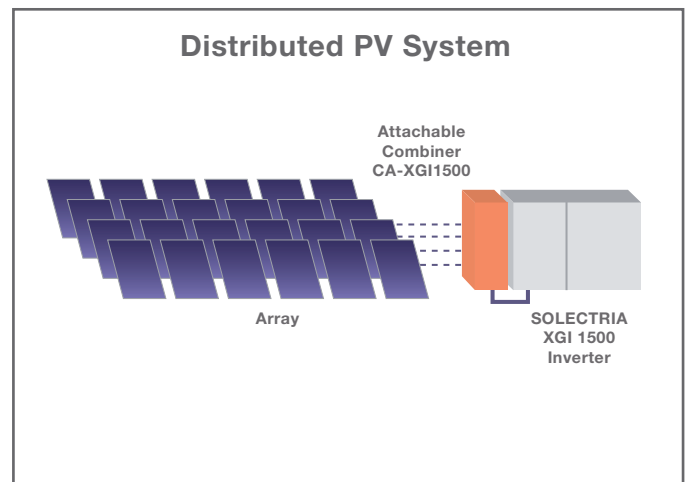
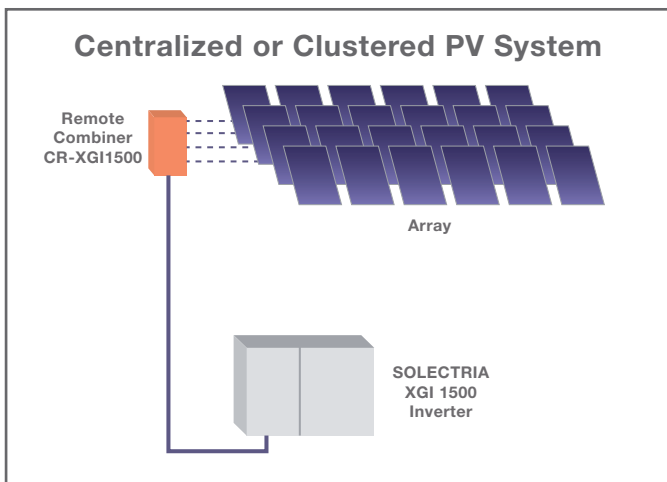


SOLECTRIA SOLAR

XGI 1500 COMBINERS

Specifications

	1500V Remote Combiner				1500V Attachable Combiner		
1500V String Combiners exclusively for use with SOLECTRIA XGI 1500							
Input Wire Compatibility	14-4 AWG				14-4 AWG		
Output Wire Compatibility	Compression Terminal: 1 conductor, 1/0 - 500 kcmil 2 conductors, 1/0 - 500 kcmil				Compression Terminal: 1 conductor, 1/0 - 500 kcmil 2 conductors, 1/0 - 500 kcmil		
Maximum Voltage	1500 VDC				1500 VDC		
Fuse Rating Options	15 A or 20 A (fuses included)	25 A	30 A	15 A or 20 A (fuses included)	25 A	30 A	
Number of Fused Positions	16 / 20 / 24 / 26 / 28	20	16	16 / 20 / 24 / 26 / 28	20	16	
Input PV Source Circuit Configurations	Ungrounded PV Source Circuits				Ungrounded PV Source Circuits		
Fuse Configurations	Both positive and negative polarities fused				Both positive and negative polarities fused		
DC Disconnect	2-pole integrated DC disconnect, positive and negative poles switched				DC Disconnect located on XGI 1500 inverter		
DC Disconnect Current Rating	250 A				250 A (located on XGI 1500)		
Temperature Range	-40°F to 122°F (-40°C to 50°C)				-40°F to 122°F (-40°C to 50°C)		
Mounting Positions	Indoor, Outdoor, Wall, Array - Vertical, Horizontal or Angled				Mechanically attaches to structure		
Safety Certification & Listing	UL 1741				UL 1741		
Standard Warranty	5 Years				5 Years		
Enclosure Material Options & Rating	Polyester Powder Coated Aluminum, NEMA Type 4X				Polyester Powder Coated Aluminum, NEMA Type 4X		
Option							
Surge Protection	Both positive and negative polarities				Both positive and negative polarities		



SOLECTRIA SOLAR

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YASKAWA



HPS Millennium™ E

Medium Voltage Distribution Transformer

- up to 34.5kV

power to perform



HPS Millennium™ E

Medium Voltage Transformer



HPS MILLENNIUM™ E

Hammond Power Solutions (HPS) is the industry leading manufacturer of standard and custom dry-type transformers in North America. Every HPS product is built with the quality and dependability you count on.

HPS Millennium™ medium voltage distribution transformers are designed for many demanding and diverse applications, while minimizing both installation and maintenance costs. Coils are precision wound with copper or aluminum conductors using either barrel or comb wound designs with a full vacuum-pressure impregnation (VPI) insulation system.

With three phase ratings up to 15MVA, 34.5kV, 175kV BIL and single phase to 5MVA, they feature the newest technology and manufacturing processes.

To service all of your medium voltage needs, HPS Millennium™ G is also available for applications requiring voltages up to 5kV. For more information on HPS Millennium™ G (catalog no. MILGMED), please contact us or visit the HPS Website.

SUPPORT & RESOURCES

No other transformer company can offer our service and quality in a full range of products:



Current Calculator: Calculate the Amps, Volts, or kVA of a transformer. Visit the "Online Tools" area of the HPS website.



Fast On-Site Response: On-site technicians are available to assist with any technical problems or issues that cannot be resolved over the phone.



Live Telephone Technical Support: Our inside sales team is available to quickly answer your questions. They are technically trained and able to answer most questions right over the phone.



Easy-To-Access Installation Manuals: All transformer installation manuals are conveniently located on our website so you can access them anywhere, anytime.



Online Technical Support: Get answers to frequently asked questions, troubleshooting tips and instruction sheets by visiting the "Technical Support" area of the HPS website.

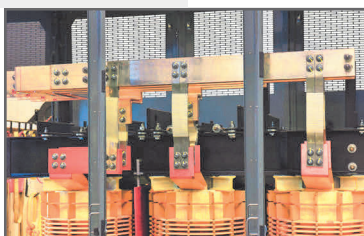
APPLICATIONS

HPS Millennium™ E is suitable for any commercial, industrial, manufacturing or production process application. They can be offered for a variety of environmental conditions and built to meet the most onerous duty.

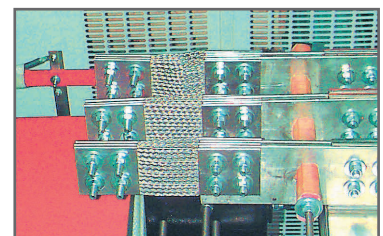
- Industrial
- Commercial
- Data Centers
- Renewable Energy



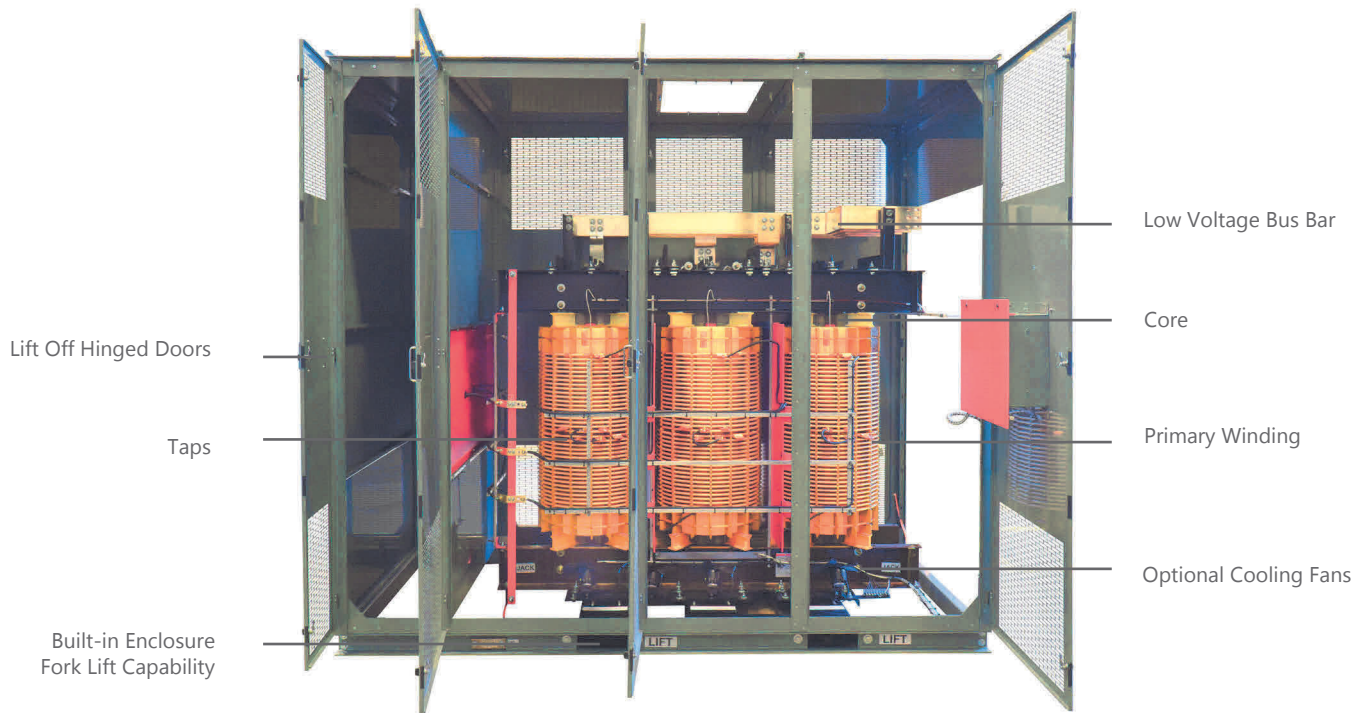
Built-in enclosure fork lift capability



Low voltage bus bar



Flexible connectors



FEATURES

Core & Coil Construction:

- Manufactured from quality non-aging, cold rolled, silicon steel laminations
- Cores are precision cut to close tolerances to eliminate gaps and improve performance
- Core is coated to prevent the ingress of moisture
- Precision wound with copper or aluminum conductors that are electrically balanced to minimize axial forces during short-circuit conditions
- Wire or foil conductors for optimum performance for the application
- Robust interface between core & coils for better short circuit performance
- Utilize both barrel or comb wound construction techniques
- Available with multiple termination configurations: stubs-up, coordinated bus-to-end
- Vibration isolation pads to minimize noise

BENEFITS

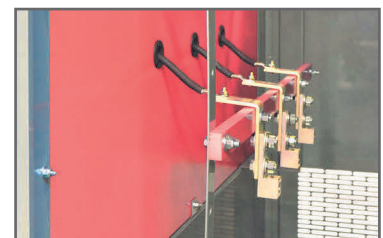
- Meets the minimum efficiency standards mandated in DOE 10 CFR Part 431 (levels as of Jan. 1st 2016), NRCAN 2019 SOR/2018-201 Amd. 14, ON Reg. 404/12 (effective Jan. 1st, 2018) and exceeds CSA C802.2-12 resulting in increased dollar savings and positive societal/environmental payback
- Designed for indoor or outdoor applications
- VPI windings are mechanically durable for the most demanding environments typically found in mining, crane and other difficult mechanical applications.
- Minimal maintenance required beyond removing surface contaminants, such as dirt
- Can be energized immediately after installation
- Excellent resistance to short circuits
- Self-extinguishing in the unlikely event of fire
- Environmentally friendly



Lift off hinged doors



Lifting eyes for core & coil assembly



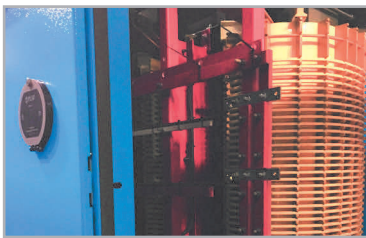
Air terminal chamber (ATC)

HPS Millennium™ E

Medium Voltage Transformer

Specifications - Copper or Aluminum

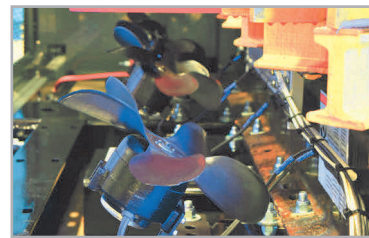
kVA:	225-2500kVA (DOE16) 225-7500kVA (NRCAN 2019) others available upon request	Temperature Rise:	150°C typical temperature rise, (optional 115°C & 80°C rise available)
High Voltage (Primary):	Up to 34.5 kV Class, up to 175 kV BIL Up to 150 kV BIL (BIL per CSA and IEEE/ANSI standards) Standard taps +/- 2.5%, +/- 5% Other options available upon request	Termination:	Front accessible separate high and low voltage terminals; connectors suitable for aluminum and copper are provided for easy cable installation.
Low Voltage (Secondary):	208Y/120V to 600Y/347V & 2.4-5kV up to 60kV BIL Higher BIL available upon request	Impedance:	3-7%, typically 5.75%
Frequency:	60 Hz, others available upon request	Seismic:	Seismically qualified according to the International Building Code (IBC) 2018, and the American Society of Civil Engineers ASCE 7-16 specifications, with the following design parameters: Spectral acceleration: $S_{DS} \leq 2.0$ g Importance factor: $I_p = 1.5$ Attachment/height ratio: $z/h = 0$ OSHPD compliance available upon request
Insulation System:	220°C (200°C for some lower kVA ratings)	Sound Level:	Meets IEEE C57.12.01 (other sound level performance available)
Enclosure Type:	Type 1, 2, 3/3R, 4/4X or 12 available (others available upon request). Enhanced Type 3R option available for improved outdoor performance. Lift off hinged doors for easy accessibility and quick removal if required. Built-in enclosure fork lift capability.	Altitude:	Standard up to 1000 meters (de-rated above 1000 meters)
Enclosure Finish:	ANSI 61 Grey Compliant with UL 50	Ambient:	-20°C to 40°C (with de-rating possible from 40°C to 60°C, consult HPS)
Neutral:	Neutral terminal for field connection (on applicable units)	Duty:	Special duty available upon request.



