

PETITION OF WINDHAM SOLAR LLC

VOLUNTOWN SOLAR FACILITY

**FOR A DECLARATORY RULING FOR THE CONSTRUCTION
AND OPERATION OF THREE 2.0 MEGAWATT AND ONE 1.0 MW
SOLAR PHOTOVOLTAIC RENEWABLE ENERGY GENERATING
FACILITIES LOCATED AT 1219 AND 1240 VOLUNTOWN ROAD, GRISWOLD,
CONNECTICUT**

March 15, 2016

TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
I.	INTRODUCTION.....	1
II.	PETITIONER.....	2
III.	DESCRIPTION OF PROPOSED PROJECT	3
A.	Site Selection	3
B.	Site Description	4
C.	Project Description.....	4
D.	Interconnection	6
E.	Service Life and Capacity Factor	7
IV.	PROJECT BENEFITS.....	7
V.	LOCAL INPUT & NOTICE.....	9
VI.	POTENTIAL ENVIRONMENTAL EFFECTS	9
A.	Natural Environment and Ecological Balance.....	9
B.	Public Health and Safety	10
C.	Air Quality.....	11
D.	Scenic Values and Visual Renderings.....	11
E.	Historic Values	12
F.	Wildlife & Habitat.....	13
G.	Water Resources and Storm Water Management.....	14
VII.	ADDITIONAL INFORMATION	15
VIII.	CONCLUSION	17

LIST OF EXHIBITS

Exhibit A	Facilities Site Plan
Exhibit B	GIS Maps
Exhibit C	Cross Section and Key Observation Point Plan
Exhibit D	Notice Service List
Exhibit E	Phase I Environmental Site Assessment
Exhibit F	Wetlands Report
Exhibit G	DEEP NDDB Species Review
Exhibit H	Stormwater Management Report
Exhibit I	Decommissioning Memo

I. INTRODUCTION

Pursuant to Section 16-50k(a) and Section 4-176(a) of the Connecticut General Statutes (“CGS”) and Section 16-50j-38 *et seq.* of the Regulations of Connecticut State Agencies (“RCSA”), Windham Solar LLC (the “Petitioner”) requests that the Connecticut Siting Council (the “Council”) issue a declaratory ruling approving the construction and operation of the Petitioner’s three (3) 2.0 megawatt (“MW”) and one (1) 1.0 MW solar electric generating facilities (the “Facilities”), located on commercially-zoned land at 1219 and 1240 Voluntown Road in the Town of Griswold, Connecticut (the “Site”).

CGS § 16-50k(a) provides:

“Notwithstanding the provisions of this chapter or title 16a, the council shall, in the exercise of its jurisdiction over the siting of generating facilities, approve by declaratory ruling . . . (B) the construction or location of . . . any customer-side distributed resources project or facility . . . with a capacity of not more than sixty-five megawatts, as long as such project meets the air and water quality standards of the Department of Energy and Environmental Protection . . .”

Pursuant to CGS § 16-50k(a), the Council should approve the Facilities by declaratory ruling since they are customer-side distributed resources facilities under 65 MW in capacity that comply with the air and water quality standards of the Connecticut Department of Energy and Environmental Protection (“DEEP”). Further, CGS § 16a-35k establishes the State’s energy policies, including the goal to “develop and utilize renewable energy resources, such as solar and wind energy, to the maximum extent possible.” As demonstrated from the information included in this petition, the Facilities will result in no air emissions, have minimal impacts that comply with DEEP’s air and water quality standards, and will have no substantial adverse environmental effects. The Facilities will further the State of Connecticut’s energy policy by developing renewable energy resources. The Facilities also further the State of Connecticut’s goals announced in the 2013 Comprehensive Energy Strategy (the “CES”). “Connecticut has suffered

from some of the country’s worst air pollution, in part due to its geographic location downwind of out-of-state coal- and oil-burning power plants. A cleaner energy future requires support for electricity generation from low- or no-emission sources.”¹ The Facilities will be an important part of that cleaner energy future. The CES also emphasizes the necessity for the “development of more distributed generation”, which the Facilities are.²

II. PETITIONER

Windham Solar LLC was organized in 2014 by New-York based Allco Renewable Energy Limited for the purposes of developing, constructing, and operating solar facilities in the State of Connecticut. Project development activities are supported by Ecos Energy LLC (“Ecos”). Ecos, based in Minneapolis, MN, has developed and managed the construction/operation of 28 MW of solar PV generation spread over 17 project sites nationwide. Both the Petitioner and Ecos have the knowledge and experience to develop and implement the Facilities in a way that maximizes benefits to the citizens of Connecticut, with no significant adverse impacts.

Correspondence and/or communications regarding this petition should be addressed to:

Windham Solar LLC c/o Allco Renewable Energy Limited ATTN: Michael Melone 77 Water Street 8th Floor New York, NY 10005 (917) 328-2001 [phone] mjmelone@allcous.com [e-mail]	Windham Solar LLC c/o Ecos Energy LLC ATTN: Steve Broyer 222 South 9th Street Suite 1600 Minneapolis, MN 55402 (612) 326-1500 [phone] steve.broyer@ecosrenewable.com [e-mail]
--	--

¹ See, 2013 Comprehensive Energy Strategy for Connecticut, p. 70, available at http://www.ct.gov/deep/lib/deep/energy/cep/2013_ces_final.pdf

² Id. at p. 71.

III. DESCRIPTION OF PROPOSED PROJECT

The State of Connecticut has recognized the benefits of local renewable energy development and implemented renewable portfolio standard (“RPS”) to encourage the development of renewable energy resources not only to lessen the country’s dependence on foreign oil but also to reduce the environmental impacts associated with fossil fuel sources. The RPS requires that by 2020, twenty percent of electricity generation must be derived from Class I renewable energy sources such as solar PV.

The Facilities will play an important role in the State’s renewable energy goals. The Facilities will provide a significant source of clean, renewable energy produced locally. The Facilities will produce 100 percent clean, renewable electricity with zero emissions will result in significant environmental benefits. Further, the Facilities will act as a peak reducer by producing energy during the electric distribution companies’ peak load hours. The project will therefore help moderate peak load requirements and reduce the demand on transmission lines.

A. Site Selection

The Site was selected based upon a number of factors including:

1. Site Suitability (zoning, solar resource, soil, and topographic characteristics that allow for efficient facility design and construction); and
2. Site Resources (lack of sensitive natural resources onsite—the Site contains no rare, protected, or sensitive natural resources that would be adversely impacted by the Facilities’ footprint.); and
3. Proximity to electrical infrastructure and roadways—the Site has direct public road access and is directly adjacent to an Eversource electric distribution line.

4. Available for Sale – The site was listed for sale through a licensed Connecticut real estate broker.

B. Site Description

The Site is located at 1219 and 1240 Voluntown Road, Griswold, CT. The east Site is comprised of 17.4 acres and the west Site is comprised of 32.7 acres for a total of 50.1 acres, all of which is zoned ‘C-1 Village Commercial District.’ The Site is currently vacant and contains no structures. Of the Site’s 50.1 acres, approximately 10.5 acres have been previously cleared and tilled for agricultural use. The remaining 39.6 acres of the Site consists of un-cleared cedar/poplar timber and low-quality wetlands. The proposed total project footprint, which is delineated by the projects perimeter fence lines, is 29.1 acres and has been sited to avoid steep slopes, wetlands and their associated 150’ buffers. Topography on the Site is generally flat with slight undulations while carrying a slight overall slope to the east (west Site) and west (east Site). Adjacent parcels consist of un-cleared vacant lands, light agriculture, and a small number of residences to the north of the Site. An ALTA Survey showing the Site’s general location, characteristics, and boundaries can be found on Sheets 2 and 3 of Exhibit A (Facilities Site Plan). Exhibit B (Wetlands Report) shows an aerial view of the Site. Exhibit C (Cross Sections and Key Observation Point Plan) contains photographs of the Site taken from ground level, as well as cross sections of the sight lines from the adjacent roadway.

