

CS Energy, LLC
Petition No. 1345A

Interrogatories Connecticut Siting Council Set 1
Dated: July 20, 2020

EXHIBIT C

SPADEFoot TOAD MITIGATION PLAN



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

January 23, 2020

Mr. Dean Gustafson
All-Points Technology Corporation
3 Saddlebrook Drive
Killingworth, CT 06419
dgustafson@allpointstech.com

Project: Proposed North Stonington Center Solar Project (Formerly Pawcatuck Solar) in North Stonington, Connecticut
NDDB Final Determination No.: 201908729 (Preliminary Assessment No. 201607723)

Dear Dean Gustafson,

I have re-reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map provided for a proposed North Stonington Center Solar Project in North Stonington, Connecticut. As you are aware, according to our records there are extant populations of State Listed Species known to occur within or close to the boundaries of this property. The species include:

Amphibians

Scaphiopus holbrookii (Eastern spadefoot) – State Endangered

Mammals

Lasiurus cinereus (Hoary bat) - State Special Concern

Invertebrates

Calopteryx dimidiata (Sparkling Jewelwing) - Threatened

Margaritifera margaritifera (Eastern pearlshell) – Special Concern

Tree Roosting Bat Protection

Tree clearing should be completed during the hibernation or winter range period for bats. Tree clearing should be limited to between November 1st and March 30th. The implementation of this measure would be protective of hoary bat as well as other tree-roosting bat species. Additionally, large diameter coniferous and deciduous trees and wooded buffers adjacent to wetland areas should be maintained whenever possible. Bat houses must be installed in the area where trees will be removed and will help in the conservation of all tree roosting bats.

State Threatened *Calopteryx dimidiata* (Sparkling Jewelwing)

This aquatic damselfly inhabits streams and rivers with sandy bottoms. Suitable habitat for this species is found in the Pawcatuck River.

State Special Concern *Margaritifera margaritifera* (Eastern pearlshell):

The eastern pearlshell is a freshwater mussel found in streams and small rivers that support trout or salmon populations and exists in a variety of substrate. Suitable habitat for this species is found in the Pawcatuck River.

I concur with the following conservation measures you submitted to protect the damselfly and freshwater mussel from project impacts:

- A minimum 200-foot wide buffer is required between the Project’s limits of disturbance and the Pawcatuck River.
- There must be no tree clearing of the existing tree cover in this 200-foot wide buffer area (north of the river).
- A comprehensive sedimentation and erosion control plan should be developed and implemented.
- A stormwater management plan should be developed and implemented and must comply with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, 2004 Connecticut Stormwater Quality Manual and the DEEP Stormwater Management at Solar Farm Construction Projects, dated September 8, 2017.
- No direct discharges of stormwater (treated or untreated) should be directed to the Pawcatuck River.

State Endangered *Scaphiopus holbrookii* (Eastern Spadefoot):

The state endangered eastern spadefoot is one of the rarest amphibians in Connecticut. This toad is secretive in nature and its population fluctuations make assessments and protection of the species difficult. In Connecticut, this species has disappeared from central portions of the state and most formerly known extant populations are considered extirpated. The eastern spadefoot favor low lying areas associated with river valleys with sandy, well-drained soils. They are explosive breeders and exclusively use temporary ephemeral pools of water for breeding. The subject area (these project parcels) have been identified as providing suitable habitat for the eastern spadefoot. With that in mind, on December 30, 2019 The Connecticut Office of Policy and Management (OPM), in consultation with The Connecticut Department of Energy and Environmental Protection (DEEP), determined that that the proposed North Stonington Center Solar Project (Formerly Pawcatuck Solar) in North Stonington, Connecticut would result in an incidental taking of the State Endangered *Scaphiopus holbrookii* (eastern spadefoot) pursuant to Section 26-310 of the Connecticut General Statutes (CGS).

Pursuant to CGS Sec. 26-310(d), the Commissioner of Energy and Environmental Protection is required to provide North Stonington Center Solar, LLC with specific feasible and prudent measures and alternatives that must be implemented as part of the proposed project in order to ensure that the action does not appreciably reduce the likelihood of the recovery of the species.

The proposed actions have been planned to avoid, minimize and mitigate impacts to the “take” of eastern spadefoot. These specific conservation measures include:

- Habitat enhancement including a +/- 10/.5 acre “No Build Restrictive Zone” centered on the primary spadefoot use areas and habitat management measures (i.e. plantings) within a +/- 105 acres “Spadefoot Habitat Management Zone”.
- Breeding Pool Restoration including re-grading (to remove accumulated organics-manure) and re-contouring.
- Invasive Species Control within both “No Build Restrictive Zone” and “Spadefoot Habitat Management Zone”
- Monitoring and reporting of the eastern spadefoot population for 25 years with two, five year extension options totaling a maximum of 35 years. Monitoring must be overseen by a qualified herpetologist (Dennis Quinn in consultation with All-Points Technology Corp., P.C.). Reports will be sent to the NDDDB Program (CTDEEP-Wildlife Division, deep.nddbrequest@ct.gov).
- Monitor Reports will contain data on newly captured and recaptured spadefoot. The specific details about the reporting are attached to the Incidental Take Report submitted September 2019 by Dennis P. Quinn (CTHerpConsultant, LLC and Dean Gustafson (All-Points Technology Corp., P.C.).

The details of these conservation actions (above) are outlined in the “Incidental Take Report for the State Endangered *Scaphiopus holbrookii* (eastern spadefoot)” prepared by Dennis P. Quinn of

CTHerpConsultant, LLC and Dean Gustafson of All-Points Technology Corp., P.C. dated September of 2019 and amended with email with details on the Monitoring and Reporting (data and reporting protocols) on October 8th, 2019. In addition, North Stonington Center Solar, LLC will work with CTDEEP to ameliorate any problems that may arise.

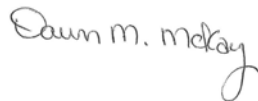
Failure to comply with conditions set forth in “Incidental Take Report for the State Endangered Scaphiopus holbrookii (eastern spadefoot)” prepared by Dennis P. Quinn of CTHerpConsultant, LLC and Dean Gustafson of All-Points Technology Corp., P.C. dated September of 2019 and amended with email with details on the Monitoring and Reporting (data and reporting protocols) on October 8th, 2019 or within this document may result in permit revocation and/or civil penalties levied against the responsible party.

This determination is good for two years. Please re-submit a new NDDB Request for Review if the scope of work changes or if work has not begun on this project by January 16, 2022.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection’s Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits.

Please contact me if you have further questions at (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base.

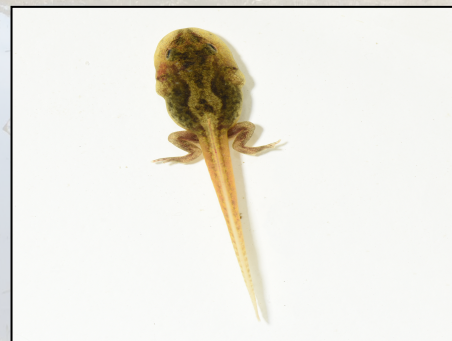
Sincerely,



Dawn M. McKay
Environmental Analyst 3

North Stonington Solar Center, LLC (formerly known as Pawcatuck Solar Center LLC)

Incidental Take Permit Application
Eastern Spadefoot (*Scaphiopus holbrookii*)



September 2019
North Stonington, CT

Prepared for:
Connecticut Department of Energy and Environmental Protection

On Behalf of:
Lincoln Clean Energy, LCC

Prepared by:
Dennis P. Quinn - CTHerpConsultant, LLC
and
Dean Gustafson - All-Points Technology Corp., P.C.

Project Narrative

1. Project Background

1. Brief description of project

North Stonington Solar Center, LLC (formerly known as Pawcatuck Solar Center, LLC) assembled four parcels totaling 353 acres for this project, of which 144 acres will be within the limits of disturbance for project staging and construction, and, of these, 118 acres will host the actual facility. The 15-MW solar generating facility, employing 61,000 photovoltaic panels, is proposed to be sited on a mixture of agricultural and forest land south of Interstate 95, northwest of the Pawcatuck River and east of Route 49 in the southeastern corner of North Stonington.

2. Identify need for project

North Stonington Solar Center, LLC submitted this 15 MW project into the Small Scale Clean Energy Request for Proposals (RFP) issued by DEEP. Connecticut solicited and selected renewable energy projects issued pursuant to Section 1(b) of Connecticut Public Act 15-107, An Act Concerning Affordable and Reliable Energy (P.A. 15-107) and Sections 6 and 7 of Connecticut Public Act 13-303, An Act Concerning Connecticut's Clean Energy Goals (P.A. 13-303). Bringing grid-scale renewable energy projects on line is an important step forward towards a cheaper, cleaner, and more reliable energy future for the ratepayers of Connecticut. In the 2018 legislative session, Connecticut committed to procuring 40% of its electricity from Class I renewable sources by 2030. Connecticut also committed to a mid-point reduction of carbon emissions of 45% below 2001 levels by 2035 on the way to attaining the state's longer term goal of an emissions reduction of 80% below 2001 levels by 2050. Grid scale renewable energy projects are essential to maintaining compliance with these statutory commitments. In reviewing the projects submitted pursuant to this RFP, DEEP applied both a quantitative and a qualitative analysis to arrive at a final score for each project. After reviewing all the projects submitted through the RFP process, DEEP selected the North Stonington Solar Center project as one of the projects authorized to negotiate a long-term power purchase agreement with the utilities, Eversource Energy and The United Illuminating Company.

3. Identify the regional or state-wide significance of the project

The project would be a distributed energy resource facility as defined in CGS §16-1(a)(49). CGS §16a-35k establishes the State's energy policy, including the goal to "develop and utilize renewable energy resources,

such as solar and wind energy, to the maximum practicable extent.” The 2018 Connecticut Comprehensive Energy Strategy emphasizes growth of renewable and zero-carbon generation in the state and region. The proposed facility will contribute to fulfilling the State’s Renewable Portfolio Standard as a zero emission Class I renewable energy source.

A public benefit exists if a project “is necessary for the reliability of the electric power supply of the state or for a competitive market for electricity.” CGS § 16-50p(c)(1). The Project will generate much of its power at peak times, when the demand for electricity is greatest, and will thereby provide the electrical system with flexible peaking capacity that is necessary to keep the electrical grid stable.

Further, the Project supports the State’s energy policies as set forth in CGS § 16a-35k, including the goal to “develop and utilize renewable energy resources, such as solar and wind energy, to the maximum practicable extent.” The Project will provide clean, renewable, solar-powered electricity and assist the State in meeting its legislatively mandated obligations under the Renewable Portfolio Standard.

The Project will also assist the State of Connecticut in reducing greenhouse gas emissions and reducing criteria air emissions pollutants associated with the displacement of older, less efficient, fossil fuel generation. As part of larger state, national and global strategies, reductions in greenhouse gas emissions from this Project will have long-term secondary biological, social and economic benefits. Similarly, the advancement of renewable resources at a distributed level contributes to our Nation’s desire for energy independence and reduces our dependency upon foreign countries where geo-political issues may not align with National policy or the virtues of democracy. The Project will also hire local labor, as practical, and be a source of increased revenue for local businesses during construction.

2. Site Description

1. Identify current usage, land cover, and habitat-types present

The ±225-acre Site is located east of Pendleton Hill Road (State Route 49), south of I-95, and north of the Pawcatuck River in North Stonington, New London County, Connecticut. The Site is identified by the North Stonington Tax Assessor as four separate and abutting parcels, including:

- Parcel 123-0140 – Boombridge Road - 62.62 acres
- Parcel 123-3161 – 36 Ella Wheeler Road - 13.31 acres
- Parcel 123-3694 – Ella Wheeler Road - 180.42 acres
- Parcel 126-0006 – 36 Pendleton Hill Road - 97.11 acres

The majority of the Project Area is undeveloped, open agricultural land. Intermixed between and surrounding the open agricultural land (most recently used for growing corn) are areas of forested uplands and wetlands. Wetlands on the Site consist of a complex of broad forested wetlands, interior intermittent and perennial watercourses, and isolated depressional pocket wetlands. Forested uplands are comprised of a mix of deciduous and coniferous forest types, primarily located within the eastern extents of the Site. The Site generally drains north to south ranging from moderate to steep slopes. The far southern boundary of the Site consists of an electrical overhead transmission corridor and the Pawcatuck River. The Site is entirely undeveloped with no structures.

Land use in the area of the Site consists of large wooded tracts and agricultural fields, the Interstate transportation corridor, commercial and industrial development, a gravel pit, sparse residential development, and open space. Refer to the attached Existing Site Conditions & Topography (Drawing No. C-101) dated April 11, 2018.

3. Proposed Activities

1. Provide a more detailed description of proposed activities, highlighting those which may require State permits.

The Project will consist of the installation of approximately 61,000 PV modules and associated ground equipment, upgrading and installation of an access road, installation of perimeter maintenance/access roads and installation of electrical interconnection facilities. In totality, the “Project Area”, representing the limits of disturbance, would encompass approximately 144 acres to accommodate the Solar Facility, temporary construction staging areas, access and peripheral tree-free zones (to mitigate shading effects). This will require clearing of approximately 98 acres of existing forest with 14 of those acres restricted from grubbing activities to maintain the woody understory and 8 of those acres subject to selective tree removal. Upon completion, the fence-enclosed Solar Facility will comprise approximately 118 acres.

A petition for a declaratory ruling was submitted in 2018 to the Connecticut Siting Council for the proposed Project. The Connecticut Siting Council, at a public meeting held on October 25, 2018, considered and ruled that the Project meets air and water quality standards of Department of Energy and Environmental Protection and would not have a substantial adverse environmental effect, and pursuant to Connecticut General Statutes § 16-50k, would not require a Certificate of Environmental Compatibility and Public Need.

The Project requires a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities from DEEP.

This application will be filed once the NDDB Final Determination No. is issued.

The Project as currently designed has a relatively small direct wetland impact associated with a narrow wetland crossing to access the southwestern most solar field, resulting in $\pm 1,650$ square feet of permanent wetland impact. As a result, the Project will require authorization of the proposed wetland impact from the U.S. Army Corps of Engineers New England District (“Corps”). The Project would be eligible under the Corps Connecticut General Permits, likely as a Self-verification Notification Form (“SVNF”) process. North Stonington Solar Center, LLC has requested from the Corps a Jurisdictional Determination (“JD”) and is currently waiting for an Approved JD from the Corps before proceeding with the SVNF submission.

4. Status of Environmental Impact Evaluation (EIE)

1. Identify whether the proposed actions require an EIE under the Connecticut or National Environmental Policy Act (CEPA or NEPA, respectively). Cite existing EIE’s for the project.

No EIE is required for this project.

5. Permit Status

1. Identify State permit(s) required to perform the proposed actions.

The Project requires approval from the Connecticut Siting Council. A General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities is also required from DEEP.

2. Identify the current status of the permit application(s)?

The Connecticut Siting Council approved of the project on October 25, 2018, ruling that the Project meets air and water quality standards of DEEP and would not have a substantial adverse environmental effect, and pursuant to Connecticut General Statutes § 16-50k, would not require a Certificate of Environmental Compatibility and Public Need.

The General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities will be filed once the NDDB Final Determination No. is issued.

6. Funding Sources

1. Highlight funding sources administered by the State of Connecticut.

No state funding sources are proposed to be used for the Project. All funding will be secured by North Stonington Solar Center, LLC from private institution(s).

2. Federally and State Endangered, Threatened, and Special Concern Species

Sparkling Jewelwing (*Calopteryx dimidiata*): The jewelwing is an aquatic damselfly that inhabits sandy bottomed streams and rivers. The species is known to occur in the Pawcatuck River¹. No suitable habitat exists within the interior portions of the Site, including the Project Area.

This riverine species is potentially present within the Pawcatuck River which lies along the southern Site boundary. To prevent impacts to this species, and to the river ecosystem as a whole, a minimum 200-foot wide buffer between the Project's limits of disturbance and the river is provided. No clearing of the existing tree cover in this buffer area north of the river is proposed. The footprint of Project development is confined within the existing cornfield limits ± 280 feet north of the river at its closest point with the limit of disturbance located ± 240 from the river. In addition, a phased construction sequence, comprehensive sedimentation and erosion control plan and stormwater management plan that complies with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*, 2004 *Connecticut Stormwater Quality Manual*, and the DEEP *Stormwater Management at Solar Farm Construction Projects*, dated September 8, 2017 is provided to ensure that water quality of receiving wetlands is not impaired. Please note that no direct discharges of treated stormwater are proposed to the Pawcatuck River or to any of its tributaries. These measures will ensure that the NSSC project will not result in any adverse impacts to water quality in the Pawcatuck River and therefore the project would not result in an adverse effect to sparkling jewelwing.

Eastern Pearlshell (*Margaritifera margaritifera*)²: The eastern pearlshell is listed as a species of special concern in Connecticut. Suitable habitat for this species is found in the Pawcatuck River. The eastern pearlshell is a freshwater mussel found in streams and small rivers that support trout or salmon populations and exists in a variety of substrate. This species is not found in lakes or ponds. The eastern pearlshell is found in most major watersheds in Connecticut, though it is most common in the northern and northwestern parts of the State. The scarcity and continual loss of cold-water habitat in the State contribute to its rarity. It is more common in

¹ Wagner, D.L. and Thomas, M.C. The Odonata Fauna of Connecticut. Journal of American Odonatology. Volume 5, Number 4, 30 July 1999.

² Nedeau, E.J. and Victoria, J. A Field Guide to Freshwater Mussels of Connecticut. Connecticut Department of Environmental Protection, Bureau of Natural Resources, Wildlife Division.

northern New England where there are more cold-water streams and rivers. Its host fish include Atlantic salmon, brook trout and brown trout.

This riverine species is potentially present within the Pawcatuck River which lies along the southern Site boundary. To prevent impacts to this species, and to the river ecosystem as a whole, a minimum 200-foot wide buffer between the Project's limits of disturbance and the river is provided. No clearing of the existing tree cover in this buffer area north of the river is proposed. The footprint of Project development is confined within the existing cornfield limits ± 280 feet north of the river at its closest point with the limit of disturbance located ± 240 from the river. In addition, a phased construction sequence, comprehensive sedimentation and erosion control plan and stormwater management plan that complies with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, 2004 Connecticut Stormwater Quality Manual, and the DEEP Stormwater Management at Solar Farm Construction Projects, dated September 8, 2017 is provided to ensure that water quality of receiving wetlands is not impaired. Please note that no direct discharges of treated stormwater are proposed to the Pawcatuck River. These measures will ensure that the NSSC project will not result in any adverse impacts to water quality in the Pawcatuck River and therefore the project would not result in an adverse effect to eastern pearlshell.

Red Bat (*Lasiurus borealis*)³: The red bat is a tree roosting bat in summer, utilizing the dense foliage of tree crowns or shrubs. Found in forests, open cultivated rural areas, and small towns, the red bat uses a variety of hardwood and softwood habitats and features, especially still water, roads and trails. Red bats are primarily solitary roosters and can be found roosting and feeding around forest edges and clearings. Larger diameter trees (12-inch DBH and larger) are more valuable to these bats, particularly trees that have loose, rough bark such as maples, hickories, and oaks. Suitable habitat for this species, including those used for both summer roosting and feeding, occurs throughout the Site.

Potential impacts to red bat are proposed to be mitigated through a timing restriction for tree clearing activities: tree cutting would be conducted from August 15th through April 30th, during the red bat's non-roosting and hibernation periods, when roosting bats would not be present on the Site. As a result, no adverse impact to red bat would occur.

³ Degraaf, R.M. and Yamasaki, M. 2001. New England Wildlife: habitat, natural history and distribution.

1. Species Information

1. Identify species targeted for field surveys

Eastern Spadefoot (*Scaphiopus holbrookii*)

2. General species' biology, ecology, range, site requirements, etc.

The Eastern Spadefoot (*Scaphiopus holbrookii*), the only member of the spadefoot family (Scaphiopodidae) east of the Mississippi River, is among the rarest amphibians in the northeastern United States. It is listed as Endangered under Connecticut's Endangered Species Act and designated as Most Important in Connecticut's Wildlife Action Plan for Species of Greatest Conservation Need (CT DEEP 2015). New England populations are scattered and disjunct, and typically found in low elevation river valleys with sandy, well-drained soils. Some of these already localized populations have been extirpated, presumably related to urban/suburban development (Klemens 1993). These extirpations likely resulted from impacts to their breeding pools, which are often not afforded wetland protection status due to their highly ephemeral nature and difficulty in detecting breeding activity of spadefoots. In eastern Connecticut spadefoot locations coincided with Hinckley Soils and elevations below 200 feet with two notable exceptions in the towns of Lisbon and Griswold where elevations are greater than 300 feet (Moran and Button 2011, Klemens 1993, D. Quinn, observations, 2016). Hinckley soils are sandy, gravelly, and well-drained (NRCS, 2008), characteristics that are consistent with reports of soil types preferred by spadefoots.

Data on the movement patterns and habitat use/selection of spadefoots in the Northeast are sparse with a few exceptions, most notably Ryan *et al.* (*in preparation*) and Timm *et al.* (2014). Timm *et al.* (2014), found individuals selecting areas closer to deciduous shrub edges and areas with greater percent cover of low growing shrub species. Similar trends in habitat selection were found by Ryan *et al.* (*in prep*), with burrow locations in, or at the edge of, open-canopy cover types with open soils and nearby patches of dense vegetation having soil temperatures warmer than those of randomly selected locations nearby. Timm *et al.* (2014), attributes habitat preferences to individuals seeking out locations that provide suitable burrowing substrates, cool and moist subterranean conditions, ample prey availability and protection from predators during nighttime foraging forays. Burrowing observed by Ryan *et al.* (*in prep*), was consistent with Jansen *et al.* (2001) experimental selection of substrates, where spadefoots burrowed primarily in bare, sandy soils avoiding grassy areas all together presumably due to dense root systems prohibiting burrow excavation. Timm and Ryan documented similar trends in burrow use where on average 3.6 (range 1 to 8) and 3 (range 1 to 7) unique burrows were selected by individual spadefoots during the

course of their studies. In addition, both studies showed similarities in duration of burrow use with many spadefoots using a single burrow for greater than 30 consecutive days and occasionally returning to previously used burrow locations. The selection of new burrow locations was often associated with nocturnal rain events (Timm *et al.*, 2014 and Ryan *et al.*, (in prep)). Timm *et al.* (2014), documented burrow depths up to 0.96 meters below the surface prior to November, no data on burrow depths were reported during winter months. Maximum Convex Polygon (MCP) home-range sizes for individuals were reported from 45–21,108 m² (mean = 4,729 m², max 61,391 m²) with home-range lengths of 22.0–455.9 m (mean = 157.6 m) reported by Timm *et al.* (2014). Ryan *et al.* (in prep), observed mean maximum straight-line distances of 155 ± 29 m (range 1–724 m) from the original point of release. Timm *et al.* (2014) reported average migratory distances from the closest breeding wetland of 130.4m. Timm *et al.* (2014) and Paton *et al.* (2003) noted these migratory distances from wetlands as critical in the protection of amphibian populations, stating that the closer breeding pools are to roads, the greater the likelihood of populations and metapopulations being impacted by road mortality. Timm *et al.* (2014) associated the lack of breeding in wetlands within close proximity to park roads within their study site to be a result of past mortality events reducing spadefoot population size and the primary cause of local metapopulation extirpation at their site.

CT DEEP 2015. Connecticut Species of Greatest Conservation Need: Wildlife Action Plan. State of Connecticut Department of Environmental Protection, Bureau of Natural Resources.

Jansen, K. P., A. P. Summers, and P. R. Delis. 2001. Spadefoot toads (*Scaphiopus holbrookii holbrookii*) in an urban landscape: effects of nonnatural substrates on burrowing in adults and juveniles. *Journal of Herpetology* 35:141–145.

Klemens, M. W. 1993. Amphibians and reptiles of Connecticut and adjacent regions. State Geological and Natural History Survey of Connecticut, Bulletin No. 112. Connecticut Department of Environmental Protection, USA.

Moran, M. and C. E. Button. (2011). A GIS model for identifying eastern spadefoot toad (*Scaphiopus holbrookii*) habitat in eastern Connecticut. *Applied Geography* 31 (2011) 980-989.

Paton, P. W. C., B. C. Timm, and T. A. Tupper. 2003. Monitoring pond-breeding amphibians: a protocol for the long-term coastal ecosystem monitoring program at Cape Cod National Seashore. National Park Service Technical Report. 113 pp.

Ryan, K. J., D. P. Quinn, and A. J. K. Calhoun. (In Prep.) Movement Patterns and Terrestrial Habitat Selection of Eastern Spadefoots (*Scaphiopus holbrookii*) at the Northern Limit of Their Range.

Timm, B. C., K. McGarigal, and R. P. Cook. (2014). Upland movement patterns and habitat selection of adult Eastern Spadefoots (*Scaphiopus holbrookii*) at Cape Cod National

2. Species' abundance and distribution at the site
 1. Include text descriptions and maps

To date a total of 28 night-time visual encounter eye-shine surveys have been conducted, totaling a combined 164 survey hours (528 person hours). A total of 189 spadefoots (18 adults, 10 sub-adults, 47 juveniles and 114 metamorphs) have been captured during survey efforts. Of these 189 spadefoots a total of 169 have been implanted with PIT-tags for long-term monitoring and 11 have been radio-tracked to determine population range, individual home-range sizes and habitat preference. One sub-adult was collected and deposited in American Museum of Natural History as a site voucher specimen for this site (MWK No. 20034 under Permit No. 0120004). Three additional adult spadefoots have been confirmed dead, the cause of death for one is unknown but the other two deaths have been attributed to agricultural activities. To date a total of 130 individual spadefoots are known to be secured in the exclusionary safety pen. The population range covered an area within a Maximum Convex Polygon (MCP) of 24 acres with individual MCP home-ranges averaging 0.87 acres (min 0.04, max 2.97). Adults dispersed from the edge of the breeding pool an average of 178 meters (min 49/max 269m). Refer attached Eastern Spadefoot Distribution Map 2017 through 2019.

The use of four primary upland habitats were documented during the radio-telemetry study: agricultural (7.8%), forest (19.86%), agricultural/forest edge (56.03%) and forest/access road edge 16.31%). Spadefoots were documented in edge habitat to a much greater extent than any other available habitat, with a combined edge habitat use of 72.34%.

3. Potential Impacts to State-Listed Species
 1. Discuss how proposed actions will impact State-listed species.

There is the potential that spadefoots may be impacted during the site preparation and installation of solar arrays during the construction phase of the project. No impacts are anticipated after construction is complete.

2. Estimate the number, percentage, or area of State-listed taxa that will be impacted.

It is estimated that 25% or less of the population will be impacted during the construction phase of the project, with most impacts occurring to younger metamorph and juvenile individuals.

4. Discussion of ‘feasible and prudent alternatives’

1. Identify alternatives, including a ‘no build’ option, and why these were not selected.

The site selection for the Project was based on a detailed evaluation of the following key criteria:

- Site suitability (solar resource size, grade and surrounding topography);
- Site availability (ability to lease or purchase land);
- Proximity to critical infrastructure (suitable electrical grid access); and,
- Congruence with local zoning and planning.

Once the initial evaluation was completed, a preferred site was selected by the Petitioner for development and preliminary due diligence work was initiated. The development plan included two parcels totaling 278 acres on Ella Wheeler Road owned by Congeries Realty, Inc., a subsidiary of the Mashantucket Pequot Tribal Nation (MPTN). These parcels are adjacent to a suitable interconnection substation, have willing landowners, and were thought to have enough suitable land to build the Project. The use of this site for a solar array represents a comparable increase of tax revenue for the Town of North Stonington (“Town”) and favorable low-impact industrial development of the land as opposed to other proposed uses including an amusement park, shopping center, or golf course.

A “no build” option would have limited DEEP’s choice of options, which included reviewing over 100 projects and evaluating them against its established criteria that resulted in the selection of the Project. This Project was selected by DEEP along with 24 other projects as part of the DEEP’s Small Scale Clean Energy Request for Proposals. Therefore, the “no build” option was not considered a viable alternative since it would not contribute to advancing the State’s clean energy goals.

Prior to award from DEEP, North Stonington Solar Center, LLC (then known as Pawcatuck Solar Center LLC) commissioned All-Points Technology Corporation (APT) in 2016 to perform a Critical Environmental Issues Analysis (CEIA) of two parcels. This CEIA indicated that finding the approximately 120 acres needed for solar within the two MPTN parcels alone would be challenging due to the presence of a vernal pool, multiple wetlands, challenging topography, and the potential presence of the state endangered Eastern Spadefoot Toad. North

Stonington Solar Center, LLC secured a lease option on additional lands across I- 95 to the north of the site but, after commissioning a separate CEIA, found this additional land to be unusable due to extensive wetlands and multiple vernal pools. North Stonington Solar Center, LLC employed real estate brokers but was unable to find other suitable properties for use as a part of the Project. As such, North Stonington Solar Center, LLC expanded its lease option with MPTN to include two additional adjacent parcels owned by Congeries Realty and continued efforts to work within the bounds of the 4 parcels outlined herein.

Project conceptual designs were evaluated early in the preliminary development phase that resulted in significant impacts to spadefoot toad habitat zone. Through an iterative design process in consultation with spadefoot toad survey results, the solar development footprint was modified by providing for a successively larger spadefoot no build restrictive zone until the currently designed Project was selected. To offset the resulting loss of energy output, additional buildable land was obtained and a more efficient solar layout was selected that further minimized encroachment into critical spadefoot toad habitat.

2. If plans have already been altered to minimize impacts, state how this was accomplished

An earlier development plan for the Project would have directly impacted the spadefoot toad breeding pool and the majority of its surrounding habitat. Refer to the attached Array Plan (Drawing No. W-111) dated December 7, 2016.

Once the 2017 and 2018 spadefoot toad surveys confirmed presence and tracking data was analyzed to understand population demographics, guidance was provided to the design team to modify the solar field layout and develop construction phasing and mitigation initiatives to protect this species. These impact avoidance and conservation initiatives resulted in a significant change to the solar facility design, resulting in a no build restrictive zone surrounding the known spadefoot habitat. Refer to attached Array Plan (Drawing No. WJ111) dated October 12, 2018.