Infrared viewing window & custom enclosure finish



Lightning arrestors



Cooling fans

OPTIONAL ACCESSORIES

- Forced air-cooling (or provisions for later)
- Heat exchanger/cooling for TENV units
- Lightning arrestors rated for system voltage (Station, Intermediate or Distribution)
- Grounding resistor
- Neutral Ground Monitor
- Thermal sensing & indication
 - Thermocouples
 - Thermometers (analog/digital)
 - Thermostat alarm / trip (N.O. /N.C. contacts)
- Current transformers
- Potential transformers
- Key interlock to prevent unauthorized access
- Electrostatic shielding
- Rated to handle non-linear loads
- Strip heater (powered from separate source)
- Surge protection devices
- Air terminal chamber
- Low voltage panel
- Coordinated bus-to-end
- Primary fused disconnects
- Infrared viewing windows

Comparison of Enclosures for Indoor and Outdoor Non-Hazardous Locations

		Indoor					Indoor/Outdoor							Submersible			
CSA C22.2 No. 94.2 Enclosure Type		1 ^a	2 ^a	5	12	12K	13	3	-	3R ^a	-	3S	-	4	4X	6	6P
NEMA 250 Enclosure Type		1 ^a	2 ^a	5	12	12K	13	3	3X	3R ^a	3RX ^a	3S	3SX	4	4X	6	6P
Equivalent IEC 60529 IP designation ^a		IP20	IP22	IP53	IP54	IP54	IP54	IP55	IP55	IP24	IP24	IP55	IP55	IP66	IP66	IP67	IP68
Provides a degree of protection against these environmental conditions	Accidental contact with live parts	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Falling dirt	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Dripping and light splashing of non-corrosive liquids		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Circulating dust, lint, fibres and flyings ^d				X	X	X	X	X			X	X	X	X	X	X
	Settling dust, lint, fibres and flyings ^d			X	X	X	X	X	X			X	X	X	X	X	X
	Wind-blown dust							X	X			X	X	X	X	X	X
	Rain, snow and external formation of ice or sleet ^b							X	X	X	X	X	X	X	X	X	X
	External formation of ice or sleet											X	X				
	Hose down and splashing water													X	X	X	X
	Corrosion												X		X		X
	Occasional temporary submersion															X	X
	Occasional prolonged submersion																X
	Oil and coolant seepage				X	X	X										
	Oil and coolant seepage, spraying and splashing						X										

Notes:

- a. - These enclosures may be ventilated
 - b. - External operating mechanism(s) is not required to operate when the enclosure is ice covered
 - c. - External operating mechanism(s) shall be operable when the enclosure is ice covered
 - d. - These fibres and flyings are non-hazardous and are not considered Class III type ignitable fibres or combustible flyings
 - e. - Since IEC 60529 does not specify degrees of protection for many conditions considered CSA C22.2 No. 94.2, the IEC classifications cannot be exactly equated to North American Type numbers. The North American Type numbers meet or exceed the test requirements for the associated IP classifications.
- This table cannot be used to convert from IEC classifications to North American Type designations.

References: CSA C22.2 No. 94, CSA C22.1 (CEC), NEMA 250, NEMA document - NEMA Enclosure Types
 Disclaimer: This table is for quick comparison only. Please refer to appropriate standard for enclosure selection to your needs.

TESTING

All VPI Power transformers are tested at HPS prior to shipment. They must meet specific criteria to be certified acceptable for release. The following tests are performed on each power transformer:

- Resistance Measurement*
- Voltage Ratio
- Polarity & Phase-Relation Test
- No-Load Loss and Excitation Current Test
- Induced Voltage
- Impedance, Voltage & Load Loss Test*
- Power frequency voltage-withstand each winding
- Other testing available upon customer request

* typically not performed for units ≤ 500kVA

COMPLIANCE & APPROVALS

HPS Millennium™ E is CSA Certified and UL Listed to the following standards:

- CSA C22.2 No. 47
- CSA C9-02
- U.L. 1562



Compliant to the following industry standards:

- IEEE-C57.12.01
- IEEE-C57.12.51
- IEEE-C57.12.70
- IEEE-C57.12.91
- CSA 802.2-12
- DOE 10 CFR Part 431: 2010 or 2016
- NRCAN SOR/2018-201 Amd. 14
- ON Reg. 404/12 (2018)
- IEC 60076 (upon request)
- IBC 2018/OSHPD for seismic conditions

Selection Tables

ALUMINUM WOUND

kVA	Voltage Class kV	BIL	Enclosure with Stubs Up Fig. 1				Enclosure with Bus-To-End Fig. 2			
			Width (W)	Depth (D)	Height (H)	Weight (Lbs.)	Width (W)	Depth (D)	Height (H)	Weight (Lbs.)
225	5	30	49	42	64	2000	60	50	82	2300
	15	60	54	47	72	2400	60	50	82	2700
	15	95	60	50	82	3000	72	54	91.5	3700
	25	110	72	54	91.5	4100	72	60	91.5	4400
	25	125	72	60	91.5	4500	72	60	91.5	4900
300	34.5	150	90	72	91.5	5500	90	72	91.5	5900
	5	30	49	42	64	2100	68	50	72	2400
	15	60	68	50	72	2900	68	50	72	3200
	15	95	72	54	91.5	4000	84	54	91.5	4400
	25	110	72	54	91.5	4200	84	60	91.5	4800
500	25	125	84	60	91.5	4800	84	60	91.5	5200
	34.5	150	90	72	91.5	5700	90	72	91.5	6100
	5	30	54	47	72	3100	78	48	78	3600
	15	60	68	50	72	3900	78	48	78	4400
	15	95	84	54	91.5	5300	84	54	91.5	5800
750	25	110	84	54	91.5	5700	84	60	91.5	6400
	25	125	90	60	91.5	6400	96	72	91.5	7200
	34.5	150	96	72	91.5	7800	96	72	91.5	8400
	5	30	68	50	72	5000	84	54	91.5	6100
	15	60	78	48	78	5300	90	54	91.5	6400
1000	15	95	84	54	91.5	6700	96	60	91.5	7600
	25	110	84	60	91.5	7000	90	60	91.5	7600
	25	125	90	60	91.5	7100	96	72	91.5	8000
	34.5	150	96	72	91.5	9000	102	72	91.5	9900
	5	30	78	48	78	6100	90	54	91.5	7300
1500	15	60	84	54	91.5	7200	96	54	91.5	8000
	15	95	90	60	91.5	8400	102	60	91.5	9400
	25	110	90	60	91.5	8500	96	60	91.5	9300
	25	125	96	60	91.5	8700	102	72	91.5	9800
	34.5	150	96	72	110	10000	102	72	110	11000
2000	5	30	78	48	78	8100	96	54	91.5	9500
	15	60	90	54	91.5	9600	102	60	91.5	10800
	15	95	96	60	91.5	10800	108	60	91.5	12100
	25	110	96	60	91.5	10900	108	72	91.5	12500
	25	125	102	72	110	11800	108	72	110	13000
2500	34.5	150	108	72	110	13900	120	72	110	15400
	5	30	90	54	91.5	10800	108	60	91.5	12400
	15	60	96	54	91.5	11500	108	60	91.5	13000
	15	95	102	60	91.5	13400	120	72	91.5	15300
	25	110	102	72	91.5	13800	120	72	91.5	15500
2500	25	125	108	72	110	15000	120	72	110	16600
	34.5	150	120	72	110	16200	120	72	110	17600
	5	30	90	54	91.5	13000	120	60	91.5	15100
	15	60	96	60	91.5	13700	120	72	91.5	15800
	15	95	108	60	91.5	15800	132	72	110	18400
2500	25	110	108	72	110	14900	120	72	110	16500
	25	125	108	72	110	15900	120	72	110	17600
	34.5	150	108	72	110	16900	132	72	110	19000

Weight and dimensions are typical for 150°C Average Winding Rise.
 Weights and dimensions are for DOE 2016/NRCAN 2019 compliant product.
 All dimensions are in inches.
 For Type 2 enclosure styles, add 4 inches to the enclosure depth and 20 lbs to the total weight.
 Not for construction purposes. Approval drawings can be provided as needed.

Add 20 inch for ATC up to 110kV BIL designs and 24 inch for ATC with 125/150kV BIL designs.
 Add approx. 400 lbs. per ATC.

Selection Tables

ALUMINUM WOUND



Hammond
Power Solutions

kVA	Voltage Class kV	BIL	Enclosure with Stubs Up Fig. 1				Enclosure with Bus-To-End Fig. 2			
			Width (W)	Depth (D)	Height (H)	Weight (Lbs.)	Width (W)	Depth (D)	Height (H)	Weight (Lbs.)
3000	5	30	90	60	110	15700	120	60	110	17900
	15	60	96	60	110	17300	120	72	110	19800
	15	95	102	60	110	19000	132	72	110	21700
	25	110	102	72	110	20700	120	72	110	23100
	25	125	108	72	110	22900	132	72	110	25600
	34.5	150	Consult HPS				Consult HPS			
3750	5	30	Consult HPS				Consult HPS			
	15	60	96	60	110	17800	120	72	110	20300
	15	95	102	60	110	19500	132	72	135	22800
	25	110	108	72	110	21400	132	72	135	24400
	25	125	108	72	110	23900	Consult HPS			
	34.5	150	Consult HPS				Consult HPS			
5000	5	30	Consult HPS				Consult HPS			
	15	60	102	60	110	19000	120	72	110	21400
	15	95	108	72	135	21400	132	72	135	23900
	25	110	120	72	135	23200	132	72	135	25500
	25	125	120	72	135	25700	Consult HPS			
	34.5	150	Consult HPS				Consult HPS			
7500	5	30	Consult HPS				Consult HPS			
	15	60	120	72	135	21700	132	72	135	23900
	15	95	120	72	135	23200	Consult HPS			
	25	110	120	72	135	24700	Consult HPS			
	25	125	Consult HPS				Consult HPS			
	34.5	150	Consult HPS				Consult HPS			

Weight and dimensions are typical for 150°C Average Winding Rise.
Weights and dimensions are for NRCAN 2019 compliant product.
All dimensions are in inches.

For Type 2 enclosure styles, add 4 inches to the enclosure depth and 20 lbs to the total weight.

Not for construction purposes. Approval drawings can be provided as needed.

Add 20 inch for ATC up to 110kV BIL designs and 24 inch for ATC with 125/150kV BIL designs.
Add approx. 400 lbs. per ATC.

Selection Tables

COPPER WOUND

kVA	Voltage Class kV	BIL	Enclosure with Stubs Up Fig. 1				Enclosure with Bus-To-End Fig. 2			
			Width (W)	Depth (D)	Height (H)	Weight (Lbs.)	Width (W)	Depth (D)	Height (H)	Weight (Lbs.)
225	5	30	49	42	64	2000	60	50	82	2300
	15	60	60	50	82	2700	68	50	72	2900
	15	95	68	50	72	3100	72	54	91.5	3900
	25	110	68	50	72	3300	72	54	91.5	4100
	25	125	72	54	91.5	3900	72	60	91.5	4200
300	5	30	49	42	64	2100	60	50	82	2400
	15	60	60	50	82	3100	68	50	72	3400
	15	95	68	50	72	3700	72	54	91.5	4500
	25	110	72	54	91.5	4400	84	54	91.5	4900
	25	125	84	54	91.5	4600	84	60	91.5	5200
500	5	30	49	42	64	2800	68	50	72	3200
	15	60	78	48	78	4400	78	48	78	4800
	15	95	84	54	91.5	5700	84	54	91.5	6200
	25	110	84	54	91.5	5800	84	60	91.5	6500
	25	125	84	60	91.5	6100	84	60	91.5	6600
750	5	30	49	42	64	2800	68	50	72	3200
	15	60	78	48	78	4400	78	48	78	4800
	15	95	84	54	91.5	6500	90	60	91.5	7200
	25	110	90	54	91.5	6800	96	60	91.5	7600
	25	125	90	60	91.5	7000	96	72	91.5	7900
1000	5	30	60	50	82	4800	78	48	78	5300
	15	60	78	48	78	5500	84	54	91.5	6500
	15	95	84	54	91.5	6500	90	60	91.5	7200
	25	110	90	54	91.5	6800	96	60	91.5	7600
	25	125	90	60	91.5	7000	96	72	91.5	7900
1500	5	30	68	50	72	5800	84	54	91.5	7000
	15	60	78	48	78	6500	90	54	91.5	7700
	15	95	90	54	91.5	8400	96	60	91.5	9300
	25	110	90	60	91.5	8600	96	60	91.5	9400
	25	125	90	60	91.5	8700	96	72	91.5	9700
2000	5	30	78	48	78	7900	90	54	91.5	9200
	15	60	84	54	91.5	8500	96	54	91.5	9400
	15	95	90	54	91.5	10400	102	60	91.5	11700
	25	110	96	60	91.5	10800	102	72	91.5	12100
	25	125	102	72	91.5	12200	108	72	91.5	13400
2500	5	30	84	54	91.5	11300	102	60	91.5	12800
	15	60	90	54	91.5	12100	108	60	91.5	13800
	15	95	96	54	91.5	14100	120	72	91.5	16400
	25	110	96	72	91.5	15100	120	72	91.5	17200
	25	125	102	72	110	16600	120	72	110	18500
	34.5	150	108	72	110	18400	Consult HPS			

Weight and dimensions are typical for 150°C Average Winding Rise.
 Weights and dimensions are for DOE 2016/NRCAN 2019 compliant product.
 All dimensions are in inches.
 For Type 2 enclosure styles, add 4 inches to the enclosure depth and 20 lbs to the total weight.
 Not for construction purposes. Approval drawings can be provided as needed.

Add 20 inch for ATC up to 110kV BIL designs and 24 inch for ATC with 125/150kV BIL designs.
 Add approx. 400 lbs. per ATC.

Selection Tables

COPPER WOUND



kVA	Voltage Class kV	BIL	Enclosure with Stubs Up Fig. 1				Enclosure with Bus-To-End Fig. 2			
			Width (W)	Depth (D)	Height (H)	Weight (Lbs.)	Width (W)	Depth (D)	Height (H)	Weight (Lbs.)
3000	5	30	90	54	91.5	15200	120	60	91.5	17500
	15	60	96	54	91.5	17300	120	60	91.5	19700
	15	95	102	54	91.5	19500	120	72	91.5	22100
	25	110	102	72	91.5	21800	120	72	91.5	24300
	25	125	102	72	110	23700	120	72	110	26400
	34.5	150	Consult HPS				Consult HPS			
3750	5	30	Consult HPS				Consult HPS			
	15	60	96	60	110.0	19800	120	60	110	22300
	15	95	102	60	110.0	22300	120	72	110.0	25000
	25	110	102	60	110	23000	120	72	110.0	25800
	25	125	108	72	110	24900	132	72	110.0	27800
	34.5	150	120	72	110	26700	Consult HPS			
5000	5	30	Consult HPS				Consult HPS			
	15	60	96	60	110	20800	108	60	110	23100
	15	95	102	60	110	23000	120	60	110.0	25600
	25	110	108	72	135	25400	120	72	135.0	28000
	25	125	108	72	135	25900	120	72	135.0	28500
	34.5	150	Consult HPS				Consult HPS			
7500	5	30	Consult HPS				Consult HPS			
	15	60	102	72	135	23700	120	72	135	26300
	15	95	108	72	135	25600	132	72	135.0	28500
	25	110	120	72	135	26400	132	72	135.0	29000
	25	125	120	72	135	27700	132	72	135.0	30500
	34.5	150	Consult HPS				Consult HPS			

Weight and dimensions are typical for 150°C Average Winding Rise.
Weights and dimensions are for NRCAN 2019 compliant product.