C. Project Description

The Facilities are renewable energy generation facilities that will use PV solar modules to convert solar radiation to electricity. They will be located on the customer side of the CL&P meter. Each 2.0 MW Facility will consist of approximately 6,790 solar modules and the 1.0 MW

facility will consist of approximately 3,395 solar modules (based on a module rating of 345 watts). The solar modules will be supported above the ground by a steel and aluminum fixed-tilt racking system. The modules will be oriented directly due south at a tilt angle of approximately 15 degrees. Solar modules will be mounted to the racking system in portrait orientation, with two rows of modules per rack. The racking system will support the modules to maintain a ground clearance of at least 18 inches. The racking system will be supported above the ground by a series of steel h-beams that are direct-driven into the ground, requiring no concrete foundations. The length of h-beam embedment will be determined following a geotechnical and structural analysis; 6 to 8 feet embedment is typical. The solar modules will be wired in series strings of 18 modules per string. Strings will be connected to 1,000 kilowatt (kW) centralized solar inverters. The inverters alter the DC output of the solar modules to 390V three-phase alternating current (“AC”) output.

Output from the inverters will feed into a step-up transformer services to increase the collected 390V three-phase AC output to 23 kV (or other, as required) for interconnection to Eversource’s distribution system. Output from the transformer will be connected via underground cabling to a pad-mounted fused master AC disconnect switch for the Project. This output will be connected to a pad-mounted automated recloser, which will provide automated overcurrent protection to the Project and to Eversource’s distribution/transmission system. Output from the recloser will run through a set of Eversource metering equipment before being connected to the nearby Eversource distribution circuit.

Each facility will contain a centralized equipment skid that will contain the inverters, transformer, disconnect switches, a suite of monitoring and communications equipment, as well as controls for the Facilities’ video security system. In addition to the solar energy generating

equipment described above, the Facilities will include a 20-foot wide gravel driveway for operations, maintenance, and emergency access. Also, the entirety of the Site footprint will be surrounded by a 7.5 foot tall chain-link security fence. Access to the Site will be via a padlocked gate in the perimeter fence at the location of the Facilities' access driveway off of Voluntown Road. A series of infrared, motion-sensitive video security cameras will be installed around and within the perimeter fence. No night-time lighting of any kind is proposed for the Facilities. After construction, the ground area within the Facilities' footprint will be hydro-seeded with an architect-reviewed seed mix that offers low/slow growing groundcover vegetation that is drought-tolerant and native. A row of existing trees and natural vegetation will be maintained around both the east and west Sites to shield the Facilities from view along the roadways. No other perimeter screening will be necessary to screen the Facilities from neighboring properties since the existing trees and vegetation are thick enough to provide adequate screening. The Facilities' footprint area will encompass 29.1 acres of the Site, all within the Facilities' perimeter fence line. All elements of Facilities' design, construction, operation, and maintenance will be performed in accordance with all applicable local, state, and national rules, guidelines, and regulations. The particulars of each Facility's footprint design and equipment locations can be seen in detail in Exhibit A.

D. Interconnection

Each Facility is proposed to be interconnected to the Eversource electric distribution grid at an existing 23 kV overhead electric line located along Voluntown Road/CT Route 138. The interconnection would be in accordance with Eversource technical standards and State of Connecticut, ISO-New England ("ISO-NE"), and the Federal Energy Regulatory Commission

(“FERC”) requirements. The interconnection will consist of Eversource-specified metering and protection (breakers/switches/relays) to be installed for each Facility. The interconnection will be made pursuant to Eversource’s Guidelines for Generator Interconnection. As part of the interconnection process, the Petitioner has successfully completed an interconnection application request, and an application review and will be working toward completing a System Impact Study (“SIS”) with Eversource in the coming months. The SIS is expected to include:

1. Circuit Modeling
2. Power Flow Analysis
3. Voltage Impact Study
4. Thermal Impact Study
5. Short Circuit Study
6. Distribution Requirement Interruption Ratings
7. Protection Coordination
8. Transfer Trip Requirements
9. Protection Schemes
10. Costs of Required Network Upgrades

Upon completion of the SIS, the Petitioner will review the requirements for interconnection and enter into an Interconnection Agreement (“IA”) with CL&P for each Facility.

E. Service Life and Capacity Factor

Each Facility’s equipment has an expected useful life of approximately 45 years, and the Petitioner would plan to operate each Facility until the equipment has exhausted its useful life. According to the 2012 Integrated Resources Plan for Connecticut, PV solar has an expected capacity factor of approximately 13 percent.

IV. PROJECT BENEFITS

Projects that are “necessary for the reliability of the electric power supply of the state or for a competitive [electric market]” present a clear public benefit. Conn. Gen. Stat. § 16-50p(c)(1). Each Facility provides exactly the benefit contemplated in the statute and more, as it

will generate much of its power at peak times. By providing electricity when there is high demand, each Facility will help stabilize the electrical grid.

Additionally, there exists a clear public need for renewable projects and undertaking them supports the State's energy policies as codified in Conn. Gen. Stat. § 16a-35k, expressing the legislature's goal to "develop and utilize renewable energy resources, such as solar and wind energy, to the maximum practicable extent." Solar facilities are considered Class I renewable energy sources under General Statutes § 16-1(a)(26). Over the life of each Facility, each Facility will contribute to a significant reduction in NOx, SOx, PM, CO and VOC emissions as compared to combustion-based generation. These figures are further outlined *infra*. Additionally, each Facility will deliver its generated power 'locally' by injecting that power into a distribution-level electric circuit for use by nearby homes and business. This decreases the amount of power that will need to be brought into the area from further away, lightening the load on utility transmission infrastructure and increasing local grid reliability.

Each Facility will also help the State move closer to meeting its renewable portfolio standards. Further, providing increased renewable capacity helps further distance Connecticut from foreign energy supply and helps support energy independence, a local and national goal. Concerning Project labor, the Company fully intends to employ local labor in completing the Project wherever practical. 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 contribute to our Nation's desire for energy independence and reduces our dependency upon foreign countries where geo-political issues may introduce issues with the reliability of their fuel

supply. The project will also hire local labor, as practical, and be a source of increased revenue for local businesses during construction.

V. LOCAL INPUT & NOTICE

The Petitioner has contacted the Town of Griswold (“the Town”) planning staff to see that the Facilities are sited and designed so as to be a positive addition to the community by complying with local siting and setback requirements. This was done in an attempt to make sure that the Facilities were sited and designed in accordance with Town standards and requirements.

In addition to contacting the Town directly, the Petitioner provided notice of this petition to all persons and appropriate municipal officials and government agencies to whom notice is required pursuant to CGS § 16-50j-40(a). For details, reference Exhibit D (Notice Service List).

VI. POTENTIAL ENVIRONMENTAL EFFECTS

The Petitioner has evaluated the Site and taken inventory of the resources available onsite. The Facilities’ have been designed so as to be compatible with the existing environment while avoiding, reducing, and mitigating potential environmental impacts.

A. Natural Environment and Ecological Balance.

The Site selected for the Facilities’ footprint is not an area with any sensitive, rare, or protected natural resources. The area needed to construct the Facilities will be cleared of any tree/timber vegetation. These removals are detailed on Sheets 5 and 6 of Exhibit A. Minimal grading will be required for each Facility, as the solar racking equipment is designed to follow the existing contour of the Site’s topography. The minimal grading will be performed to create the access driveway and transformer equipment pads. These areas would be less than 1 acre in total. A Phase I Environmental Site Assessment (“ESA”) was performed at the Site. The ESA did not recognize any environmental conditions that warranted additional investigation or action

in the area of the Site encompassed by the Facilities' footprint. For details, see Exhibit E (Phase I Environmental Site Assessment). No hazardous substances or materials will be used or stored onsite during construction or operation.