It should also be clarified, that during the initial studies conducted to guide the solar field layout the study team identified many impacts to the spadefoots as a result of the current land use practices. This project presents the unique opportunity to improve current land use practices that are posing significant threats to the long-term survivorship of this spadefoot population.

During the 2017 field season the study team identified many agricultural activities including the broadcast application of herbicidal sprays,

stockpiling of manure and site grading that impacted all life-stages of the spadefoot, but most significantly reproduction and larval development. These impacts first presented themselves during the late spring when the low-growing cover crop within the 100 acres of agricultural land was sprayed with herbicide prior to the June 29th sowing of corn. Additionally, chicken manure stockpiled at various locations across the site was broadcast over the fields prior to this planting. One of these stockpiles was located just west of the breeding pool and up until it's removal, leached into the breeding pool already occupied by developing spadefoot tadpoles. Although the 2017 breeding was somewhat successful, the over-all water quality was severely compromised, resulting in a lower than expected survival rates of developing tadpoles and high levels of toadlet mortality observed on the fringes of the breeding pool.

Further impacts to the breeding pool were observed on September 1st, when additional stockpiling of chicken manure began. The majority of this manure was stockpiled just north of the breeding pool between the active agricultural field and the forest. In the process of stockpiling this manure, the breeding pool was compromised by repeated traffic from agricultural equipment, leaving tire ruts within the pool depression. Additionally, the depression of the pool was inadvertently filled with chicken manure during this process. Although the manure was immediately removed from the breeding pool on September 29th and again in March prior to the 2018 breeding season, this impact coupled with the tire ruts, left the breeding pool hydrologically compromised and marginally suitable for reproduction. The study continued to closely monitor this pool in 2018 and to prevent further impacts during the 2018 field season the pool boundaries were marked with flags and the farmer was notified to avoid activities within this area. Although an additional successful breeding occurred in the already compromised breeding pool during the spring of 2019, even with continued coordinating efforts with the farmer, this breeding pool was completely graded during the 2019 planting season. The breeding pool referenced in all prior reporting no longer exists on site. The reconstruction of this breeding pool is a priority mitigation item to ensure the spadefoots have suitable breeding habitat prior to the 2020 activity season.

It is the position of the study teams Herpetologist Dennis Quinn that by improving current site conditions through less impactful land use practices, creation and enhancement of available suitable habitats, and reconstructing the breeding pool through engineered methods, the solar facility being proposed by North Stonington Solar Center, LLC will reduce the current direct impacts on all life stages of the eastern spadefoot and enhance the overall habitat quality for this species.

5. Avoidance/Mitigation

1. Describe how proposed design and work methodology will avoid or reduce impacts to State-listed species (this includes protection measures during the course of construction). Provide maps as appropriate.

Project conceptual designs were evaluated early in the preliminary development phase that resulted in significant impacts to the spadefoot habitat zone. Through an iterative design process in consultation with spadefoot survey results, the solar development footprint was modified by providing for a successively larger spadefoot no build restrictive zone until the currently designed Project was selected. To offset the resulting loss of energy output, additional buildable land was obtained and a more efficient solar layout was selected that further minimized encroachment into critical spadefoot habitat. Refer to the attached Array Plan (Drawing No. W-111) dated December 7, 2016.

Additionally, a section of solar panels to the east of the breeding pool was designed to maintained a wider 20' spacing to evaluate if panel spacing influences use of solar fields by spadefoots. Array Plan (Drawing No. WJ111) dated October 12, 2018.

To mitigate for direct mortality, prior to construction, spadefoots are being captured and moved into an exclusionary refuge pen approximately 10 acres in size. This refuge pen covers the same approximate footprint of the No Build Restrictive Zone, but is slightly smaller to allow the farmer access to agricultural fields prior to construction. The refuge pen contains all the primary habitats and areas spadefoots were detected in during the 2017, 2018 and 2019 monitoring seasons (including the breeding pool which will be reconstructed). Since its installation the study team has relocated 49 spadefoots into the refuge area. To date a total of 130 spadefoots are known to occur in the refuge area: including the 49 relocated individuals and 68 individuals already residing inside the refuge area). These relocation efforts will continue up to and throughout the construction phase. All spadefoots captured receive a PIT-tag for future identification and to help evaluate the success of the short and long-term monitoring initiatives.

2. Describe mitigation areas and provide detailed methodologies for site preparation and conservation activities (if available, include citations regarding successful protection or conservation of the State-listed species or related taxa)

Eastern Spadefoot Impact Mitigation Measures

The most significant aspect of the mitigation plan is habitat enhancement and long-term monitoring of spadefoot toad. This effort includes reconstruction of the breeding pool; re-planting native vegetation within a

±10.5 acre “no build restrictive zone” centered on the primary spadefoot use areas; habitat management measures (i.e., plantings) within an ±105-acres “Spadefoot Habitat Management Zone”; and, monitoring.

The breeding pool restoration activities will include the following:

1. The breeding pool will be re-graded to remove accumulated organics (i.e., manure deposits) and re-contoured. Contouring will be determined through engineered means taking into account the micro-watershed topography, vegetation and soils to achieve the highly specialized ephemeral hydrology spadefoots require for larval development. The pool is being designed to hold water for a 5 week period after a rainfall event of 1 or more inches of rain (the amount of rain that typically stimulates spadefoot breeding activities and hydroperiod for successful tadpole development). The pool will have an overflow to make sure the pool doesn't hold water for longer than 8 weeks, to prevent breeding of odonates.
2. Between April and October of the construction year, the breeding pool will be planted with low growing native herbaceous plants that tolerate full sun and soils that range from moist to temporarily inundated (up to four weeks). The native soils present are moderately-well drained. The proposed plantings will include plants with an indicator status of Facultative (“FAC”) to Facultative Wetland (FACW).
3. If a breeding event occurs prior to planting, temporary structure for egg mass attachment will be placed in the pool and plantings will be delayed until after larval emergence.
4. It is anticipated that the size of the engineered breeding pool will be similar to the documented pool mapped in the spring of 2017 at around ±3,887 square feet. Two-inch plugs are proposed to be planted to re-vegetate the newly reconstructed breeding pool. The total estimate of plantings proposed is approximately 600. The locations of the plantings will be field determined by Dennis Quinn and/or the supervising wetland scientist.
5. Plant species may be adjusted as needed by Dennis Quinn or the supervising wetland scientist.
6. Rainfall and the associated hydrology of the breeding pool will be monitored using digital monitoring meters.

Spadefoot Breeding Pool Plantings - Total 600 Live Plugs			
Common Name	Scientific Name	Plant	Ind. Status
New England Aster	<i>Aster novae-angliae</i>	2" plug	FACW-
Soft Rush	<i>Juncus effuses</i>	2" plug	FACW+
Blue Vervain	<i>Verbena hastata</i>	2" plug	FACW
Hop Sedge	<i>Carex lupulina</i>	2" plug	FACW+
Grass-leaved Goldenrod	<i>Euthamia graminifolia</i>	2" plug	FAC
Path Rush	<i>Juncus tenuis</i>	2" plug	FAC-
Three Square Bulrush	<i>Schoenoplectus pungens</i>	2" plug	FACW

Habitat Enhancement and Creation:

The Spadefoot Habitat Management Zone (± 105 acres) will consist of early old field habitat (herbaceous cover with scattered shrubs) and be established as follows:

1. Plants with an indicator status of Upland (UPL) to FAC will be utilized. Herbaceous plants will consist of grasses and wildflowers. Clump-forming warm season grasses have been selected to promote areas of bare soil. Wildflowers include native host species intended to attract Lepidoptera and other insects. Shrub species will be low-growing.
2. Herbaceous cover will be established using native seed mixes. A custom seed mix will be developed in consultation with New England Wetland Plants, Inc. based on the planting palette. In some areas the stock New England Native Warm Season Grass Mix and New England Wildflower Mix, a product of New England Wetland Plants, Inc. will be utilized.
3. No Build Restrictive Zone: The “no build restrictive zone” covers ± 10.5 acres. The proposed plant community is early old field. Total cover will consist of 15% aerial coverage by shrub species, 60% herbaceous cover, and the remaining 25% maintained as bare ground.
4. Within the “no build restrictive zone”, discrete areas (approximately 2,000-3,000 total square feet) of the existing agriculturally enriched topsoil/manure will be stripped to reveal the underlying coarse-textured friable nutrient-poor soils to promote areas of non-vegetated bare ground. Should the total desired bare ground be unachievable, additional clump-forming herbaceous cover will be planted as an alternative.
5. Within the “no build restrictive zone”, shrubs will be planted in clusters rather than uniformly placed across the planting zone as directed by Dennis Quinn and the supervising wetland scientist. A total estimate of

±800 live or dormant live stake shrubs will be planted in order to establish immediate cover. Additionally, a shrub-inclusive seed mix, New England Roadside Matrix Upland Seed Mix, will be planted. The ultimate goal is to achieve the desired 15% total shrub cover within the no build restrictive zone.

6. Solar Facility: the solar arrays located within the Spadefoot Habitat Management Zone will be under sown only with non-woody native grasses and wildflowers.
7. No topsoil amendments or fertilizers will be utilized.
8. Plant species, locations and density may be adjusted in the field by the supervising wetland scientist.
9. To facilitate wildlife movement across the Site, fencing will be raised above the ground to a height of 6” to allow wildlife passage into/out of the Solar Facility.
10. To prevent the proposed stormwater basins from functioning as decoy breeding pools for spadefoots, the stormwater management system has been intentionally designed to minimize the hydroperiod of basins. However, as additional protection for spadefoots, the basin hydroperiods will be monitored during the post-construction monitoring period to assess the potential for decoy breeding. If that potential is found to exist within any of the basins, a permanent spadefoot exclusion fence such as Animex brand fencing (model #AMX24/610, 24" tall, or approved equivalent) shall be installed around the perimeter of the basins to prevent toad access. This fencing would allow for conveyance of stormwater but restrict toad access.

Spadefoot Habitat Management Zone		
Common Name	Scientific Name	Indicator Status
Custom Seed Mix (to be determined)		
Little Bluestem	<i>Schizachyrium</i>	FACU
Big Bluestem	<i>Andropogon gerardii</i>	FAC
Indian Grass	<i>Sorghastrum nutans</i>	FAC
Butterfly Milkweed	<i>Asclepias tuberosa</i>	FACU
Wild Blue Lupine	<i>Lupinus perennis</i>	UPL
Golden Alexanders	<i>Zizia Aurea</i>	FAC
Grey Goldenrod	<i>Solidago nemoralis</i>	UPL
Marsh Blazing Star	<i>Liatris spicata</i>	FAC+

Broomsedge Bluestem	<i>Andropogon vignicus</i>	FACU
Blue Wood Aster	<i>Aster cordifolius</i>	UPL
Grass-leaved Goldenrod	<i>Euthamia graminifolia</i>	FAC
Shrub		
Bearberry	<i>Arctostaphylos uva-ursi</i>	UPL
New Jersey Tea	<i>Ceanothus americanus</i>	FACU-
Sweet Fern	<i>Comptonia peregrina</i>	UPL
Common Juniper	<i>Juniperus communis</i>	FAC
Lowbush Blueberry	<i>Vaccinium angustifolium</i>	FACU-
Stock Seed Mixes (source: New England Wetland Plants, Inc.)		
New England Wildflower Mix		
New England Native Warm Season Grass Mix		
New England Roadside Matrix Upland Seed Mix		

3. Provide a tentative timeline for site prep (i.e. invasive control) and conservation activities.
 1. Exclusionary refuge area installation - Complete
 2. Spadefoot relocation into refuge area - On-going
 3. Tree clearing activities - February through April 2020
 4. Site grading/earthwork - April through May 2020
 5. Breeding pool reconstruction - completed no later than March 15, 2020
 6. Breeding pool plantings April 2020
 7. Construction completion - estimated November 2020
 8. First year post-construction monitoring - March 2021
 9. Invasive species monitoring and controls will be conducted biannually beginning in 2021 and conclude in 2045
 10. Second year post-construction monitoring - March 2022
 11. Third year post-construction monitoring - March 2023
 12. Fifth year post-construction monitoring - March 2025
 13. Tenth year post-construction monitoring - March 2030
 14. Fifteenth year post-construction monitoring - March 2035
 15. Twentieth year post-construction monitoring - March 2040
 16. Twenty-fifth year post-construction monitoring - March 2045

4. Reference and include appendices for any and all Conservation/Restrictive Easements placed over the mitigation area.

There will be a 10.5 acres No Build Restrictive Zone centered on the primary spadefoot use areas that were determined during the radio-telemetry study and

visual encounter surveys performed during the 2017 and 2018 field seasons. This No Build Restrictive Zone contains all the primary habitat types and areas of highest spadefoot densities documented during the radio-telemetry study and visual encounter efforts. The NBRZ will also contain the reconstructed breeding pool. The No Build Restrictive Zone has been written into the 25 year lease agreement terms and is legally enforceable, including for the two, five year extension options in the lease which can extend the total lease term to 35 years.

6. Long- Term Maintenance

1. Describe measures to be taken to manage and protect mitigation areas, including fencing, invasive species control, and maintenance schedules.

Invasive plants will be controlled within the proposed 10.5 acres *No Build Restrictive Zone* and the *Spadefoot Breeding Pool*.

Invasive Species of Concern:

The CT DEEP, under PA 03-136 and in cooperation with the Connecticut Invasive Plants Council (through the Invasive Plant Atlas of New England [IPANE]), has compiled a State list of invasive plants. The target species of greatest concern are those that readily invade post-agricultural fields. These include autumn olive (*Elaeagnus umbellata*), Russian olive (*Elaeagnus angustifolia*), multiflora rose (*Rosa multiflora*), and morrow's honeysuckle (*Lonicera morrowii*). These species have the potential to form monocultures which may adversely impact the ecologic integrity of these areas.

Control Measures:

Mechanical control by pulling or mowing of the noted target invasive plant species will be utilized wherever practical. While these non-chemical controls are preferred, the extent of any invasion will dictate the appropriate control method. The final determination of the sequence of control will be dependent on the target species. The final appropriate control technique will be determined by Dennis Quinn, the site contractor, and, if appropriate, an invasive species control contractor, after consultation with the owner.

Any herbicide application will be conducted by a commercial herbicide applicator licensed by the Connecticut Department of Energy and Environmental Protection, according to product labels.

Small woody specimens of bush honeysuckle, olive or multiflora rose will be controlled by hand pulling if the infestations are small. If the infestations are large or the individuals are more mature, they will be controlled using basal bark applications of an herbicide with

the active ingredient Triclopyr in a BEE formulation such as Pathfinder II or Garlon4 mixed in a methylated seed oil carrier. This herbicide penetrates the stem bark and translocates throughout the plant, killing the root system and preventing re-sprouting after cutting. This application is conducted using a low-volume backpack sprayer to wet the entire circumference of the bottom 12 inches of the plant stem and around the root collar. Small and intermediate-sized shrubs will be managed using a foliar application, likely using herbicides with the active ingredients Imazpyr, such as Habitat, glyphosate, such as Roundup.

Monitoring:

1. Target invasive plant species shall not exceed 20% total cover within the *No Build Restrictive Zone*, or 10% cover within the *Spadefoot Breeding Pool*.
2. Monitoring will be overseen/coordinated by Dennis Quinn in consultation with All-Points Technology Corp., P.C.
3. Monitoring will be conducted for the term of the lease agreement for 25 years with two, five year extension options, totaling a maximum of 35 years..
4. A monitoring inspection will be conducted biannually between May 15th and June 15th. During this period, any invasive plants will have leafed out and will be readily identifiable.
5. Invasive plants found will be sketch mapped and field tagged as needed to facilitate control.
6. Any necessary control recommendations will be determined by June 30th to allow time to effectively treat during the identified growing season.
7. All control measures will be implemented prior to September 30th.

2. Identify the organization, group, or individuals responsible for

North Stonington Solar Center, LLC

7. Monitoring

1. To evaluate the overall success of the mitigation efforts, a twenty-five year post-construction monitoring program has been developed. Population monitoring within the first five-year period will take place

during the 1st, 2nd, 3rd, and 5th field seasons after construction, after which monitoring will continue every five years during years 10, 15, 20 and 25. If the lease agreement is extended, two days of monitoring will continue for the term of the lease extension every five years.

First Year Post-Construction Monitoring Period:

During this field season continued visual encounter surveys will be conducted over the course of 10 optimal survey nights. No radio-tracking will occur during this monitoring season, allowing the population to re-establish within the spadefoot habitat management zone without any additional outside stressors. Monitoring of breeding activity will continue through night-time surveys during optimal breeding conditions and day-time dip-net surveys following periods where breeding may have occurred. If a breeding event is documented, hydrological monitoring of the breeding pool, concurrent with larval development, will be conducted to ensure the construction of the solar facility did not disrupt the hydrological conditions of the breeding pool for larval spadefoot development. If hydrological issues are identified, additional pool restoration will take place to ensure suitable breeding conditions are established post-construction.

Second Year Post-Construction Monitoring Period:

During this field season continued visual encounter surveys will be conducted over the course of 10 optimal survey nights. Population monitoring through radio-telemetric methodologies will be reinstated during this season, radio-tracking no more than fifteen individuals. Monitoring of breeding activity will continue following the same methodologies outlined in the previous monitoring season. Monitoring during this field season is designed to gain post-construction movement, habitat use and demographic data on the population to compare with previously collected pre-construction data to evaluate any changes or shifts in population structure and habitat use.

Third and Fifth Year Post-Construction Monitoring Period:

During the 3rd year and 5th year post-construction field seasons, continued visual encounter surveys will be conducted over the course of 5 optimal survey nights during each season (total 10). Monitoring during this period is designed to document continued site activity and breeding. Data collected during this period will be compared to capture rates recorded during the pre-construction phase of this study to determine post-construction trends in the population demographics to evaluate the overall success of mitigation and management initiatives.

Tenth, fifteenth, twentieth and twenty-fifth Year Post-Construction Monitoring Period:

During the 10th, 15th, 20th and 25th year post-construction field seasons, continued visual encounter surveys will be conducted over the course of two optimal survey nights during each season (total 8). Monitoring during this period is designed to document continued site activity and breeding. Data collected during this period will be compared to capture rates recorded during the pre-construction phase of this study to determine post-construction trends in the population demographics to evaluate the overall success of mitigation and management initiatives. If the lease agreement is extended, two days of monitoring will continue for the term of the lease extension every five years.

- 2 Brief reports will be submitted to DEEP within 7 days of all visits and will include assessments of the mitigation actions and any further recommended actions. An annual summary will also be submitted prior to December 31st of that year.
- 3 Identify the organization or individuals responsible for conducting or contracting the monitoring and reporting work.

All-Points Technology Corporation (APT) and CTherpConsultant, LLC

Additional Items Included as Attachments for this Application:

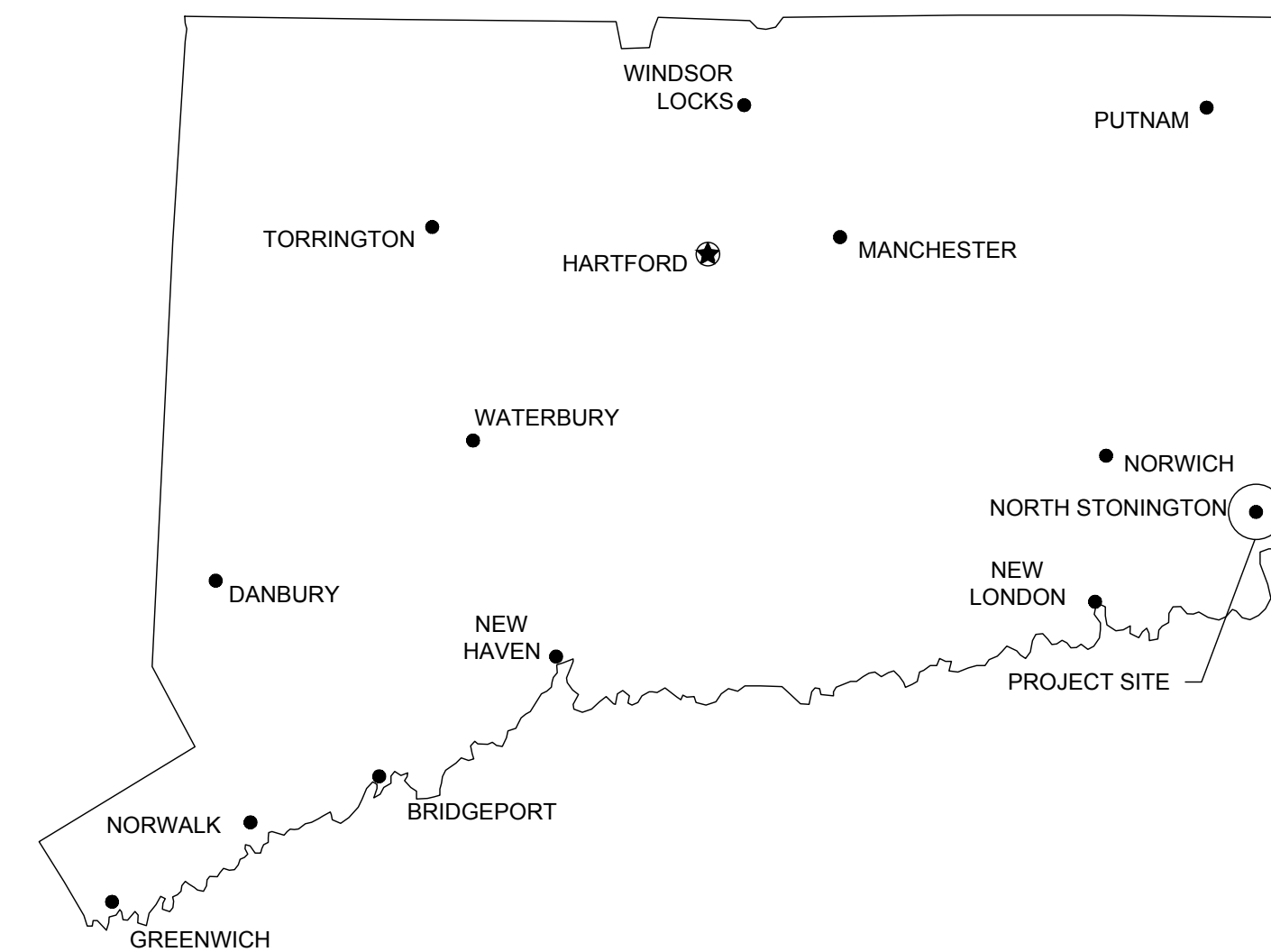
1. Overview Map: Refer to the attached Existing Site Conditions & Topography (Drawing No. C-101) dated April 11, 2018.
2. Engineering plans overlaid on aerial maps: Refer to the attached Proposed Conditions Map dated September 2019.
3. Map of State-listed species distribution overlaid on proposed plans: Refer to the attached Proposed Conditions Map dated September 2019.
4. Map identifying proposed mitigation areas and protective features: Refer to the attached Proposed Conditions Map dated September 2019.
5. Photos of target species and site conditions: North Stonington Solar Center, LLC - Site Photos and Eastern Spadefoot Photos.
6. Comprehensive List of all Eastern Spadefoots Encountered.

GRADING AND DRAINAGE PLANS FOR PAWCATUCK SOLAR CENTER

ELLA WHEELER ROAD, NORTH STONINGTON,
NEW LONDON COUNTY, CT 06359



PROJECT LOCATION:



PROJECT SCOPE:

SOLAR ELECTRIC SYSTEM
THE PROJECT ENTAILS THE INSTALLATION OF A 15 MW AC SOLAR PHOTOVOLTAIC SYSTEM IN NEW LONDON COUNTY, CONNECTICUT.
THE INSTALLATION CONSISTS OF NEW GROUND MOUNTED STRUCTURES WITH MOUNTED PHOTOVOLTAICS.
THE PROJECT SCOPE OF WORK FOR THESE CONSTRUCTION DRAWINGS PERTAINS ONLY TO THE GRADING AND DRAINAGE/SITE IMPROVEMENT WORK DEPICTED ON THESE PLANS.

STANDARDS AND CONDITIONS:

THESE GRADING AND DRAINAGE PLANS SHALL CONFORM TO THE FOLLOWING CODE VERSIONS:
1. 2012 INTERNATIONAL BUILDING CODE
2. 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL
3. 2004 CONNECTICUT STORMWATER QUALITY MANUAL
4. 2000 CONNECTICUT DEPARTMENT OF TRANSPORTATION (DOT) DRAINAGE MANUAL
5. 2012 INTERNATIONAL FIRE CODE

PROJECT TEAM:

OWNER/SITE CONTACT
PAWCATUCK SOLAR CENTER, LLC

DESIGN ENGINEERING FIRM/CIVIL ENGINEER
BLUE OAK ENERGY
1500 DREW AVENUE
DAVIS, CA 95618
CONTACT: JUAN BRAVO, PE
TEL: (530) 747-2026

PROJECT UTILITY INFORMATION:

GAS
SPECTRA ENERGY OPERATING COMPANY, LLC/
EVERSOURCE

ELECTRIC
EVERSOURCE

TELEPHONE
FRONTIER COMMUNICATIONS

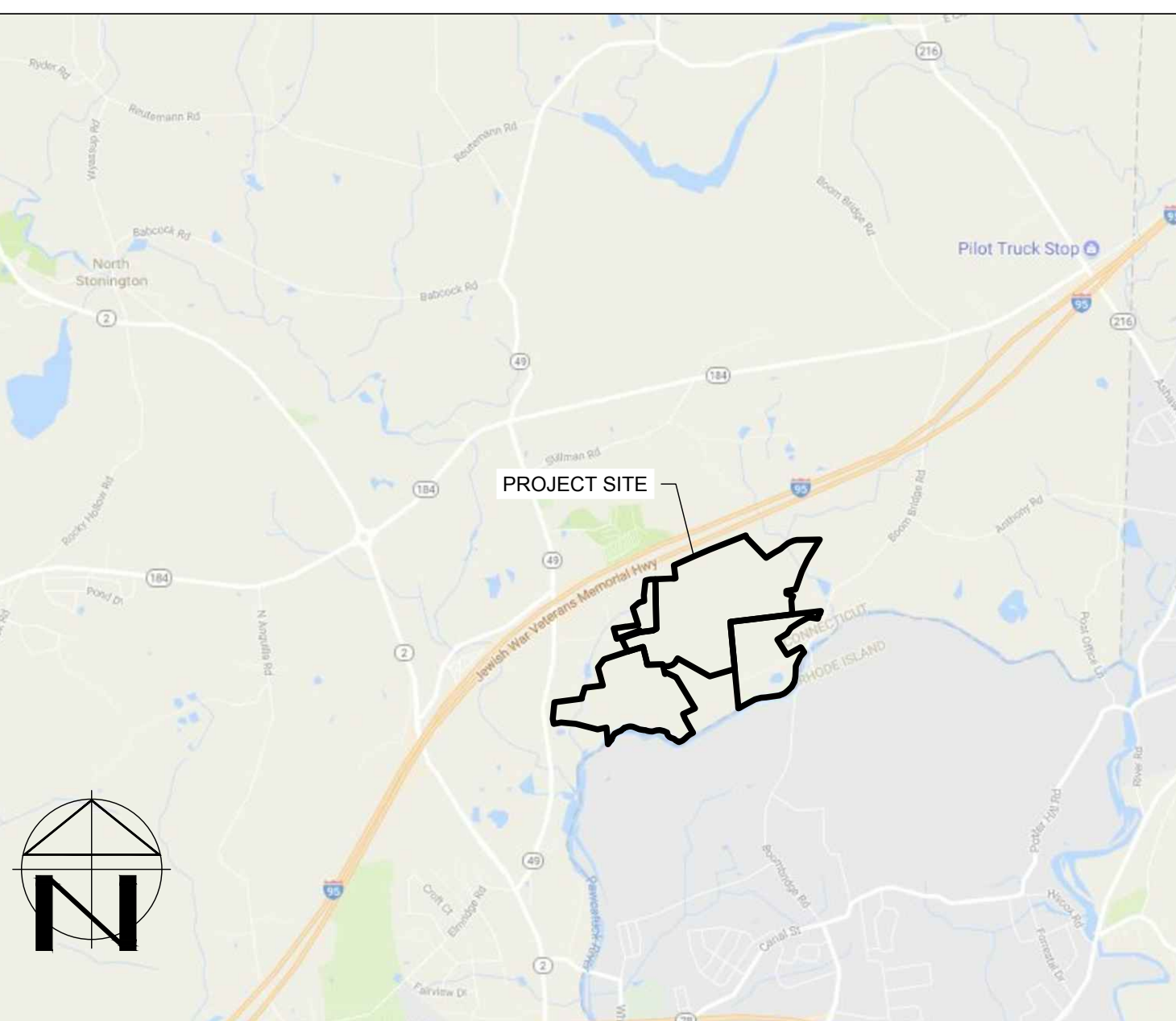
CABLE TV
COMCAST OF GROTON, INC

SEWER
TOWN OF NORTH STONINGTON

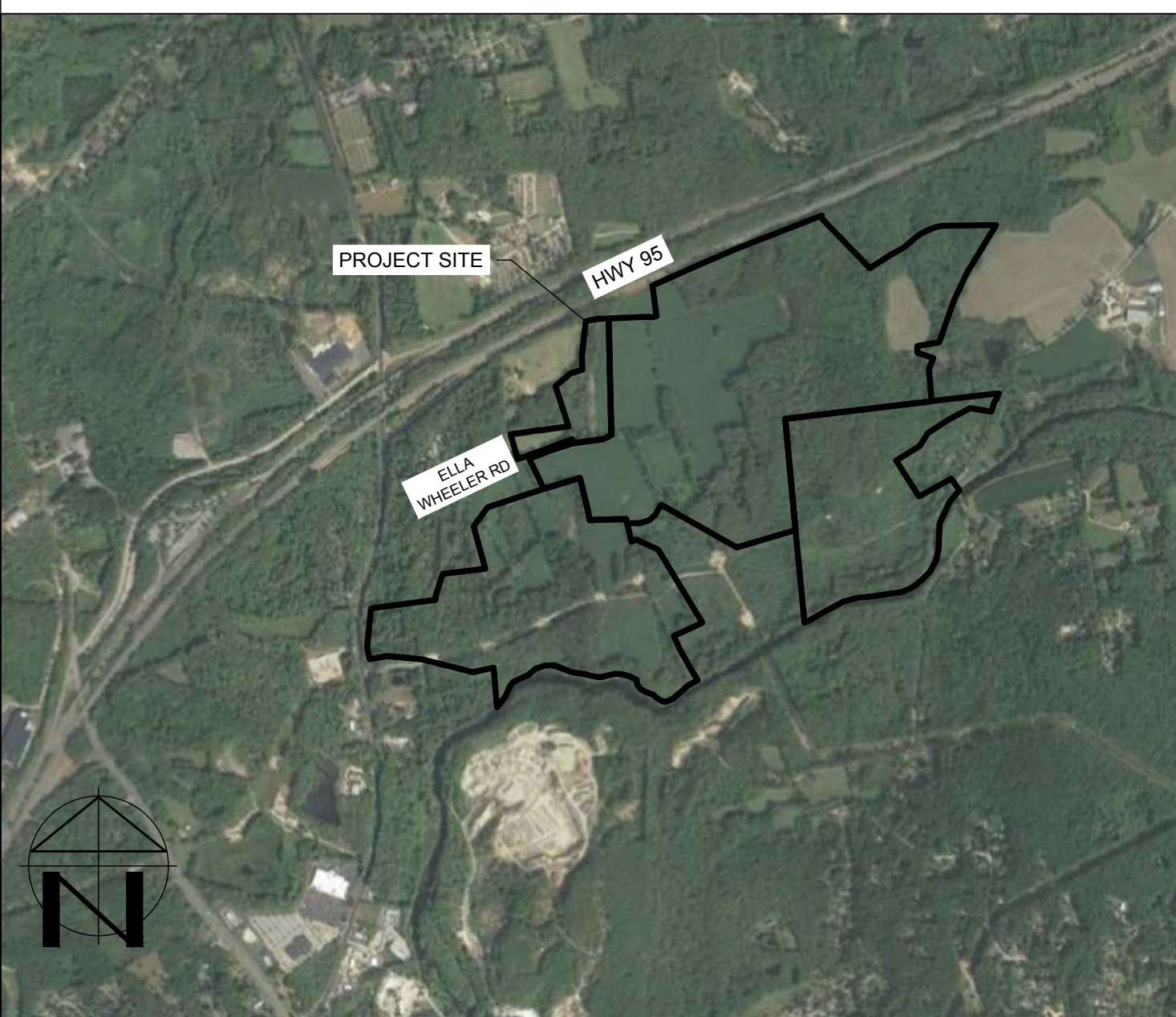
STORM DRAIN
TOWN OF NORTH STONINGTON/CTDOT