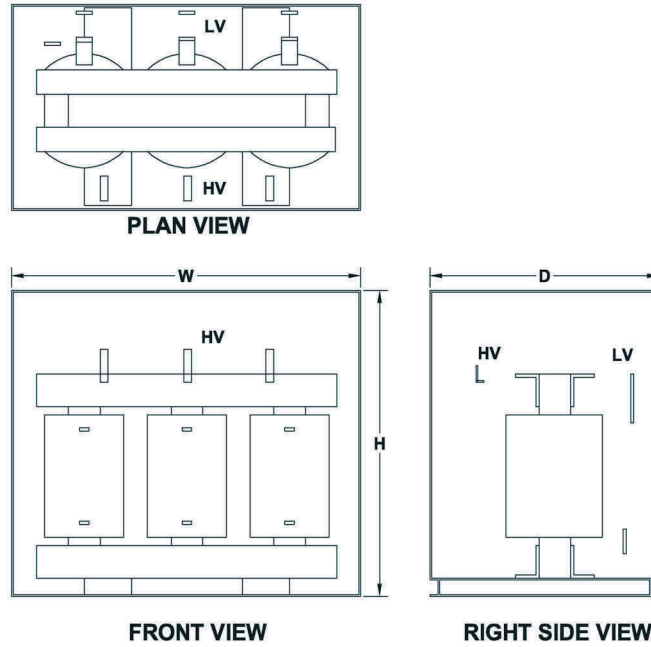
All dimensions are in inches.

For Type 2 enclosure styles, add 4 inches to the enclosure depth and 20 lbs to the total weight.

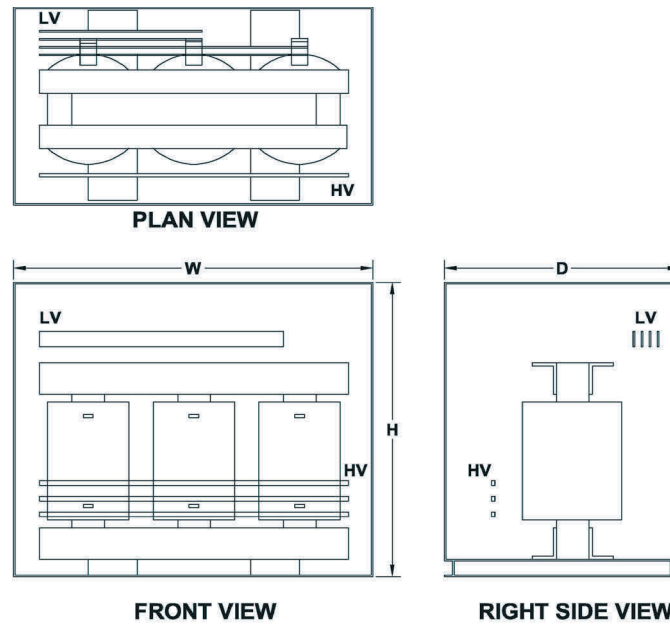
Not for construction purposes. Approval drawings can be provided as needed.

Add 20 inch for ATC up to 110kV BIL designs and 24 inch for ATC with 125/150kV BIL designs.
Add approx. 400 lbs. per ATC.

Drawings



ENCLOSURE WITH STUBS UP FIG. 1



ENCLOSURE WITH BUS-TO-END FIG. 2

Anti-Vibration Pad & Vibration Isolator Kits

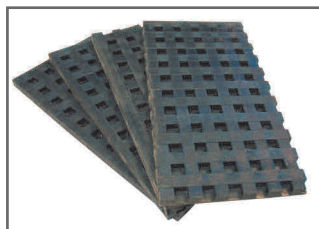


ANTI-VIBRATION PAD AND VIBRATION ISOLATOR KITS

All standard transformers come with installed internal vibration absorbing pads to minimize noise during operation. Optional external "anti-vibration" pad and "vibration isolator" (for higher noise dampening) kits can be used to reduce operating noise even further. All are resistant to industrial contaminants like oil, acids and alkalines.

Anti-Vibration Pad Kits

Part No.	Description
PD1	Set of four (4) rubber anti-vibration pads which replace the standard steel enclosure washers.
PD2	



All anti-vibration pad kits contain a set of four (4) pads or isolators. Therefore only one kit is required per transformer.

Vibration Isolator Kits

Part No.	Transformer Weight (Lbs)	Description
NMP1	Up to 340 lbs	Set of four (4) molded neoprene and steel plate assemblies that virtually eliminate vibration noise between the transformer and the mounting surface.
NMP2	341 to 680 lbs	
NMP3	681 to 1040 lbs	
NMP4	1041 to 1740 lbs	
NMP5	1741 to 2330 lbs	
NMP6	2331 to 3450 lbs	
NMP7	3451 to 4690 lbs	



All vibration isolator kits and anti-vibration pad kits contain a set of four (4) pads or isolators. Therefore only one kit is required per transformer.

Typical Performance Data

5 kV, 30kV BIL - Aluminum

75°C, 4160V Delta (30 kV BIL) -
480Y/277V, 600Y/347V (10kV BIL), 60 Hz

kVA	No Load Loss (W)	Load Loss (W)	Impedance	Resistance	Reactance	X/R Ratio	Regulation				% Efficiency at different loads			
							at 50% load		at 100% load		25%	50%*	75%	100%
							pf = 1	pf = 0.8	pf = 1	pf = 0.8				
225	630	2770	5.7%	1.2%	5.6%	4.64	0.65%	2.18%	1.38%	4.40%	98.56%	98.82%	98.71%	98.50%
300	735	3420	5.7%	1.1%	5.6%	5.10	0.63%	2.16%	1.33%	4.37%	98.72%	98.93%	98.80%	98.60%
500	1020	4925	5.7%	1.0%	5.7%	5.66	0.54%	2.12%	1.17%	4.27%	98.93%	99.09%	98.98%	98.80%
750	1500	6010	5.8%	0.8%	5.7%	7.13	0.44%	2.05%	0.96%	4.15%	99.01%	99.21%	99.14%	99.01%
1000	1790	7145	5.8%	0.7%	5.7%	8.18	0.41%	2.03%	0.90%	4.11%	99.10%	99.28%	99.21%	99.09%
1500	2150	10235	5.8%	0.7%	5.7%	8.19	0.39%	2.02%	0.86%	4.08%	99.26%	99.37%	99.29%	99.17%
2000	2595	12440	5.8%	0.6%	5.7%	9.57	0.35%	1.99%	0.79%	4.03%	99.33%	99.43%	99.36%	99.25%
2500	2785	15460	5.8%	0.6%	5.7%	9.58	0.35%	1.99%	0.78%	4.03%	99.40%	99.47%	99.39%	99.28%

*Meets DOE 10 CFR Part 431 - 2016 & NRCAN 2019/ON Reg. 404/12 Energy Efficiency Regulations for MVDT Transformers

5 kV, 30kV BIL - Copper

75°C, 4160V Delta (30 kV BIL) -
480Y/277V, 600Y/347V (10kV BIL), 60 Hz

kVA	No Load Loss (W)	Load Loss* (W)	Impedance	Resistance	Reactance	X/R Ratio	Regulation				% Efficiency at different loads			
							at 50% load		at 100% load		25%	50%*	75%	100%
							pf = 1	pf = 0.8	pf = 1	pf = 0.8				
225	575	3070	5.6%	1.3%	5.4%	4.17	0.72%	2.19%	1.51%	4.40%	98.65%	98.82%	98.65%	98.41%
300	690	3720	5.6%	1.2%	5.5%	4.56	0.66%	2.15%	1.39%	4.34%	98.79%	98.93%	98.78%	98.55%
500	900	5550	5.6%	1.1%	5.5%	5.01	0.59%	2.12%	1.26%	4.27%	99.01%	99.09%	98.94%	98.73%
750	1475	6050	5.7%	0.8%	5.6%	7.00	0.44%	2.02%	0.96%	4.09%	99.02%	99.21%	99.14%	99.01%
1000	1650	7840	5.7%	0.8%	5.6%	7.01	0.43%	2.02%	0.94%	4.07%	99.15%	99.28%	99.20%	99.06%
1500	1910	11240	5.7%	0.7%	5.6%	8.02	0.41%	2.01%	0.91%	4.05%	99.31%	99.37%	99.27%	99.13%
2000	2265	13750	5.7%	0.7%	5.6%	8.05	0.38%	1.99%	0.85%	4.01%	99.38%	99.43%	99.34%	99.21%
2500	2570	16310	5.7%	0.6%	5.6%	9.40	0.37%	1.97%	0.81%	3.99%	99.43%	99.47%	99.38%	99.25%

*Meets DOE 10 CFR Part 431 - 2016 & NRCAN 2019/ON Reg. 404/12 Energy Efficiency Regulations for MVDT Transformers

15 kV, 60kV BIL - Aluminum

75°C, 12470V Delta (60 kV BIL) -
480Y/277V, 600Y/347V (10kV BIL), 60 Hz

kVA	No Load Loss (W)	Load Loss (W)	Impedance	Resistance	Reactance	X/R Ratio	Regulation				% Efficiency at different loads			
							at 50% load		at 100% load		25%	50%*	75%	100%
							pf = 1	pf = 0.8	pf = 1	pf = 0.8				
225	915	2300	5.7%	1.0%	5.6%	5.64	0.55%	2.12%	1.18%	4.28%	98.15%	98.69%	98.71%	98.59%
300	1025	3135	5.7%	1.0%	5.6%	5.64	0.56%	2.13%	1.20%	4.29%	98.40%	98.81%	98.78%	98.63%
500	1275	5085	5.7%	1.0%	5.6%	5.65	0.55%	2.12%	1.18%	4.28%	98.74%	98.99%	98.91%	98.74%
750	1700	6510	5.8%	0.9%	5.7%	6.32	0.47%	2.07%	1.03%	4.19%	98.89%	99.12%	99.06%	98.92%
1000	2075	7585	5.8%	0.8%	5.7%	7.14	0.42%	2.04%	0.92%	4.12%	98.99%	99.21%	99.16%	99.04%
1500	2775	9950	5.8%	0.7%	5.7%	8.19	0.37%	2.01%	0.83%	4.06%	99.10%	99.30%	99.26%	99.16%
2000	3285	12850	5.8%	0.6%	5.7%	9.57	0.36%	2.00%	0.81%	4.05%	99.19%	99.35%	99.30%	99.20%
2500	3825	14710	5.8%	0.6%	5.8%	9.59	0.34%	1.98%	0.75%	4.01%	99.25%	99.40%	99.36%	99.26%

*Meets DOE 10 CFR Part 431 - 2016 & NRCAN 2019/ON Reg. 404/12 Energy Efficiency Regulations for MVDT Transformers

15 kV, 60kV BIL - Copper

75°C, 12470V Delta (60 kV BIL) -
480Y/277V, 600Y/347V (10kV BIL), 60 Hz

kVA	No Load Loss (W)	Load Loss (W)	Impedance	Resistance	Reactance	X/R Ratio	Regulation				% Efficiency at different loads			
							at 50% load		at 100% load		25%	50%*	75%	100%
							pf = 1	pf = 0.8	pf = 1	pf = 0.8				
225	750	2725	5.6%	1.2%	5.5%	4.55	0.64%	2.14%	1.36%	4.32%	98.29%	98.69%	98.63%	98.45%
300	950	3425	5.6%	1.0%	5.5%	5.54	0.61%	2.13%	1.29%	4.29%	98.47%	98.81%	98.74%	98.56%
500	1240	5215	5.6%	1.0%	5.5%	5.54	0.56%	2.10%	1.20%	4.23%	98.76%	98.99%	98.90%	98.73%
750	1540	7115	5.6%	0.9%	5.6%	6.18	0.51%	2.07%	1.10%	4.17%	98.95%	99.12%	99.02%	98.86%
1000	1800	8980	5.7%	0.9%	5.6%	6.20	0.49%	2.05%	1.05%	4.14%	99.08%	99.21%	99.10%	98.94%
1500	2485	11215	5.7%	0.8%	5.6%	7.02	0.41%	2.00%	0.91%	4.05%	99.16%	99.30%	99.22%	99.09%
2000	2860	14695	5.7%	0.7%	5.6%	8.03	0.41%	2.00%	0.89%	4.04%	99.25%	99.35%	99.26%	99.13%
2500	3015	18025	5.7%	0.7%	5.6%	8.04	0.40%	2.00%	0.88%	4.04%	99.34%	99.40%	99.30%	99.17%

*Meets DOE 10 CFR Part 431 - 2016 & NRCAN 2019/ON Reg. 404/12 Energy Efficiency Regulations for MVDT Transformers

Typical Performance Data

15 kV, 95kV BIL - Aluminum

75°C, 12470V Delta (95 kV BIL) -
480Y/277V, 600Y/347V (10kV BIL), 60 Hz

kVA	No Load Loss (W)	Load Loss (W)	Impedance	Resistance	Reactance	X/R Ratio	Regulation				% Efficiency at different loads			
							at 50% load		at 100% load		25%	50%*	75%	100%
							pf = 1	pf = 0.8	pf = 1	pf = 0.8				
225	930	2240	5.7%	1.0%	5.7%	5.65	0.51%	1.28%	1.04%	2.57%	98.13%	98.69%	98.72%	98.61%
300	1050	3005	5.7%	1.0%	5.7%	5.65	0.51%	1.28%	1.04%	2.57%	98.38%	98.81%	98.80%	98.67%
500	1350	4820	5.7%	1.0%	5.7%	5.66	0.53%	1.32%	1.09%	2.65%	98.75%	98.99%	98.90%	98.72%
750	1750	6280	5.8%	0.8%	5.7%	7.12	0.45%	1.57%	0.94%	3.15%	98.89%	99.12%	99.06%	98.92%
1000	2275	7050	5.8%	0.7%	5.7%	8.18	0.37%	1.52%	0.78%	3.06%	98.93%	99.20%	99.18%	99.09%
1500	2850	9620	5.8%	0.6%	5.7%	9.57	0.35%	1.60%	0.74%	3.22%	99.09%	99.30%	99.27%	99.18%
2000	3350	12465	5.8%	0.6%	5.7%	9.57	0.37%	1.70%	0.79%	3.43%	99.23%	99.36%	99.29%	99.17%
2500	3900	14235	5.8%	0.5%	5.8%	11.51	0.33%	1.68%	0.72%	3.39%	99.26%	99.41%	99.35%	99.25%

*Meets DOE 10 CFR Part 431 - 2016 & NRCAN 2019/ON Reg. 404/12 Energy Efficiency Regulations for MVDT Transformers