B. Public Health and Safety

Overall, each Facility will meet or exceed all health and safety requirements applicable for electric power generation. During construction, each employee working onsite will:

- 1) Receive required general and site specific health and safety training.
- 2) Comply with all health and safety controls as directed by local and state requirements.
 - i) Understand and employ the site health and safety plan while on the job site.
- 3) Know the location of local emergency care facilities, travel times, ingress and egress routes.
- 4) Report all unsafe conditions to the construction managers.

During construction, heavy equipment, delivery trucks, and water trucks for dust suppression will be required to access the Site during normal weekday working hours. It is anticipated that approximately 16 to 20 construction vehicles would make daily trips onto the Site during the approximately 4 month construction period. During operation, construction noise may be audible offsite. Therefore, all work will be conducted during normal weekday working hours, and it is not anticipated that any levels of construction noise will exceed state or local noise limit standards. During operation, the Facilities will not present a health or safety hazard to anyone located offsite. The Facilities will generate no offsite noise, harmful glare, vibrations, or damaging emissions of any kind. PV solar is a long-proven safe and benign generation technology. Authorized personnel visiting the Facilities during operation will be fully licensed

and properly trained on how to navigate a solar project safely and how to quickly respond in the event of an emergency. Once operational, the Petitioner will work with local fire and law enforcement officials to ensure they have the appropriate knowledge and access to provide their services to the Facilities if necessary.

C. Air Quality

Overall, the Facilities will have minor air emissions of regulated air pollutants and greenhouse gases during construction and no air permit will be required. During construction, any air emission effects will be temporary and will be controlled by enacting appropriate mitigation measures (e.g. water for dust control, avoiding mass early morning vehicle startups, etc.). Accordingly, any potential air effects as a result of the Facilities' construction activities will be negligible. During operation, the Facilities will not produce air emissions of regulated air pollutants or greenhouse gases (e.g., PM10, PM2.5, VOCs, GHG, or Ozone). Thus, no air permit will be required. Moreover, over 45 years, the Facilities will result in the offset/elimination of approximately 403,900 tons of CO₂ equivalent, which is equal to 76,800 vehicles off the road, 130,000 tons of avoided landfill waste, 83 tons of NO_x emissions avoided, or 207 tons of SO₂ emissions avoided. The Facilities will have a net benefit effect on air quality.

D. Scenic Values and Visual Renderings

Once installed, the Facilities will be minimally visible to neighboring property owners and only briefly visible to drivers and passengers traveling on Voluntown Road and Hopeville Road. The solar equipment being installed has a low profile; less than 9 feet in height, with the exception of a few taller poles for video cameras and meteorological equipment. At a majority of locations around the Site boundary, existing thick vegetation will completely block views of the Facilities from offsite. The vegetation features at the Site boundaries are not planned for

removal. The majority of the residences that are adjacent to the Site are located to the north of the east Site and will be shielded from view of the Facilities by existing vegetation. This is also the case with the few residences that are located to the east, south and west of the proposed Facilities. There are segments of the easterly Site's southerly boundary near the intersection of Voluntown Road and Hopeville Road and about 1,200 feet east of this intersection where there is a break in the vegetation where views of the Facilities will be possible. However, as these areas are along traveled roadways, the only observers would be located in moving vehicles, so any views of the Facilities would be brief and momentary. The appearance of the Facilities during these brief moments would not cause significant visual impact because they would occur as the viewer travels down an already developed highway corridor. There are no protected or designated scenic areas, roadways, or trails within visual range of the Site. Given these details, the Facilities would not have a significant adverse effect on the scenic values of the area. Current photographs of the Site, along with a key observation point plan of the Facilities, can be found in Exhibit C.

E. Historic Values

The Petitioner has requested review of the Facilities and Site by the Connecticut State Historic Preservation Office (“SHPO”). At the time of filing, the Petitioner has not yet received a response from SHPO, other than one indicating a probable delay due to significant backlog of review requests. The Petitioner will submit the SHPO response to the Council as soon as it is received.

F. Wildlife & Habitat

The Facilities have been designed to avoid any impacts to sensitive plant or wildlife species or the associated habitats. Three analysis were performed to identify the potential for any sensitive species or habitat:

- 1) Phase I Environmental Site Assessment (Exhibit E)
- 2) Wetlands Report (Exhibit F)
- 3) Request for Natural Diversity Database (“NDDB”) State Listed Species Review by Connecticut Department of Energy & Environmental Protection (“DEEP”) (Exhibit H)

The ESA did not recognize any species or habitat of concern. Due to the fact that the NDDB review did not reveal any sensitive or endangered species on the property, an in-depth field survey for species and habitat was not performed. However, the site was investigated for wetlands features; those results can be found in the Wetlands Report (Exhibit F). Some Wetlands features were identified (and subsequently delineated) onsite, and these will be discussed in more detail in section VI.G, below. As it relates to species and habitat, the Facilities footprint was designed to avoid the delineated wetlands features entirely, including a 150-foot buffer around those features. This is shown in detail in Exhibit A. The Petitioner submitted a request to DEEP for NDDB review of the Property and Project footprint. DEEP responded with a review results letter on December 11, 2015 (Exhibit G). The NDDB review did not identify any negative impacts to State-listed species (RCSA Sec. 26-306) within the Sites. Since there were no sensitive species identified onsite, the Facilities will have no significant adverse effect on Wildlife & Habitat.

G. Water Resources and Storm Water Management.

The Facilities are not anticipated to have an adverse impact to the water resources of the state. The Facilities fixed panel solar arrays can be considered pervious groundcover. The racking provides adequate height above the ground to promote vegetative growth underneath the solar array and allow for infiltration to continue to occur. Natural drainage patterns and vegetal cover will be preserved throughout the project footprint by minimizing ground disturbances. Grading activities for the Facilities have been minimized to the access roadway, spot grading on the eastern site and utility trenching. All graded areas will be seeded to a low growth low maintenance meadow/native grass condition. Hydraulic modeling calculations illustrate a reduction in downstream flow rates from the Facilities and can be reviewed in the Facilities Stormwater Management Report (Exhibit H).

Construction of the Facilities will result in a grading disturbance of approximately 3.1 acres of land with a 1.5 acres of the grading for access roads and 1.6 acres for portion of the easterly array will be graded where slopes exceed 12% down to that slope to accommodate racking design thresholds. The Petitioner will register under the DEEP's General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities at least thirty (30) days prior to commencing any construction activities. Petitioner intends to request coverage under the existing Connecticut General Permit, DEP-PED-GP-015, by submitting a complete and accurate General Permit Registration Form and Transmittal prior to construction activities and in accordance with applicable rules at the time of filing. In connection with that registration, Petitioner will implement a storm water management plan to minimize any potential adverse environmental effects.

VII. ADDITIONAL INFORMATION

The Council has previously reviewed petitions for other solar facilities similar to the ones being proposed by the Petitioner. In these other dockets, the Council has sent out interrogatory requests with multiple questions about each facility. This section will attempt to pre-emptively answer some of those questions that were not addressed in previous sections of this petition.

Q01. Did the Petitioner publish a legal notice of its intent to file this petition?

A01. Yes. A copy of the following text ran in the Notices section of the Monday, March 14, 2016 edition of the Hartford Courant:

“Windham Solar LLC is providing notice to the general public regarding its intent to file a Petition of Declaratory Ruling (Petition) to the Connecticut Siting Council for the proposed development of three (3) – 2.0 megawatt and one (1) – 1.0 megawatt solar photovoltaic renewable energy generating facilities to be located at 1219 and 1240 Voluntown Road in the Town of Griswold. This notice is being given pursuant to Section 16-50(l) of the Connecticut General Statutes. The Petition will be submitted on or after March 15, 2016. Copies of the Petition will be available at the Connecticut Siting Council: Ten Franklin Square, New Britain, CT 06501 or at the Town Hall of the Town of Griswold.”