WATER
SOUTHEASTERN CONNECTICUT WATER AUTHORITY

VICINITY MAP:



AERIAL MAP:



SITE INFORMATION:

NORTH EAST PARCEL: APN: 123-3694 AREA: ± 180.42 ACRES GROSS
NORTH WEST PARCEL: APN: 123-3161 AREA: ±13.31 ACRES GROSS
SOUTH EAST PARCEL: APN: 123-0140 AREA: ± 62.61 ACRES GROSS
SOUTH WEST PARCEL: APN: 126-0006 AREA: ±97.11 ACRES GROSS

LAND DEVELOPMENT DATA:

TOTAL PROPERTY AREA 354 AC
PROJECT AREA WITHIN FENCE 118 AC
AREA OF TREE CLEARING (SELECTIVELY) 8 AC
AREA OF TREE CLEARING AND GRUBBING 70 AC
AREA OF TREE CLEARING AND NO GRUBBING 14 AC
VOLUME OF GRADING (CUT RAW) 158,000 CY
VOLUME OF GRADING (FILL RAW) 158,000 CY
LINEAR FEET OF GRAVEL ROADS 11,490 LF

DRAWING INDEX:

DWG NO.	TITLE	REV NO.
C-001	TITLE SHEET	
C-002	CIVIL NOTES & ABBREVIATIONS	
C-101	EXISTING SITE CONDITIONS & TOPOGRAPHY	
C-102	TREE CLEARING PLAN	
C-110	OVERALL GRADING & DRAINAGE PLAN	
C-111	GRADING & DRAINAGE PLAN - AREA NORTH EAST	
C-112	GRADING & DRAINAGE PLAN - AREA NORTH WEST	
C-113	GRADING & DRAINAGE PLAN - AREA SOUTH	
C-301	SECTIONS & DETAILS	
C-701	EROSION AND SEDIMENTATION CONTROL PLAN - AREA NORTH EAST	
C-702	EROSION AND SEDIMENTATION CONTROL PLAN - AREA NORTH WEST	
C-703	EROSION AND SEDIMENTATION CONTROL PLAN - AREA SOUTH	
C-720	EROSION AND SEDIMENTATION CONTROL NOTES & DETAILS	

PRELIMINARY
NOT FOR CONSTRUCTION

- INTERNAL USE ONLY -

DRAWN:	JT, LUK
CHKD:	JB
P.L.:	MLB
PROJECT #:	COR16-005
FILE NAME:	C001.dwg
DATE:	04/12/2018
BY:	JT
DATE:	03/29/18
CT SITING COUNCIL DESCRIPTION:	

PROJECT: PAWCATUCK SOLAR CENTER
ELLA WHEELER ROAD, NORTH STONINGTON, CT 06359

DRAWING TITLE: TITLE SHEET

DRAWING NO. C-001

CAUTION:

- 1. CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT FOR LOCATION OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION - PHONE (DIAL 800-922-4455) OR 811. CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES PRIOR TO BEGINNING ANY WORK ON THIS SITE.

ENGINEER'S GENERAL NOTES:

- 1. UNLESS SHOWN OR SPECIFIED OTHERWISE, ALL CONSTRUCTION AND MATERIALS SHALL COMPLY WITH THE TOWN OF NORTH STONINGTON ORDINANCES.
- 2. THE CONTRACTOR SHALL NOT BEGIN ANY WORK SHOWN ON THESE PLANS UNTIL THE SIGNATURE OF APPROVAL OF THE TOWN ENGINEER IS AFFIXED HEREON AND ALL APPLICABLE PERMITS HAVE BEEN OBTAINED.
- 3. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH TOWN STAFF, OTHER AGENCY STAFF, CONTRACTOR, MATERIAL TESTING LAB, CONSULTANTS, AND OTHER APPROPRIATE PERSONNEL REPRESENTING THE DEVELOPER AT LEAST 2 WORKING DAYS IN ADVANCE OF ANY CONSTRUCTION ACTIVITIES.
- 4. CONTRACTORS SHALL BE RESPONSIBLE FOR COORDINATING THEIR OPERATIONS WITH ALL REQUIRED MATERIALS TESTING SERVICES AS REQUIRED BY THE TOWN OF NORTH STONINGTON IMPROVEMENT STANDARDS AND THE TOWN OF NORTH STONINGTON INSPECTOR. EACH PHASE OF CONSTRUCTION SHALL BE TESTED AND APPROVED BY THE TOWN INSPECTOR PRIOR TO PROCEEDING TO SUBSEQUENT PHASES.
- 5. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES INVOLVED IN THE DEVELOPMENT PRIOR TO BEGINNING OF WORK.
- 6. UTILITIES TO BE INSTALLED UNDER EXISTING PAVEMENTS SHALL BE OPEN CUT UNLESS OTHERWISE NOTICED ON PLANS.
- 7. NO PAVEMENT WORK WILL OCCUR WITHIN THE ROAD RIGHT-OF-WAY PRIOR TO COMPLETION OF ANY NECESSARY UTILITY POLE REMOVAL AND UTILITY UNDERGROUND WORK WITHIN THAT RIGHT-OF-WAY.
- 8. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SURVEY MONUMENTS AND/OR OTHER SURVEY MARKERS DURING CONSTRUCTION. ALL MONUMENTS OR MARKERS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED BY A LICENSED STATE LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE.
- 9. PRIOR TO REQUESTING COUNTY ACCEPTANCE OF IMPROVEMENTS, THE CONTRACTOR SHALL SET STANDARD SURVEY MONUMENTS AT LOCATIONS REFERENCED BY ENGINEER. ALL SURVEY MONUMENTS SHALL BE PUNCHED AND SHALL BEAR THE LICENSE NUMBER OF THE SURVEYOR.
- 10. CONTRACTOR IS RESPONSIBLE FOR COMPLIANCE WITH ALL CURRENTLY APPLICABLE SAFETY LAWS OF ALL JURISDICTIONAL BODIES. THE CONTRACTOR IS DIRECTED TO CONTACT THE OFFICE OF SAFETY AND HEALTH ADMINISTRATION (OSHA), THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL BARRICADES, SAFETY DEVICES, AND CONTROL OF TRAFFIC WITHIN AND AROUND THE CONSTRUCTION AREA. FOR ALL TRENCH EXCAVATION 5 FEET OR MORE IN DEPTH, THE CONTRACTOR SHALL OBTAIN A PERMIT PRIOR TO BEGINNING ANY EXCAVATION.
- 11. PUBLIC SAFETY AND TRAFFIC CONTROL SHALL BE PROVIDED IN ACCORDANCE WITH THE APPLICABLE PROVISIONS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND AS MAY BE DIRECTED BY THE TOWN OF NORTH STONINGTON. ANY LANE CLOSURES (VEHICLE OR BICYCLE) SHALL BE APPROVED IN ADVANCE BY THE TOWN OF NORTH STONINGTON. SAFE VEHICULAR, BICYCLE, AND PEDESTRIAN ACCESS SHALL BE PROVIDED AT ALL TIMES.
- 12. THE CONTRACTOR SHALL MAINTAIN CONTINUOUS TEMPORARY TRAFFIC BARRICADES, WITH OPERABLE FLASHING DEVICES, SPACED AT INTERVALS OF NOT TO EXCEED 50 FEET WHENEVER THE WORK AREA IS ADJACENT TO AN EXISTING TRAFFIC LANE AND THERE IS A PAVEMENT CUT, TRENCH, OR DITCH WHICH IS OVER 2 INCHES IN DEPTH, OR IF THE TRAFFIC LANE USED BY VEHICLES IS NOT PAVED. IF THE CUT, TRENCH OR DITCH IS MORE THAN 10 FEET FROM A TRAFFIC LANE, THEN THE BARRICADE SPACING MAY BE GREATER, PROVIDED THAT IT DOES NOT EXCEED 200 FEET.
- 13. CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES CONTRACTOR SHALL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF THE CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONTRACTOR FURTHER AGREES TO INDEMNIFY AND HOLD THE TOWN OF NORTH STONINGTON, ITS OFFICERS, EMPLOYEES, AGENTS, AND VOLUNTEERS HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT.
- 14. ALL CONSTRUCTION AND MATERIAL DELIVERY VEHICLES SHALL USE THE DESIGNATED ACCESS AND HAUL ROUTE(S) TO THE CONSTRUCTION SITE. THE ROUTE(S) SHALL BE MONITORED DURING THE PROJECT FOR ANY DAMAGE AND DEBRIS ATTRIBUTABLE TO THE PROJECT VEHICLES.
- 15. WHERE WORK IS BEING DONE IN AN OFF-SITE EASEMENT THE CONTRACTOR SHALL NOTIFY THE PROPERTY OWNER TWO WORKING DAYS PRIOR TO COMMENCING WORK WITHIN SAID EASEMENT. COPIES OF ALL SIGNED/APPROVED OFF-SITE EASEMENT AND/OR RIGHT-OF-ENTRY DOCUMENTS SHALL BE PROVIDED TO THE TOWN OF NORTH STONINGTON.

DEMOLITION NOTES:

- 1. CONTRACTOR SHALL COMPLY WITH ALL GENERAL AND STATE REQUIREMENTS INVOLVING THE REMOVAL AND DISPOSAL OF HAZARDOUS MATERIAL(S).
- 2. BACKFILL ALL DEPRESSIONS AND TRENCHES FROM DEMOLITION TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.
- 3. REMOVAL OF LANDSCAPING SHALL INCLUDE ROOTS AND ORGANIC MATERIALS TO THE SATISFACTION OF THE GEOTECHNICAL ENGINEER.
- 4. PRIOR TO BEGINNING DEMOLITION WORK ACTIVITIES, CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES OUTLINED IN THE EROSION CONTROL PLAN & DETAILS.
- 5. THE CONTRACTOR SHALL MAINTAIN ALL SAFETY DEVICES, AND SHALL BE RESPONSIBLE FOR CONFORMANCE TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS LAWS AND REGULATIONS.
- 6. THE CONTRACTOR SHALL PROTECT FROM DAMAGE ALL EXISTING IMPROVEMENTS FACILITIES AND STRUCTURES WHICH ARE TO REMAIN. ANY ITEMS DAMAGED BY THE CONTRACTOR OR HIS AGENTS OR ANY ITEMS REMOVED FOR HIS USE SHALL BE REPLACED IN EQUAL OR BETTER CONDITION AS APPROVED BY THE OWNER'S REPRESENTATIVE.
- 7. COORDINATE WITH ELECTRICAL, MECHANICAL, LANDSCAPING AND ARCHITECTURAL DRAWINGS FOR UTILITY SHUT-DOWN/DISCONNECT LOCATIONS. CONTRACTOR IS TO SHUT OFF ALL UTILITIES AS NECESSARY PRIOR TO DEMOLITION. CONTRACTOR IS TO COORDINATE SERVICE INTERRUPTIONS WITH THE CLIENT, DO NOT INTERRUPT SERVICES TO ADJACENT OFF-SITE OWNERS.
- 8. THIS PLAN IS NOT INTENDED TO BE A COMPLETE CATALOGUE OF ALL EXISTING STRUCTURES AND/OR UTILITIES. THE INTENT OF THIS PLAN IS TO DISCLOSE GENERAL INFORMATION KNOWN BY THE ENGINEER AND TO SHOW THE LIMITS OF THE AREA WHERE WORK WILL BE PERFORMED. THIS PLAN SHOWS THE EXISTING FEATURES TAKEN FROM A FIELD SURVEY, FIELD INVESTIGATIONS AND AVAILABLE INFORMATION. THIS PLAN MAY OR MAY NOT ACCURATELY REFLECT THE TYPE OR EXTENT OF THE ITEMS TO BE ENCOUNTERED AS THEY ACTUALLY EXIST. WHERE EXISTING FEATURES ARE NOT SHOWN, IT IS NOT IMPLIED THAT THEY ARE NOT TO BE DEMOLISHED OR REMOVED. THE CONTRACTOR SHALL PERFORM A THOROUGH FIELD INVESTIGATION AND REVIEW OF THE SITE WITHIN THE LIMIT OF WORK SHOWN IN THIS PLAN SET TO DETERMINE THE TYPE, QUANTITY AND EXTENT OF ANY AND ALL ITEMS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DETERMINING THE EXTENT OF EXISTING STRUCTURES AND/OR UTILITIES AND QUANTITY OF WORK INVOLVED IN REMOVING THESE ITEMS FROM THE SITE.

ENGINEER'S GRADING NOTES:

- 1. THE CONTRACTOR SHALL NOT ADJUST GRADES ON THIS PLAN WITHOUT PRIOR WRITTEN APPROVAL OF THE ENGINEER.
- 2. CONTRACTOR SHALL TAKE THE NECESSARY PRECAUTIONS REQUIRED TO PROTECT ADJACENT PROPERTIES DURING THE GRADING OPERATIONS.
- 3. THE GEOTECHNICAL ENGINEERING REPORT (SOILS REPORT) PREPARED BY TERRACON CONSULTANTS, INC. DATED JANUARY 8, 2018, FOR THE SITE SHALL BE CONSIDERED AS PART OF THESE PLANS. ALL GRADING SHALL BE DONE IN ACCORDANCE WITH THE RECOMMENDATIONS AND SPECIFICATIONS CONTAINED IN THE SOILS REPORT.
- 4. IF THE OWNER/APPLICANT DIRECTS THE ENGINEER TO DEVIATE FROM THE SOILS REPORT RECOMMENDATIONS (MATERIALS, METHODS, ETC.), REGARDLESS OF JURISDICTIONAL REQUIREMENTS OR EXCEPTIONS, THE OWNER/APPLICANT SHALL INDEMNIFY AND HOLD THE ENGINEER HARMLESS OF ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF THE GRADING WORK ON THIS PROJECT.
- 5. ALL GRADING SHALL BE DONE UNDER THE OBSERVATION OF A GEOTECHNICAL ENGINEER. ALL AREAS TO BE FILLED SHALL BE PREPARED TO BE FILLED AND ALL FILL SHALL BE PLACED IN ACCORDANCE WITH THE RECOMMENDED GRADING SPECIFICATIONS AND SPECIAL PROVISIONS ATTACHED TO THE SOILS INVESTIGATIONS FOR THIS PROJECT. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PLACE, SPREAD, WATER AND COMPACT THE FILL IN STRICT ACCORDANCE WITH THESE SPECIFICATIONS.
- 6. CONSTRUCTION OBSERVATIONS AND COMPACTION TESTS SHALL BE MADE BY THE GEOTECHNICAL ENGINEER DURING THE FILLING AND COMPACTING OPERATIONS SO THAT HE CAN STATE HIS OPINION THAT THE FILL WAS CONSTRUCTED IN ACCORDANCE WITH THE EARTHWORK SPECIFICATIONS.
- 7. IN THE CASE OF CONFLICTS, THE REQUIREMENTS OF THE EARTHWORK SPECIFICATIONS PREPARED FOR THE PROJECT BY THE SOILS ENGINEER SHALL GOVERN THE REQUIREMENTS OF THIS PLAN AND THESE NOTES. PLANS SHALL BE REVISED ACCORDINGLY.
- 8. GRADING CONTRACTOR SHALL COORDINATE THE GRADING OPERATION WITH UTILITY COMPANIES PERTAINING TO CONFLICTS REQUIRING REMOVAL/RELOCATION/ADJUSTMENT OF EXISTING POWER POLES, UNDERGROUND PIPES/CONDUITS, VAULTS/BOXES, ETC, OR ANY OTHER UTILITY ADJUSTMENTS NECESSARY TO PERFORM THE SCOPE OF WORK.

ENGINEER'S GRADING NOTES (CONTINUED):

- 9. DURING CONSTRUCTION, THE CONTRACTOR SHALL PROPERLY GRADE ALL EXCAVATED SURFACES TO PROVIDE POSITIVE DRAINAGE AND PREVENT PONDING OF WATER. THE CONTRACTOR SHALL CONTROL SURFACE WATER TO AVOID DAMAGE TO ADJOINING PROPERTIES OR TO FINISHED WORK ON THE SITE. THE CONTRACTOR SHALL TAKE REMEDIAL MEASURES TO PREVENT EROSION OF FRESHLY GRADED AREAS AND UNTIL SUCH TIME AS PERMANENT DRAINAGE AND EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
- 10. ALL TRENCHES SHALL BE BACKFILLED PER THE SPECIFICATIONS WITH APPROPRIATE TESTS BY THE GEOTECHNICAL ENGINEER TO VERIFY COMPACTION VALUES.

STORM WATER POLLUTION CONTROL PLAN (SWPCP) NOTES:

- 1. THE SWPPP MUST BE DEVELOPED AND IMPLEMENTED BEFORE ANY LAND-DISTURBING ACTIVITIES. SEDIMENT CONTROLS SUCH AS ROCK SITE ENTRANCE PADS, TRAPS, BASINS, AND SILT FENCES MUST BE INSTALLED BEFORE LAND CLEARING, EXCAVATION, OR PLACEMENT OF FILL MATERIAL.
- 2. DETENTION BASINS, IF USED, MUST BE CONSIDERED FIRST AND MUST PERFORM AS SEDIMENT BASINS UNTIL THE CONTRIBUTING DRAINAGE AREA IS SEEDD AND STABILIZED. OUTLETS MUST BE MODIFIED, IF NECESSARY, TO MAXIMIZE DETENTION AND SEDIMENT REMOVAL DURING CONSTRUCTION.
- 3. INSTALL CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MUD, SOIL, AND ROCK FROM CONSTRUCTION AREAS ONTO PUBLIC ROADWAYS. SOIL AND ROCK TRACKED ONTO THE ROADWAY MUST BE REMOVED DAILY.
- 4. SOIL STOCKPILES MUST BE LOCATED AWAY FROM STREAMS, PONDS, SWALES AND CATCH BASINS. STOCKPILES MUST BE SEEDD, MULCHED, AND ADEQUATELY CONTAINED THROUGH THE USE OF SILT FENCE WITHIN SEVEN (7) DAYS IF PLANNING TO LEAVE UNATTENDED FOR 30 DAYS OR MORE.
- 5. SEDIMENT-LADEN WATER ENCOUNTERED DURING TRENCHING, BORING, OR OTHER EXCAVATION ACTIVITIES MUST BE PUMPED TO A SEDIMENT TRAPPING OR FILTERING DEVICE AND CLEANED BEFORE BEING DISCHARGED. DISCHARGES TO STORM DRAINS, DITCHES, OR WATER BODIES MUST BE COVERED BY CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENT PROTECTION (CTDEEP) PERMIT.
- 6. IF CONSTRUCTION ACTIVITIES ARE COMPLETE OR HAVE BEEN TEMPORARILY HALTED FOR MORE THAN SEVEN (7) DAYS, STABILIZATION ACTIVITIES WILL BE IMPLEMENTED WITHIN (3) DAYS.
- 7. ALL AREAS WITHIN 25 FT WETLANDS AND 100 FT OF STREAMS, RIVERS, LAKES, AND SINKHOLES (EXCEPT WHERE NOTED OTHERWISE ON PLANS) MUST BE FLAGGED AS OFF-LIMITS TO VEHICLES, EQUIPMENT, AND SOIL DISTURBANCE ACTIVITIES.
- 8. GOOD HOUSEKEEPING PRACTICES MUST BE APPLIED TO PREVENT CONTAMINATED RUNOFF OR OTHER IMPACTS FROM PAINT OR CONCRETE WASTES, FUELS AND OILS, TRASH AND LITTER, OR OTHER MATERIALS.
- 9. SILT FENCES, DITCH CHECK DAMS, NON-PERMANENT SEDIMENT TRAPS, AND OTHER TEMPORARY CONTROLS MUST BE REMOVED AFTER VEGETATION IN UPGRADIENT AREAS IS ESTABLISHED AND DITCHES ARE DEEMED STABLE PER THE GUIDELINES.
- 10. GOOD HOUSEKEEPING MEASURES FOR MATERIALS STORAGE AND HANDLING, VEHICLE FUELING AND MAINTENANCE, SPILL RESPONSE AND CLEANUP, AND WASTE MANAGEMENT MUST BE FOLLOWED TO ENSURE THAT RUNOFF FROM THE SITE IS FREE OF CONTAMINANTS.
- 11. ALL BMPs WILL BE SELECTED, INSTALLED, OPERATED, AND MAINTAINED ACCORDING TO 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, MANUFACTURER'S REQUIREMENTS, OR STANDARD INDUSTRY PRACTICE, AS APPROPRIATE.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENT:

- 1. ALL CONSTRUCTION ON OFFSITE OR ONSITE IMPROVEMENTS SHALL ADHERE TO NPDES (NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM) BEST MANAGEMENT PRACTICES TO PREVENT DELETERIOUS MATERIALS OR POLLUTANTS FROM ENTERING THE TOWN OF NORTH STONINGTON STORM DRAIN SYSTEMS.
- 2. ERODED SEDIMENTS AND OTHER POLLUTANTS MUST BE RETAINED ON SITE AND MAY NOT BE TRANSPORTED FROM THE SITE VIA SHEET FLOW, SWALES, AREA DRAINS, NATURAL DRAINAGE COURSES, OR WIND.
- 3. STOCKPILES OF EARTH AND OTHER CONSTRUCTION RELATED MATERIALS MUST BE PROTECTED FROM BEING TRANSPORTED FROM THE SITE BY THE FORCES OF WIND OR WATER.
- 4. FUELS, OILS, SOLVENTS, AND OTHER TOXIC MATERIALS MUST BE STORED IN ACCORDANCE WITH THEIR LISTING AND ARE NOT TO CONTAMINATE THE SOIL AND SURFACE WATERS. ALL APPROVED STORAGE CONTAINERS ARE TO BE PROTECTED FROM THE WEATHER. SPILLS MUST BE CLEANED UP IMMEDIATELY AND DISPOSED OF IN A PROPER MANNER. SPILLS MAY NOT BE WASHED INTO THE DRAINAGE SYSTEM.
- 5. EXCESS OR WASTE CONCRETE MAY NOT BE WASHED INTO THE PUBLIC RIGHT-OF-WAY OR ANY OTHER DRAINAGE SYSTEM. PROVISIONS SHALL BE MADE TO RETAIN CONCRETE WASTES ON SITE UNTIL THEY CAN BE DISPOSED OF AS SOLID WASTE.
- 6. TRASH AND CONSTRUCTION RELATED SOLID WASTES MUST BE DEPOSITED INTO A COVERED RECEPTACLE TO PREVENT CONTAMINATION AND DISPERSAL BY WIND.
- 7. SEDIMENTS AND OTHER MATERIALS MAY NOT BE TRACKED FROM THE SITE BY VEHICLE TRAFFIC. THE CONSTRUCTION ENTRANCE ROADWAYS MUST BE STABILIZED SO AS TO INHIBIT SEDIMENTS FROM BEING DEPOSITED INTO THE PUBLIC RIGHT-OF-WAY. ACCIDENTAL DEPOSITIONS MUST BE SWEEP UP IMMEDIATELY AND MAY NOT BE WASHED DOWN BY RAIN OR OTHER MEANS.
- 8. ANY SLOPES WITH DISTURBED SOILS OR DENUDED OF VEGETATION MUST BE STABILIZED SO AS TO INHIBIT EROSION BY WIND AND WATER.
- 9. CLEAN UP ALL SPILLS USING DRY METHODS.
- 10. CALL 911 IN CASE OF A HAZARDOUS SPILL.
- 11. UPON SATISFACTORY COMPLETION OF THE WORK, THE ENTIRE WORK SITE SHALL BE CLEANED BY THE CONTRACTOR AND LEFT WITH A SMOOTH AND NEATLY GRADED SURFACE FREE OF CONSTRUCTION WASTE, RUBBISH, AND DEBRIS OF ANY NATURE.

DUST CONTROL:

- 1. WATER TRUCKS SHALL BE PRESENT AND IN USE AT THE CONSTRUCTION SITE. ALL PORTIONS OF THE SITE SUBJECT TO BLOWING DUST SHALL BE WATERED AS OFTEN AS DEEMED NECESSARY BY THE CLIENT/INSPECTOR IN ORDER TO INSURE PROPER CONTROL OF BLOWING DUST FOR THE DURATION OF THE PROJECT.
- 2. ALL PUBLIC STREETS AND MEDIANS SOILED OR LITTERED DUE TO THIS CONSTRUCTION ACTIVITY SHALL BE CLEANED AND SWEEP ON A DAILY BASIS DURING THE WORK WEEK, OR AS OFTEN AS DEEMED NECESSARY BY THE CLIENT / INSPECTOR, OR TO THE SATISFACTION OF THE TOWN OF NORTH STONINGTON DEPARTMENT OF PUBLIC WORKS.
- 3. ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS SHALL BE COVERED WITH TARPULINS OR OTHER EFFECTIVE COVERS.
- 4. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DUST CONTROL MEASURES AND FOR OBTAINING ALL REQUIRED PERMITS AND APPROVALS.
- 5. REFER TO THE PROJECT STORM WATER POLLUTION CONTROL PLAN (SWPCP) REPORT FOR ADDITIONAL DUST CONTROL GUIDELINES.

KEEPING PLANS CURRENT:

- 1. THE CONTRACTOR SHALL KEEP UP-TO-DATE AND ACCURATE A COMPLETE RECORD SET OF PRINTS FOR THE CONTRACT DRAWINGS SHOWING EVERY CHANGE FROM THE ORIGINAL DRAWINGS MADE DURING THE COURSE OF CONSTRUCTION INCLUDING EXACT FINAL LOCATION, ELEVATION, SIZES, MATERIALS, E&S CHANGES AND DESCRIPTION OF ALL WORK. RECORDS SHALL BE "REDLINED" ON A SET OF CONSTRUCTION PLAN DRAWINGS. A COMPLETE SET OF CORRECTED AND COMPLETED RECORD DRAWING PRINTS SHALL BE SUBMITTED TO THE TOWN ENGINEER AND DEVELOPER'S CIVIL ENGINEER PRIOR TO FINAL ACCEPTANCE FOR REVIEW AND APPROVAL BY THE TOWN ENGINEER.