15 kV, 95kV BIL - Copper

75°C, 12470V Delta (95 kV BIL) -
480Y/277V, 600Y/347V (10kV BIL), 60 Hz

kVA	No Load Loss (W)	Load Loss* (W)	Impedance	Resistance	Reactance	X/R Ratio	Regulation				% Efficiency at different loads			
							at 50% load		at 100% load		25%	50%*	75%	100%
							pf = 1	pf = 0.8	pf = 1	pf = 0.8				
225	850	2570	5.6%	1.1%	5.5%	4.83	0.60%	2.02%	1.28%	4.06%	98.23%	98.69%	98.66%	98.50%
300	1000	3235	5.6%	1.1%	5.5%	4.98	0.58%	2.11%	1.23%	4.25%	98.42%	98.81%	98.76%	98.61%
500	1425	4450	5.7%	0.9%	5.6%	6.27	0.49%	2.08%	1.05%	4.21%	98.66%	98.99%	98.96%	98.84%
750	1725	6400	5.7%	0.9%	5.6%	6.58	0.47%	2.23%	1.05%	4.50%	98.88%	99.12%	99.06%	98.93%
1000	2040	7890	5.7%	0.8%	5.6%	7.19	0.44%	2.21%	0.98%	4.46%	99.00%	99.20%	99.14%	99.02%
1500	2610	10700	5.7%	0.7%	5.6%	7.92	0.41%	2.18%	0.91%	4.41%	99.13%	99.30%	99.24%	99.12%
2000	3070	13550	5.7%	0.7%	5.6%	8.41	0.39%	2.17%	0.87%	4.39%	99.22%	99.36%	99.29%	99.18%
2500	3600	15480	5.7%	0.6%	5.6%	9.11	0.36%	2.15%	0.81%	4.35%	99.27%	99.41%	99.35%	99.24%

*Meets DOE 10 CFR Part 431 - 2016 & NRCAN 2019/ON Reg. 404/12 Energy Efficiency Regulations for MVDT Transformers

25 kV, 125kV BIL - Aluminum

75°C, 24940V Delta (125 kV BIL) -
480Y/277V, 600Y/347V (10kV BIL), 60 Hz

kVA	No Load Loss (W)	Load Loss (W)	Impedance	Resistance	Reactance	X/R Ratio	Regulation				% Efficiency at different loads			
							at 50% load		at 100% load		25%	50%*	75%	100%
							pf = 1	pf = 0.8	pf = 1	pf = 0.8				
225	950	2714	5.7%	1.2%	5.6%	4.65	0.64%	2.17%	1.36%	4.38%	98.05%	98.57%	98.55%	98.40%
300	1165	3280	5.7%	1.1%	5.6%	5.11	0.59%	2.14%	1.25%	4.32%	98.21%	98.69%	98.68%	98.54%
500	1535	5038	5.7%	1.0%	5.6%	5.65	0.54%	2.12%	1.17%	4.27%	98.54%	98.89%	98.85%	98.70%
750	2000	6868	5.7%	0.9%	5.7%	6.31	0.50%	2.09%	1.08%	4.22%	98.72%	99.02%	98.97%	98.83%
1000	2460	8045	5.8%	0.8%	5.7%	7.13	0.44%	2.05%	0.97%	4.15%	98.83%	99.11%	99.08%	98.96%
1500	3115	11312	5.8%	0.7%	5.7%	8.17	0.42%	2.04%	0.92%	4.12%	98.99%	99.21%	99.16%	99.05%
2000	4015	12822	5.8%	0.7%	5.7%	8.20	0.36%	2.00%	0.81%	4.05%	99.05%	99.28%	99.26%	99.17%
2500	4200	17000	5.8%	0.7%	5.7%	8.19	0.38%	2.01%	0.84%	4.07%	99.17%	99.33%	99.27%	99.16%

*Meets DOE 10 CFR Part 431 - 2016 & NRCAN 2019/ON Reg. 404/12 Energy Efficiency Regulations for MVDT Transformers

25 kV, 125kV BIL - Copper

75°C, 24940V Delta (125 kV BIL) -
480Y/277V, 600Y/347V (10kV BIL), 60 Hz

kVA	No Load Loss (W)	Load Loss (W)	Impedance	Resistance	Reactance	X/R Ratio	Regulation				% Efficiency at different loads			
							at 50% load		at 100% load		25%	50%*	75%	100%
							pf = 1	pf = 0.8	pf = 1	pf = 0.8				
225	900	2920	5.6%	1.3%	5.4%	4.14	0.69%	2.17%	1.45%	4.37%	98.11%	98.57%	98.52%	98.33%
300	1115	3500	5.6%	1.2%	5.5%	4.58	0.62%	2.13%	1.32%	4.30%	98.25%	98.69%	98.65%	98.48%
500	1525	5085	5.6%	1.0%	5.5%	5.55	0.55%	2.09%	1.17%	4.21%	98.55%	98.89%	98.84%	98.70%
750	1955	7100	5.6%	0.9%	5.6%	6.18	0.51%	2.07%	1.10%	4.17%	98.74%	99.02%	98.95%	98.81%
1000	2340	8520	5.6%	0.8%	5.6%	6.99	0.47%	2.04%	1.01%	4.12%	98.86%	99.11%	99.06%	98.93%
1500	3280	10730	5.7%	0.7%	5.6%	8.04	0.40%	1.99%	0.87%	4.03%	98.96%	99.21%	99.18%	99.07%
2000	3650	14600	5.7%	0.7%	5.6%	8.03	0.40%	2.00%	0.89%	4.04%	99.10%	99.28%	99.22%	99.10%
2500	4050	17740	5.7%	0.7%	5.6%	8.04	0.39%	1.99%	0.87%	4.03%	99.18%	99.33%	99.26%	99.14%

*Meets DOE 10 CFR Part 431 - 2016 & NRCAN 2019/ON Reg. 404/12 Energy Efficiency Regulations for MVDT Transformers

Technical Information

The following information is provided for reference only:

Average Audible Sound Levels

Self-Cooled		Ventilated Forced Air Cooled	
Equivalent Two-Winding (kVA)	Ventilated (Class AA Rating)	Equivalent Two-Winding (kVA)	Class FA and AFA Rating
0-9	40	0-1167	67
10-50	45	1168-1667	68
51-150	50	1668-2000	69
151-300	55	2001-3333	71
301-500	60	3334-5000	73
501-700	62	5001-6667	74
701-1000	64	6668-8333	75
1001-1500	65	8334-10000	78
1501-2000	66		
2001-3000	68		
3001-4000	70		
4001-5000	71		
5001-6000	72		
6001-7500	75		

System Voltage and Transformer BIL Ratings

Nominal L-L System Voltage (kV)	Low Frequency Voltage Insulation Level (kV rms)	Basic lightning impulse insulation levels (BIL ratings) in common use kV crest ^{a,b} (1.2 x 50 μs)													
		10	20	30	45	60	95	110	125	150	200	250	300	350	
0.25	2.5	None													
0.6	3	S	1	1											
1.2	4	S	1	1											
2.5	10		S	1	1										
5.0	12			S	1	1									
8.7	20				S	1	1								
15.0	34					S	1	1							
18.0	40						S	1	1						
25.0	50							2	S	1	1				
34.5	70									2	S	1			
46.0	95											S	1	1	
69.0	140												S	1	1
Chopped wave ^{c,d} minimum time to flashover μs		1.0	1.0	1.0	1.25	1.5	1.6	1.8	2.0	2.25	2.7	3.0	3.0	3.0	

When performing an impulse test on the low voltage windings, the high voltage windings may experience higher test voltage than the rated BIL level.

Note - The latest edition of IEEE Std. C62.22™ [B3] should be consulted for information coordination with available surge arrester protection levels.

S = Standard values

1 = Optional higher levels where exposure to overvoltages occurs and improved protective margins are required.

2 = Optional lower levels where protective characteristics of applied surge arresters have been evaluated and found to provide appropriate surge protection.

a = Low-impedance low-side windings may be tested with a much faster 0.5 x 1.5 μs impulse wave on BIL ratings less than or equal to 30 kV.

b = A positive impulse wave shall be used.

c = The voltage crest of the chopped wave should be approximately the same as the full wave magnitude.

d = No chopped waves are required on 0.6 kV systems and below.

Standard Transformer Ratings, Primary Voltage Class 2.3-46 kV

kVA 3 Phase			Secondary Voltage			
Self-Cooled	Fan-Cooled Ventilated Dry	Fan-Cooled Weather Resistant Ventilated	208Y/120 V 240 V Delta	480Y/277 V 480V Delta	4160Y/2400 V 4160 V Delta 2400 V Delta	600Y/277 V 600V Delta
225			X	X		X
300	400	400	X	X		X
500	667	667	X	X	X	X
750	1000	1000	X	X	X	X
1000	1333	1333	X	X	X	X
1500	2000	2000	X	X	X	X
2000	2666	2666		X	X	X
2500	3333	3333		X	X	X
3750	5000	5000			X	
5000	6650	6650			X	
7500	10000	10000			X	

The above combinations are based on standard designs. Other than standard designs may place further restrictions on the availability of voltage and kVA combinations. Consult factory for final determination.

Altitude Derating Factor

Altitude (FT)	kVA Correction	BIL Correction
3300	1.00	1.00
4000	0.994	0.98
5000	0.985	0.95
6000	0.975	0.92
7000	0.966	0.89
8000	0.957	0.86
9000	0.948	0.83
10,000	0.939	0.80
11,000	0.930	0.77
12,000	0.921	0.75
13,000	0.912	0.72
14,000	0.903	0.70
15,000	0.894	0.67

Per IEEE 100m = 330 ft

Other HPS Energy Efficient Products



ENERGY EFFICIENT GENERAL PURPOSE DISTRIBUTION TRANSFORMERS

Generally used for supplying appliance, lighting, heating, motorized machine and power loads from electrical distribution systems.

Standard features include:

HPS Sentinel®

- Meets C802.2 (2012) efficiencies per Canadian Energy Efficiency Regulations SOR/94-651

HPS Sentinel® G

- Meets new DOE 2016/NRCAN 2019 & ON Reg. 404/12 efficiency standards
- 10kV BIL on all transformers



ENERGY EFFICIENT K-FACTOR TRANSFORMERS

The use of K-factor distribution transformers has become a popular means of supplying power for non-linear loads such as electronic ballasts, drives, personal computers, telecommunications equipment, broadcasting equipment and other similar power electronics. These non-linear loads generate harmonic currents which can substantially increase transformer losses. Our K-rated transformers have been specifically designed to prevent failure due to overheating.

Standard features include:

HPS Synergy®

- K-Factor ratings of K4, K9, K13 and K20
- Meets C802.2 (2012) efficiencies per Canadian Energy Efficiency Regulations SOR/94-651

HPS Sentinel® K

- K-Factor ratings of K4, K9, K13 and K20
- Meets new DOE 2016/NRCAN 2019 & ON Reg. 404/12 efficiency standards
- 10kV BIL on all transformers



ENERGY EFFICIENT HARMONIC MITIGATING TRANSFORMERS

HPS Harmonic Mitigating transformers reduce voltage distortion (flat-topping) and power losses due to current harmonics created by single-phase, non-linear loads such as computer equipment. They treat sequence harmonics (3rd, 9th and 15th) within the secondary windings and 5th and 7th harmonics upstream with appropriate phase shifting. Typical applications of severe non-linear loading conditions include data centers, internet-service providers, telecom sites, call centers, broadcast centers, etc.

Standard features include:

HPS Centurion®

- Meets C802.2 (2012) efficiencies per Canadian Energy Efficiency Regulations SOR/94-651

HPS Sentinel® H

- K-Factor rating of K13 (others available on request)
- Meets new DOE 2016/NRCAN 2019 & ON Reg. 404/12 efficiency standards
- 10kV BIL on all transformers





ENERGY EFFICIENT DRIVE ISOLATION TRANSFORMERS

HPS drive isolation transformers are suitable for both AC and DC variable speed drives. They are sized to match standard motor horsepower and voltage ratings.

Standard features include:

- Three phase ratings from 7 kVA to 660 kVA
- Copper and aluminum available
- Optional shield available
- UL Listed and CSA Certified
- Type 3R enclosure (optional type 4, 12 or stainless)

HPS Tribune™

- Meets TP1 and C802.2-12 efficiencies

HPS Tribune™ E

- Meets NRCAN 2019 & ON Reg. 404/12 efficiency standards

HPS ENDURACOIL™ CAST RESIN TRANSFORMERS

HPS EnduraCoil™ is a high-performance cast resin product designed for many demanding and diverse applications. Coils are precision wound with copper or aluminum conductors that are electrically balanced to minimize axial forces during short-circuit conditions.

Standard features include:

- kVA ratings from 300 to 3000 ANN, 4000 AFN, up to 34.5 kV Class
- Enclosure options (Type 1, 2, 3R, 3RE, 4, 12; other paint colors or stainless steel)
- Multiple standard options
- UL listed and CSA certified

HPS EnduraCoil™

- Meets Canadian Energy Efficiency Regulations SOR/94-651 efficiency levels at 50% of rated load

HPS EnduraCoil™ E

- Meets new DOE 2016/NRCAN 2019 & ON Reg. 404/12 efficiency standards



HPS MILLENNIUM™ ENERGY EFFICIENT MEDIUM VOLTAGE DISTRIBUTION TRANSFORMERS

5 kV class transformers are designed to step down incoming high voltage power to utilize voltages for commercial, institutional or industrial applications.

Standard features include:

- Large variety of standard and custom single phase and three phase voltages and kVA ratings
- Standard primary voltages of 2400 and 4160 volts
- UL Listed and CSA Certified
- Type 3R and ANSI 61 enclosure (optional Type 4, 12; other paint colors or stainless steel)

HPS Millennium™

- Meets CSA C802.2-12 efficiency standards at 50% of rated load

HPS Millennium™ G

- Meets new DOE 2016/NRCAN 2019 & ON Reg. 404/12 efficiency standards





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Distributed by:

APPENDIX F

FAA DETERMINATION



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

Aeronautical Study No.
2020-ANE-1955-OE

Issued Date: 04/23/2020

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 HP
Location:	Watertown, CT
Latitude:	41-36-47.99N NAD 83
Longitude:	73-09-03.60W
Heights:	814 feet site elevation (SE) 10 feet above ground level (AGL) 824 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:

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 L Change 2.

This determination expires on 10/23/2021 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1955-OE.