Q02. How did the Petitioner become aware of the Site?

A02. The Site was actively being listed for sale at the time that the Petitioner was searching for an acceptable location for the Facilities.

Q03. Did the Petitioner investigate any other properties as potential locations for the Facilities? If so, identify these properties.

A03. The Petitioner investigated a large number of properties that were listed for sale. The Site was selected based upon favorable characteristics.

Q04. Has the Petitioner conducted a shading analysis of the Site? If so, provide the results.

A04. No, a shading analysis was not required because the construction plans for the Facilities do not propose and shading objects to be left within the boundaries of the solar array.

Q05. What is the efficiency of the photovoltaic module technology that would be employed by the Petitioner at the proposed project? Does this efficiency decrease over time?

A05. The efficiency will be in the range of 15 to 18 percent, depending on the manufacturer and model of solar module selected for construction. The efficiency does decrease over time, at a predicted average rate of 0.5% per year.

Q06. Would the angles of the Facilities' solar modules be adjusted during the year to maintain optimal alignment with the sun's changing path?

A06. No. The solar modules will be installed on a fixed-tilt racking system.

Q07. Approximately what percentage of the proposed project's maximum possible output would occur during those times of the year when Connecticut normally experiences its peak demand for electricity?

A07. Energize Connecticut (www.energizect.com) defines the peak electricity demand in Connecticut as occurring weekdays between noon and 8 pm, during the summer months of June through September. The Facilities will create approximately 14% of their total annual output during this timeframe.

Q08. Does the Petitioner have contracts to sell the electricity it expects to generate with the proposed Facilities?

A08. Yes, with Eversource under the state's Zero Emission Renewable Energy Credits and Low Emission Renewable Energy Credits programs.

Q09. Has the Petitioner determined if any trees need to be removed to construct the Facilities? If so, how many trees will be removed?

A09. Details of proposed tree removals can be found on sheets 4 and 5 of Exhibit A.

Q10. Are the Facilities located near any Important Bird Areas designated by the Connecticut Audubon Society?

A10. No.

Q11. What would be the construction timeline of the Facilities from groundbreaking to full operation?

A11. Approximately 5 months.

Q12. Describe how the project would be decommissioned at the end of its useful life.

A12. A decommissioning memo is included as Exhibit I.

Q13. Describe the land use within a 0.5 mile radius of the Site.

A13. Uncleared vacant land, commercial, light agriculture, and low-density residential.

VIII. CONCLUSION

The Facilities will provide numerous and significant benefits to the Town of Griswold, the State of Connecticut and its citizens, while producing significant environmental benefits with minimal environmental impact. Pursuant to CGS § 16-50k(a), the Siting Council shall approve by declaratory ruling the construction or location of customer side distributed resources project or facility with a capacity of not more than sixty-five (65) MW, as long as such project meets DEEP air and water quality standards. The Facilities meet these criteria. Each Facility is a customer-side distributed resources facility “grid-side distributed resources” facility, as defined in CGS § 16-1(a)(40), because the Project involves “the generation of electricity from a unit with a rating of not more than sixty-five megawatts on the premises of a retail end user within the

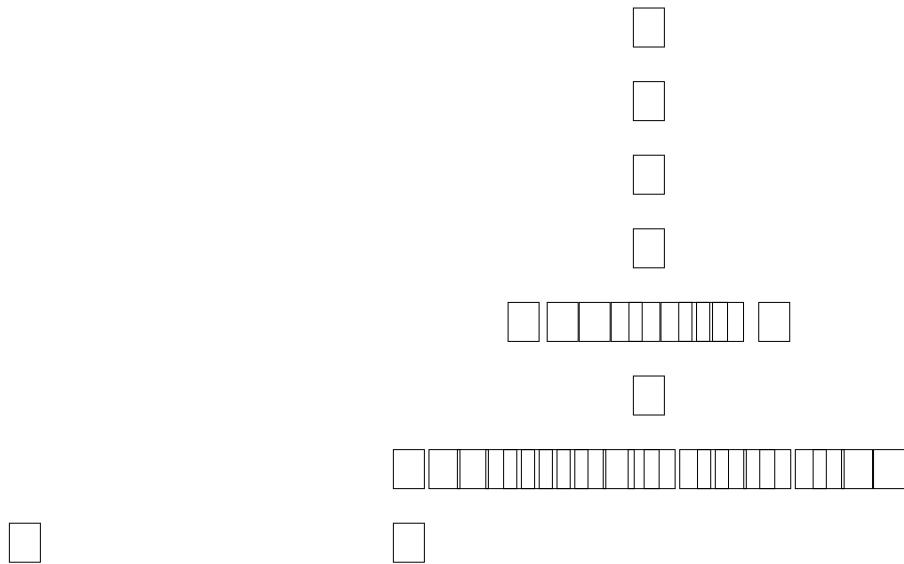
transmission and distribution system including, but not limited to . . . photovoltaic systems and, as demonstrated herein, each Facility will meet DEEP air and water quality standards. The Facilities will not produce air emissions, will not utilize water to produce electricity, were designed to minimize wetland impacts, will employ a stormwater management plan that will result in no net increase in runoff to any surrounding properties, and furthers the State's energy policy by developing and utilizing renewable energy resources and distributed energy resources. In addition, as demonstrated above, the Facilities will not have a substantial adverse environmental effect in the State of Connecticut.

Accordingly, Petitioner respectfully requests that the Siting Council approve the location, construction and operation of the Facilities by declaratory ruling.

Respectfully Submitted,
Windham Solar LLC

By: 

Steve Broyer
Windham Solar LLC
c/o Ecos Energy LLC
222 South 9th Street
Suite 1600
Minneapolis, MN 55402
Phone (612) 326-1500
steve.broyer@ecosrenewable.com