ABBREVIATIONS:

AB	AGGREGATE BASE
AC	ASPHALT CONCRETE
APPROX	APPROXIMATE
AVG	AVERAGE
BLDG	BUILDING
BMP	BEST MANAGEMENT PRACTICES
BNDY	BOUNDARY
BOT	BOTTOM
C/L	CENTERLINE
CMP	CORRUGATED METAL PIPE
CN	CURVE NUMBER
COI	CHANGE OF INFORMATION
CONC	CONCRETE
CP	CONTROL POINT
CPP	CORRUGATED PLASTIC PIPE
EG	EXISTING GRADE
EP	EDGE OF PAVEMENT
ELEC	ELECTRICAL
ELEV.	ELEVATION
ESMT	EASEMENT
ETW	EDGE OF TRAVELED WAY
EXIST.	EXISTING
FG	FINISHED GRADE
FL	FLOW LINE
FR	FIBER ROLL
FS	FINISHED SURFACE
FT	FEET
GB	GRADE BREAK
HT	HEIGHT
ID	IDENTIFICATION
IRRIG	IRRIGATION
LF	LINEAR FEET
LP	LIGHT POLE
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
(N.I.C.)	NOT IN CONTRACT
NOI	NOTICE OF INTENT
NPDES	NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
O/H	OVERHEAD LINE
OAE	OR APPROVED EQUAL
P/L	PROPERTY LINE
PP	POWER POLE
PROP.	PROPOSED
R	RADIUS
RD	ROAD
R/W	RIGHT-OF-WAY
SD	STORM DRAIN
SF	SILT FENCE
SPT	SPOT ELEVATION
SQ FT	SQUARE FEET
SS	SANITARY SEWER
ST	STREET
SWPCP	STORMWATER POLLUTION CONTROL PLAN
TC	TIME OF CONCENTRATION
TEMP	TEMPORARY
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VIF	VERIFY IN FIELD
YR	YEAR



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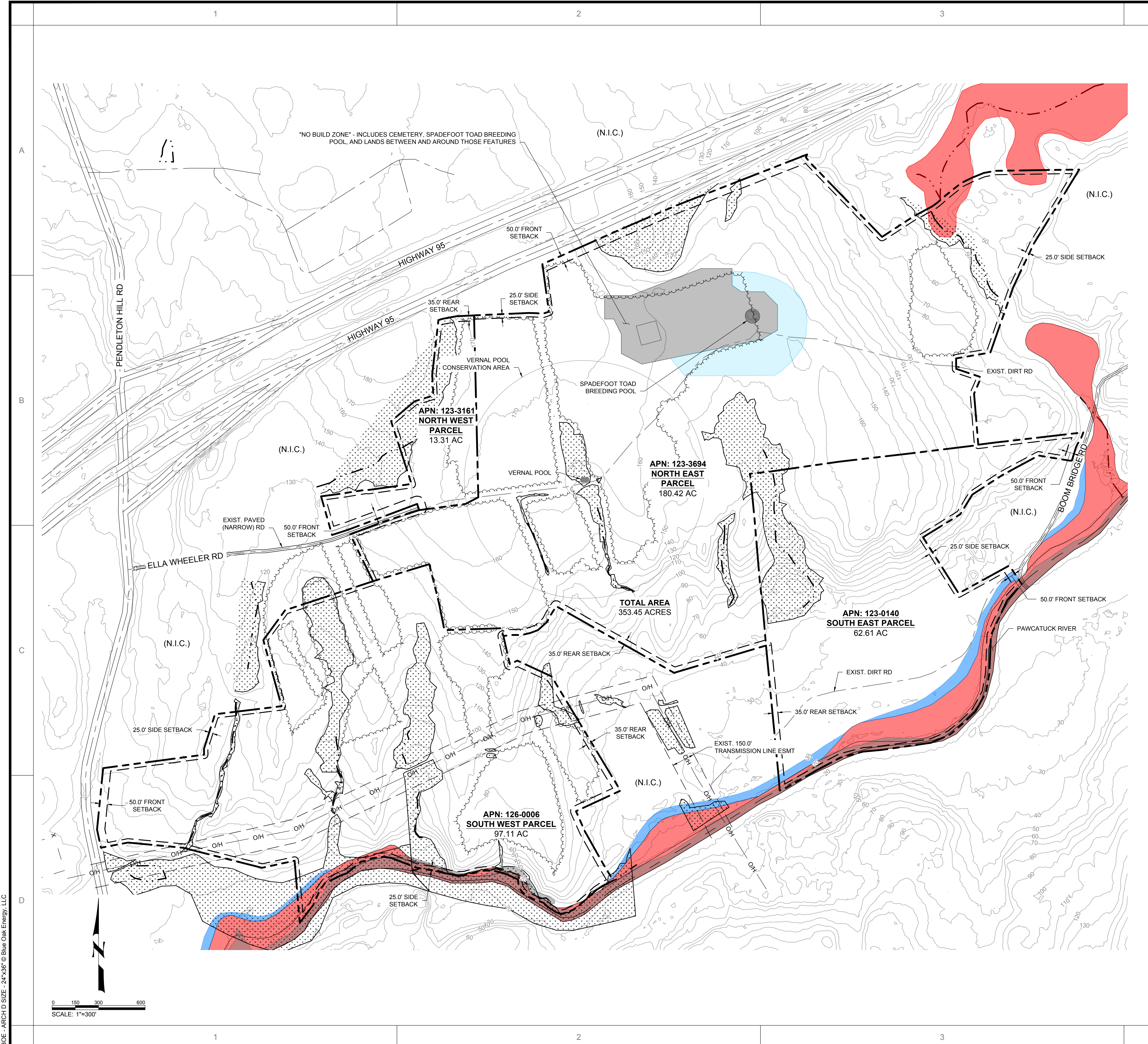
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DRAWN: JT, LUK	J.T. LUK
CHKD: JB	JB
P.L.L: KLB	KLB
PROJECT #:	
COR: 16.005	
FILE NAME:	0001.dwg
DATE:	04/12/2018
BY:	JT
PRINTED:	
CT SITING COUNCIL	
DESCRIPTION	
DATE	03-29-18
BY	JT

PROJECT: PAWCATUCK SOLAR CENTER
ELLA WHEELER ROAD,
NORTH STONINGTON, CT 06898

DRAWING TITLE: CIVIL NOTES & ABBREVIATIONS

DRAWING NO. C-002

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- BASIS OF BEARING:**
1. THE BEARINGS SHOWN HEREON ARE BASED UPON THE CONNECTICUT STATE PLAN SYSTEM NAD1983.
 2. ALL DISTANCES SHOWN, UNLESS OTHERWISE NOTED, ARE IN TERMS OF THE U.S. SURVEY FOOT.
- EXISTING CONDITIONS:**
1. PARCEL BOUNDARY IS FROM THE PARLAY DATABASE AND NEW ENGLAND ASSESSOR TAX MAPS.
 2. FLOOD BOUNDARY PER PUBLICLY AVAILABLE DATA FROM FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) NATIONAL FLOOD HAZARD LAYERS (NFHL) DATED APRIL, 2016.
 3. ALL (E) OVERHEAD TRANSMISSION LINE AND UNDERGROUND NATURAL GAS LINE PER VENTYX DATED JUNE 9, 2016.
 4. ALL WETLANDS SHOWN WITHIN PROPERTY WERE SURVEYED BY ALL POINTS TECHNOLOGY.
 5. ALL STREAMS SHOWN WITHIN PROPERTY ARE PER THE DEEP GIS CT NAMED WATERBODY MAP.
 6. ALL ROADS SHOWN ARE PER UNITED STATES GEOLOGICAL SURVEY (USGS).
 7. EXISTING GROUND ELEVATION BASE MAP WAS CREATED BY UTILIZE 2016 CT DEEP LIDAR DATA AND CONSTRAINS. GRADES ENCOUNTERED ON-SITE MAY VARY FROM THOSE SHOWN. A TOPOGRAPHIC SURVEY PREPARED AND CERTIFIED BY A LICENSED LAND SURVEYOR IS REQUIRED PRIOR TO FINISHING THESE PLANS FOR CONSTRUCTION.
 8. PROPERTY LINE INFORMATION SHOWN ON THESE PLANS IS APPROXIMATE AND WILL BE UPDATED UTILIZING A BOUNDARY SURVEY PREPARED BY A LICENSED LAND SURVEYOR. THIS IS REQUIRED PRIOR TO FINALIZING THESE PLANS FOR CONSTRUCTION.
- GENERAL NOTES:**
1. DIMENSIONS PROVIDED ARE FOR GENERAL GUIDANCE ONLY AND DO REPRESENT SLOPES OR DIFFERENCES IN ELEVATIONS.
 2. SEE SHEET C-102 FOR TREE CLEARING AREA.
- SITE SETBACKS:**
1. PROPERTY LINE SETBACKS INTENT TO MEET LOCAL ZONING REGULATIONS, WHERE FEASIBLE.
 - 50' FRONT YARD
 - 35' REAR YARD
 - 25' SIDE YARD

LEGEND

	PROPERTY LINE
	PROPERTY SETBACK
	STREAM CENTERLINE
	100-YR FLOODPLAIN
	500-YR FLOODPLAIN
	WETLAND DELINEATION BY ALL POINTS TECHNOLOGY
	NO BUILD ZONE
	WIDE ARRAY SPACING ZONE
	EXIST. MAJOR CONTOUR
	EXIST. TRANSMISSION LINE
	EXIST. TRANSMISSION LINE ESMT
	EXIST. TREE LINE
	EXIST. PAVED ROAD
	EXIST. DIRT ROAD CENTERLINE

CORONAL ENERGY

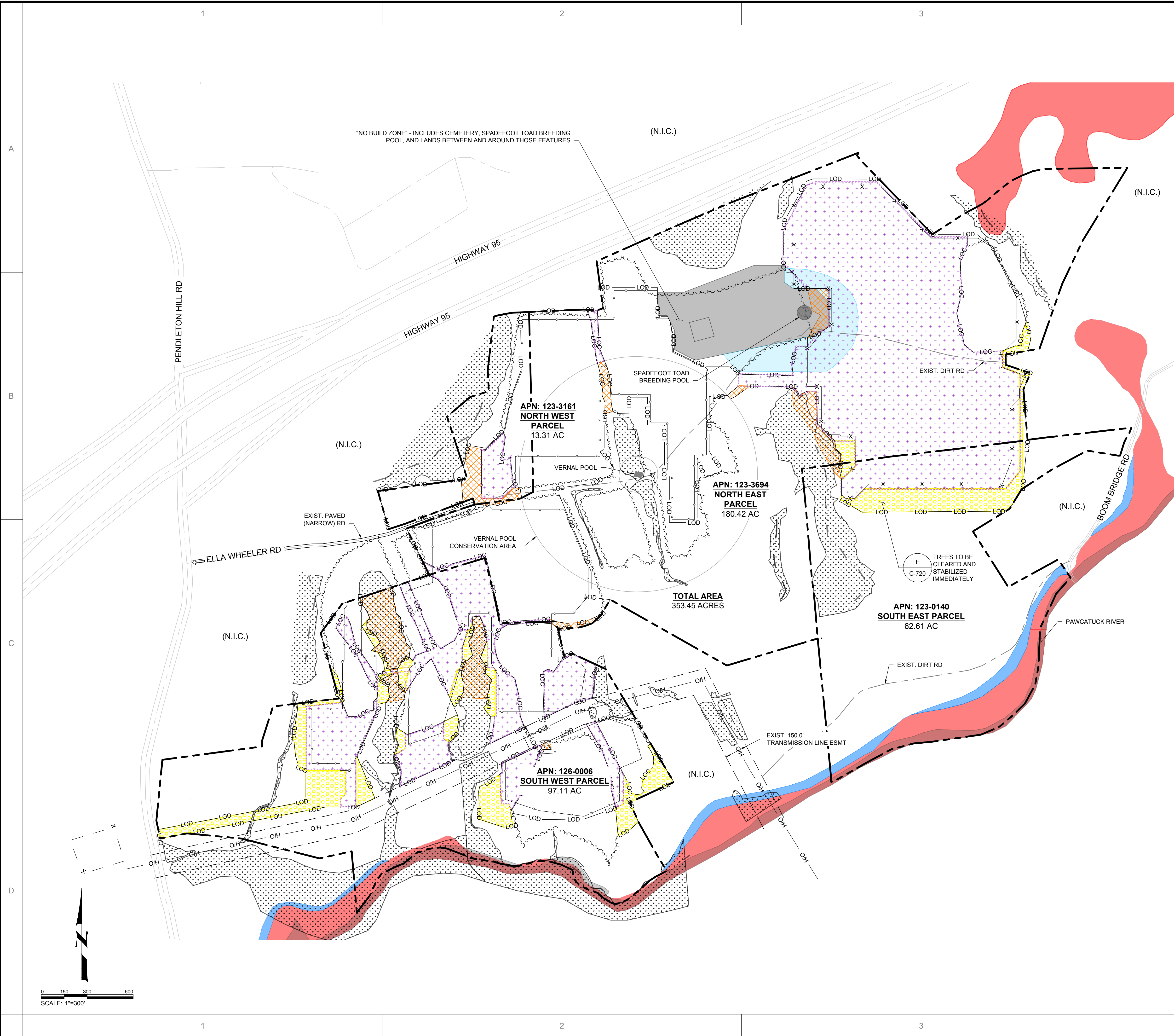
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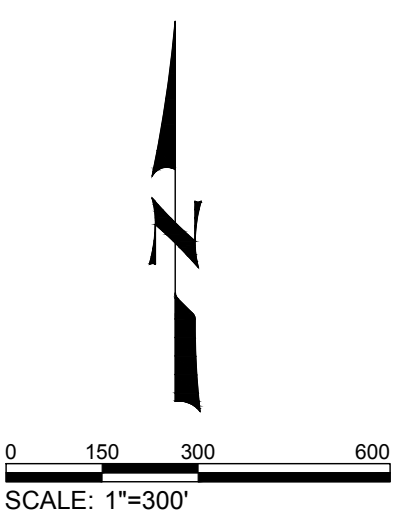
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BOE - ARCH D SIZE - 24"x36" © Blue Oak Energy, LLC



LEGEND	
	PROPERTY LINE
	STREAM CENTERLINE
	100-YR FLOODPLAIN
	500-YR FLOODPLAIN
	WETLAND DELINEATION BY ALL POINTS TECHNOLOGY
	NO BUILD ZONE
	WIDE ARRAY SPACING ZONE
	TREES TO BE CLEARED (NO STUMPING & GRUBBING)
	TREES TO BE CLEARED AND GRUBBED
	TREES TO BE CLEARED SELECTIVELY
	EXIST. MAJOR CONTOUR
	EXIST. TRANSMISSION LINE
	EXIST. TRANSMISSION LINE ESMT
	EXIST. PAVED ROAD
	EXIST. DIRT ROAD CENTERLINE
	EXIST. TREE LINE
	LIMIT OF DISTURBANCE
	LIMIT OF CLEARING
	PROP. FENCE



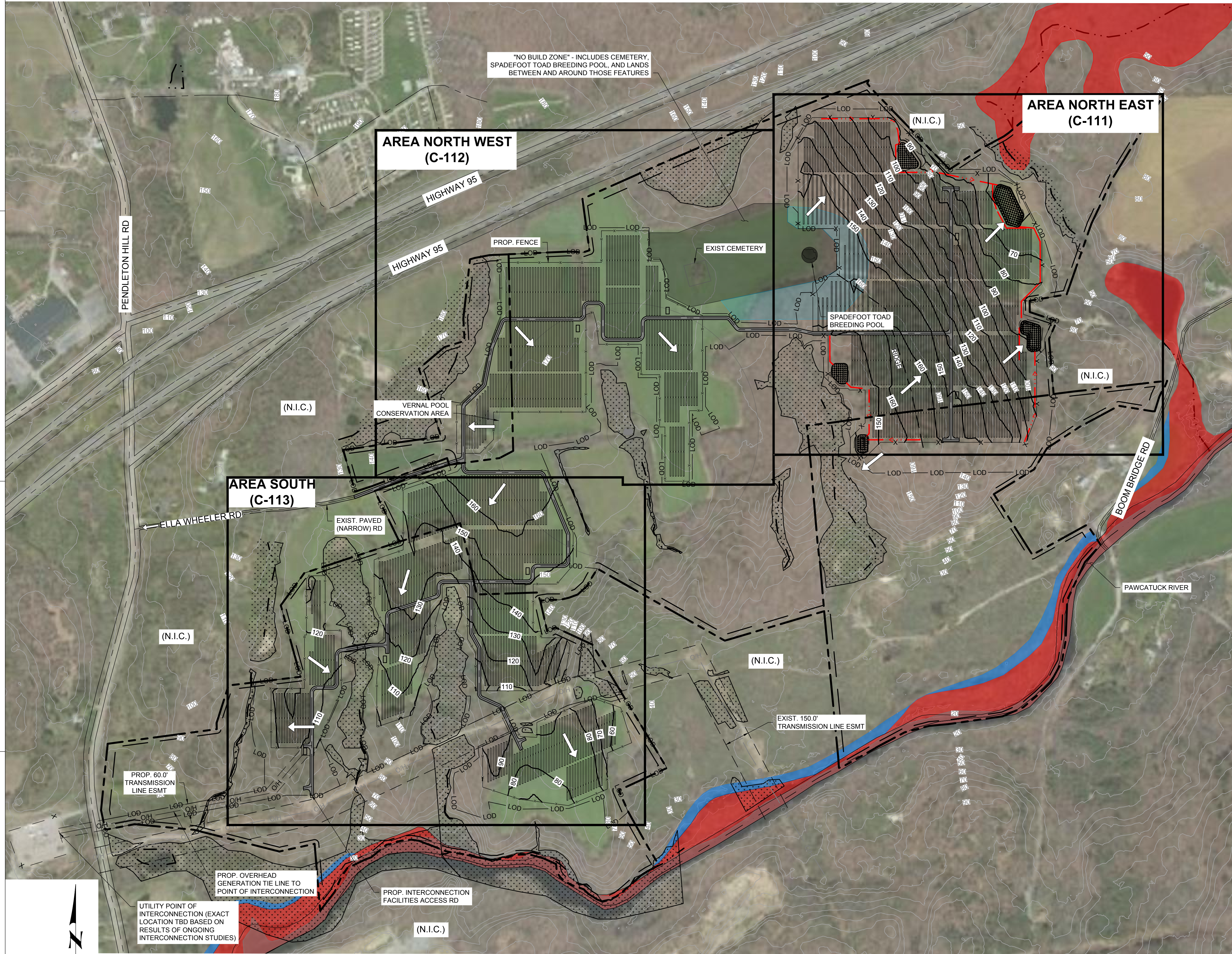


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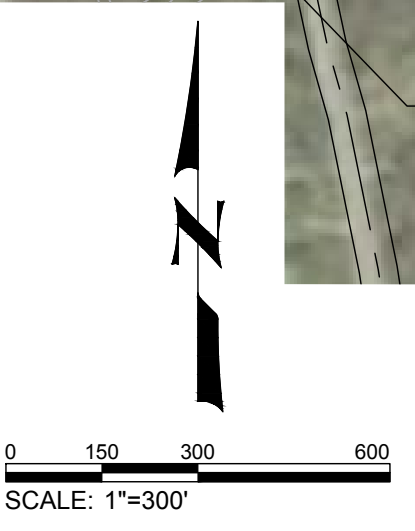
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LEGEND	
	PROPERTY LINE
	SETBACK
	STREAM
	WETLAND DELINEATION BY ALL POINTS TECHNOLOGY
	EXIST. MAJOR CONTOUR
	PROP. SOLAR TRACKER
	PROP. ACCESS ROAD
	PROP. FENCE
	LIMIT OF DISTURBANCE
	PROP. SWALE
	DIRECTION OF STORM RUNOFF
	NO BUILD ZONE
	WIDE ARRAY SPACING ZONE
	EXIST. PAVED ROAD
	100-YR FLOODPLAIN
	500-YR FLOODPLAIN
	EXIST. TRANSMISSION LINE
	EXIST. TRANSMISSION LINE ESMT
	PROP. MAJOR CONTOUR

- GENERAL NOTES:**
1. THE OVERALL HISTORICAL DRAINAGE PATTERNS ARE TO REMAIN.
 2. THE INTENT OF THE GRADES SHOWN IS TO MATCH THE EXISTING GRADES AS CLOSE AS POSSIBLE WITH A MINIMUM GRADING IN ORDER TO PROVIDE CONTINUOUS SLOPE ALONG SECTIONS OF TRACKERS.
 3. THE ENTIRE SITE SHALL BE CLEARED AND GRUBBED IN ACCORDANCE WITH THE EROSION AND SEDIMENTATION PLANS AND SEQUENCE OF CONSTRUCTION PROVIDED HEREIN.
 2. FOR TREE CLEARING SEE SHEET C-102.



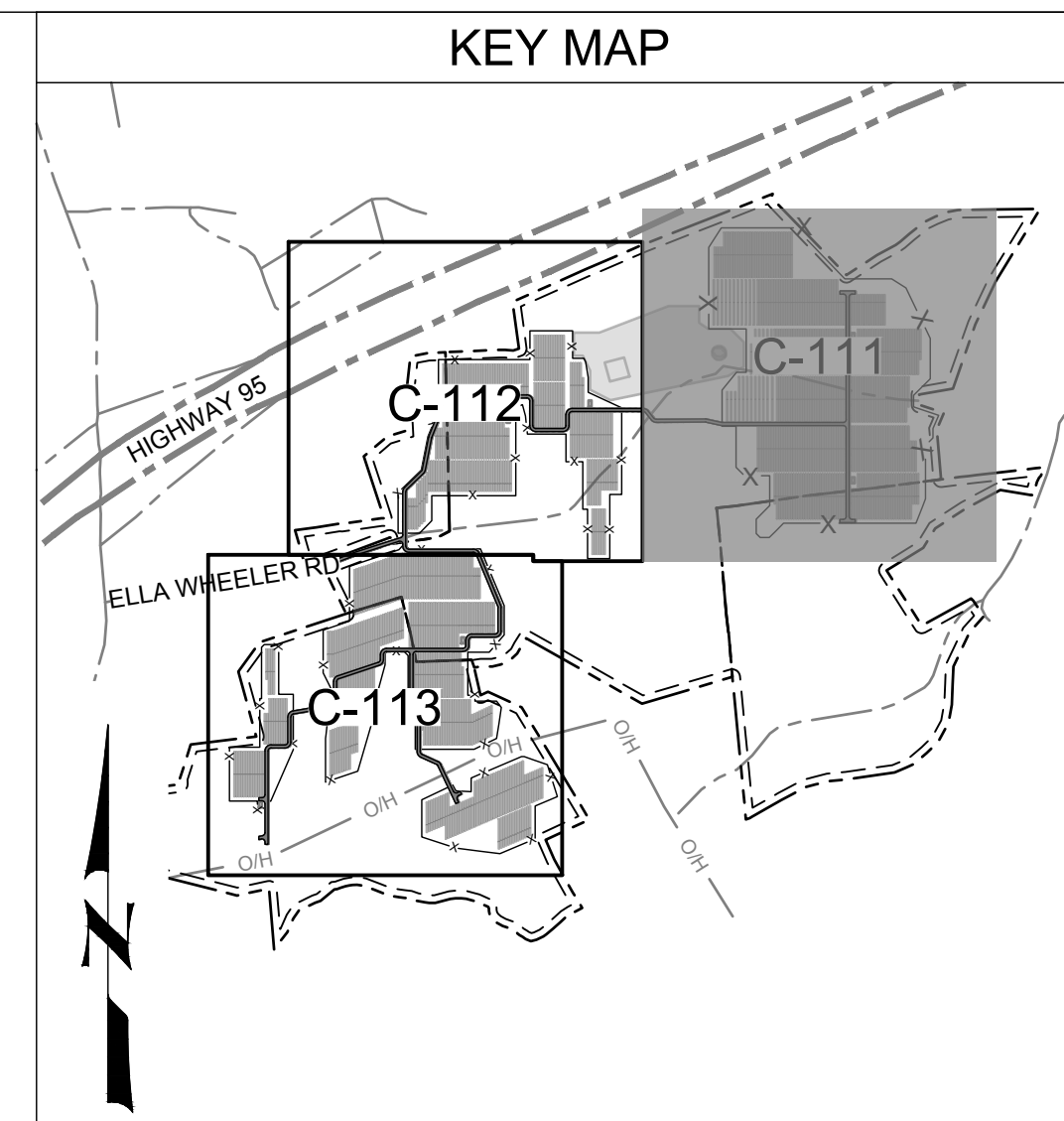
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DRAWN: JT, LUK	DATE: 04/12/2018
CHKD: JB	BY: PRINTED
P.L.: KLB	DESCRIPTION: CT SITING COUNCIL
PROJECT #: COR16-005	FILE NAME: C110.dwg
DATE: 03/29/18	DATE: 04/12/18

PROJECT: PAWCATUCK SOLAR CENTER
 ELLA WHEELER ROAD, NORTH STONINGTON, CT 06359
 DRAWING TITLE: OVERALL GRADING & DRAINAGE PLAN
 DRAWING NO.: C-110



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LEGEND

	PROPERTY LINE
	SETBACK
	STREAM
	WETLAND DELINEATION BY ALL POINTS TECHNOLOGY EXIST. MAJOR CONTOUR
	PROP. SOLAR TRACKER
	PROP. ACCESS ROAD
	PROP. FENCE
	LIMIT OF DISTURBANCE
	LIMIT OF CLEARING
	PROP. SWALE
	DIRECTION OF STORM RUNOFF
	NO BUILD ZONE
	WIDE ARRAY SPACING ZONE
	EXIST. DIRT ROAD CENTERLINE
	100-YR FLOODPLAIN
	500-YR FLOODPLAIN
	PROP. MAJOR CONTOUR

- KEYED NOTES:**
- PROPOSED SOLAR ARRAY AND OTHER ELECTRICAL EQUIPMENT (SEE ELECTRICAL AND STRUCTURAL PLANS).
 - PROPOSED 6' TALL CHAINLINK FENCE WITH 1 FT BARBED WIRE PER DOT STANDARD CHAINLINK FENCE, SHEET NO HW-913-01.
 - PROPOSED 20' WIDE ACCESS ROAD, (SEE SECTION D ON C-301)
 - PROPOSED 22' WIDE DOUBLE SWING GATE. GATE SHALL BE LOCKED WITH FIRE DEPARTMENT APPROVED PAD LOCK.
- GENERAL NOTES:**
- DIMENSIONS PROVIDED ARE FOR GENERAL GUIDANCE ONLY AND DO REPRESENT SLOPES OR DIFFERENCES IN ELEVATIONS.
 - FOR TREE CLEARING SEE SHEET C-102.



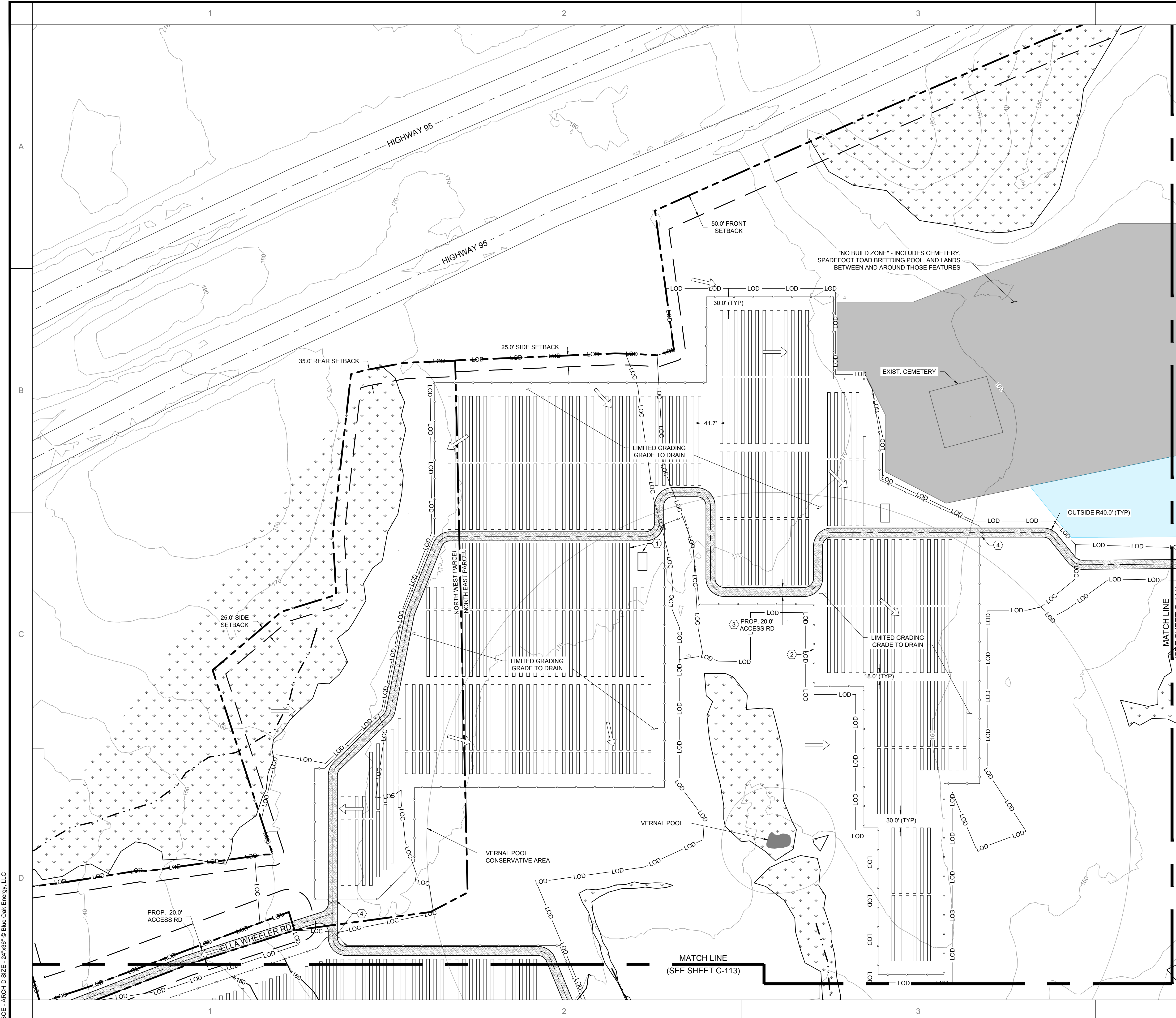
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DRAWN: JT, LUK	DATE: 03/29/18
CHKD: JB	BY: JT
P.L.L.: KLB	DESCRIPTION: CT SITING COUNCIL
PROJECT #: COR16-005	FILE NAME: C110.dwg
DATE: 04/12/2018	

PROJECT: PAWCATUCK SOLAR CENTER
ELLA WHEELER ROAD, NORTH STONINGTON, CT 06359
DRAWING TITLE: GRADING & DRAINAGE PLAN - AREA NORTH EAST
DRAWING NO. C-111



Know what's below.
Call before you dig.



KEY MAP

LEGEND

	PROPERTY LINE
	SETBACK
	STREAM
	WETLAND DELINEATION BY ALL POINTS TECHNOLOGY EXIST. MAJOR CONTOUR
	PROPOSED SOLAR TRACKER
	PROP. ACCESS ROAD
	PROP. FENCE
	LIMIT OF DISTURBANCE
	LIMIT OF CLEARING
	DIRECTION OF STORM RUNOFF
	NO BUILD ZONE
	WIDE ARRAY SPACING ZONE

KEYED NOTES:

- PROPOSED SOLAR ARRAY AND OTHER ELECTRICAL EQUIPMENT (SEE ELECTRICAL AND STRUCTURAL PLANS).
- PROPOSED 6' TALL CHAINLINK FENCE WITH 1 FT BARBED WIRE PER DOT STANDARD CHAINLINK FENCE. SHEET NO HW-913-01.
- PROPOSED 20' WIDE ACCESS ROAD. (SEE SECTION D ON C-301)
- PROPOSED 24' WIDE DOUBLE SWING GATE. GATE SHALL BE LOCKED WITH FIRE DEPARTMENT APPROVED PAD LOCK.