Signature Control No: 435147435-437408200

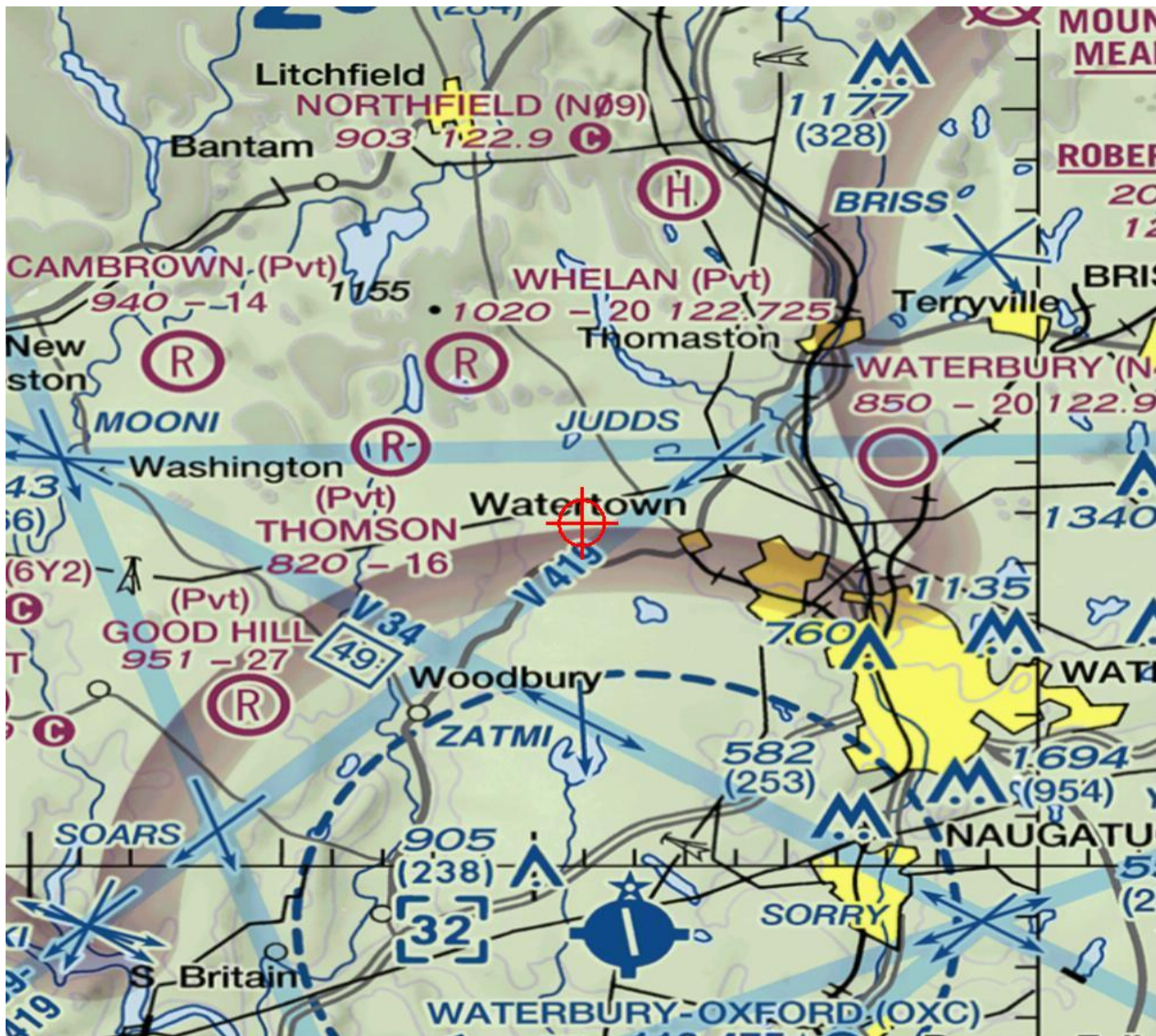
(DNE)

David Maddox
Specialist

Attachment(s)
Case Description
Map(s)

Case Description for ASN 2020-ANE-1955-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.





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

Aeronautical Study No.
2020-ANE-1954-OE

Issued Date: 04/23/2020

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 7
Location:	Watertown, CT
Latitude:	41-36-52.94N NAD 83
Longitude:	73-09-03.79W
Heights:	797 feet site elevation (SE) 10 feet above ground level (AGL) 807 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:

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 L Change 2.

This determination expires on 10/23/2021 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1954-OE.

Signature Control No: 435147434-437408203

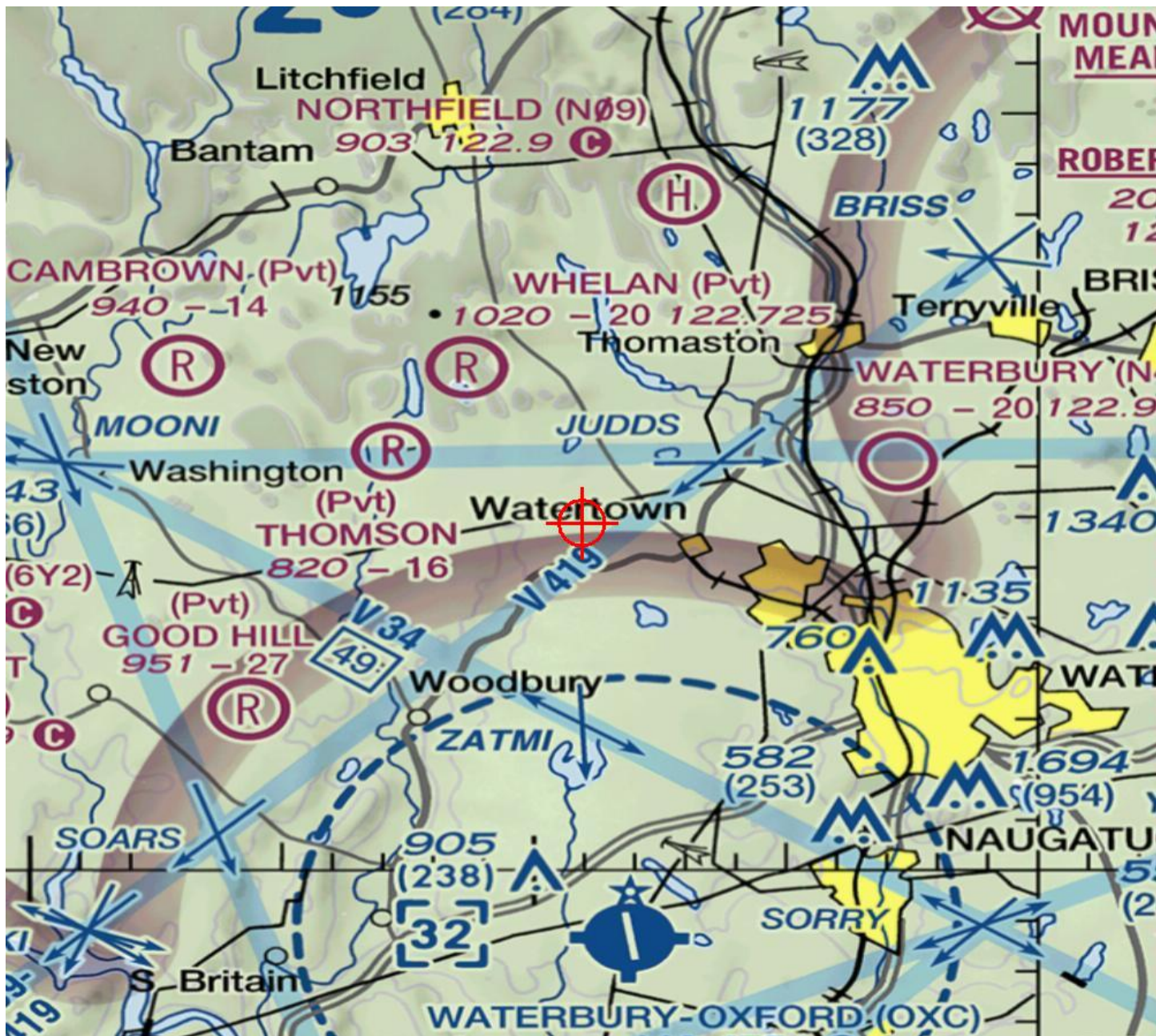
(DNE)

David Maddox
Specialist

Attachment(s)
Case Description
Map(s)

Case Description for ASN 2020-ANE-1954-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.





Mail Processing Center
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Fort Worth, TX 76177

Aeronautical Study No.
2020-ANE-1953-OE

Issued Date: 04/23/2020

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**** 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:	Watertown, CT
Latitude:	41-36-51.07N NAD 83
Longitude:	73-09-03.57W
Heights:	802 feet site elevation (SE) 10 feet above ground level (AGL) 812 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:

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 L Change 2.

This determination expires on 10/23/2021 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1953-OE.

Signature Control No: 435147433-437408204

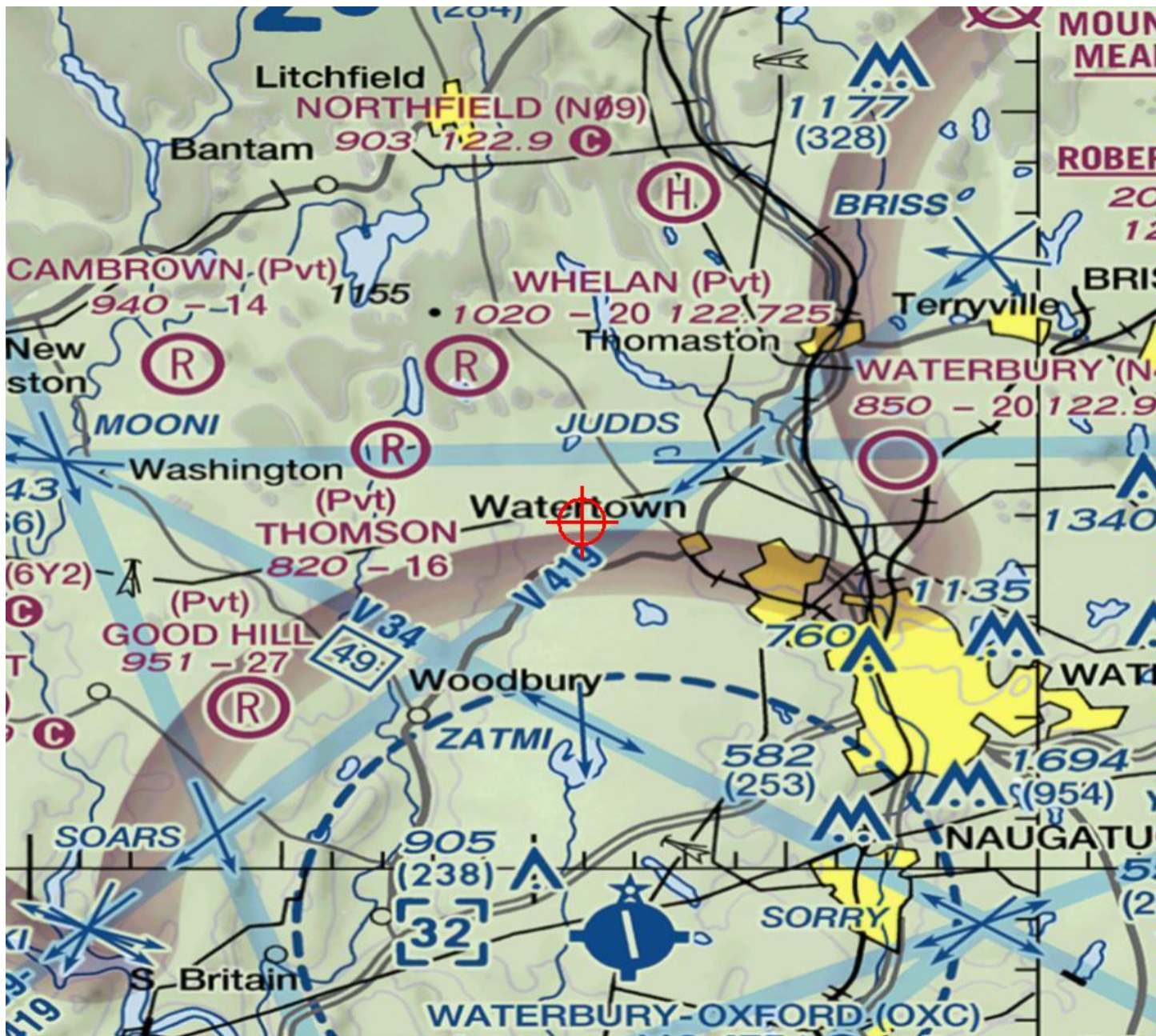
(DNE)

David Maddox
Specialist

Attachment(s)
Case Description
Map(s)

Case Description for ASN 2020-ANE-1953-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.





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

Aeronautical Study No.
2020-ANE-1952-OE

Issued Date: 04/23/2020

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 5
Location:	Watertown, CT
Latitude:	41-36-50.71N NAD 83
Longitude:	73-09-10.96W
Heights:	760 feet site elevation (SE) 10 feet above ground level (AGL) 770 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:

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 L Change 2.

This determination expires on 10/23/2021 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1952-OE.

Signature Control No: 435147432-437408202

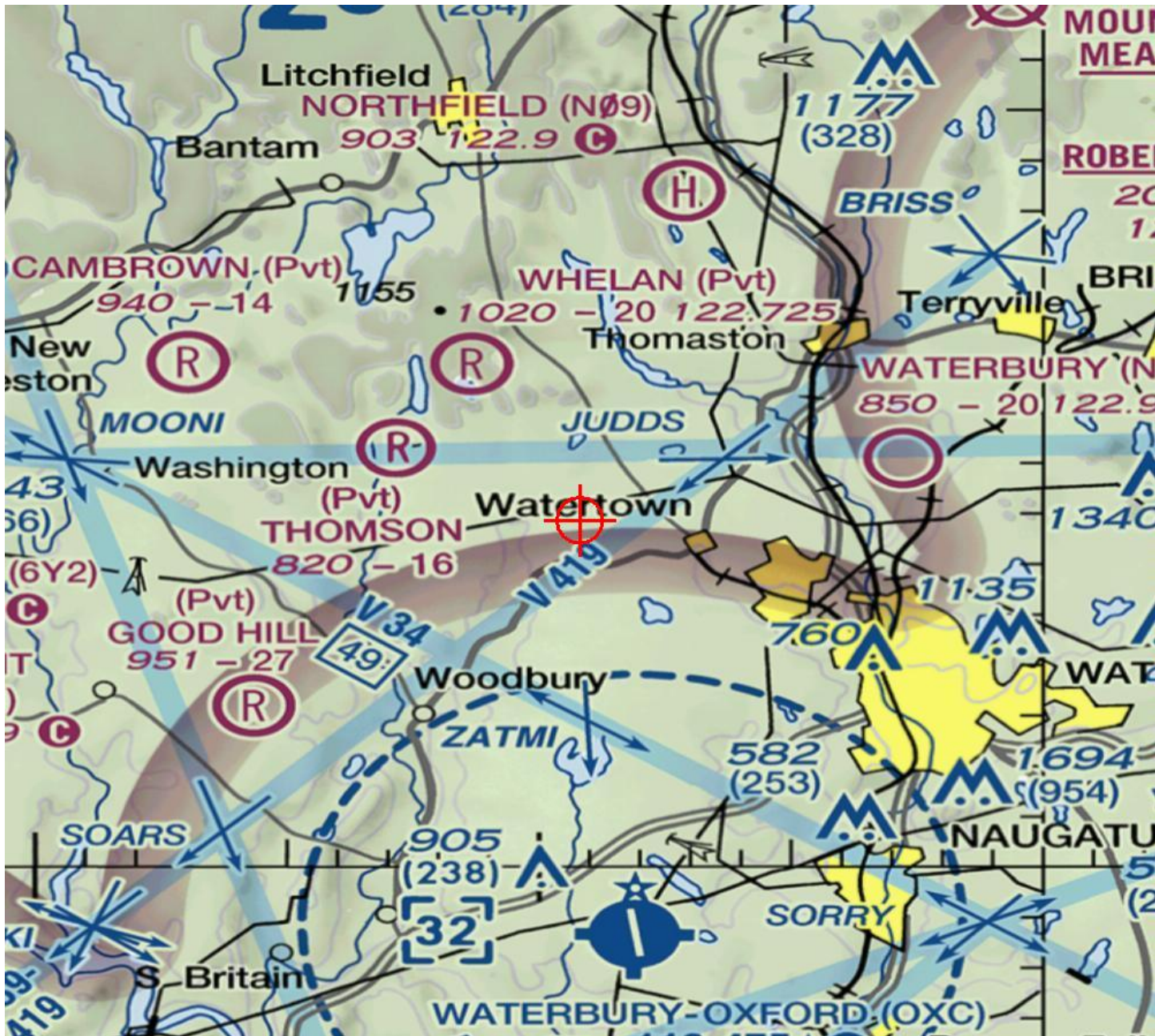
(DNE)

David Maddox
Specialist

Attachment(s)
Case Description
Map(s)

Case Description for ASN 2020-ANE-1952-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.