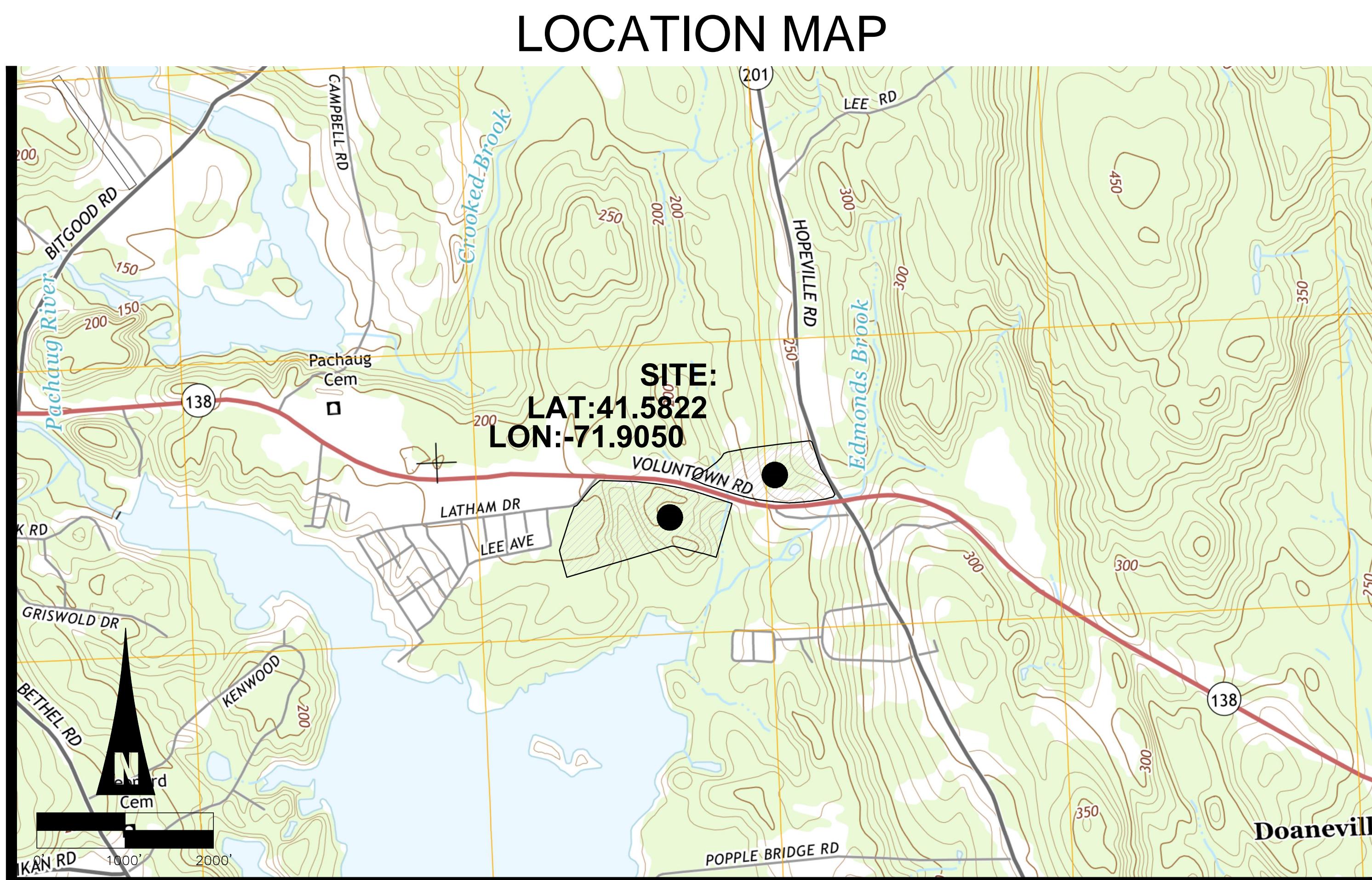
VOLUNTOWN ROAD SOLAR CONNECTICUT SITING BOARD DOCUMENTS

FOR

Site/Electrical Layout, Grading/Drainage/Erosion Control/Landscaping

IN

GRISWOLD, CONNECTICUT



CONTACT INFO:

RECORD LANDOWNER:
PLH, LLC
77 WATER STREET
8TH FLOOR
NEW YORK, NY 10005

OWNER/DEVELOPER:
ECOS ENERGY
222 SOUTH 9TH STREET
SUITE 1600
MINNEAPOLIS, MN 55402

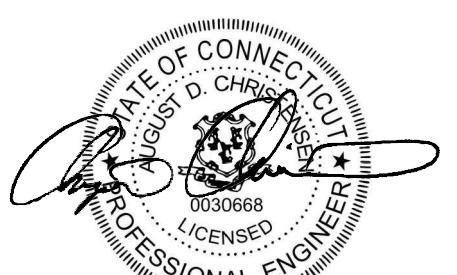
CIVIL ENGINEER:
WESTWOOD PROFESSIONAL
SERVICES
7699 ANAGRAM DRIVE
EDEN PRAIRIE, MN 55344

SURVEYOR:
ROB HELLSTROM LAND
SURVEYING, LLC
P.O. BOX 497
HEBRON, CT 06248

WETLAND DELINEATION:
HIGHLAND SOILS
P.O. BOX 337
STORRS, CT 06268

Westwood

Phone (480) 747-6558 6909 East Greenway Parkway, Suite 250
Fax (480) 376-8025 Scottsdale, AZ 85254
westwoodps.com
Westwood Professional Services, Inc.



Designed: ADC

Checked: SAW

Drawn: SJB

Record Drawing by/date:

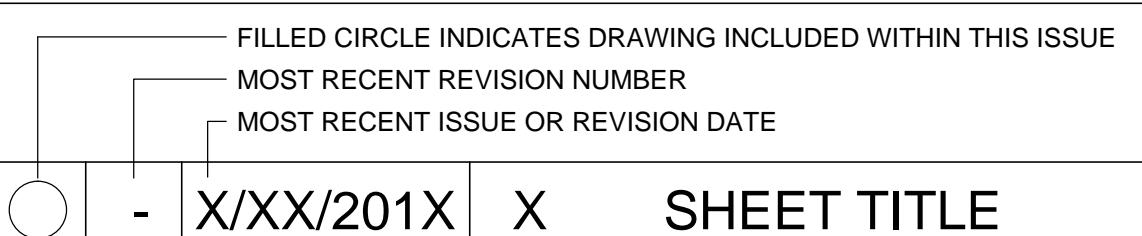
Revisions: DATE DESCRIPTION
- 03/15/2016 CT SITING BOARD SUBMISSION

Prepared for:

SHEET INDEX

●	03/15/2016	1	COVER SHEET
●	10/15/2015	2	ALTA SURVEY (BY HELLSTROM LS, LLC)
●	10/15/2015	3	ALTA SURVEY (BY HELLSTROM LS, LLC)
●	03/15/2016	4	OVERALL SITE PLAN
●	03/15/2016	5	NORTH SITE & GRADING PLAN - 1"=50'
●	03/15/2016	6	SOUTHEAST SITE & GRADING PLAN - 1"=50'
●	03/15/2016	7	SOUTHWEST SITE & GRADING PLAN - 1"=50'
●	03/15/2016	8	LANDSCAPE PLAN
●	03/15/2016	9	PROJECT CROSS SECTION
●	03/15/2016	10	KEY OBSERVATION POINT PLAN
●	03/15/2016	11	CIVIL NOTES
●	03/15/2016	12	CIVIL DETAILS