GENERAL NOTES:

- DIMENSIONS PROVIDED ARE FOR GENERAL GUIDANCE ONLY AND DO REPRESENT SLOPES OR DIFFERENCES IN ELEVATIONS.
- FOR TREE CLEARING SEE SHEET C-102.

SCALE: 1" = 100'

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BOE - ARCH'D SIZE - 24"x36" © Blue Oak Energy, LLC



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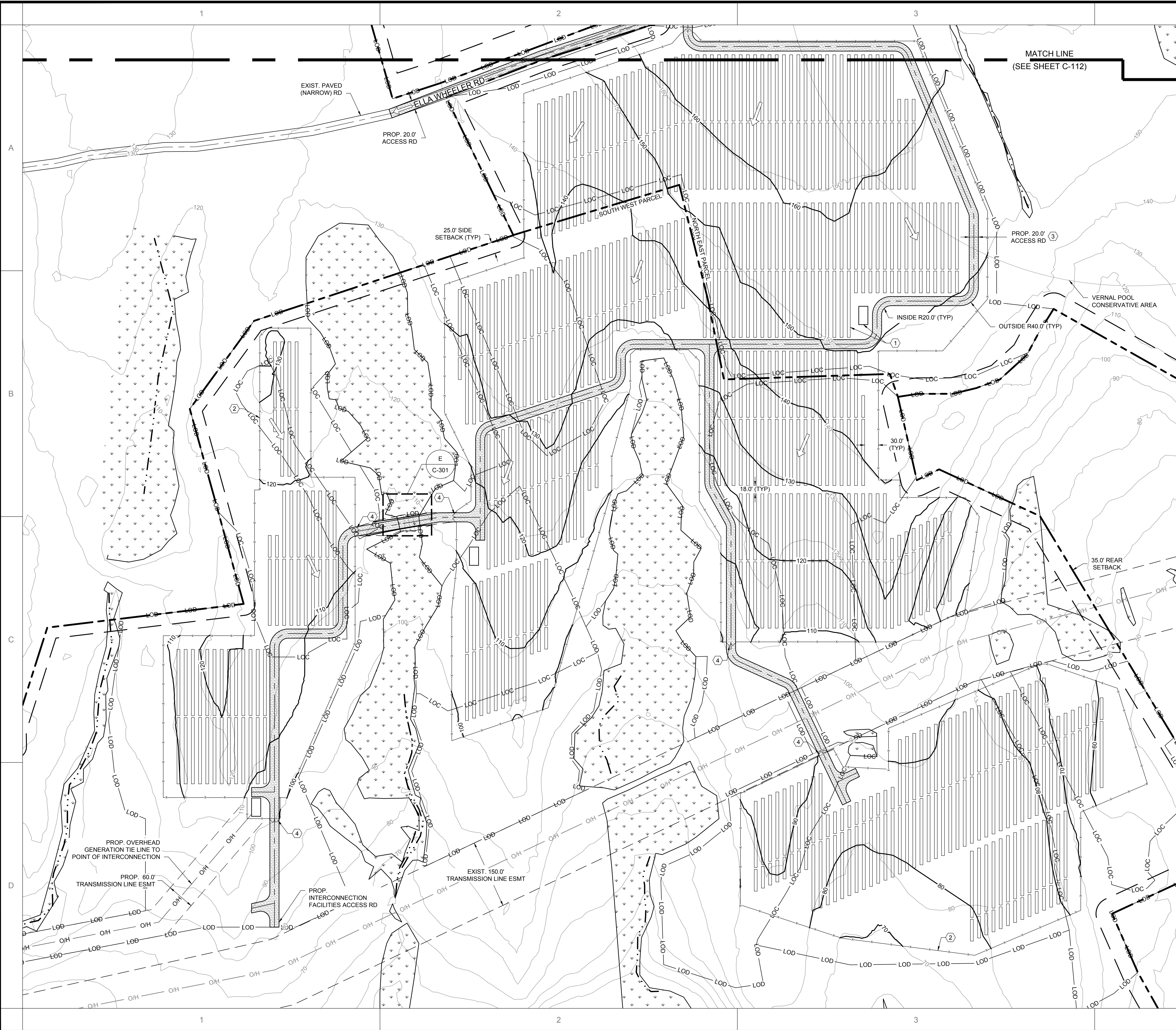
- INTERNAL USE ONLY -	
DRAWN: JT, LUK	CHKD: JB
P. AL.	MKB
PROJECT #:	COR16-005
FILE NAME:	C110.dwg
DATE: 03/29/18	BY: JT
CT SITING COUNCIL DESCRIPTION:	04/11/2018

PROJECT: PAWCATUCK SOLAR CENTER
 ELLA WHEELER ROAD, NORTH STONINGTON, CT 06399

DRAWING TITLE: GRADING & DRAINAGE PLAN - AREA NORTH WEST

DRAWING NO. C-112

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KEY MAP

LEGEND

	PROPERTY LINE
	SETBACK
	STREAM
	WETLAND DELINEATION BY ALL POINTS TECHNOLOGY
	EXIST. MAJOR CONTOUR
	PROP. SOLAR TRACKER
	PROP. ACCESS ROAD
	PROP. FENCE
	LIMIT OF DISTURBANCE
	LIMIT OF CLEARING
	DIRECTION OF STORM RUNOFF
	EXIST. PAVED ROAD
	EXIST. TRANSMISSION LINE
	EXIST. TRANSMISSION LINE ESMT
	PROP. TRANSMISSION LINE
	PROP. MAJOR CONTOUR

KEYED NOTES:

- PROPOSED SOLAR ARRAY AND OTHER ELECTRICAL EQUIPMENT (SEE ELECTRICAL AND STRUCTURAL PLANS).
- PROPOSED 6' TALL CHAINLINK FENCE WITH 1 FT BARBED WIRE PER DOT STANDARD CHAINLINK FENCE, SHEET NO HW-913-01.
- PROPOSED 20' WIDE ACCESS ROAD, (SEE SECTION D ON C-301)
- PROPOSED 24' WIDE DOUBLE SWING GATE. GATE SHALL BE LOCKED WITH FIRE DEPARTMENT APPROVED PAD LOCK.

GENERAL NOTES:

- DIMENSIONS PROVIDED ARE FOR GENERAL GUIDANCE ONLY AND DO REPRESENT SLOPES OR DIFFERENCES IN ELEVATIONS.
- FOR TREE CLEARING SEE SHEET C-102.

SCALE: 1" = 100'

**Know what's below.
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DRAWN: JT, LUK	CHKD: JB
PROJECT #: COR16-005	FILE NAME: C110.dwg
DATE: 03/29/18	BY (PRINTED): JT
CT SITING COUNCIL DESCRIPTION: C110.dwg	

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PAWCATUCK SOLAR CENTER
ELLA WHEELER ROAD
NORTH STONINGTON, CT 06399

GRADING & DRAINAGE PLAN - AREA SOUTH

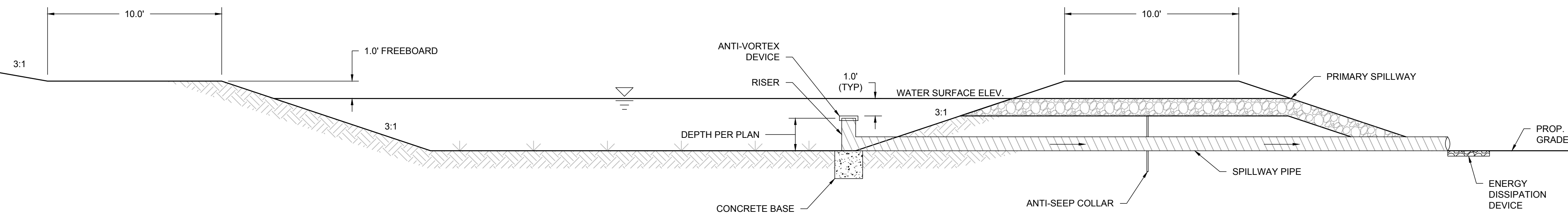
PROJECT: PAWCATUCK SOLAR CENTER

DRAWING NO. **C-113**

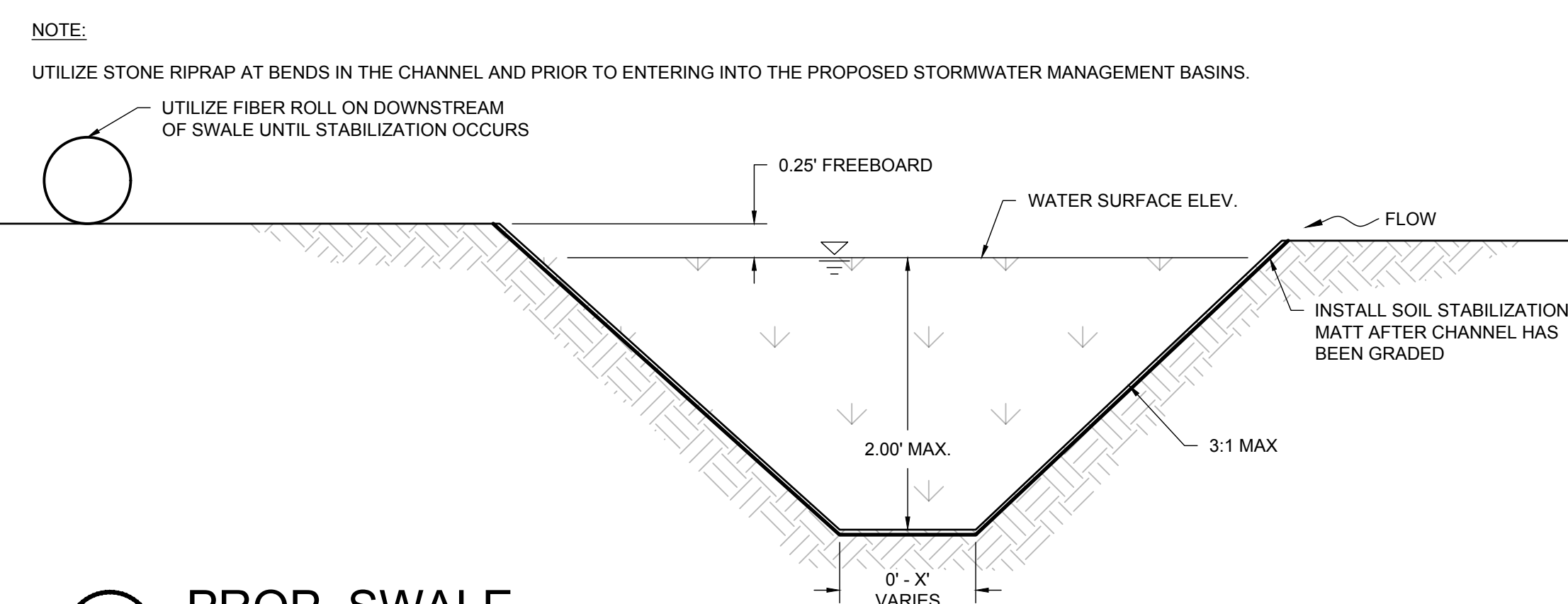
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PRELIMINARY BASIN SIZING							
BASIN NO	VOLUME (CY)	BASIN TOP	BASIN BOT	RISER ELEV	SPILLWAY ELEV	RISER DETAILS	SPILLWAY DETAILS
NE1	990	95.0	90.0	93.0	94.0	18" DIA. CMP RISER	20FT LONG BROAD CRESTED SPILLWAY
NE2	2250	59.5	54.5	56.0	58.5	18" DIA. CMP RISER	20FT LONG BROAD CRESTED SPILLWAY
NE3	1250	90.5	85.5	88.8	89.5	18" DIA. CMP RISER	20FT LONG BROAD CRESTED SPILLWAY
NE4	330	143.0	138.0	141.0	142.0	12" DIA. CMP RISER	20FT LONG BROAD CRESTED SPILLWAY
NE5	720	146.0	141.0	144.0	145.0	18" DIA. CMP RISER	20FT LONG BROAD CRESTED SPILLWAY

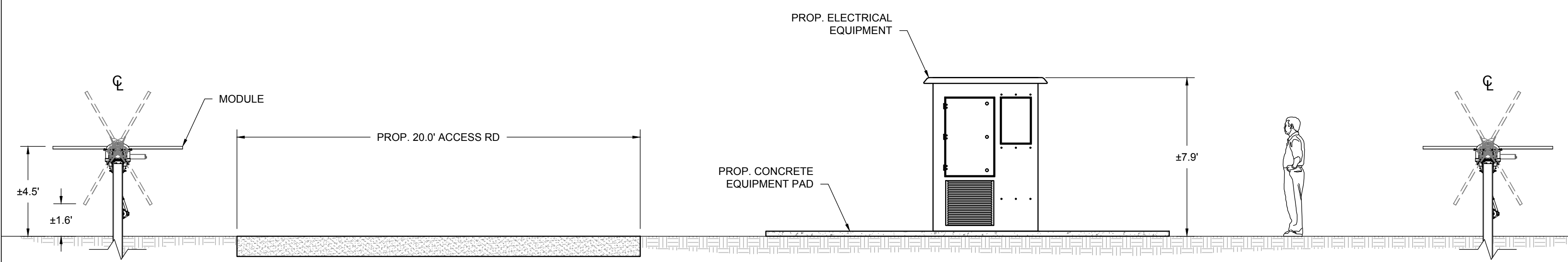
- NOTES:
1. THE PERMANENT STORMWATER MANAGEMENT BASINS HAVE BEEN SIZED PER THE CONNECTICUT WATER QUALITY MANUAL
 2. OUTFALL PIPING, SPILLWAY, EMBANKMENT DESIGN & BASIN SIZING WERE DETERMINED UTILIZING CONNECTICUT METHODOLOGY, TR-55 AND HEC-HMS DRAINAGE PROGRAMS
 3. PERMANENT BASINS SHALL BE INSTALLED WITH A CUTOFF TRENCH OF IMPERVIOUS MATERIAL AND PIPES SHALL BE EQUIPPED WITH AN ANTI-SEEP COLLAR. THESE WILL BE DETAILED IN FINAL ENGINEERING



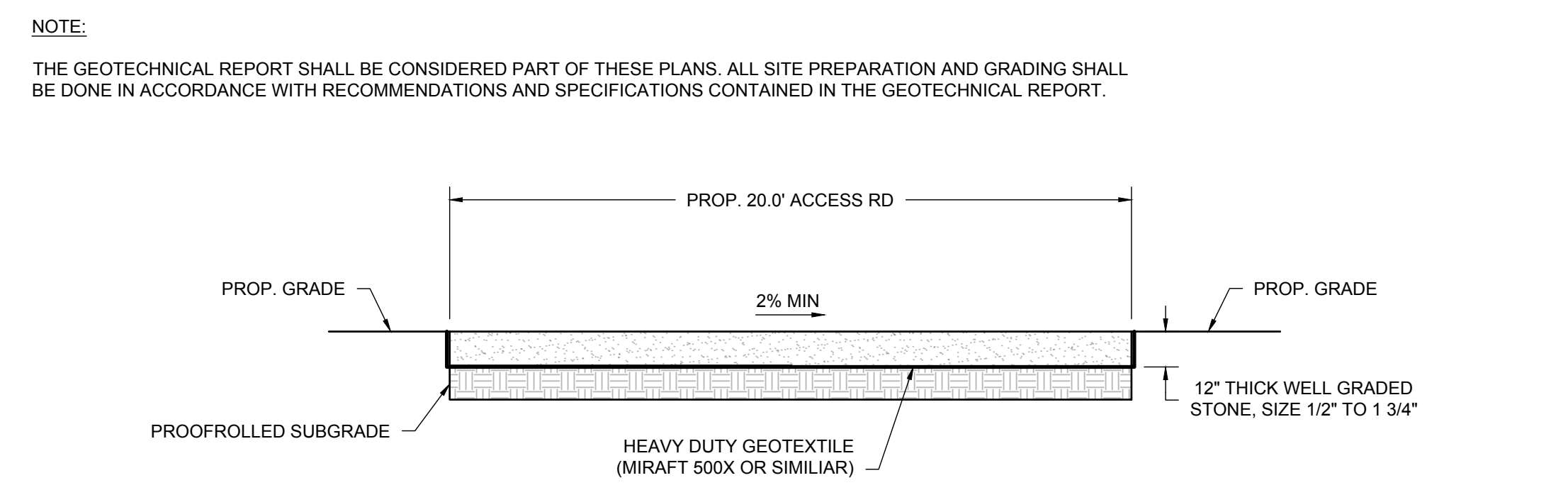
A PROP. STORMWATER MANAGEMENT BASIN
SCALE: NTS



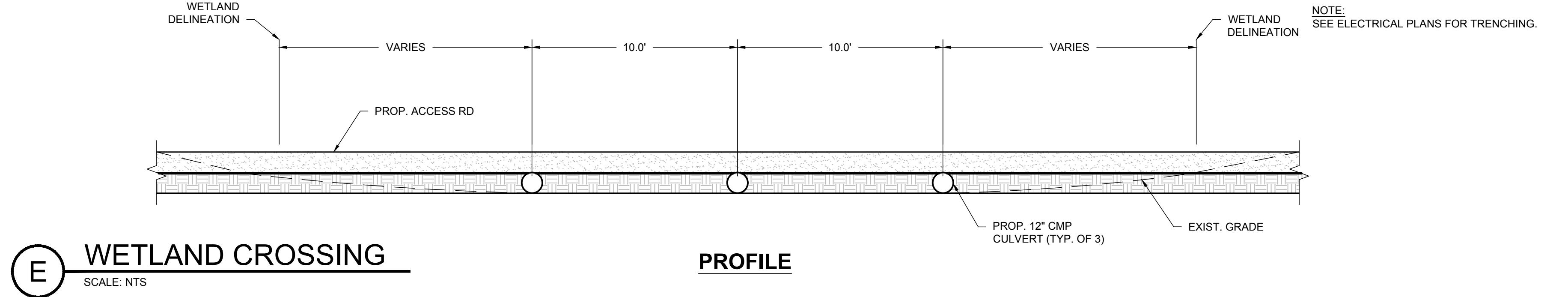
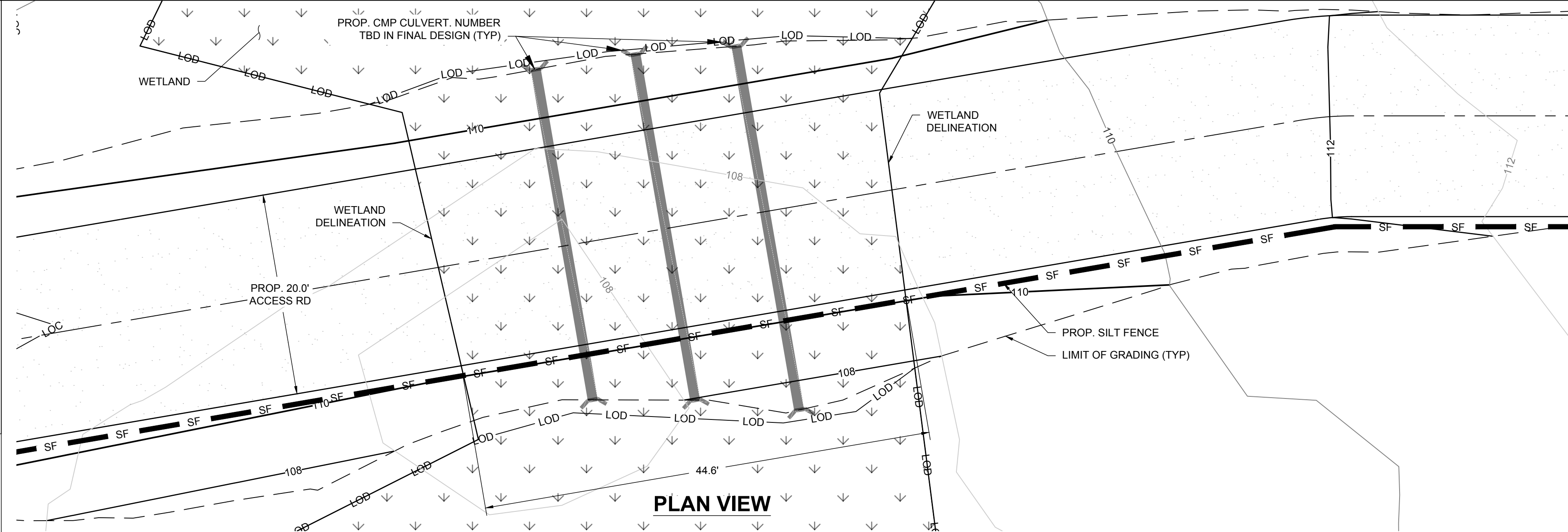
B PROP. SWALE
SCALE: NTS



C TYPICAL TRACKER AND EQUIPMENT PAD ELEVATION
SCALE: NTS



D PROP. ACCESS ROAD
SCALE: NTS



E WETLAND CROSSING
SCALE: NTS

- NOTES:
1. PROPOSED 6' TALL CHAINLINK FENCE WITH 1" BARBED WIRE SHALL BE PER DOT STANDARD CHAINLINK FENCE, STANDARD SHEET HW-913_01.
 2. FENCE MESH SIZE NO GREATER THAN 1.25" IS REQUIRED.

F PROP. FENCE DETAIL
SCALE: NTS

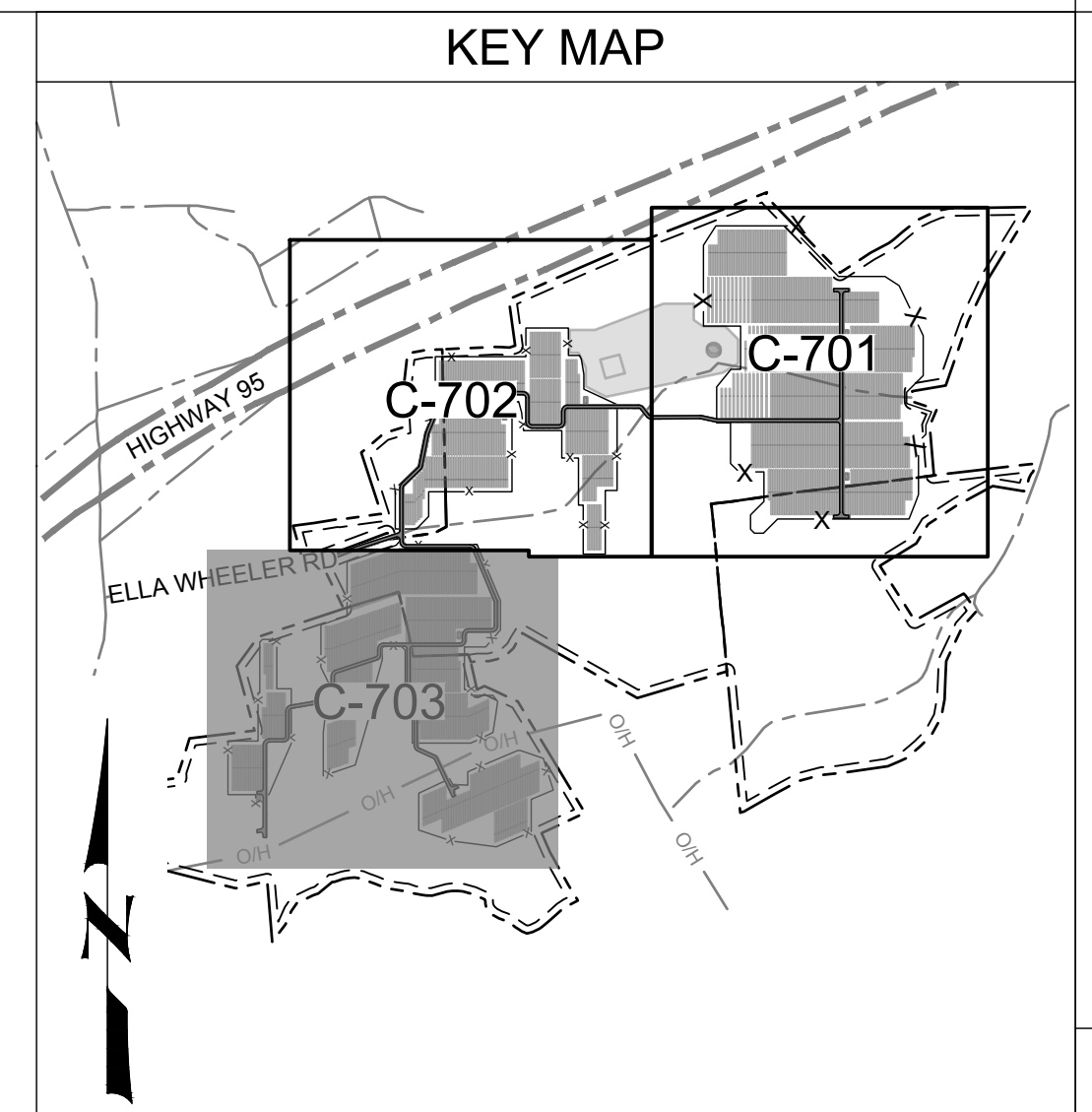
- INTERNAL USE ONLY -

DRAWN:	JT, LJK
CHKD:	JB
P.L.:	NLB
PROJECT #:	COR16-005
FILE NAME:	C301.dwg
DATE:	03/29/18
BY:	JT
PRINTED:	04/12/2018
DESCRIPTION:	CT SITING COUNCIL

PROJECT: PAWCATUCK SOLAR CENTER
ECLA WHEELER ROAD, NORTH STONINGTON, CT 06359

DRAWING TITLE: SECTIONS & DETAILS

DRAWING NO. C-301



LEGEND

	PROPERTY LINE
	SETBACK
	STREAM
	WETLAND DELINEATION BY ALL POINTS TECHNOLOGY
	EXIST. MAJOR CONTOUR
	PROP. SOLAR TRACKER
	PROP. ACCESS ROAD
	PROP. FENCE
	TEMP. DIVERSION DITCH
	LIMIT OF DISTURBANCE
	LIMIT OF CLEARING
	PROP. SILT FENCE
	DIRECTION OF STORM RUNOFF
	EXIST. PAVED ROAD
	EXIST. TRANSMISSION LINE
	EXIST. TRANSMISSION LINE ESMT
	PROP. TRANSMISSION LINE
	PROP. MAJOR CONTOUR

- KEYED NOTES:**
- PROPOSED SOLAR ARRAY AND OTHER ELECTRICAL EQUIPMENT (SEE ELECTRICAL AND STRUCTURAL PLANS).
 - PROPOSED 6' TALL CHAINLINK FENCE WITH 1 FT BARBED WIRE PER DOT STANDARD CHAINLINK FENCE, SHEET NO HW-913-01.
 - PROPOSED 20' WIDE ACCESS ROAD.
 - PROPOSED 24' WIDE DOUBLE SWING GATE. GATE SHALL BE LOCKED WITH FIRE DEPARTMENT APPROVED PAD LOCK.
- GENERAL NOTES:**
- DIMENSIONS PROVIDED ARE FOR GENERAL GUIDANCE ONLY AND DO REPRESENT SLOPES OR DIFFERENCES IN ELEVATIONS.
 - FOR ADDITIONAL INFORMATION ON WATERSHEDS SEE SHEETS C-800 & C-801 IN THE STORMWATER ENGINEERING CONCEPT REPORT.
 - FOR TREE CLEARING SEE SHEET C-102.