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

Aeronautical Study No.
2020-ANE-1951-OE

Issued Date: 04/23/2020

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:	Watertown, CT
Latitude:	41-36-42.83N NAD 83
Longitude:	73-09-08.55W
Heights:	775 feet site elevation (SE) 10 feet above ground level (AGL) 785 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:

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 L Change 2.

This determination expires on 10/23/2021 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1951-OE.

Signature Control No: 435147431-437408205

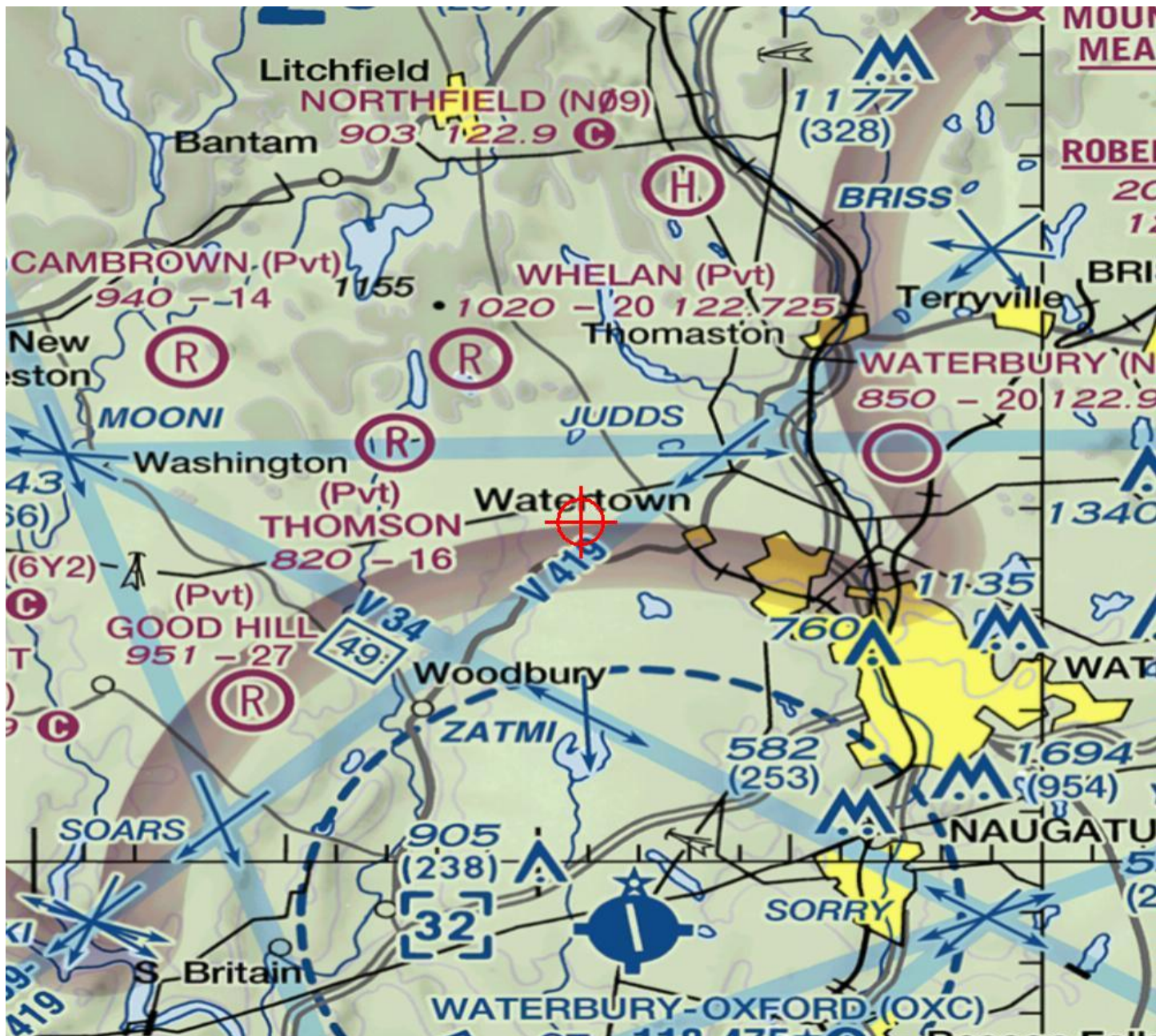
(DNE)

David Maddox
Specialist

Attachment(s)
Case Description
Map(s)

Case Description for ASN 2020-ANE-1951-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.





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

Aeronautical Study No.
2020-ANE-1950-OE

Issued Date: 04/23/2020

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:	Watertown, CT
Latitude:	41-36-43.94N NAD 83
Longitude:	73-08-58.88W
Heights:	784 feet site elevation (SE) 10 feet above ground level (AGL) 794 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:

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 L Change 2.

This determination expires on 10/23/2021 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.

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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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1950-OE.

Signature Control No: 435147430-437408201

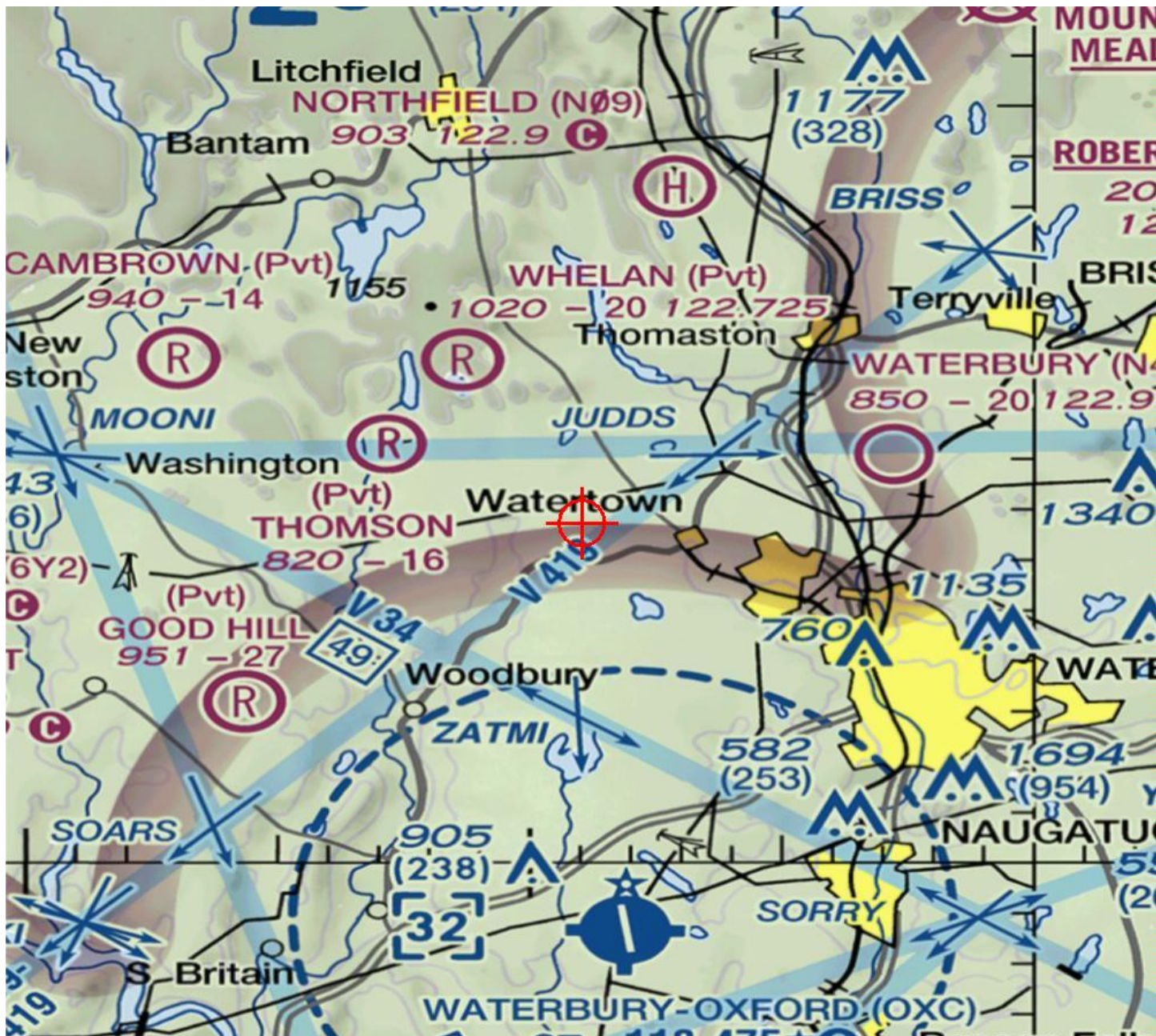
(DNE)

David Maddox
Specialist

Attachment(s)
Case Description
Map(s)

Case Description for ASN 2020-ANE-1950-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.





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

Aeronautical Study No.
2020-ANE-1949-OE

Issued Date: 04/23/2020

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:	Watertown, CT
Latitude:	41-36-50.57N NAD 83
Longitude:	73-08-59.00W
Heights:	794 feet site elevation (SE) 10 feet above ground level (AGL) 804 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:

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 L Change 2.

This determination expires on 10/23/2021 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.

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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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1949-OE.

Signature Control No: 435147429-437408199

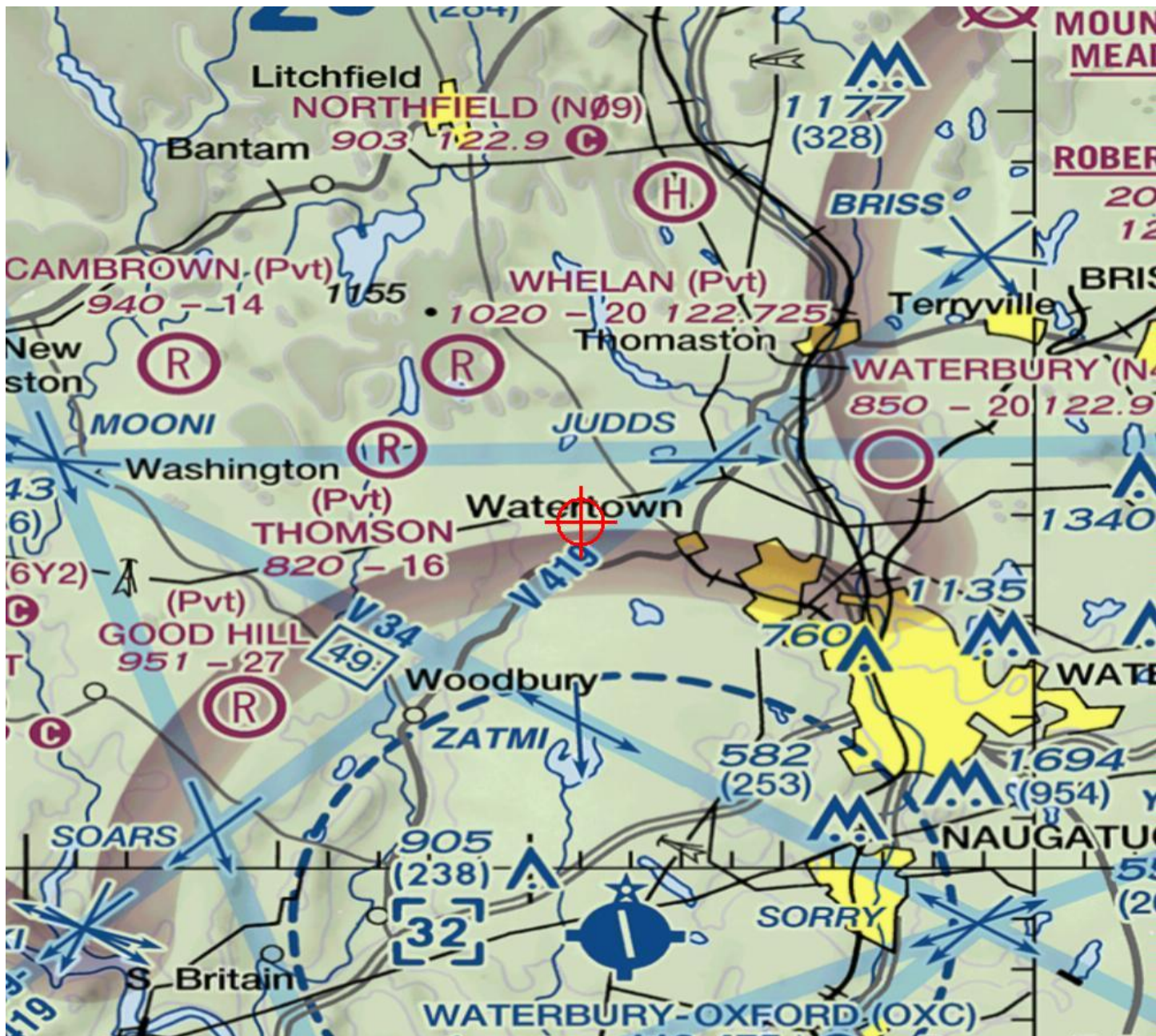
(DNE)

David Maddox
Specialist

Attachment(s)
Case Description
Map(s)

Case Description for ASN 2020-ANE-1949-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.





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

Aeronautical Study No.
2020-ANE-1948-OE

Issued Date: 04/23/2020

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
Location:	Watertown, CT
Latitude:	41-36-53.00N NAD 83
Longitude:	73-08-59.67W
Heights:	788 feet site elevation (SE) 10 feet above ground level (AGL) 798 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:

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 L Change 2.

This determination expires on 10/23/2021 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1948-OE.