DRAWING INDEX LEGEND



- X/XX/201X X SHEET TITLE

VOLUNTOWN RD. SOLAR

1219 & 1240 VOLUNTOWN RD.
GRISWOLD, CT 06351
NEW LONDON COUNTY

COVER SHEET

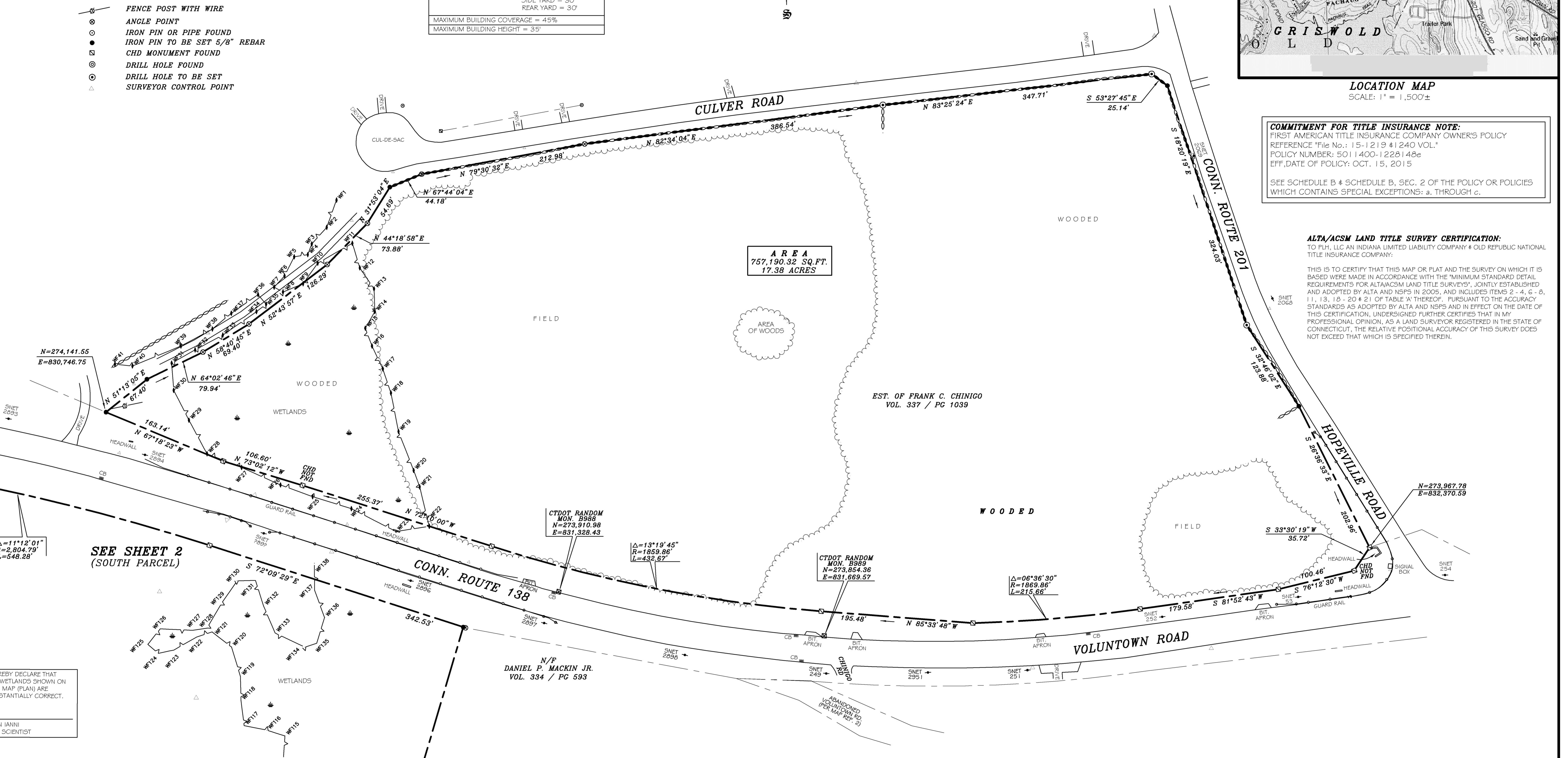
SITING BOARD REVIEW

DATE: 03/15/2016
SHEET: 1 of 12

LEGEND

- PROPERTY LINE
- STONE WALL
- WIRE FENCE
- EDGE BRUSH OR CLEARING
- GUARDRAIL
- BOX WIRE FENCE
- FENCE POST WITH WIRE
- ANGLE POINT
- IRON PIN OR PIPE FOUND
- IRON PIN TO BE SET 5/8" REBAR
- CHD MONUMENT FOUND
- DRILL HOLE FOUND
- DRILL HOLE TO BE SET
- SURVEYOR CONTROL POINT

ZONING TABLE TOWN OF CRISWOLD	
ZONE 'C1' - VILLAGE COMMERCIAL DISTRICTS	
MIN. LOT AREA = 40,000 SQ.FT.	
MIN. STREET FRONTAGE = 150'	
BUILDING SETBACKS: FRONT YARD = 40' SIDE YARD = 30' REAR YARD = 30'	
MAXIMUM BUILDING COVERAGE = 45%	
MAXIMUM BUILDING HEIGHT = 35'	



GRAPHIC SCALE		REVISIONS	
-60' 0' 60' 120'			
(IN FEET)			
1 inch = 60 ft.			
1 10-14-15 POLICY # & EFF. DATE ADDED TO COMMITMENT NOTE		TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.	
NO. DATE		THIS DRAWING IS NOT VALID UNLESS IT BEARS AN ORIGINAL INK SIGNATURE AND EMBOSSED SEAL	
DESCRIPTION			
ROBERT W. HELLSTROM, L.S. #13626			

R ROB HELLSTROM
LAND SURVEYING LLC
Mailing Address:
P.O. BOX 497
COLUMBIA, CT. 06237-0497
(860) 228-9853
(860) 228-1360 (FAX)

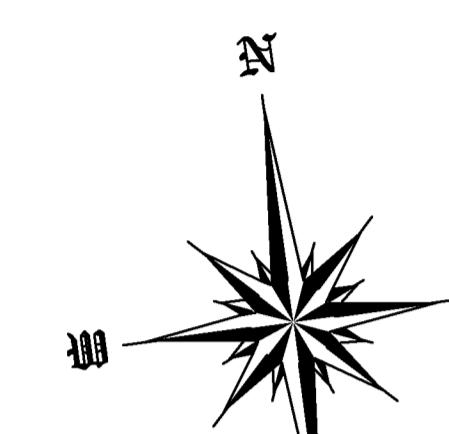
32 MAIN STREET HEBRON, CT. 06248
hellstromsurveying@yahoo.com
www.hellstromlandsurveying.com

DATE: SEPTEMBER 22, 2015

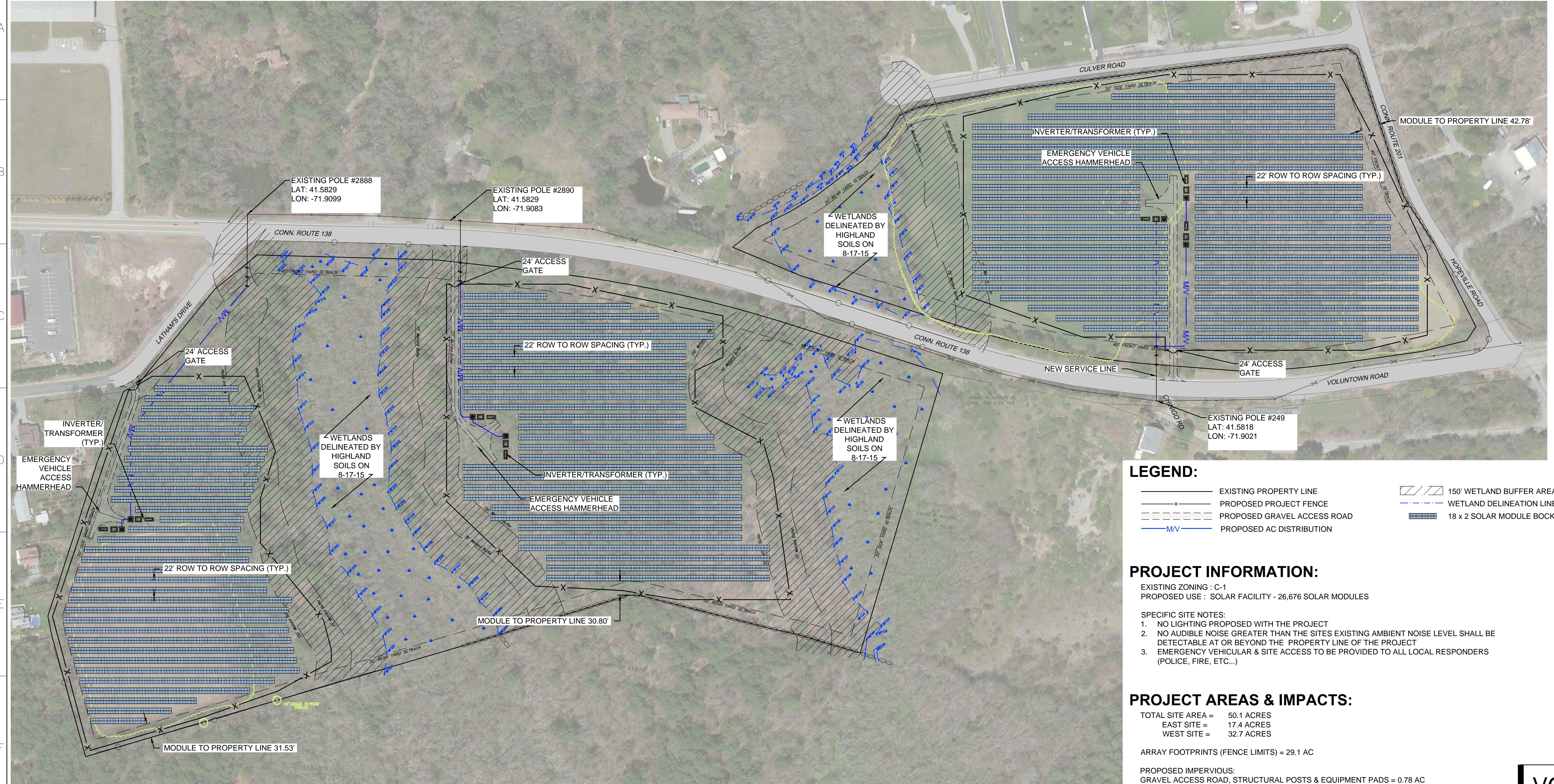
BOUNDRARY SURVEY
- PREPARED FOR -
PLH, LLC
CT. RTE. 138 VOLUNTOWN RD &
CT. RTE. 201 HOPEVILLE RD.
GRISWOLD CONNECTICUT
SHEET NO.: 1 OF 2
JOB NO.: 2015-067
BY: ROBIN H. SCALE: 1" = 60'
FILE NO.: EC15067 NORTH