CT DEEP TEMPORARY EROSION & EROSION CONTROL SIZING

WATERSHED ID	DRAINAGE AREA (AC)	TOTAL REQUIRED STORAGE (CY)	E&SC MEASURE
S1	0.87	-	SILT FENCE
S2	0.76	-	SILT FENCE
S3	0.74	-	SILT FENCE
S4	3.01	403	TRAP
S5	0.82	-	SILT FENCE
S6	0.82	-	SILT FENCE
S7	4.18	560	TRAP
S8	1.00	-	SILT FENCE
S9	1.00	-	SILT FENCE
S10	9.60	341	BASIN
S11	5.00	670	TRAP
S12	4.95	663	TRAP
S13	9.53	339	BASIN
S14	0.71	-	SILT FENCE
S15	0.72	-	SILT FENCE
S16	4.53	607	TRAP



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PAWCATUCK SOLAR CENTER
ELLA WHEELER ROAD
NORTH STONINGTON, CT 06959

EROSION & SEDIMENTATION PLAN - AREA SOUTH

PROJECT: PAWCATUCK SOLAR CENTER
DRAWING NO. **C-703**

DATE: 03/29/18
BY: JT
DATE PRINTED: 04/12/2018
FILE NAME: C703.dwg

CT SITING COUNCIL DESCRIPTION

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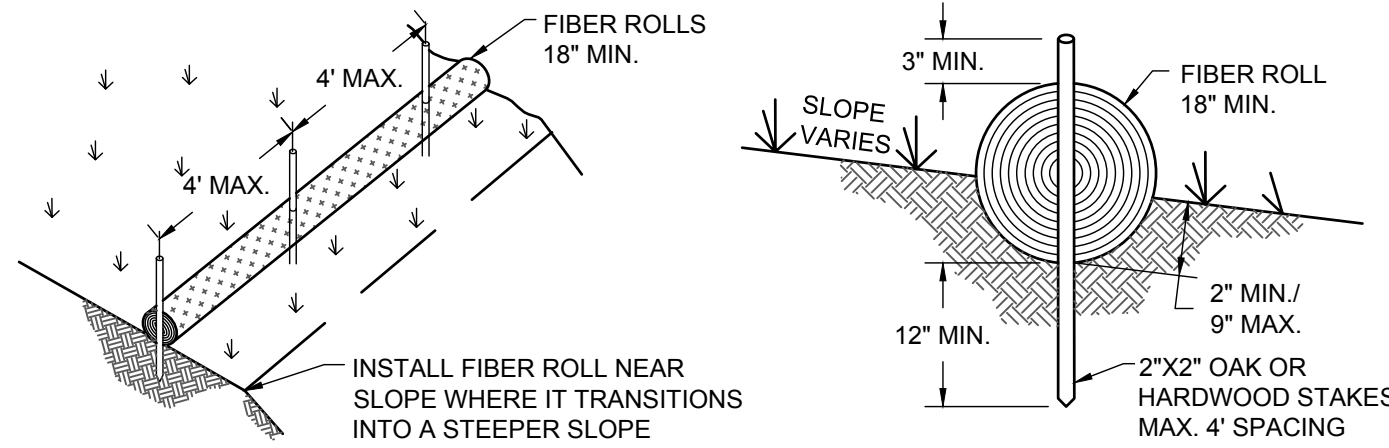
BOE - ARCH D SIZE - 24"x36" © Blue Oak Energy, LLC

CONSTRUCTION SPECIFICATIONS

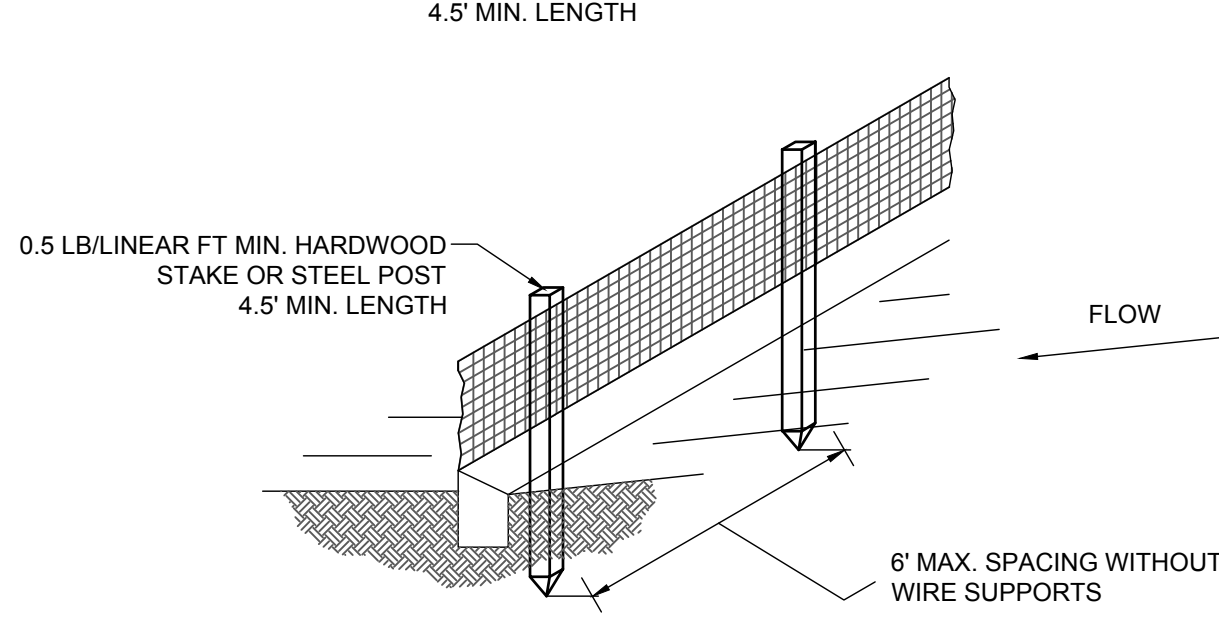
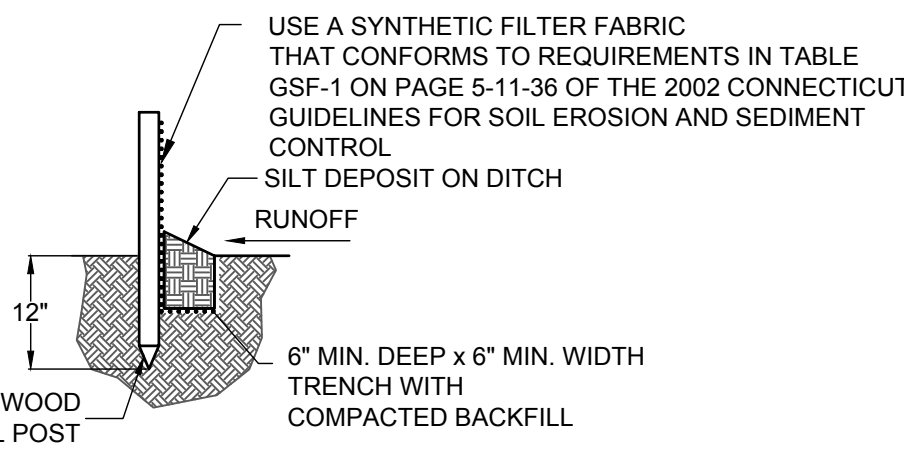
1. INSTALL FIBER ROLL ALONG A LEVEL CONTOUR.
2. FIBER ROLL SHALL BE A MINIMUM OF 2" EMBEDDED IN THE GROUND AND A MAXIMUM OF 6" EMBEDDED.
3. USE 2"x2" OAK OR HARDWOOD STAKES AT A SPACING OF 4' MAX TO ANCHOR FIBER ROLL/COMPOST SOCK INTO GROUND.

MAINTENANCE

INSPECT COMPOST SOCKS WEEKLY AND AFTER EACH SIGNIFICANT RAINFALL EVENT (1/2 INCH OR GREATER). REMOVE ACCUMULATED SEDIMENT AND ANY DEBRIS. COMPOST SOCK MUST BE REPLACED IF CLOGGED OR TORN. IF PONDING BECOMES EXCESSIVE, SOCK MAY NEED TO BE REPLACED WITH A LARGER DIAMETER OR A DIFFERENT MEASURE.



A FIBER ROLL/COMPOST SOCK
SCALE: NTS



CONSTRUCTION SPECIFICATIONS

1. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
2. SILT FENCE SHALL BE LOCATED AT 10 FEET DOWN GRADIENT FROM THE TOE OF SLOPE.
3. DO NOT LAYOUT PERIMETER CONTROL SILT FENCE AT PROPERTY CORNERS AS A SINGLE RUN. INSTALL SILT FENCE IN SECTION UTILIZING J HOOKS SO RUNOFF DOES NOT CONCENTRATE AND OVERWHELM THE SYSTEM CONTRIBUTING DRAINAGE TO SECTIONS OF SILT FENCE SHOULD BE 1 ACRE OR LESS.
4. WHEN THE CONTOUR CAN NOT BE FOLLOWED INSTALL THE SILT FENCE SUCH THAT PERPENDICULAR WINGS ARE CREATE TO BREAK THE VELOCITY OF WATER FLOWING ALONG THE FACE. SPACING SHALL BE AT 75 FEET MAX.
5. FOR FURTHER INFORMATION SEE BMP GSF SILT FENCE FROM 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.

MAINTENANCE

INSPECT SILT FENCE AT LEAST WEEKLY AND AFTER EACH SIGNIFICANT (1/2 INCH OR GREATER) RAINFALL EVENT. MAKE ANY REQUIRED REPAIRS IMMEDIATELY. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN TO REDUCE PRESSURE ON THE FENCE. REMOVE SEDIMENT DEPOSITS AND BRING AREA TO GRADE AFTER THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

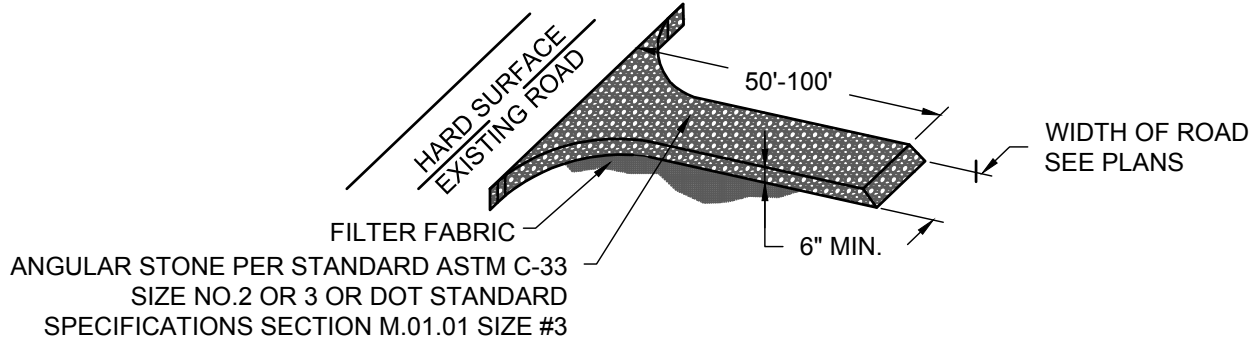
B TYPICAL SILT FENCE [GSF]
SCALE: NTS

CONSTRUCTION SPECIFICATIONS

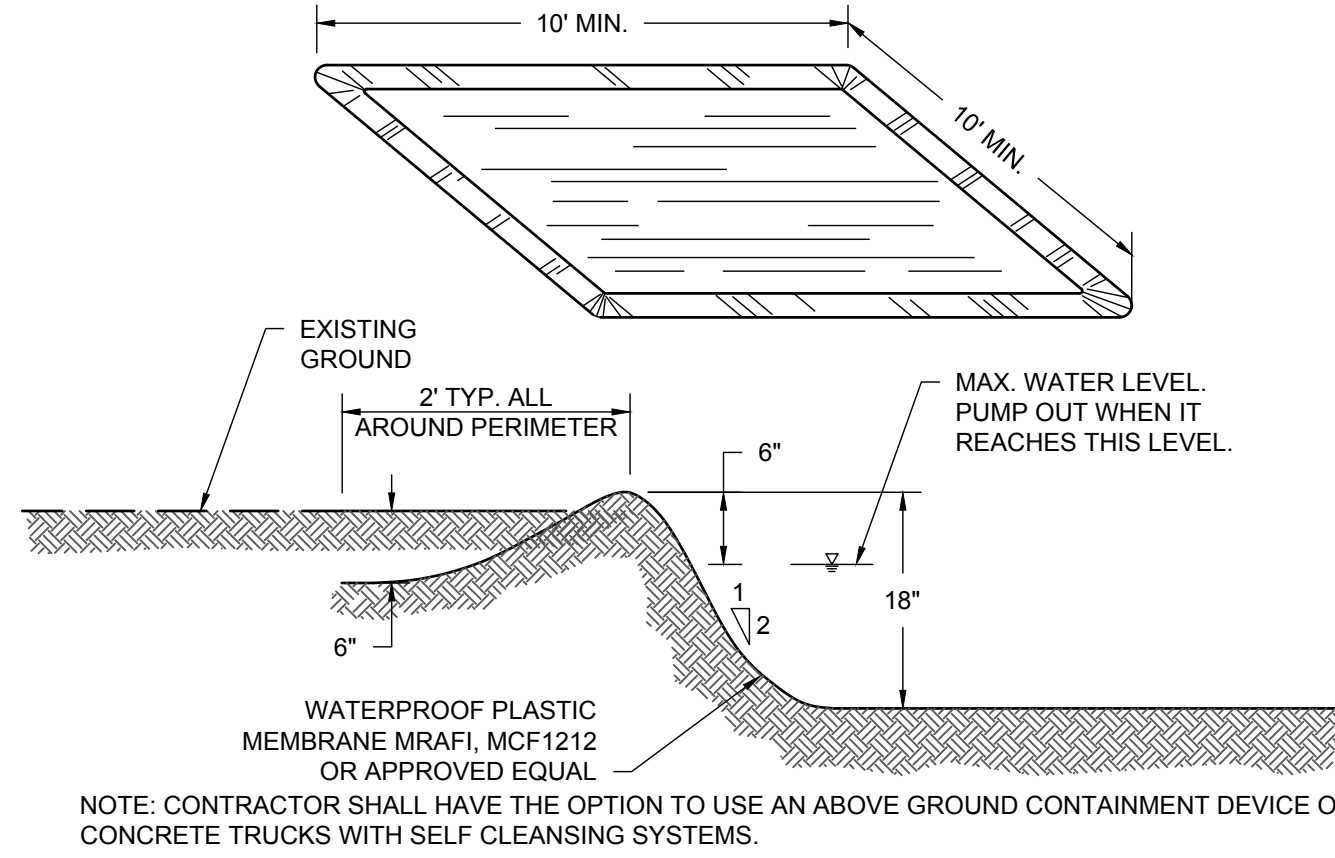
1. TO CONSTRUCT CLEAR THE ENTRANCE AND EXIT AREA OF ALL VEGETATION ROOTS AND OTHER OBJECTIONABLE MATERIAL AND PROPERLY GRADE IT.
2. PLACE THE GRAVEL OVER A GEOTEXTILE FABRIC TO THE SPECIFIC GRADE AND DIMENSIONS SHOWN ON THE PLANS.
3. FOR FURTHER INFORMATION SEE BMP CE CONSTRUCTION ENTRANCE FROM THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.

MAINTENANCE

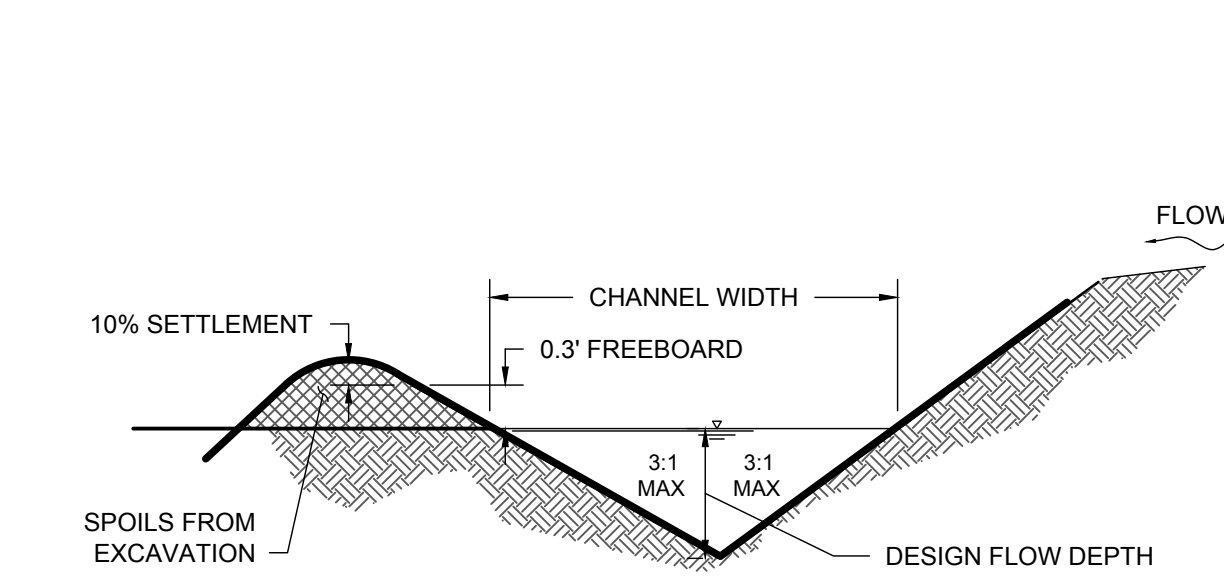
MAINTAIN THE GRAVEL IN A CONDITION TO PREVENT MUD OR SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL STONE. IMMEDIATELY REMOVE ALL OBJECTIONABLE MATERIALS SPILLED, WASHED OR TRACKED INTO PUBLIC ROADWAYS.



C TEMPORARY GRAVEL CONSTRUCTION ENTRANCE [CE]
SCALE: NTS



D CONCRETE WASHOUT
SCALE: NTS



E TEMPORARY DIVERSION DITCH
SCALE: NTS

NOTES:

1. IF CONSTRUCTION ACTIVITIES ARE COMPLETE OR HAVE BEEN TEMPORARILY HALTED FOR MORE THAN SEVEN (7) DAYS, STABILIZATION ACTIVITIES WILL BE IMPLEMENTED WITHIN THREE (3) DAYS.
2. AREAS THAT REMAIN DISTURBED BUT INACTIVE FOR AT LEAST 30 DAYS SHALL RECEIVE TEMPORARY SEEDING OR SOIL PROTECTION WITHIN SEVEN (7) DAYS.

GROUND STABILIZATION

AREA DESCRIPTION	STABILIZATION TIME FRAME
DIVERSION DITCH	7 DAYS
SLOPES STEEPER THAN 3:1	7 DAYS
SLOPES FLATTER THAN 3:1	14 DAYS
ALL OTHER AREAS	14 DAYS

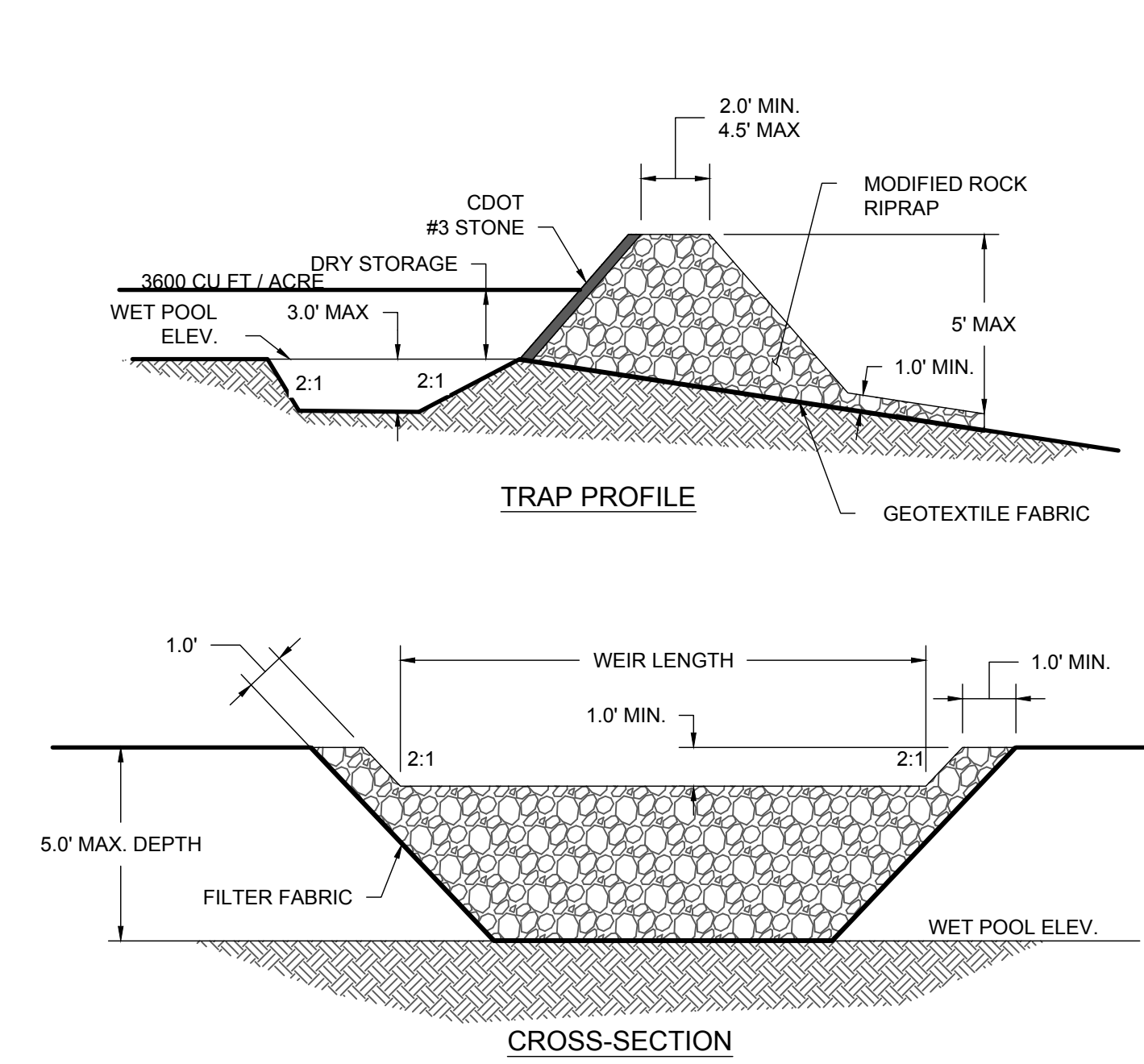
TEMPORARY SEEDING SCHEDULE

- FERTILIZE 300 LBS/ACRE UTILIZING 10-10-10
- LIME 2 TONS/ACRE
- MULCH IF OUTSIDE OF OPTIMUM SEEDING DATES
- UTILIZE SEED MIX CONFORMING TO FIG. TS-2 OF THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL

PERMANENT SEEDING SCHEDULE

- FERTILIZE 500 LBS/ACRE UTILIZING 10-10-10, OAE
- LIME 2 TONS/ACRE
- UTILIZE SEED MIX CONFORMING TO FIG. TS-2 OF THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL

F SEEDING DETAIL
SCALE: NTS



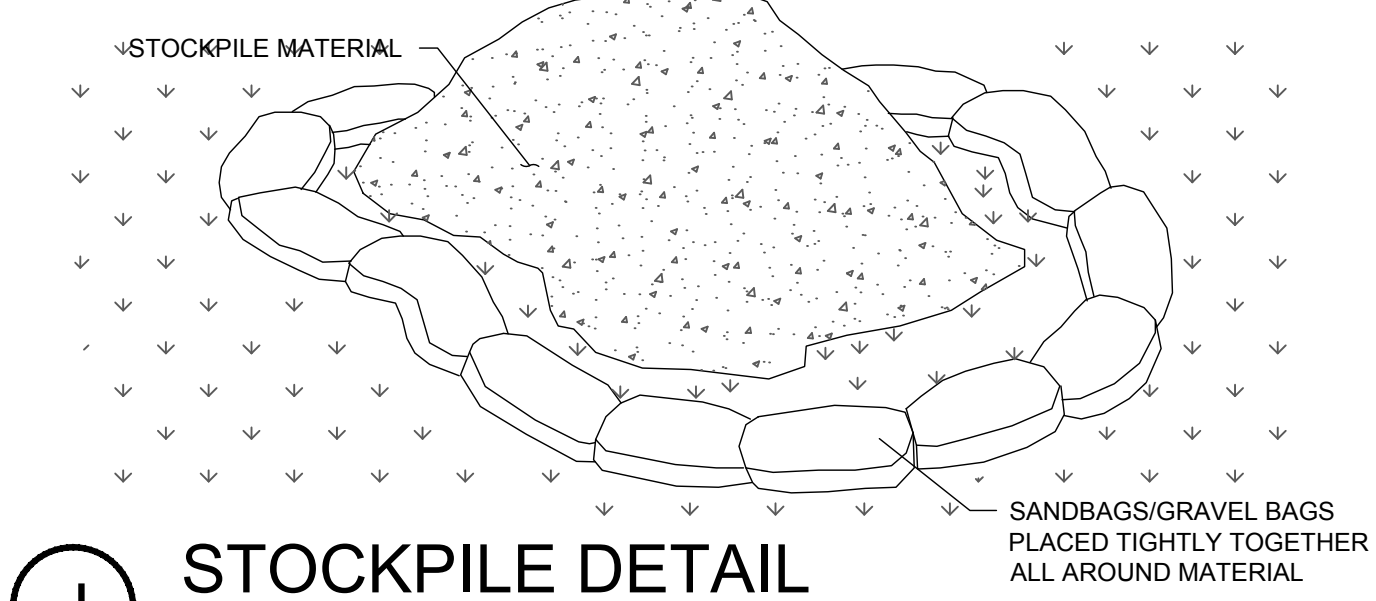
CONSTRUCTION SPECIFICATIONS

1. SEDIMENT TRAP SHALL CONFORM TO TST TEMPORARY SEDIMENT TRAP FROM 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.
2. ENSURE THAT THE FILL MATERIAL FOR EMBANKMENT IS FREE OF ROOTS, WOODY VEGETATION, OR OTHER OBJECTIONABLE MATERIAL.
3. CONSTRUCTION THE OUTLET SECTION IN THE EMBANKMENT. PROTECT RIPRAP AND SOIL FROM PIPING USING FILTER FABRIC.
4. SEDIMENT TRAP SHOULD OUTFALL TO STABLE GROUND
5. SEDIMENT TRAPS LOCATED NEAR THE VERNAL POOLS SHALL INSTALL DEWATERING DEVICES SUCH AS SKIMMERS OR SUBDRAINS TO IMPROVE INFILTRATION. THESE WILL BE SIZED AND DESIGNED DURING FINAL ENGINEERING TO PROVIDE DEWATERING WITHIN A 48-72 HOUR PERIOD. THE USE OF PUMPS FOR DEWATERING THE BASINS CAN BE UTILIZED IF NATURAL INFILTRATION IS NOT ADEQUATE.

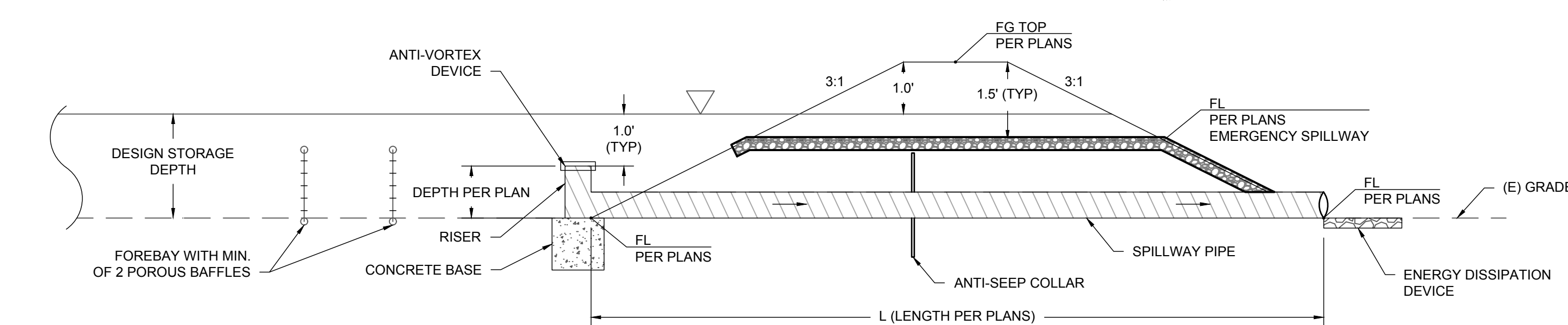
H TEMPORARY SEDIMENT TRAP [TST]
SCALE: NTS

NOTE(S):

1. PROTECTION OF STOCKPILES IS A YEAR-ROUND REQUIREMENT.
2. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CONCENTRATED FLOWS OF STORM WATER, DRAINAGE COURSES, AND DRAIN INLETS.
3. IMPLEMENT WIND EROSION/TRANSPORT CONTROL PRACTICES AS APPROPRIATE.
4. ALL STOCKPILES SHALL BE COVERED, STABILIZED, OR PROTECTED WITH A TEMPORARY LINEAR BARRIER (I.E. SANDBAGS, ETC.) PRIOR TO THE ONSET OF PRECIPITATION.



J STOCKPILE DETAIL
SCALE: NTS



NOTES:

1. EARTHEN EMBANKMENT SHALL BE SEEDED WITH TEMPORARY VEGETATION IMMEDIATELY AFTER INSTALLATION.
2. CONSTRUCTION OPERATION SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
3. THE STRUCTURE SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE UPSLOPE DRAINAGE AREA HAS BEEN STABILIZED.
4. SEDIMENT TRAP SHOULD OUTFALL TO STABLE GROUND.

G TYPICAL SEDIMENT BASIN SPILLWAY PROFILE
SCALE: NTS

EROSION AND SEDIMENTATION CONTROL NOTES:

1. CONTRACTOR SHALL ASSUME THE CONCEPTS ON THE EROSION AND SEDIMENTATION CONTROL PLAN, IF PROVIDED, ARE SCHEMATIC MINIMUM REQUIREMENTS, THE FULL EXTENT OF WHICH ARE TO BE DETERMINED BY THE CONTRACTOR. CONTRACTOR IS RESPONSIBLE FOR THE EXACT DESIGN AND EXTENT OF THE EROSION CONTROL SYSTEM SO THAT IT WORKS WITH THE CONTRACTOR'S INTENDED USE AND MANAGEMENT OF THE CONSTRUCTION SITE.
2. ALL EROSION CONTROL FACILITIES SHALL BE INSPECTED BY THE CONTRACTOR AND REPAIRED, AS REQUIRED, AT THE CONCLUSION OF EACH WORKING DAY DURING THE RAINY SEASON. THE CONTRACTOR SHALL INSPECT THE EROSION CONTROL FACILITIES AND MAKE NECESSARY REPAIRS PRIOR TO ANTICIPATED STORMS AND AT REASONABLE INTERVALS DURING STORMS OF EXTENDED DURATION. REPAIRS TO DAMAGED FACILITIES SHALL BE MADE IMMEDIATELY UPON DISCOVERY.
3. AS SOON AS PRACTICAL FOLLOWING EACH STORM, THE CONTRACTOR SHALL REMOVE ANY ACCUMULATION OF SILT OR DEBRIS FROM THE EROSION CONTROL SEDIMENT BASINS AND SHALL CLEAR THE OUTLET PIPES OF ANY BLOCKAGE.
4. STOCKPILED MATERIAL SHALL BE COVERED WITH VISQUEEN OR A TARPULIN UNTIL THE MATERIAL IS REMOVED FROM THE SITE. ANY REMAINING BARE SOIL THAT EXISTS AFTER THE STOCKPILE HAS BEEN REMOVED SHALL BE COVERED UNTIL A NATURAL GROUND COVER IS ESTABLISHED OR IT MAY BE SEEDED OR PLANTED TO PROVIDE GROUND COVER PRIOR TO THE FALL RAINY SEASON.
5. PRIOR TO THE COMMENCEMENT OF ANY CLEARING, GRADING, OR EXCAVATION, THE CONTRACTOR SHALL VERIFY THAT THE CLIENT HAS SUBMITTED TO THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENT PROTECTION (CTDEEP) NECESSARY MATERIALS SHALL BE AVAILABLE ON SITE AND STOCKPILED AT CONVENIENT LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS IMMINENT.
6. CONTRACTOR SHALL MAINTAIN ADJACENT STREETS IN A NEAT, CLEAN, DUST FREE AND SANITARY CONDITION AT ALL TIMES AND TO THE SATISFACTION OF THE CLARK COUNTY INSPECTOR. THE ADJACENT STREET SHALL BE KEPT CLEAN OF DEBRIS, WITH DUST AND OTHER NUISANCE BEING CONTROLLED AT ALL TIMES. DEVELOPER SHALL BE RESPONSIBLE FOR ANY CLEAN UP ON ADJACENT STREETS AFFECTED BY THEIR CONSTRUCTION. METHOD OF STREET CLEANING SHALL BE BY DRY SWEEPING OF ALL PAVED AREAS. NO STOCKPILING OF BUILDING MATERIALS WITHIN THE CLARK COUNTY RIGHT-OF-WAY IS PERMITTED.
7. ALL EROSION CONTROL MATERIALS SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR UNLESS OTHERWISE NOTED.
8. PROTECT DOWN SLOPE DRAINAGE COURSES, STREAMS, AND STORM DRAINS WITH ROCK FILLED SAND BAGS, TEMPORARY DRAINAGE SWALES, SILT FENCES, EARTH BERMS, STORM DRAIN INLET FILTERS AND/OR STRAW BALES USED ONLY IN CONJUNCTION WITH PROPERLY INSTALLED SILT FENCES.