Signature Control No: 435147428-437408198

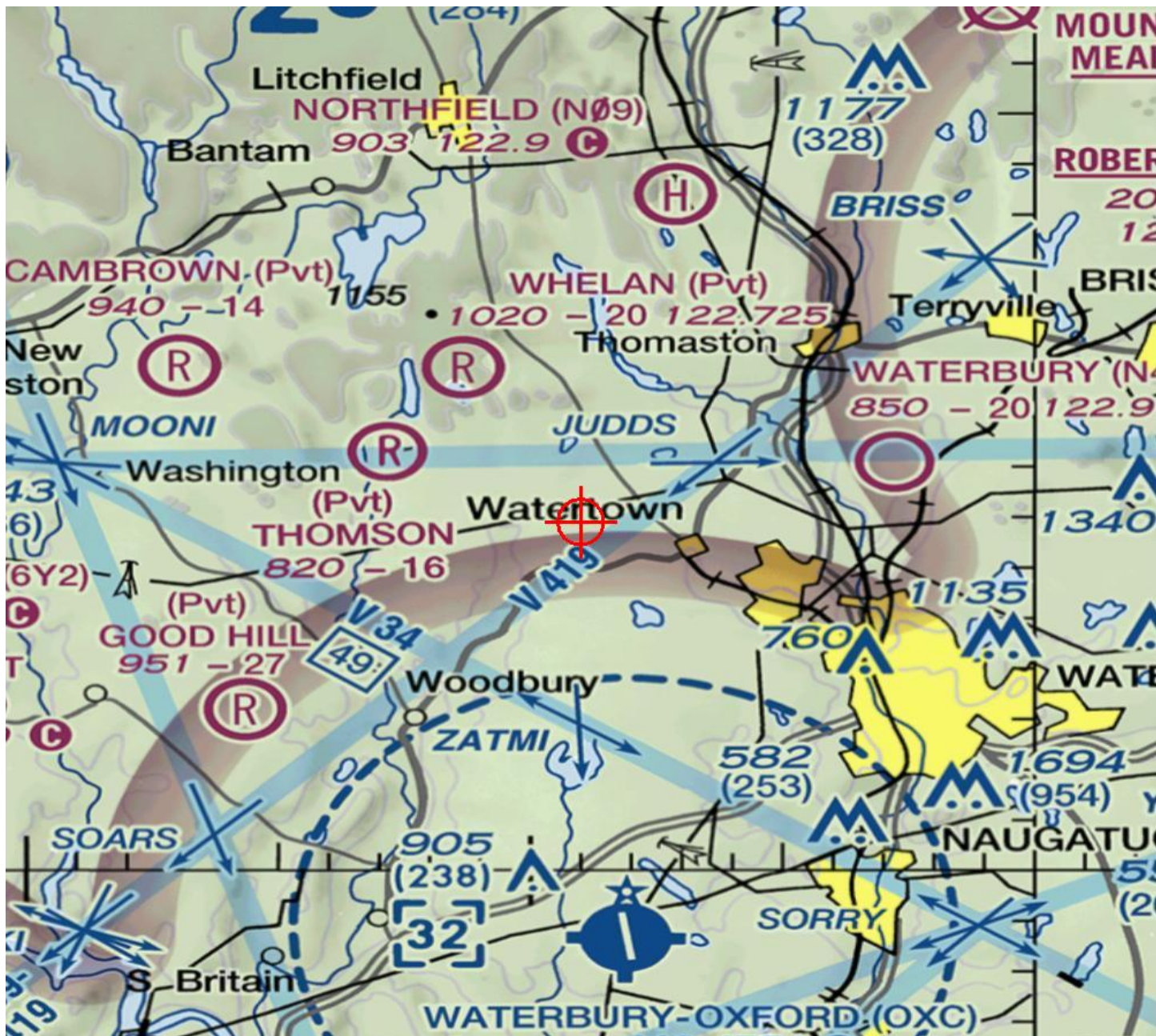
(DNE)

David Maddox
Specialist

Attachment(s)
Case Description
Map(s)

Case Description for ASN 2020-ANE-1948-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.





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

Aeronautical Study No.
2020-ANE-1940-OE

Issued Date: 04/23/2020

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
Location:	Watertown, CT
Latitude:	41-36-53.00N NAD 83
Longitude:	73-08-59.67W
Heights:	788 feet site elevation (SE) 22 feet above ground level (AGL) 810 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1940-OE

Signature Control No: 435146100-437410380

(TMP)

David Maddox

Specialist

Additional Condition(s) or Information for ASN 2020-ANE-1940-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 810 feet above mean sea level.

Location: The structure will be located 4.77 nautical miles west of N41 Airport reference point.

Case Description for ASN 2020-ANE-1940-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.

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

Preliminary FAA study indicates that the above mentioned structure would:

have no effect on any existing or proposed arrival, departure, or en route instrument flight rules (IFR) operations or procedures.

have no effect on any existing or proposed arrival, departure, or en route visual flight rules (VFR) operations.

have no effect on any existing or proposed arrival, departure, or en route instrument/visual flight rules (IFR/VFR) minimum flight altitudes.

not exceed traffic pattern airspace

have no physical or electromagnetic effect on the operation of air navigation and communications facilities.

have no effect on any airspace and routes used by the military.

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 L Change 2, Obstruction Marking and Lighting, flag marker - Chapters 3(Marked)&12.

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.

This determination expires on 10/23/2021 unless extended, revised, or terminated by the issuing office.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed within 5 days after the temporary structure is dismantled.

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.



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

Aeronautical Study No.
2020-ANE-1941-OE

Issued Date: 04/23/2020

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:	Watertown, CT
Latitude:	41-36-50.57N NAD 83
Longitude:	73-08-59.00W
Heights:	794 feet site elevation (SE) 22 feet above ground level (AGL) 816 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1941-OE

Signature Control No: 435146101-437410385

(TMP)

David Maddox

Specialist

Additional Condition(s) or Information for ASN 2020-ANE-1941-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 810 feet above mean sea level.

Location: The structure will be located 4.77 nautical miles west of N41 Airport reference point.

Case Description for ASN 2020-ANE-1941-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.

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

Preliminary FAA study indicates that the above mentioned structure would:

have no effect on any existing or proposed arrival, departure, or en route instrument flight rules (IFR) operations or procedures.

have no effect on any existing or proposed arrival, departure, or en route visual flight rules (VFR) operations.

have no effect on any existing or proposed arrival, departure, or en route instrument/visual flight rules (IFR/VFR) minimum flight altitudes.

not exceed traffic pattern airspace

have no physical or electromagnetic effect on the operation of air navigation and communications facilities.

have no effect on any airspace and routes used by the military.

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 L Change 2, Obstruction Marking and Lighting, flag marker - Chapters 3(Marked)&12.

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.

This determination expires on 10/23/2021 unless extended, revised, or terminated by the issuing office.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed within 5 days after the temporary structure is dismantled.

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.



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

Aeronautical Study No.
2020-ANE-1942-OE

Issued Date: 04/23/2020

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:	Watertown, CT
Latitude:	41-36-43.94N NAD 83
Longitude:	73-08-58.88W
Heights:	784 feet site elevation (SE) 22 feet above ground level (AGL) 806 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1942-OE

Signature Control No: 435146102-437410383

(TMP)

David Maddox

Specialist

Additional Condition(s) or Information for ASN 2020-ANE-1942-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 810 feet above mean sea level.

Location: The structure will be located 4.77 nautical miles west of N41 Airport reference point.

Case Description for ASN 2020-ANE-1942-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.

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

Preliminary FAA study indicates that the above mentioned structure would:

have no effect on any existing or proposed arrival, departure, or en route instrument flight rules (IFR) operations or procedures.

have no effect on any existing or proposed arrival, departure, or en route visual flight rules (VFR) operations.

have no effect on any existing or proposed arrival, departure, or en route instrument/visual flight rules (IFR/VFR) minimum flight altitudes.

not exceed traffic pattern airspace

have no physical or electromagnetic effect on the operation of air navigation and communications facilities.

have no effect on any airspace and routes used by the military.

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 L Change 2, Obstruction Marking and Lighting, flag marker - Chapters 3(Marked)&12.

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.

This determination expires on 10/23/2021 unless extended, revised, or terminated by the issuing office.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed within 5 days after the temporary structure is dismantled.

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.



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

Aeronautical Study No.
2020-ANE-1943-OE

Issued Date: 04/23/2020

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:	Watertown, CT
Latitude:	41-36-42.83N NAD 83
Longitude:	73-09-08.55W
Heights:	775 feet site elevation (SE) 22 feet above ground level (AGL) 797 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1943-OE

Signature Control No: 435146103-437410386

(TMP)

David Maddox

Specialist

Additional Condition(s) or Information for ASN 2020-ANE-1943-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 810 feet above mean sea level.

Location: The structure will be located 4.77 nautical miles west of N41 Airport reference point.

Case Description for ASN 2020-ANE-1943-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.

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

Preliminary FAA study indicates that the above mentioned structure would:

have no effect on any existing or proposed arrival, departure, or en route instrument flight rules (IFR) operations or procedures.

have no effect on any existing or proposed arrival, departure, or en route visual flight rules (VFR) operations.

have no effect on any existing or proposed arrival, departure, or en route instrument/visual flight rules (IFR/VFR) minimum flight altitudes.

not exceed traffic pattern airspace

have no physical or electromagnetic effect on the operation of air navigation and communications facilities.

have no effect on any airspace and routes used by the military.

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 L Change 2, Obstruction Marking and Lighting, flag marker - Chapters 3(Marked)&12.

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.

This determination expires on 10/23/2021 unless extended, revised, or terminated by the issuing office.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed within 5 days after the temporary structure is dismantled.

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.



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

Aeronautical Study No.
2020-ANE-1944-OE

Issued Date: 04/23/2020

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:	Watertown, CT
Latitude:	41-36-50.71N NAD 83
Longitude:	73-09-10.96W
Heights:	760 feet site elevation (SE) 22 feet above ground level (AGL) 782 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1944-OE

Signature Control No: 435146104-437410382

(TMP)

David Maddox

Specialist

Additional Condition(s) or Information for ASN 2020-ANE-1944-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 810 feet above mean sea level.

Location: The structure will be located 4.77 nautical miles west of N41 Airport reference point.

Case Description for ASN 2020-ANE-1944-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.

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

Preliminary FAA study indicates that the above mentioned structure would:

have no effect on any existing or proposed arrival, departure, or en route instrument flight rules (IFR) operations or procedures.

have no effect on any existing or proposed arrival, departure, or en route visual flight rules (VFR) operations.

have no effect on any existing or proposed arrival, departure, or en route instrument/visual flight rules (IFR/VFR) minimum flight altitudes.

not exceed traffic pattern airspace

have no physical or electromagnetic effect on the operation of air navigation and communications facilities.

have no effect on any airspace and routes used by the military.

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 L Change 2, Obstruction Marking and Lighting, flag marker - Chapters 3(Marked)&12.

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.

This determination expires on 10/23/2021 unless extended, revised, or terminated by the issuing office.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed within 5 days after the temporary structure is dismantled.

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.



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

Aeronautical Study No.
2020-ANE-1945-OE

Issued Date: 04/23/2020

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:	Watertown, CT
Latitude:	41-36-51.07N NAD 83
Longitude:	73-09-03.57W
Heights:	802 feet site elevation (SE) 22 feet above ground level (AGL) 824 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1945-OE

Signature Control No: 435146105-437410384

(TMP)

David Maddox

Specialist

Additional Condition(s) or Information for ASN 2020-ANE-1945-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 810 feet above mean sea level.

Location: The structure will be located 4.77 nautical miles west of N41 Airport reference point.

Case Description for ASN 2020-ANE-1945-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.

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

Preliminary FAA study indicates that the above mentioned structure would:

have no effect on any existing or proposed arrival, departure, or en route instrument flight rules (IFR) operations or procedures.

have no effect on any existing or proposed arrival, departure, or en route visual flight rules (VFR) operations.

have no effect on any existing or proposed arrival, departure, or en route instrument/visual flight rules (IFR/VFR) minimum flight altitudes.

not exceed traffic pattern airspace

have no physical or electromagnetic effect on the operation of air navigation and communications facilities.

have no effect on any airspace and routes used by the military.

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 L Change 2, Obstruction Marking and Lighting, flag marker - Chapters 3(Marked)&12.

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.

This determination expires on 10/23/2021 unless extended, revised, or terminated by the issuing office.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed within 5 days after the temporary structure is dismantled.

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.



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

Aeronautical Study No.
2020-ANE-1946-OE

Issued Date: 04/23/2020

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 7
Location:	Watertown, CT
Latitude:	41-36-52.94N NAD 83
Longitude:	73-09-03.79W
Heights:	797 feet site elevation (SE) 22 feet above ground level (AGL) 819 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1946-OE

Signature Control No: 435146106-437410379

(TMP)

David Maddox

Specialist

Additional Condition(s) or Information for ASN 2020-ANE-1946-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 810 feet above mean sea level.

Location: The structure will be located 4.77 nautical miles west of N41 Airport reference point.

Case Description for ASN 2020-ANE-1946-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.

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

Preliminary FAA study indicates that the above mentioned structure would:

have no effect on any existing or proposed arrival, departure, or en route instrument flight rules (IFR) operations or procedures.

have no effect on any existing or proposed arrival, departure, or en route visual flight rules (VFR) operations.

have no effect on any existing or proposed arrival, departure, or en route instrument/visual flight rules (IFR/VFR) minimum flight altitudes.

not exceed traffic pattern airspace

have no physical or electromagnetic effect on the operation of air navigation and communications facilities.

have no effect on any airspace and routes used by the military.

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 L Change 2, Obstruction Marking and Lighting, flag marker - Chapters 3(Marked)&12.

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.

This determination expires on 10/23/2021 unless extended, revised, or terminated by the issuing office.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed within 5 days after the temporary structure is dismantled.

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.



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

Aeronautical Study No.
2020-ANE-1947-OE

Issued Date: 04/23/2020

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 HP
Location:	Watertown, CT
Latitude:	41-36-47.99N NAD 83
Longitude:	73-09-03.60W
Heights:	814 feet site elevation (SE) 22 feet above ground level (AGL) 836 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 (202) 267-4525, or david.maddox@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2020-ANE-1947-OE

Signature Control No: 435146108-437410381

(TMP)

David Maddox

Specialist

Additional Condition(s) or Information for ASN 2020-ANE-1947-OE

Proposal: To construct and/or operate a(n) Crane to a height of 22 feet above ground level, 810 feet above mean sea level.

Location: The structure will be located 4.77 nautical miles west of N41 Airport reference point.

Case Description for ASN 2020-ANE-1947-OE

Study is being requested in connection w/ a proposed solar facility consisting of solar panels and associated ground equipment. Please see uploaded PDF file for site layout and point locations.

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

Preliminary FAA study indicates that the above mentioned structure would:

have no effect on any existing or proposed arrival, departure, or en route instrument flight rules (IFR) operations or procedures.

have no effect on any existing or proposed arrival, departure, or en route visual flight rules (VFR) operations.

have no effect on any existing or proposed arrival, departure, or en route instrument/visual flight rules (IFR/VFR) minimum flight altitudes.

not exceed traffic pattern airspace

have no physical or electromagnetic effect on the operation of air navigation and communications facilities.

have no effect on any airspace and routes used by the military.

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 L Change 2, Obstruction Marking and Lighting, flag marker - Chapters 3(Marked)&12.

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.

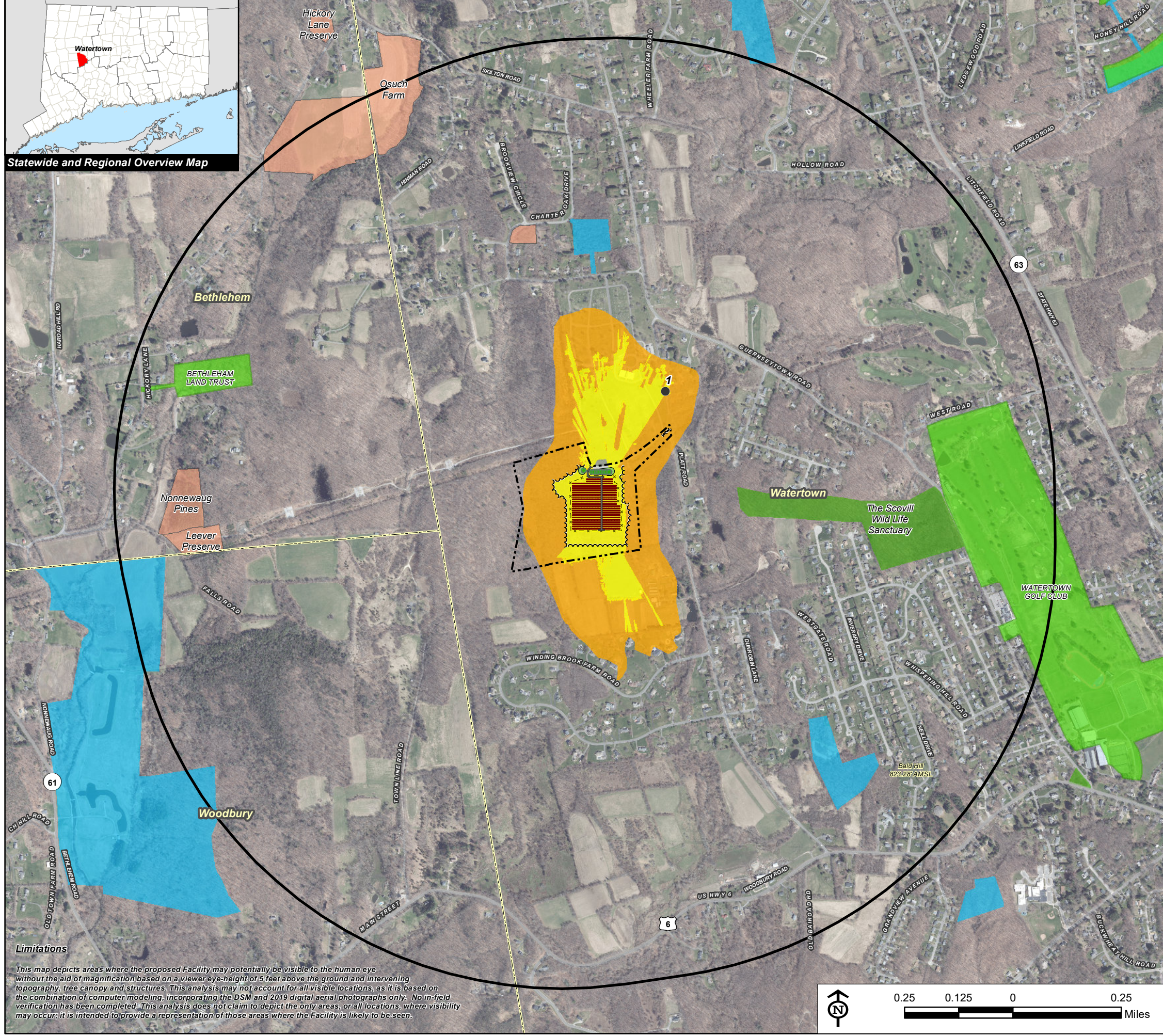
This determination expires on 10/23/2021 unless extended, revised, or terminated by the issuing office.

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed within 5 days after the temporary structure is dismantled.

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.

APPENDIX G

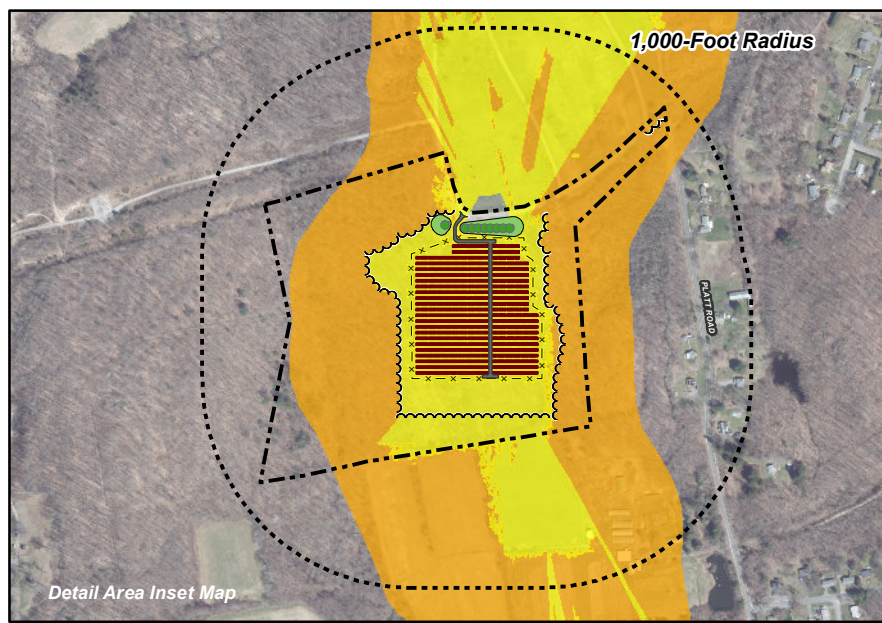
VIEWSHED MAPS AND PHOTO-SIMULATIONS



Statewide and Regional Overview Map

Limitations

This map depicts areas where the proposed Facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of 5 feet above the ground and intervening topography, tree canopy and structures. This analysis may not account for all visible locations, as it is based on the combination of computer modeling, incorporating the DSM and 2019 digital aerial photographs only. No in-field verification has been completed. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.



Detail Area Inset Map

Viewshed Analysis Map

Proposed Solar Facility
 Watertown Solar One
 Platt Road
 Watertown, Connecticut

Proposed solar panels to be mounted on approximate 10' AGL support structures. Proposed landscape screening to include 10' tall evergreens. Forest canopy height and topographic contours are derived from LiDAR data. Study area encompasses a 1-mile radius and includes 2,315 acres. Base Map Source: 2019 Aerial Photograph (CTECO) Map Date: July 2020

Legend

- Site
- Landscape Screening (Evergreens)
- Solar Modules
- Gravel Access Road
- Grass Berm
- Tree Line (Clearing Limit)
- Perimeter Fence
- Study Area (1-Mile Radius)
- Predicted Year-Round Visibility (44 Acres)
- Areas of Potential Seasonal Visibility (98 Acres)
- Municipal Boundary
- Photographic Locations (Taken on April 10, 2020)
- Trail
- Scenic Highway
- DEEP Boat Launches
- Municipal and Private Open Space Property
- State Forest/Park
- Protected Open Space Property**
- Federal
- Land Trust
- Municipal
- Private
- State

Data Sources:

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

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

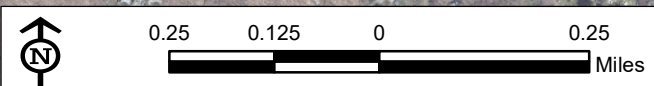
Dedicated Open Space & Recreation Areas
 Connecticut Department of Energy and Environmental Protection (DEEP): DEEP Property (May 2007; Federal Open Space (1997); Municipal and Private Open Space (1997); DEEP Boat Launches (1994)
 Connecticut Forest & Parks Association, Connecticut Walk Books East & West

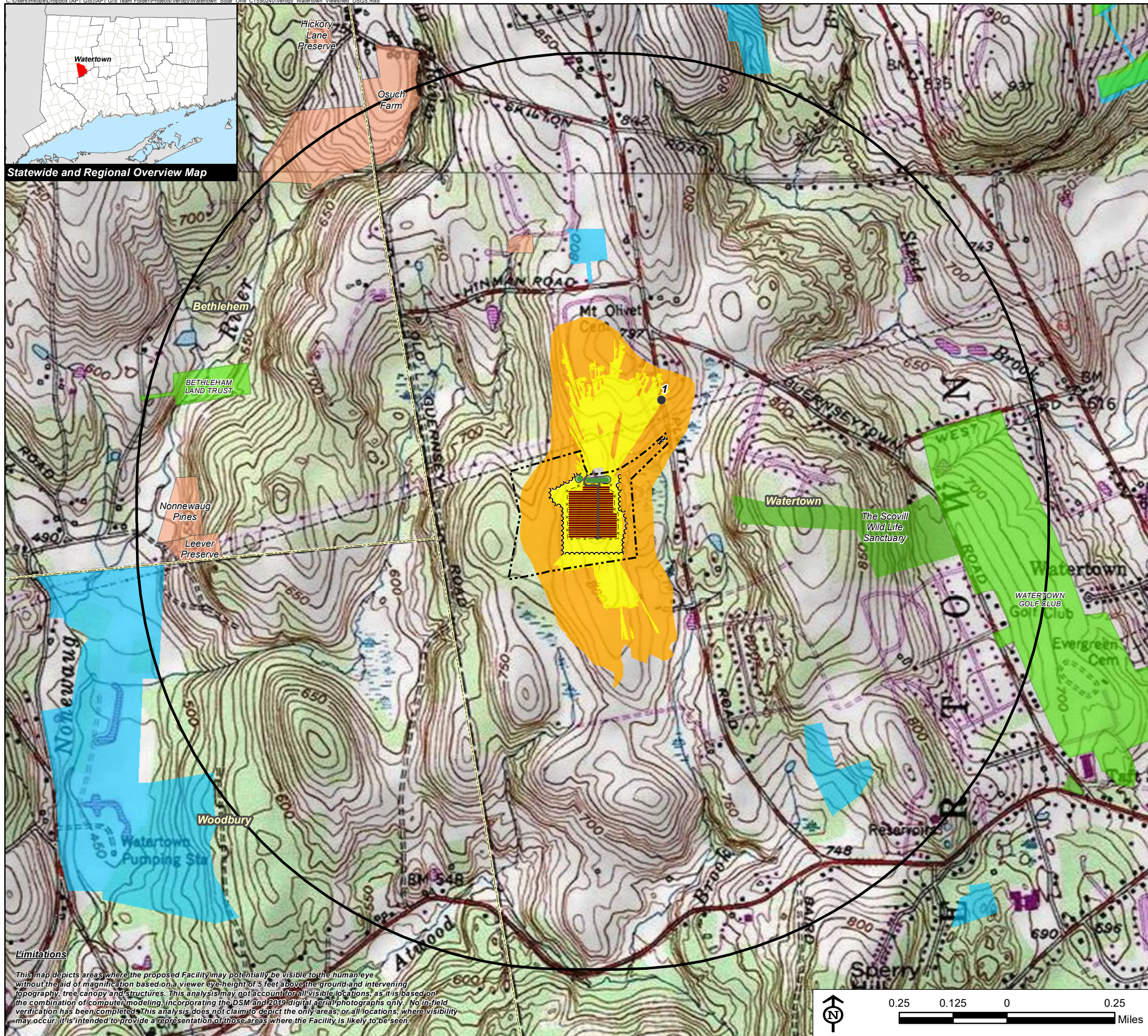
Other

CTDOT Scenic Strips (based on Department of Transportation data)

Notes

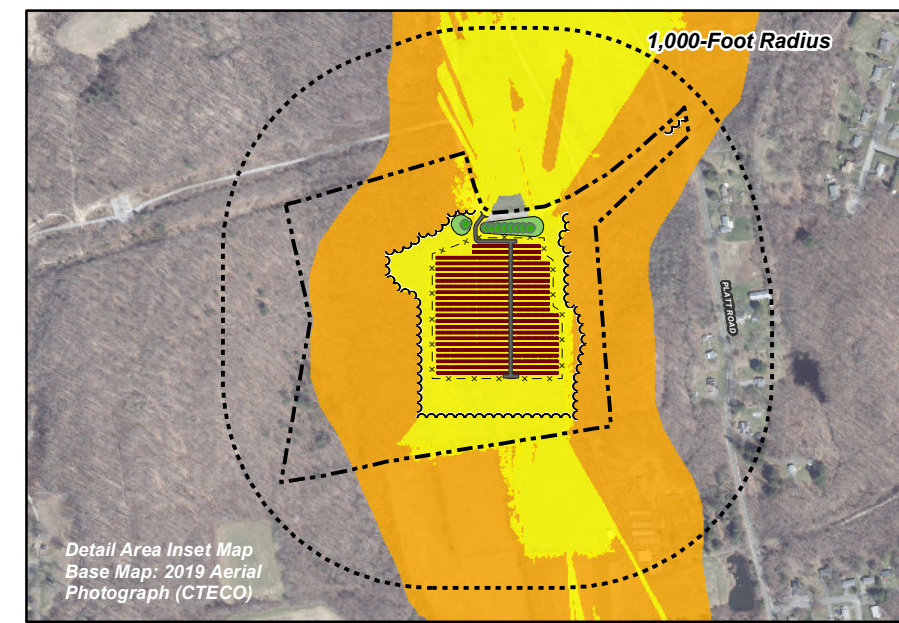
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Legend

- | | |
|---|--|
| Site | Photographic Locations (Taken on April 10, 2020) |
| Landscape Screening (Evergreens) | Trail |
| Solar Modules | Scenic Highway |
| Gravel Access Road | DEEP Boat Launches |
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Other

CTDOT Scenic Strips (based on Department of Transportation data)

Notes

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PHOTOGRAPHED ON 4/10/2020

EXISTING

PHOTO

1

LOCATION

PLATT ROAD

ORIENTATION

SOUTHWEST

DISTANCE TO SITE

+/- 0.24 MILE



PROPOSED

PHOTO

1

LOCATION

PLATT ROAD

ORIENTATION

SOUTHWEST

DISTANCE TO SITE

+/- 0.24 MILE



PHOTOGRAPHED ON 4/11/2017

EXISTING

PICTOMETRY OBLIQUE AERIAL IMAGERY





PROPOSED

PICTOMETRY OBLIQUE AERIAL IMAGERY