CONSTRUCTION SEQUENCE

PREPARE LIMITS OF CONSTRUCTION & CONSTRUCTION ENTRANCE

1. FLAG THE LIMITS OF CONSTRUCTION NECESSARY TO FACILITATE THE PRE-CONSTRUCTION MEETING.
2. HOLD PRE-CONSTRUCTION MEETING. (REMEMBER TO CALL BEFORE YOU DIG 1-800-922-4455).
3. FLAG REMAINDER OF THE LIMITS OF CONSTRUCTION AND TREE PROTECTION ZONES.
4. INSTALL THE CONSTRUCTION ENTRANCE.

INSTALL TEMPORARY E&S CONTROLS

5. SELECTIVELY REMOVE TREES PER PLAN FOR INSTALLATION OF E&S CONTROLS.
6. INSTALL PERIMETER EROSION AND SEDIMENT CONTROLS AND TREE PROTECTION DEVICES IN ACCORDANCE WITH THE E&S PLAN.
7. CONSTRUCT SEDIMENT BASINS, TRAPS, DIVERSIONS, AND OTHER E&S CONTROLS AS SHOWN ON THE PLANS.
8. **ROUGH GRADING OF THE SITE**
UTILIZE PHASING TO REMOVE TREES WITHIN SITE AS GRADING OCCURS.

9. IF REQUIRED, STRIP AND STOCKPILE ALL TOPSOIL THAT IS WITHIN THE FOOTPRINT OF THE CONSTRUCTION SITE OR AS INDICATED ON PLANS AND REFERENCE STOCKPILE MANAGEMENT FOR EROSION AND SEDIMENT CONTROLS. EITHER REMOVE TREE STUMPS TO AN APPROVED DISPOSAL SITE OR CHIP IN PLACE AS INDICATED ON THE PLANS.
10. MAKE ALL CUTS AND FILLS REQUIRED. ESTABLISH THE SUBGRADE FOR INVERTER PADS AND ACCESS ROADWAY, AS REQUIRED.

INSTALL PERMANENT E&S CONTROLS AND DRAINAGE SYSTEM

11. BEGIN CONSTRUCTION OF THE ACCESS ROADS AND INVERTER PADS AS INDICATED ON THE PLANS.
12. PRIOR TO INSTALLING SURFACE WATER CONTROLS SUCH AS TEMPORARY DIVERSIONS AND STONE DIKES, INSPECT EXISTING CONDITIONS TO ENSURE DISCHARGE LOCATIONS ARE STABLE. IF NOT STABLE, REVIEW DISCHARGE CONDITIONS WITH THE DESIGN ENGINEER AND IMPLEMENT ADDITIONAL STABILIZATION MEASURES PRIOR TO INSTALLING WATER SURFACE CONTROLS.
13. INSTALL ALL PERMANENT DRAINAGE SYSTEMS SUCH AS SWALES AND BASINS AS INDICATED ON THE PLANS OR OTHERWISE MODIFIED BY THE DESIGN ENGINEER TO ADJUST FOR UNFORSEEN SITE CONDITIONS.

FINISH GRADING OF THE SITE

14. PREPARE SUB-BASE, SLOPES, SHOULDER AREAS, ACCESS ROADS AND ANY OTHER AREA OF DISTURBANCE FOR FINAL GRADING.
15. INSTALL ACCESS ROADS AS INDICATED ON PLANS. FOLLOW GEOTECHNICAL RECOMMENDATIONS FOR STRUCTURAL ROAD SECTIONS AND RELATIVE COMPACTION.
16. PLACE TOPSOIL WHERE REQUIRED. COMPLETE THE PERIMETER LANDSCAPE PLANTINGS.
17. FINE GRADE, RAKE, SEED AND MULCH AS INDICATED ON PLANS

SOLAR FIELD

18. INSTALLATION OF PV SYSTEM.
19. **FINAL STABILIZATION**
UPON SUBSTANTIAL COMPLETION OF THE ACCESS ROADS, COMPLETE THE BALANCE OF SITE WORK AND STABILIZATION OF ALL OTHER DISTURBED AREAS.

20. INSPECT ALL PERMANENT SWALES, BASINS, AND DRAINAGE SYSTEMS IN GENERAL AND CLEAN AS NEEDED.
21. AFTER SITE IS STABILIZED REMOVE TEMPORARY EROSION AND SEDIMENT CONTROLS (E.G. GEOTEXTILE SILT FENCES).

ACTIVITY	CONSTRUCTION SCHEDULE											
	1	2	3	4	5	6	7	8	9	10	11	12
PREPARE LIMITS OF CONSTRUCTION AND CONSTRUCTION ENTRANCE												
INSTALL TEMPORARY E&S CONTROLS												
ROUGH GRADING OF THE SITE												
INSTALL PERMANENT E&S CONTROL AND DRAINAGE SYSTEMS												
FINISH GRADING OF THE SITE												
INSTALL OF PV SYSTEM												
FINAL STABILIZATION												
EROSION CONTROL MAINTENANCE												



Know what's below.
Call before you dig.



PRELIMINARY

NOT FOR CONSTRUCTION

INTERNAL USE ONLY -
DRAWN: J.T. LUK
CHKD: JB
P.L.D.: KLB
PROJECT #: COR-16-005
FILE NAME: C720.dwg
DATE: 04/12/18
BY: PRINTED

CT SITING COUNCIL
DESCRIPTION

03.29.18 JT

DATE

DESCRIPTION

CT SITING COUNCIL

DESCRIPTION

DATE

DESCRIPTION

DATE

DESCRIPTION

DATE

DESCRIPTION

DATE

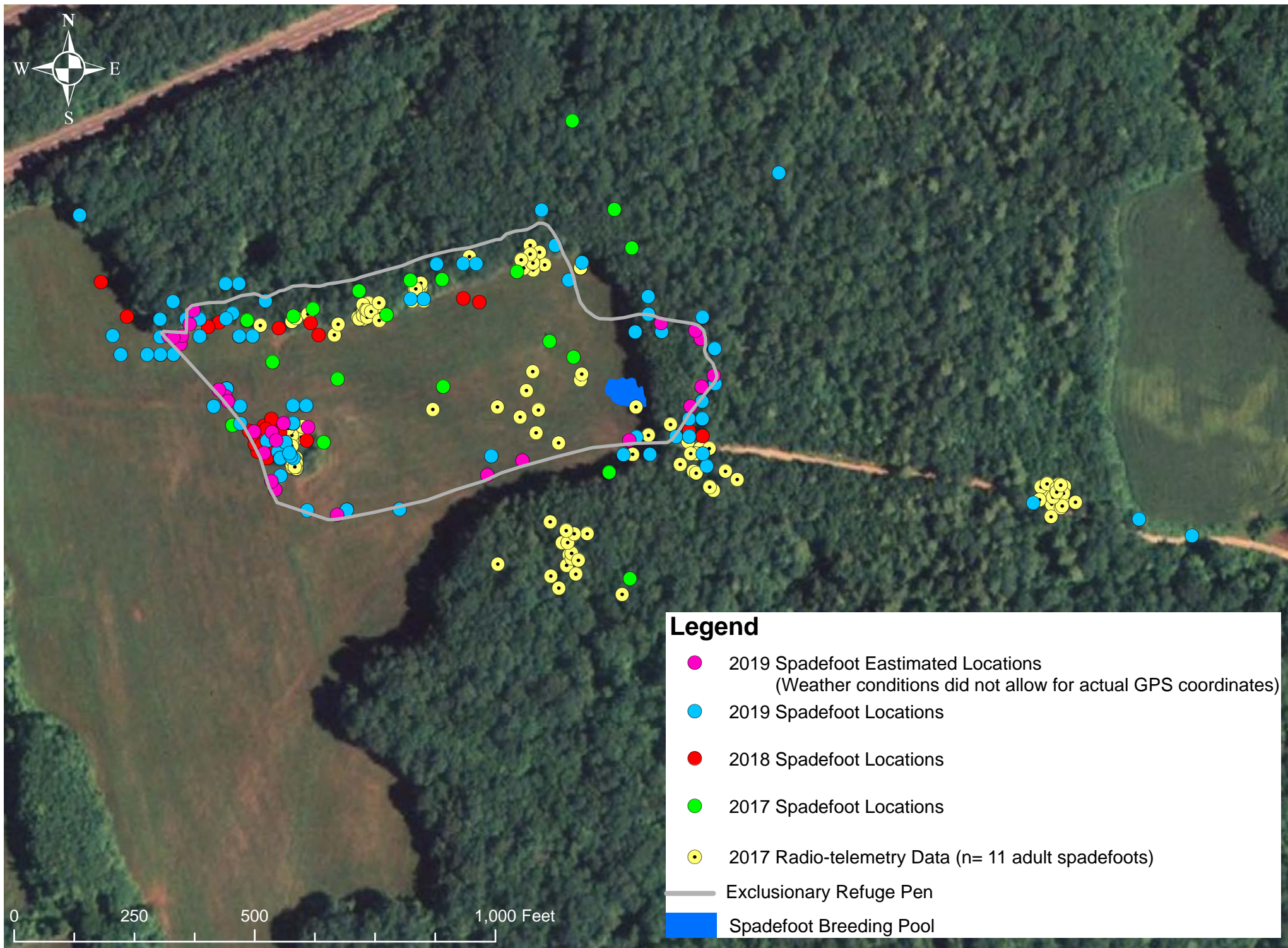
DESCRIPTION

PAWCATUCK SOLAR CENTER
ELLA WHEELER ROAD,
NORTH STONINGTON, CT 06359

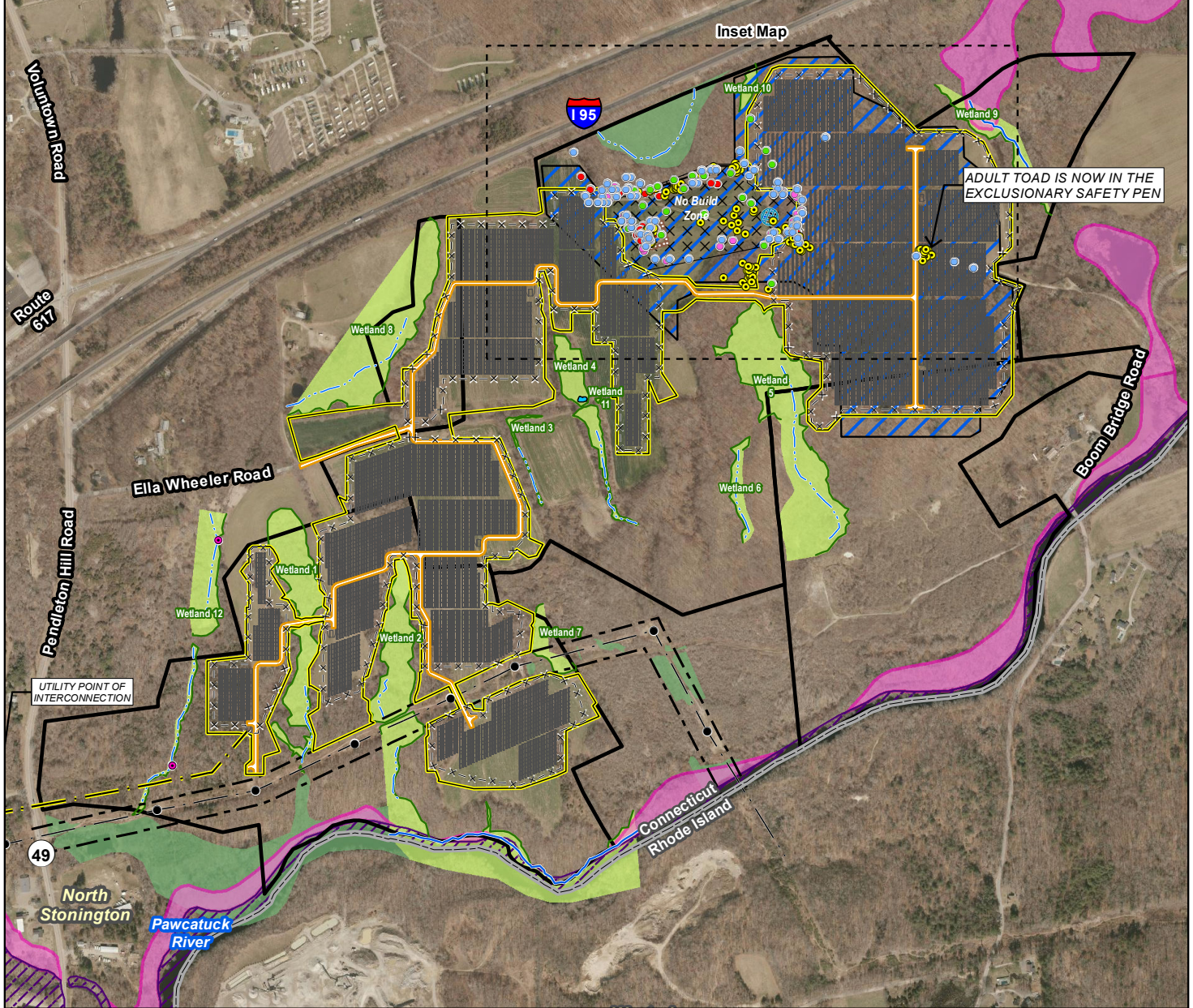
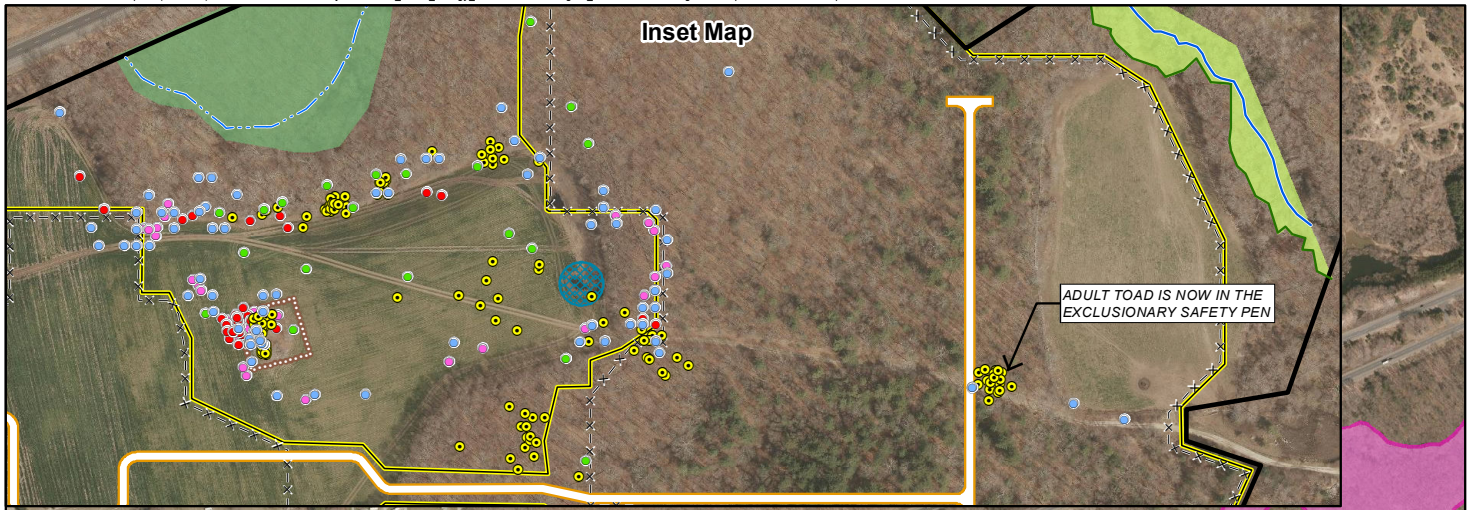
EROSION AND SEDIMENTATION CONTROL NOTES & DETAILS

DRAWING NO.

C-720



Eastern Spadefoot Distribution Map 2017 through 2019.



Legend

Site	Transmission Tower	Cemetery	100-Year Flood Zone
Project Area	Culvert	Spadefoot Breeding Pool	Floodway
Module	Perennial Watercourse Bank	Spadefoot Habitat Management Zone	Town Line
Perimeter Fence	Intermittent Watercourse	No Build Zone	State Line
Access Road	Delineated Wetland Boundary	2017 Spadefoot locations	
Proposed Overhead Tie Line Corridor	Delineated Wetland Area	2017 Telemetry Spadefoot locations	
Transmission Line	Approximate Wetland Area	2018 Spadefoot locations	
Approximate Transmission Right-of-Way	Vernal Pool	2019 Spadefoot locations	
		2019 Estimated Spadefoot locations	

Proposed Conditions Map

Proposed Pawcatuck Solar Center
Ella Wheeler Road
North Stonington, Connecticut

Map Notes:
Base Map Source: CTECO 2016 Aerial Photograph
Map Scale: 1 inch = 900 feet
Map Date: September 2019

North Stonington Solar Center, LLC Site Photos and Eastern Spadefoot Photos

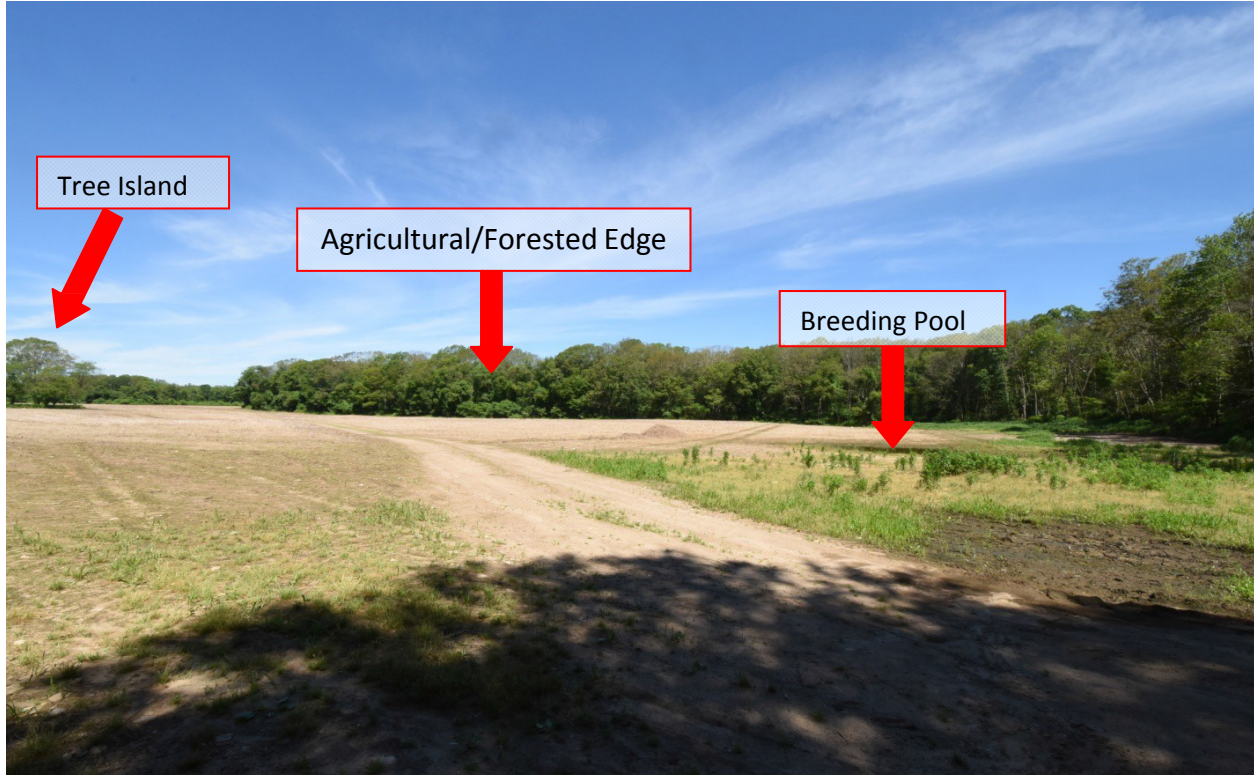


Photo A: Showing core spadefoot habitats and the associated No Build Restrictive Zone (NBRZ). Habitats include the Agricultural/Forested Edge, Breeding Pool, Agricultural field prior to planting and Graveyard or "Tree Island".



Photo B: Showing forested habitat with sparsely vegetated understory.



Photo C: Showing the former breeding pool documented during the 2017 field season, this pool has since been graded out by the farmer. This pool will be reconstructed as part of the mitigation package.



Photo D: Showing the breeding pool and stockpiled manure that resulted in agricultural run-off contaminating the water quality of the breeding pool.



Photo E: Showing tire ruts through breeding pool and stockpiled manure in breeding pool.



Photo F: Showing the site access road and forest edge that connects to Boom Bridge Road



G1



G2

Photos G1 and G2: Showing typical adult spadefoot and developmental series from the 2017 breeding.

Table 1. Comprehensive List of all Captured Eastern Spadefoots

Date Captured	ID	Exclusion Barrier Installed	Capture Log	Inside or Outside Exclusion	Sex	Age Class	Latitude	Longitude	Transmitter	PIT tag	Mass (g)	STV (mm)	Total Relocations	Disposition	Home-range (MCP)	Max Dist. From Breeding Pool (m)
5/22/2017	No_1	No	Initial	n/a	Female	Adult	41.421380	-71.82712	150.162	n/a	18.10	54.35	20	Presumed Alive	0.1	269.2
6/16/2017	3524	No	Initial	n/a	Female	Adult	41.421970	-71.83029	150.302	985120031253524	18.90	56.93	15	Presumed Alive	0.48	76.8
6/16/2017	6538	No	Initial	n/a	Female	Adult	41.422120	-71.83058	150.322	985120031256538	19.70	53.35	16	Presumed Alive	0.91	128.1
6/16/2017	3199	No	Initial	n/a	Female	Adult	41.423040	-71.83095	150.262	985120031273199	19.90	53.94	15	Presumed Alive	1.12	122.3
6/16/2017	7444	No	Initial	n/a	Female	Adult	41.422160	-71.83044	150.182	985120031277444	25.40	59.83	15	Presumed Alive	2.97	137.2
6/19/2017	7480	No	Initial	n/a	Female	Adult	41.422170	-71.83124	150.242	985120031257480	24.30	56.12	15	Presumed Alive	0.36	204.5
6/19/2017	7477	No	Initial	n/a	Female	Adult	41.422270	-71.83053	150.102	985120031267477	27.50	61.10	15	Presumed Alive	1.89	206.5
6/19/2017	1815	No	Initial	n/a	Male	Adult	41.422380	-71.83048	150.221	985120031281815	17.70	51.30	2	Confirmed Dead	n/a	49.2
7/7/2017	1194	No	Initial	n/a	Male	Adult	41.422700	-71.83227	150.122	985120031281194	15.10	50.46	13	Presumed Alive	0.09	202.3
7/7/2017	Meta 1	No	Initial	n/a	n/a	Metamorph	41.421189	-71.82976	n/a	n/a	0.50	14.53	n/a	Presumed Alive	n/a	31.8
7/7/2017	Sub 1	No	Initial	n/a	n/a	Sub-adult	41.423080	-71.82972	n/a	n/a	10.10	45.11	n/a	Presumed Alive	n/a	84.0
7/7/2017	Sub 2	No	Initial	n/a	n/a	Sub-adult	41.423810	-71.83016	n/a	n/a	11.45	46.85	n/a	Collected Voucher	n/a	167.2
7/17/2017	9141	No	Initial	n/a	Male	Adult	41.422720	-71.83218	150.282	985120031269141	20.50	57.46	7	Unknown:Signal Lost	0.72	196.6
8/7/2017	6915	No	Initial	n/a	Female	Adult	41.422059	-71.832374	150.382	985121007656915	21.00	55.02	8	Presumed Alive	0.04	207.4
8/7/2017	Juv 1	No	Initial	n/a	n/a	Juvenile	41.422690	-71.83264	n/a	n/a	2.60	27.70	n/a	Presumed Alive	n/a	31.8
8/7/2017	Juv 10	No	Initial	n/a	n/a	Juvenile	41.422710	-71.83229	n/a	n/a	4.90	34.40	n/a	Presumed Alive	n/a	203.6
8/7/2017	Juv 11	No	Initial	n/a	n/a	Juvenile	41.422850	-71.83179	n/a	n/a	2.30	26.90	n/a	Presumed Alive	n/a	179.6
8/7/2017	Juv 12	No	Initial	n/a	n/a	Juvenile	41.422550	-71.83035	n/a	n/a	2.50	26.50	n/a	Presumed Alive	n/a	55.4
8/7/2017	Juv 13	No	Initial	n/a	n/a	Juvenile	41.422460	-71.83017	n/a	n/a	1.30	22.70	n/a	Presumed Alive	n/a	37.1
8/7/2017	Juv 14	No	Initial	n/a	n/a	Juvenile	41.423300	-71.82985	n/a	n/a	4.10	31.90	n/a	Presumed Alive	n/a	109.1
8/7/2017	Juv 2	No	Initial	n/a	n/a	Juvenile	41.422350	-71.83196	n/a	n/a	2.60	27.10	n/a	Presumed Alive	n/a	184.0
8/7/2017	Juv 3	No	Initial	n/a	n/a	Juvenile	41.422910	-71.83116	n/a	n/a	2.80	28.50	n/a	Presumed Alive	n/a	123.8
8/7/2017	Juv 4	No	Initial	n/a	n/a	Juvenile	41.421800	-71.82991	n/a	n/a	1.70	23.20	n/a	Presumed Alive	n/a	72.0
8/7/2017	Juv 5	No	Initial	n/a	n/a	Juvenile	41.422300	-71.83116	n/a	n/a	2.70	27.90	n/a	Presumed Alive	n/a	116.6
8/7/2017	Juv 6	No	Initial	n/a	n/a	Juvenile	41.422750	-71.83214	n/a	n/a	2.70	29.40	n/a	Presumed Alive	n/a	192.2
8/7/2017	Juv 7	No	Initial	n/a	n/a	Juvenile	41.422450	-71.83245	n/a	n/a	2.40	27.30	n/a	Presumed Alive	n/a	224.7
8/7/2017	Juv 8	No	Initial	n/a	n/a	Juvenile	41.422910	-71.8314	n/a	n/a	1.90	25.20	n/a	Presumed Alive	n/a	142.4
8/7/2017	Juv 9	No	Initial	n/a	n/a	Juvenile	41.422090	-71.83276	n/a	n/a	5.30	34.80	n/a	Presumed Alive	n/a	251.2
10/29/2017	Juv 15	No	Initial	n/a	n/a	Juvenile	41.422712	-71.831584	n/a	n/a	4.60	33.40	n/a	Presumed Alive	n/a	146.6
10/29/2017	Juv 16	No	Initial	n/a	n/a	Juvenile	41.421988	-71.83207	n/a	n/a	5.20	36.50	n/a	Presumed Alive	n/a	185.7
10/29/2017	Juv 17	No	Initial	n/a	n/a	Juvenile	41.422951	-71.830592	n/a	n/a	3.90	32.30	n/a	Presumed Alive	n/a	91.5
4/21/2018	5322	No	Initial	n/a	Female	Adult	41.422644	-71.8324	150.541	982126051295322	23.70	56.50		Dead Killed During Corn Planting	n/a	225
4/21/2018	5324	No	Initial	n/a	Female	Adult	41.421981	-71.832376	150.661	982126051295324	27.60	57.50	0	Dead Surgical Complication??	n/a	212
5/15/2018	5248	No	Initial	n/a	n/a	Juvenile	41.422090	-71.83281	n/a	982126051295248	3.60	33.73	n/a	Presumed Alive	n/a	244
5/15/2018	5281	No	Initial	n/a	n/a	Juvenile	41.422660	-71.83379	n/a	982126051295281	3.10	30.52	n/a	Presumed Alive	n/a	324
5/15/2018	5283	No	Initial	n/a	n/a	Juvenile	41.422810	-71.83285	n/a	982126051295283	4.70	36.84	n/a	Presumed Alive	n/a	249
5/15/2018	5300	No	Initial	n/a	n/a	Juvenile	41.422030	-71.83329	n/a	982126051295300	5.40	33.73	n/a	Presumed Alive	n/a	248
5/15/2018	5306	No	Initial	n/a	Female	Adult	41.422020	-71.83289	150.661	982126051295306	22.70	53.70	n/a	Presumed Alive	n/a	216
5/15/2018	5318	No	Initial	n/a	n/a	Juvenile	41.421930	-71.83289	n/a	982126051295318	3.40	31.73	n/a	Presumed Alive	n/a	252
5/15/2018	5327	No	Initial	n/a	n/a	Juvenile	41.422090	-71.832811	n/a	982126051295327	4.20	33.73	n/a	Presumed Alive	n/a	242
5/15/2018	5329	No	Initial	n/a	n/a	Juvenile	41.422811	-71.83285	n/a	982126051295329	6.40	39.94	n/a	Presumed Alive	n/a	250
5/15/2018	6915	No	Recapture	n/a	Female	Adult	41.422020	-71.83289	Old 150.382	985121007656915	20.30	55.62	n/a	Presumed Alive	n/a	214
6/24/2018	5247	No	Initial	n/a	n/a	Juvenile	41.422880	-71.83401	n/a	982126051295247	8.30	39.15	n/a	Presumed Alive	n/a	347
6/24/2018	5258	No	Initial	n/a	n/a	Juvenile	41.422120	-71.83285	n/a	982126051295258	7.60	41.16	n/a	Presumed Alive	n/a	244
6/24/2018	5274	No	Initial	n/a	n/a	Juvenile	41.422010	-71.8326	n/a	982126051295274	7.90	39.96	n/a	Presumed Alive	n/a	225
6/24/2018	5282	No	Initial	n/a	n/a	Juvenile	41.421840	-71.83275	n/a	982126051295282	11.00	45.26	n/a	Presumed Alive	n/a	239
6/24/2018	5286	No	Initial	n/a	n/a	Juvenile	41.421980	-71.8329	n/a	982126051295286	6.80	39.96	n/a	Presumed Alive	n/a	250
6/24/2018	5287	No	Initial	n/a	n/a	Juvenile	41.421980	-71.83292	n/a	982126051295287	5.40	37.95	n/a	Presumed Alive	n/a	251
6/24/2018	5291	No	Initial	n/a	n/a	Juvenile	41.422670	-71.83216	n/a	982126051295291	6.70	38.95	n/a	Presumed Alive	n/a	193 (not max dist.)
6/24/2018	5295	No	Initial	n/a	n/a	Juvenile	41.422090	-71.83268	n/a	982126051295295	7.30	39.16	n/a	Presumed Alive	n/a	229
6/24/2018	5296	No	Initial	n/a	n/a	Juvenile	41.421970	-71.83291	n/a	982126051295296	5.60	37.95	n/a	Presumed Alive	n/a	251
6/24/2018	5313	No	Initial	n/a	n/a	Juvenile	41.422150	-71.8328	n/a	982126051295313	4.80	33.83	n/a	Presumed Alive	n/a	241
6/24/2018	5319	No	Initial	n/a	n/a	Juvenile	41.421452	-71.820747	n/a	982126051295319	9.60	44.17	n/a	Presumed Alive	n/a	753
6/24/2018	5300	No	Recapture	n/a	n/a	Juvenile	41.422070	-71.83286	n/a	982126051295300	7.90	41.10	n/a	Presumed Alive	n/a	225 (not max dist.)

8/4/2018	5292	No	Initial	n/a	n/a	Juvenile	41.422780	-71.83088	n/a	982126051295292	6.00	39.50	n/a	Presumed Alive	n/a	97
8/11/2018	5231	No	Initial	n/a	n/a	Juvenile	41.422000	-71.8292	n/a	982126051295231	5.60	34.80	n/a	Presumed Alive	n/a	44
8/11/2018	5233	No	Initial	n/a	n/a	Juvenile	41.421900	-71.8325	n/a	982126051295233	10.30	46.20	n/a	Presumed Alive	n/a	218
8/11/2018	5237	No	Initial	n/a	n/a	Juvenile	41.421900	-71.8324	n/a	982126051295237	6.70	37.50	n/a	Presumed Alive	n/a	209
8/11/2018	5246	No	Initial	n/a	n/a	Juvenile	41.421900	-71.8324	n/a	982126051295246	8.00	42.50	n/a	Presumed Alive	n/a	208
8/11/2018	5274	No	Recapture	n/a	n/a	Juvenile	41.421900	-71.8324	n/a	982126051295274	9.40	42.10	n/a	Presumed Alive	n/a	208 (not max dist.)
8/11/2018	5287	No	Initial	n/a	n/a	Juvenile	41.422000	-71.8322	n/a	982126051295287	6.90	38.90	n/a	Presumed Alive	n/a	189
8/11/2018	5289	No	Initial	n/a	n/a	Juvenile	41.422100	-71.8323	n/a	982126051295289	9.80	46.20	n/a	Presumed Alive	n/a	201
8/11/2018	5291	No	Recapture	n/a	n/a	Juvenile	41.422600	-71.8327	n/a	982126051295291	7.90	43.10	n/a	Presumed Alive	n/a	235
8/11/2018	5297	No	Initial	n/a	n/a	Juvenile	41.422000	-71.8324	n/a	982126051295297	8.90	42.90	n/a	Presumed Alive	n/a	209
8/11/2018	5309	No	Initial	n/a	n/a	Juvenile	41.422100	-71.8293	n/a	982126051295309	6.90	42.10	n/a	Presumed Alive	n/a	32
8/11/2018	5323	No	Initial	n/a	n/a	Juvenile	41.422800	-71.831	n/a	982126051295323	9.90	45.50	n/a	Presumed Alive	n/a	105
8/13/2018	5265	No	Initial	n/a	n/a	Juvenile	41.422100	-71.8323	n/a	982126051295265	7.90	42.10	n/a	Presumed Alive	n/a	198
8/13/2018	5239	No	Initial	n/a	n/a	Juvenile	41.422600	-71.8321	n/a	982126051295239	6.20	39.20	n/a	Presumed Alive	n/a	185
6/10/2019	5248	No	Recapture	n/a	n/a	Sub-adult	41.421930	-71.83233	n/a	982126051295248	3.90	37.22	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
6/10/2019	5315	No	Initial	n/a	Female	Adult	41.421830	-71.82917	n/a	982126051295315	18.30	55.83	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
6/10/2019	5232	No	Initial	n/a	n/a	Sub-adult	41.422680	-71.82919	n/a	982126051295232	9.80	43.50	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
6/10/2019	5285	No	Initial	n/a	n/a	Sub-adult	41.422210	-71.82928	n/a	982126051295289	6.90	38.20	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
6/10/2019	5320	No	Initial	n/a	n/a	Sub-adult	41.421990	-71.83236	n/a	982126051295320	8.50	41.10	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
6/10/2019	5251	No	Initial	n/a	n/a	Sub-adult	41.421930	71.83234	n/a	982126051295251	13.10	46.10	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
6/10/2019	5279	No	Initial	n/a	n/a	Sub-adult	41.421990	-71.83236	n/a	982126051295279	8.10	40.90	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
6/10/2019	5249	No	Initial	n/a	n/a	Sub-adult	41.421910	-71.83232	n/a	982126051295249	8.80	40.10	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
6/10/2019	5270	No	Initial	n/a	n/a	Sub-adult	41.421950	-71.83235	n/a	982126051295270	12.10	45.40	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	5239	Yes	Recapture	Inside	n/a	Juvenile	41.422100	-71.8323	n/a	982126051295239	12.00	48.53	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Adult	41.422000	-71.8325	n/a	Yellow VIE	18.10	55.27	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	5249	Yes	Recapture	Inside	n/a	Juvenile	41.421800	-71.8324	n/a	982126051295249	10.00	43.44	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.422100	-71.8323	n/a	Yellow VIE	1.70	25.60	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.422200	-71.8323	n/a	Yellow VIE	1.80	26.74	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.422200	-71.8322	n/a	Yellow VIE	1.20	23.70	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.422100	-71.8327	n/a	Yellow VIE	1.50	24.96	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.422200	-71.8327	n/a	Yellow VIE	1.80	27.50	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.422300	-71.8328	n/a	Yellow VIE	1.80	27.56	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.422300	-71.8328	n/a	Yellow VIE	1.50	25.57	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.422300	-71.8328	n/a	Yellow VIE	1.00	22.69	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.422800	-71.8313	n/a	Yellow VIE	1.20	23.86	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.422800	-71.8313	n/a	Yellow VIE	1.30	23.86	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.422800	-71.8332	n/a	Yellow VIE	1.20	23.84	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.422200	-71.8329	n/a	Yellow VIE	1.80	26.62	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
7/22/2019	n/a	Yes	Initial	Outside	n/a	Metamorph	41.421900	-71.8298	n/a	Yellow VIE	1.80	27.65	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5234	Yes	Initial	Inside	n/a	Metamorph	41.421900	-71.8324	n/a	982126051295234	2.80	30.61	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5304	Yes	Initial	Inside	n/a	Metamorph	41.421900	-71.8324	n/a	982126051295304	2.80	29.49	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5244	Yes	Initial	Inside	n/a	Metamorph	41.423000	-71.8309	n/a	982126051295244	3.20	32.40	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	n/a	Yes	Initial	Inside	n/a	Metamorph	41.423100	-71.8303	n/a	Pink VIE	2.60	29.81	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5263	Yes	Initial	Outside	n/a	Sub-adult	41.421600	-71.8267	n/a	982126051295263	16.60	50.96	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5293	Yes	Initial	Outside	n/a	Metamorph	41.421500	-71.8259	n/a	982126051295293	2.60	29.64	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5330	Yes	Initial	Outside	n/a	Metamorph	41.421400	-71.8255	n/a	982126051295330	3.00	31.32	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5259	Yes	Initial	Outside	n/a	Metamorph	41.421900	-71.8292	n/a	982126051295259	3.20	31.91	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5272	Yes	Initial	Outside	n/a	Metamorph	41.421600	-71.8322	n/a	982126051295272	2.90	30.86	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5328	Yes	Initial	Inside	n/a	Metamorph	41.421900	-71.8324	n/a	982126051295328	3.90	33.14	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5286	Yes	Recapture	Inside	n/a	Juvenile	41.421900	-71.8323	n/a	98212605295286	7.10	39.36	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5294	Yes	Initial	Inside	n/a	Metamorph	41.422500	-71.8332	n/a	982126051295294	1.80	27.27	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5278	Yes	Initial	Inside	n/a	Metamorph	41.422500	-71.8333	n/a	982126051295278	2.60	29.73	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5275	Yes	Initial	Outside	n/a	Metamorph	41.422500	-71.8336	n/a	982126051295275	3.10	33.13	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5260	Yes	Initial	Outside	n/a	Metamorph	41.423300	-71.8339	n/a	982126051295260	2.80	30.29	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5266	Yes	Initial	Inside	n/a	Metamorph	41.422600	-71.833	n/a	982126051295266	2.40	28.11	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5271	Yes	Initial	Inside	n/a	Metamorph	41.422600	-71.8326	n/a	982126051295271	2.70	30.10	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5253	Yes	Initial	Inside	n/a	Metamorph	41.422600	-71.8327	n/a	982126051295253	2.60	28.50	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5269	Yes	Initial	Outside	n/a	Metamorph	41.423000	-71.8301	n/a	982126051295269	2.90	29.62	n/a	Presumed Alive	n/a	TBD for 2019 Reporting

8/13/2019	5241	Yes	Initial	Inside	n/a	Metamorph	41.422500	-71.8333	n/a	982126051295241	2.50	31.86	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5254	Yes	Initial	Inside	n/a	Metamorph	41.422500	-71.8334	n/a	982126051295254	2.40	28.10	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5240	Yes	Initial	Inside	n/a	Metamorph	41.422700	-71.8331	n/a	982126051295240	2.30	28.78	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/13/2019	5252	Yes	Initial	Inside	n/a	Metamorph	41.422900	-71.8328	n/a	982126051295252	2.80	30.72	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5285	Yes	Recapture	Inside	n/a	Juvenile	41.423500	-71.8286	n/a	982126051295285	9.50	44.03	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5263	Yes	Recapture	Inside	n/a	Adult	41.422730	-71.83275	n/a	982126051295263	19.10	54.09	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5304	Yes	Recapture	Inside	n/a	Metamorph	41.422610	-71.83366	n/a	982126051295304	4.00	34.14	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5275	Yes	Recapture	Inside	n/a	Metamorph	41.421938	-71.832416	n/a	982126051295275	4.10	35.84	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5317	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295317	4.10	32.29	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5236	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295236	2.40	30.21	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5326	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295326	3.80	33.25	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5300	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	9821260551295300	4.30	33.78	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5321	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295321	4.80	34.17	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5257	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295257	3.70	32.58	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5288	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295288	3.40	30.97	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5250	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295250	4.20	32.50	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5264	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295264	3.50	32.70	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5245	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295245	4.70	34.26	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	8361	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	985121007638361	4.20	34.88	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5262	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295262	3.70	34.65	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5325	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295325	3.30	32.06	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5267	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295267	3.50	32.85	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5261	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295261	3.70	33.96	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5242	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295242	3.30	29.70	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5299	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295299	4.60	33.51	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5243	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295243	4.30	34.59	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5238	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295238	3.30	32.46	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5276	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295276	2.70	30.21	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5310	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295310	3.30	30.59	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5256	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295256	3.30	31.08	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5312	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295312	4.40	35.58	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5273	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295273	4.30	36.00	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	n/a	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	Pink VIE	1.40	24.54	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	8844	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	98212605878844	3.00	31.03	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	n/a	Yes	Initial	Outside	n/a	Metamorph	Estimated*	Estimated*	n/a	Pink VIE	2.50	27.92	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5309	Yes	Initial	Outside	n/a	Adult	Estimated*	Estimated*	n/a	985121007635309	22.20	56.27	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	2503	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	985121006152503	4.70	36.86	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	3197	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	985121007643197	5.40	36.53	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	1620	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	985121006621620	4.80	35.59	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5284	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295284	3.10	31.77	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5255	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295255	3.50	30.66	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5307	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295307	3.30	31.11	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	8140	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	985121007668140	4.40	31.76	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5056	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	985121007635056	4.80	35.57	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	8129	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	985121007638129	4.50	34.81	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5302	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295302	3.20	30.57	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	2232	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	985121007622232	4.30	35.80	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5114	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	985211006145114	3.70	33.10	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5268	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295268	3.00	29.78	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5301	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295301	3.33	32.27	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5091	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	985121007635091	5.20	36.49	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	4514	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	985121007644514	4.00	33.70	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5305	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295305	3.50	30.77	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5311	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295311	3.80	32.15	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5277	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295277	3.50	33.40	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5298	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295298	3.60	32.35	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	8879	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	985121007638879	3.70	33.26	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5272	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295272	3.80	33.22	n/a	Presumed Alive	n/a	TBD for 2019 Reporting

8/28/2019	8451	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126058788451	3.20	31.77	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	8385	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126058788385	2.90	30.84	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	8381	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126058788381	2.20	28.98	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	8456	Yes	Initial	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126058788456	3.40	32.78	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
8/28/2019	5260	Yes	Recapture	Inside	n/a	Metamorph	Estimated*	Estimated*	n/a	982126051295260	3.20	30.38	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/2/2019	5231	Yes	Recapture	Inside	n/a	Juvenile	41.422300	-71.8291	n/a	982126051295231	10.80	44.23	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/2/2019	8402	Yes	Initial	Outside	n/a	Metamorph	41.422200	-71.8292	n/a	982126058788402	3.90	32.81	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/2/2019	8309	Yes	Initial	Outside	n/a	Metamorph	41.422100	-71.8292	n/a	982126058788390	3.80	33.00	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/2/2019	8457	Yes	Initial	Outside	n/a	Metamorph	41.422900	-71.8302	n/a	982126058788457	3.20	30.64	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/2/2019	8418	Yes	Initial	Outside	n/a	Metamorph	41.421600	-71.8315	n/a	982126058788418	3.30	29.69	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/2/2019	7800	Yes	Initial	Outside	n/a	Adult	41.422100	-71.8292	n/a	985121007667800	12.60	47.04	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/2/2019	8440	Yes	Initial	Inside	n/a	Metamorph	41.423300	-71.8304	n/a	982126058788440	3.80	30.19	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/2/2019	8420	Yes	Initial	Inside	n/a	Metamorph	41.422700	-71.833	n/a	982126058788420	4.10	33.11	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/2/2019	8367	Yes	Initial	Inside	n/a	Metamorph	41.422000	-71.8294	n/a	982126058788367	3.20	29.32	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/2/2019	8431	Yes	Initial	Inside	n/a	Metamorph	41.421900	-71.8296	n/a	982126058788431	4.70	32.83	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/2/2019	8435	Yes	Initial	Inside	n/a	Metamorph	41.422000	-71.8297	n/a	982126058788435	6.70	36.03	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	5278	Yes	Recapture	Inside	n/a	Metamorph	41.422000	-71.8293	n/a	982126051295278	4.40	34.09	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8376	Yes	Initial	Outside	n/a	Metamorph	41.422600	-71.8297	n/a	982126058788376	2.70	31.03	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8415	Yes	Initial	Outside	n/a	Metamorph	41.422800	-71.8314	n/a	982126058788415	3.60	32.01	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8361	Yes	Initial	Outside	n/a	Metamorph	41.422700	-71.8328	n/a	982126058788361	4.10	33.29	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8452	Yes	Initial	Outside	n/a	Metamorph	41.421600	-71.8319	n/a	982126058788452	2.80	29.86	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8373	Yes	Initial	Outside	n/a	Metamorph	41.422000	-71.8293	n/a	982126058788373	2.70	30.85	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	5114	Yes	Recapture	Inside	n/a	Metamorph	41.423000	-71.831	n/a	985121006145114	n/a	n/a	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8400	Yes	Initial	Outside	n/a	Metamorph	41.422500	-71.8291	n/a	982126058788400	3.80	33.08	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8403	Yes	Initial	Outside	n/a	Metamorph	41.422800	-71.8296	n/a	982126058788403	3.60	33.48	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8378	Yes	Initial	Inside	n/a	Metamorph	41.422200	-71.8292	n/a	982126058788378	4.00	30.72	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8409	Yes	Initial	Inside	n/a	Metamorph	41.422100	-71.8293	n/a	982126058788409	5.30	34.59	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8374	Yes	Initial	Inside	n/a	Metamorph	41.422600	-71.8295	n/a	982126058788374	5.50	36.64	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8412	Yes	Initial	Inside	n/a	Metamorph	41.422700	-71.8296	n/a	982126058788412	5.40	36.79	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8449	Yes	Initial	Inside	n/a	Metamorph	41.423000	-71.8312	n/a	982126058788449	5.10	36.23	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8386	Yes	Initial	Inside	n/a	Metamorph	41.422800	-71.8325	n/a	982126058788386	5.10	35.56	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	5288	Yes	Recapture	Inside	n/a	Metamorph	41.421600	-71.8319	n/a	982126051295288	3.60	31.09	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8392	Yes	Initial	Inside	n/a	Metamorph	41.422900	-71.8327	n/a	982126058788392	3.70	32.36	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8437	Yes	Initial	Inside	n/a	Metamorph	41.422600	-71.8333	n/a	982126058788437	5.30	36.76	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8416	Yes	Initial	Inside	n/a	Metamorph	41.422700	-71.8333	n/a	982126058788416	4.80	34.88	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	5285	Yes	Recapture	Inside	n/a	Juvenile	41.422700	-71.8296	n/a	982126051295285	8.50	42.48	n/a	Presumed Alive	n/a	TBD for 2019 Reporting
9/4/2019	8391	Yes	Initial	Inside	n/a	Metamorph	41.421900	-71.8308	n/a	982126058788391	4.40	35.49	n/a	Presumed Alive	n/a	TBD for 2019 Reporting

*Estimated GPS coordinates were required because rainfall was so intense on 8/28/2019, it caused both GPS meters to malfunction

Monitoring Reporting:

To evaluate the overall success of the mitigation efforts, a twenty-five year post-construction monitoring program has been developed. Population monitoring within the first five-year period will take place during the 1st, 2nd, 3rd, and 5th field seasons after construction, after which monitoring will continue every fifth year during years 10, 15, 20 and 25. If the lease agreement is extended, two days of monitoring will continue for the term of the lease extension every fifth year in years 30 and 35.

Each monitoring report will contain the following data:

All newly captured and re-captured spadefoots will be reported with a summary of capture locations (mapped), PIT-tag ID, age class, sex, and biomorphic data including snout-to-vent length and mass. All re-captured individuals will have additional data summarizing capture locations, changes in age class assignment, and growth rates including snout-to-vent length and mass. A summary of habitat use for each monitoring season will be provided. In addition, a map showing the distribution of all captured spadefoots for the monitoring year will be overlaid on the pre-construction population distribution data to clearly illustrate any change in the population range and/or distribution. Data showing the use of the No Build Restrictive Zone, habitat enhancement areas and solar field will be provided.

All breeding activity will be documented. If a breeding event is observed an estimate of the number of breeding pairs will be made. If a breeding event is documented, hydrological monitoring of the breeding pool, concurrent with larval development and metamorphosis, will be conducted and documented. If hydrological issues are identified they will be reported along with additional mitigation measures to ensure suitable breeding conditions are established post-construction. During the second monitoring year, an additional map comparing the pre-construction and post-construction radio-telemetry data will be provided. This map will summarize changes in habitat use, population range and individual home-ranges between the pre and post-construction periods.

All invasive plant species and their means of removal will be documented. The location and identification of all invasive plants will be mapped.

A section of each monitoring report will detail mitigation initiatives that did not function as planned and/or any unforeseen challenges that may arise. Reporting will include all adjustments and improvements necessary to ensure that all mitigations are functioning as originally intended.



79 Elm Street • Hartford, CT 06106-5127

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Affirmative Action/Equal Opportunity Employer

January 12, 2020

Mr. Russell Edwards
North Stonington Solar Center, LLC
321 East Main Street, Suite 300
Charlottesville, VA 22902
redwards@lincolclean.com

RE: Incidental Take Consultation Regarding the Installation and Operation of a 15 Megawatt (MW) AC (MWac) Solar Photovoltaic (PV) Electric Generating Facility on Approximately 353 Acres Comprised of Four Abutting Parcels Located East of Pendleton Hill Road North, North of the Pawcatuck River and South of Interstate -95 with Proposed Access from Ella Wheeler Road and Associated Interconnection to Eversource Energy's Shunock Substation west of Pendleton Hill Road in North Stonington, Connecticut

Dear Mr. Edwards,

On December 30, 2019 the Connecticut Office of Policy and Management (OPM), in consultation with the Connecticut Department of Energy and Environmental Protection (DEEP), determined that the proposed Installation and Operation of a 15 Megawatt (MW) AC (MWac) Solar Photovoltaic (PV) Electric Generating Facility on Approximately 353 Acres Comprised of Four Abutting Parcels Located East of Pendleton Hill Road North, North of the Pawcatuck River and South of Interstate -95 with Proposed Access from Ella Wheeler Road and Associated Interconnection to Eversource Energy's Shunock Substation west of Pendleton Hill Road in North Stonington, Connecticut would result in an incidental taking of the State Endangered *Scaphiopus holbrookii* (eastern spadefoot) pursuant to Section 26-310 of the Connecticut General Statutes (CGS).

Pursuant to CGS Sec. 26-310(d), the Commissioner of Energy and Environmental Protection is required to provide North Stonington Solar, LLC with a statement that: (1) specifies the impact of the incidental taking on the species; (2) specifies feasible and prudent measures and alternatives that must be implemented as part of the proposed project in order to ensure that the action does not appreciably reduce the likelihood of the recovery of the species; and (3) sets forth the terms and conditions including, but not limited to, reporting requirements to ensure compliance with the measures and alternatives. The Commissioner's statement is enclosed. Any taking in compliance with the measures and alternatives specified in the statement is not prohibited by the State Endangered Species Act.

Should you have any questions regarding this letter or any of the provisions of the attachment, please contact Dawn McKay (860) 424-3592.

Sincerely,

A handwritten signature in blue ink, appearing to read "Rick Jacobson".

Rick Jacobson
Bureau Chief

Cc: Robin Blum, Supervising Wildlife Biologist (CTDEEP)
Dawn M. McKay, Environmental Analyst 3
Eric Lindquist, Environmental Analyst I (OPM)

Basis for Determination of Incidental Taking
Pursuant to C.G.S. Section 26-310(d)

Connecticut Siting Council and North Stonington Solar Center, LLC
353 Acre Parcel Comprised of 4 Abutting Parcels east of Pendleton Hill Road, north of Pawcatuck River and south
of Interstate 95
North Stonington

1. Impact of the Incidental Taking of the Endangered and Threatened Species

The Connecticut Siting Council (Petition No. 1341) for North Stonington Solar Center, LLC ruled on October 25, 2018 and ordered the construction, maintenance and operation of a 15MW Solar Photovoltaic Project on a 353-acre parcel comprised of four (4) abutting parcels located east of Pendleton Hill Road, north of Pawcatuck River and south of Interstate 95 and associated connection to Eversource Energy's Shunock Substation west of Pendleton Hill Road in North Stonington, Connecticut. The proposed project will consist of 61,000 solar PV panels with associated access roads and electric interconnection with the Eversource substation. The facility parcel has a total area of 353 acres, of which, the facility will occupy approximately 144 acres. The project includes the clearing of 98 acres of forest and will require a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities from the CTDEEP's Bureau of Materials Management & Compliance Assurance Water Permitting and Enforcement Division.

The proposed project will result in direct adverse impacts to a population of the State Endangered eastern spadefoot (*Scaphiopus holbrookii*). The eastern spadefoot is the only member of the spadefoot family (Scaphiopodidae) east of the Mississippi River. The eastern spadefoot is among the rarest amphibians in the northeastern United States. The species secretive habitats, irregular breeding cycles and population fluctuations make assessment of their population status difficult. Eastern spadefoot is a medium sized smooth skinned toad with very small scattered warts. It is easily distinguished from other toads by its bright eyes and vertical pupils. The eastern spadefoot has a sharp-edged, black tubercle on its hind foot which it uses to burrow down often at depths up to three or more feet. Many of the current eastern spadefoot populations have been discovered as these toads crossed roads on warm, rainy nights during summer storms. The males have a distinctive call (caw-caw) while the females deposit irregular bands of eggs along blades of grass. The eggs hatch within two days and metamorphose into toads anywhere from 14 to 60 days later.

The eastern spadefoot is rare and extremely localized in southern New England mostly restricted to scattered sites in river valleys. In Connecticut its habitats are usually sandy, well drained soils. The life history and ecology of eastern spadefoot involves evolutionary adaptations to dry, arid environments. The adaption strategies to persist and exploit arid environments include explosive breeding phenology (following heavy rains), breeding in temporary rain filled pools and rapid larval development.

The best opportunity to protect and conserve eastern spadefoot in Connecticut remains in the southeastern part of the state. Conservation actions and protection for the eastern spadefoot have been focused in the Quinebaug and Pawcatuck River valleys, where much of the land is still forested or being used in agricultural practice. Although there are historic sites in the central lowlands of Connecticut, this species has largely disappeared due to rapid expansion of urban development. The major threat facing the eastern spadefoot is the loss of undisturbed habitat (sandplains) in southeastern Connecticut to urban and suburban development, road fragmentation, and habitat degradation. Preservation of these habitats is crucial for the survival of this species in our state.

2. Feasible and Prudent Measures and Alternatives to Ensure that the Action Does Not Appreciably Reduce the Likelihood of Recovery of the Species

The proposed actions have been planned to minimize and mitigate impacts to the "take" of eastern spadefoot. Post construction monitoring of the population at this site for a full 25 years, restoring and enhancing the breeding pool

on site, invasive species control and putting aside a 10.5 acre “no build” conservation area in addition to a +/- 105 acre “Spadefoot Habitat Management Zone” will aid in the recovery of this species from these project activities.

To help find mitigation measures for the eastern spadefoots, pre-construction monitoring has been taking place through radio-telemetric methodologies to determine population movement patterns and habitat use at this site since 2016. The pre-construction monitoring has been used to guide project design for the solar panel layout, construction phasing and mitigation. In addition to preconstruction monitoring the following protection measures have been developed and will be implemented during the construction phase and through the post-construction monitoring program.

1. Breeding Pool Restoration;
2. Enhancement of edge habitat areas;
3. Maintain solar array spacing of 20 feet between panel rows in a limited area east of the breeding pool;
4. Habitat creation inside the No Build Zone;
5. Habitat Enhancement outside the No Build Zone;
6. Implementation of protective phasing measures during project construction;
7. Population monitoring post-construction to evaluate the success of mitigation and conservation initiatives
8. Invasive Plant Removal Plan

North Stonington Solar Center, LLC identified a 10.5-acre area that will be set aside as a no build zone for unavoidable impacts to the eastern spadefoot. There will also be a +/- 105 acre area “Spadefoot Habitat Management Zone” where native plants will be planted and invasive species will be controlled and removed. The breeding pool will be re-graded to remove organics, replanted with native species and engineered to enhance the suitability of the pool to breeding eastern spadefoot.

North Stonington Solar Center, LLC will also conduct 25 (twenty five) years of monitoring for the eastern spadefoot. Surveys will be conducted in the pre-construction period and continue post-construction for 25 additional years. Brief reports will be submitted to DEEP within 7 days of all visits and will include assessments of the mitigation actions and any further recommended actions. An annual summary will also be submitted prior to December 31st. The qualified herpetologist will obtain and maintain a valid scientific collector’s permit to work with eastern spadefoot. The details on the data to be included in the monitoring reports are attached to the “Incidental Take Report for the State Endangered *Scaphiopus holbrookii* (eastern spadefoot)” prepared by Dennis P. Quinn of CHERPConsultants, LLC and Dean Gustafson of All-Points Technology Group dated September 25, 2019

CTDEEP believes that the proposed actions have been planned to address concerns relative to the eastern spadefoot and ensure the conservation and recovery of the population on this project site.

3. Terms and Conditions to Ensure Compliance

To ensure that all components of the proposed mitigation plan are addressed to the satisfaction of the Commissioner of the Department of Energy and Environmental Protection, North Stonington Solar Center, LLC shall cooperate to provide details regarding the status of all mitigation, maintenance, and monitoring activities addressed in the “Incidental Take Report for the State Endangered *Scaphiopus holbrookii* (eastern spadefoot)” prepared by Dennis P. Quinn of CHERPConsultants, LLC and Dean Gustafson of All-Points Technology Group dated September 25, 2019. In addition, North Stonington Solar Center, LLC will work with CTDEEP to ameliorate any problems that may arise.

Failure to comply with conditions set forth in “Incidental Take Report for the State Endangered *Scaphiopus holbrookii* (eastern spadefoot)” prepared by Dennis P. Quinn of CHERPConsultants, LLC and Dean Gustafson of All-Points Technology Group dated September 25, 2019 with additional details of reporting requirements outlined in the attachment or within this document may result in permit revocation and/or civil penalties levied against the responsible party.