LEGEND

- PROPERTY LINE
- STONE WALL
- WIRE FENCE
- EDGE BRUSH OR CLEARING
- GUARDRAIL
- BOX WIRE FENCE
- FENCE POST WITH WIRE or WIRE ON GROUND
- ANGLE POINT
- IRON PIN OR PIPE FOUND
- IRON PIN TO BE SET 5/8" REBAR
- CHD MONUMENT FOUND
- DRILL HOLE FOUND
- DRILL HOLE TO BE SET
- SURVEYOR CONTROL POINT
- TREE WITH WIRE AS MARKED


CONN. ROUTE 138
LATHAM'S DRIVE
285.07'
N 38° 54' 34" E
N 51° 01' 06" E
N=274,124.89
E=829,708.27
WF231
WF222
WF220
WF219
WF218
WF217
WF216
WF215
WF214
WF213
WF212
WF211
WF210
WF209
WF208
WF207
WF206
WF205
WF204
WF203
WF202
WF201
WF200
WF199
WF198
WF197
WF196
WF195
WF194
WF193
WF192
WF191
WF190
WF189
WF188
WF187
WF186
WF185
WF184
WF183
WF182
WF181
WF180
WF179
WF178
WF177
WF176
WF175
WF174
WF173
WF172
WF171
WF170
WF169
WF168
WF167
WF166
WF165
WF164
WF163
WF162
WF161
WF160
WF159
WF158
WF157
WF156
WF155
WF154
WF153
WF152
WF151
WF150
WF149
WF148
WF147
WF146
WF145
WF144
WF143
WF142
WF141
WF140
WF139
WF138
WF137
WF136
WF135
WF134
WF133
WF132
WF131
WF130
WF129
WF128
WF127
WF126
WF125
WF124
WF123
WF122
WF121
WF120
WF119
WF118
WF117
WF116
WF115
WF114
WF113
WF112
WF111
WF110
WF109
WF108
WF107
WF106
WF105
WF104
WF103
WF102
WF101
WF100
WF199
WF198
WF197
WF196
WF195
WF194
WF193
WF192
WF191
WF190
WF189
WF188
WF187
WF186
WF185
WF184
WF183
WF182
WF181
WF180
WF179
WF178
WF177
WF176
WF175
WF174
WF173
WF172
WF171
WF170
WF169
WF168
WF167
WF166
WF165
WF164
WF163
WF162
WF161
WF160
WF159
WF158
WF157
WF156
WF155
WF154
WF153
WF152
WF151
WF150
WF149
WF148
WF147
WF146
WF145
WF144
WF143
WF142

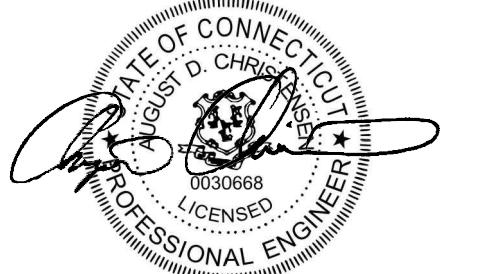
AERIAL SITE PLAN:



Westwood

Phone (480) 747-6558 6909 East Greenway Parkway, Suite 250
 Fax (480) 376-8025 Scottsdale, AZ 85254
 westwoodps.com

Westwood Professional Services, Inc.



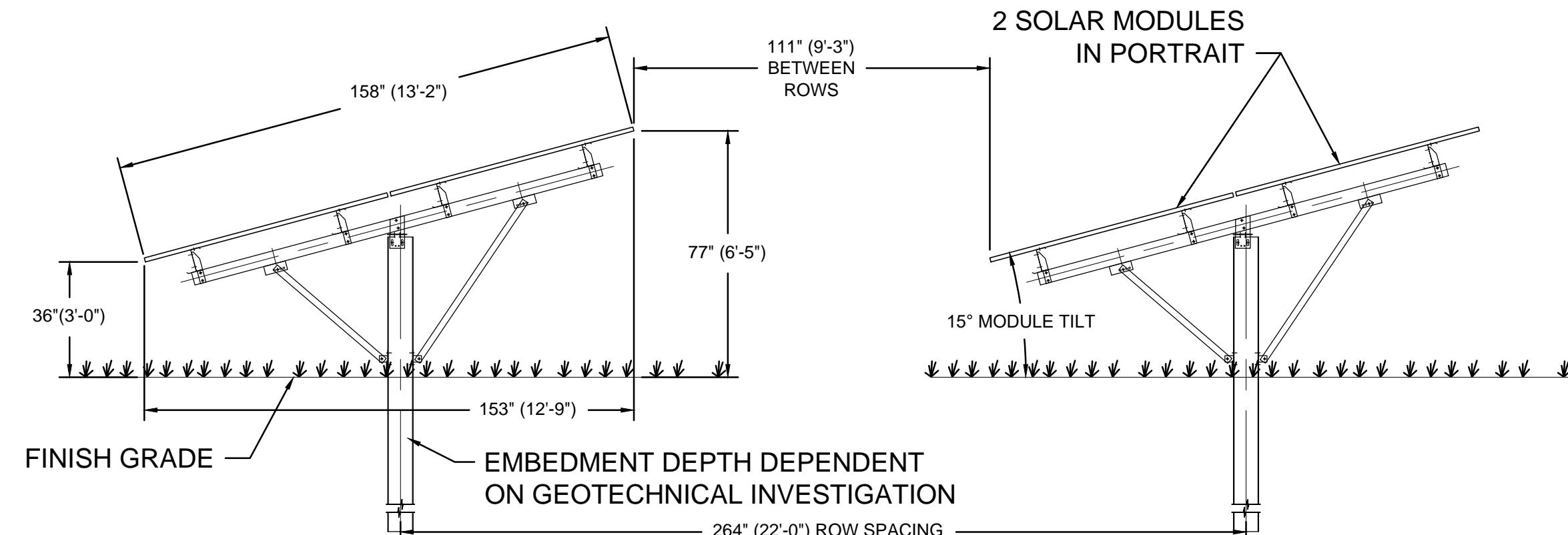
Designed: ADC
 Checked: SAW
 Drawn: SJB
 Record Drawing by/date:

Revisions: # DATE DESCRIPTION
 - 03/15/2016 CT SITING BOARD SUBMISSION

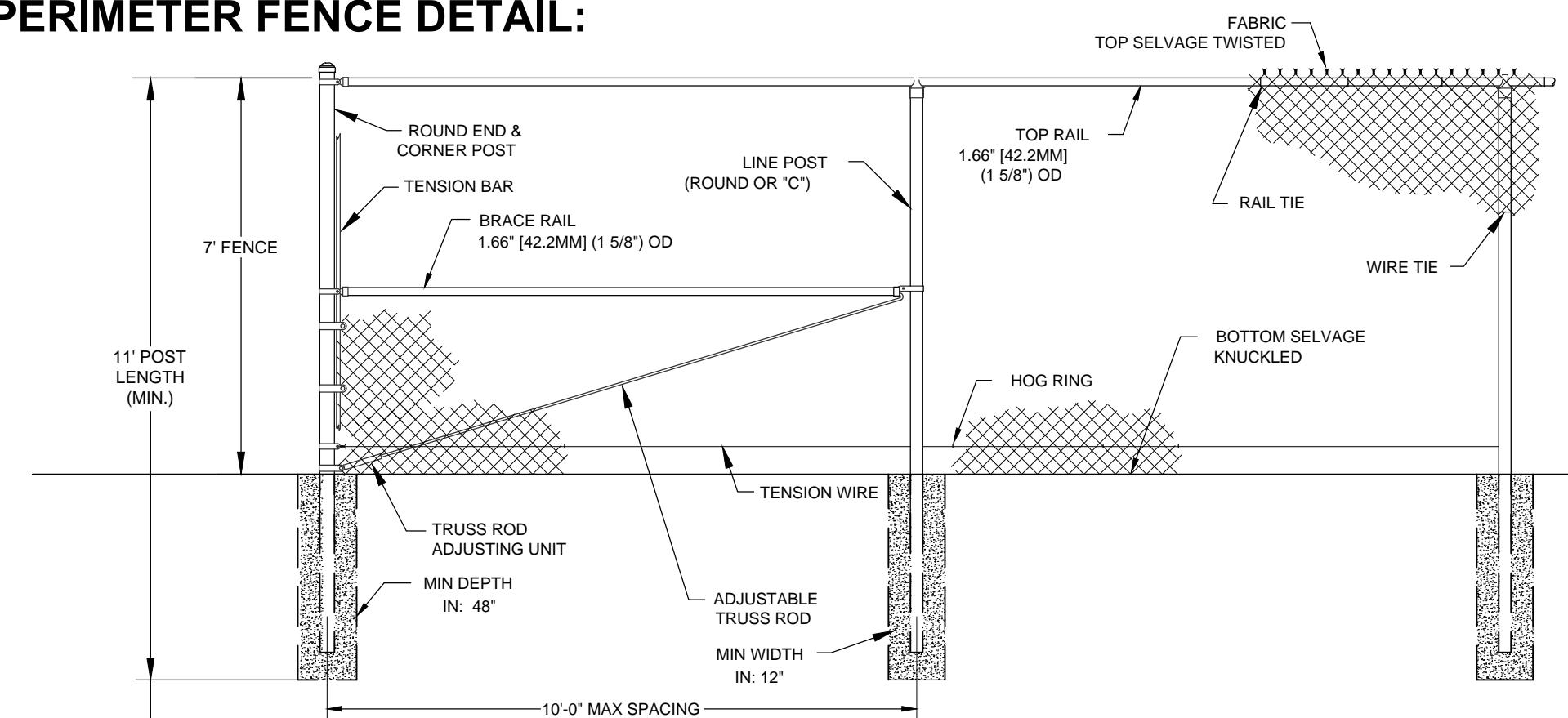
Prepared for:

ecos
ENERGY222 SOUTH 9TH STREET
SUITE 1600
MINNEAPOLIS, MN 55402

RACKING PROFILE DETAIL:



PERIMETER FENCE DETAIL:

VOLUNTOWN RD.
SOLAR

1219 & 1240 VOLUNTOWN RD.
GRISWOLD, CT 06351
NEW LONDON COUNTY

OVERALL
SITE PLAN

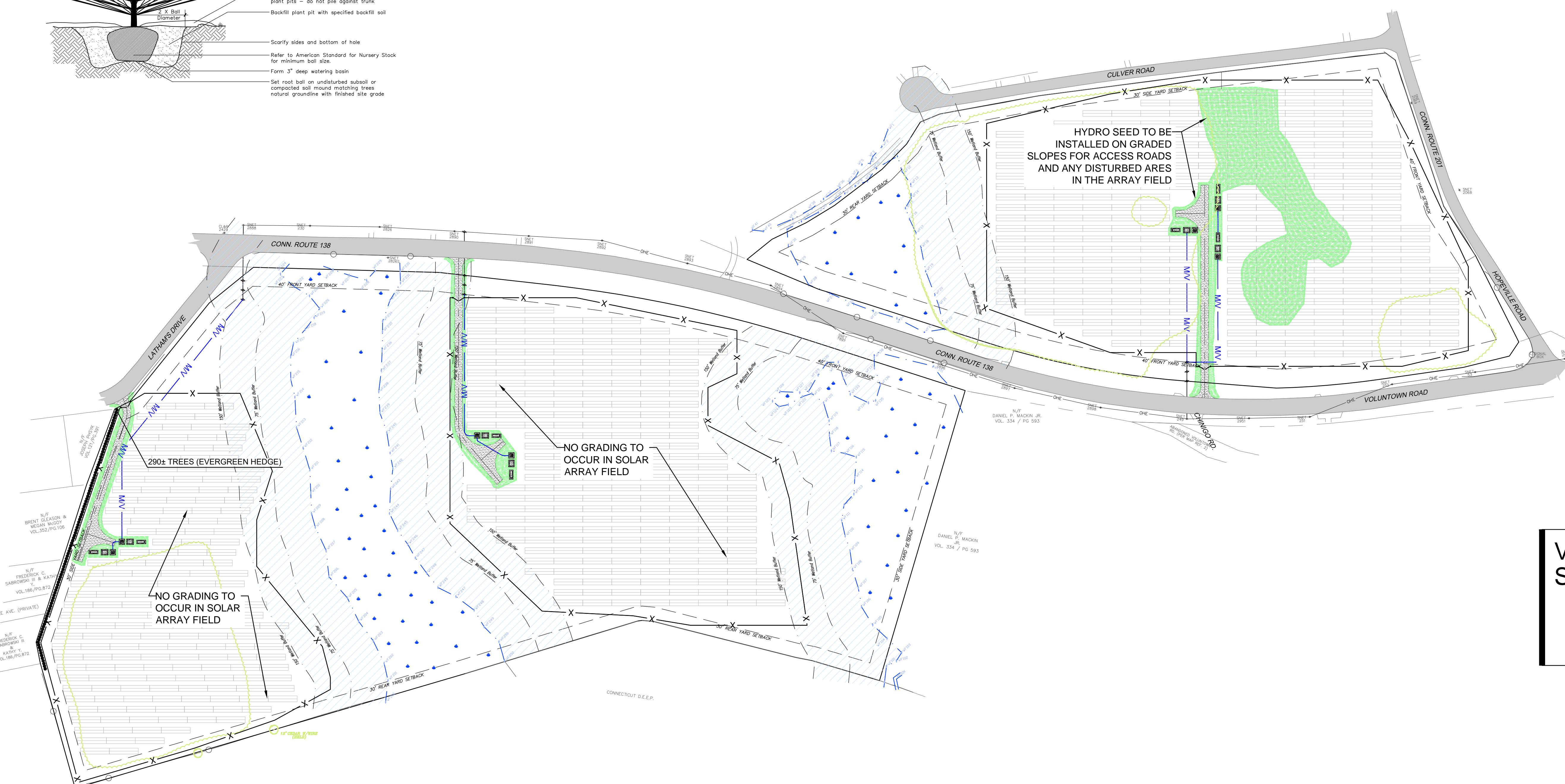
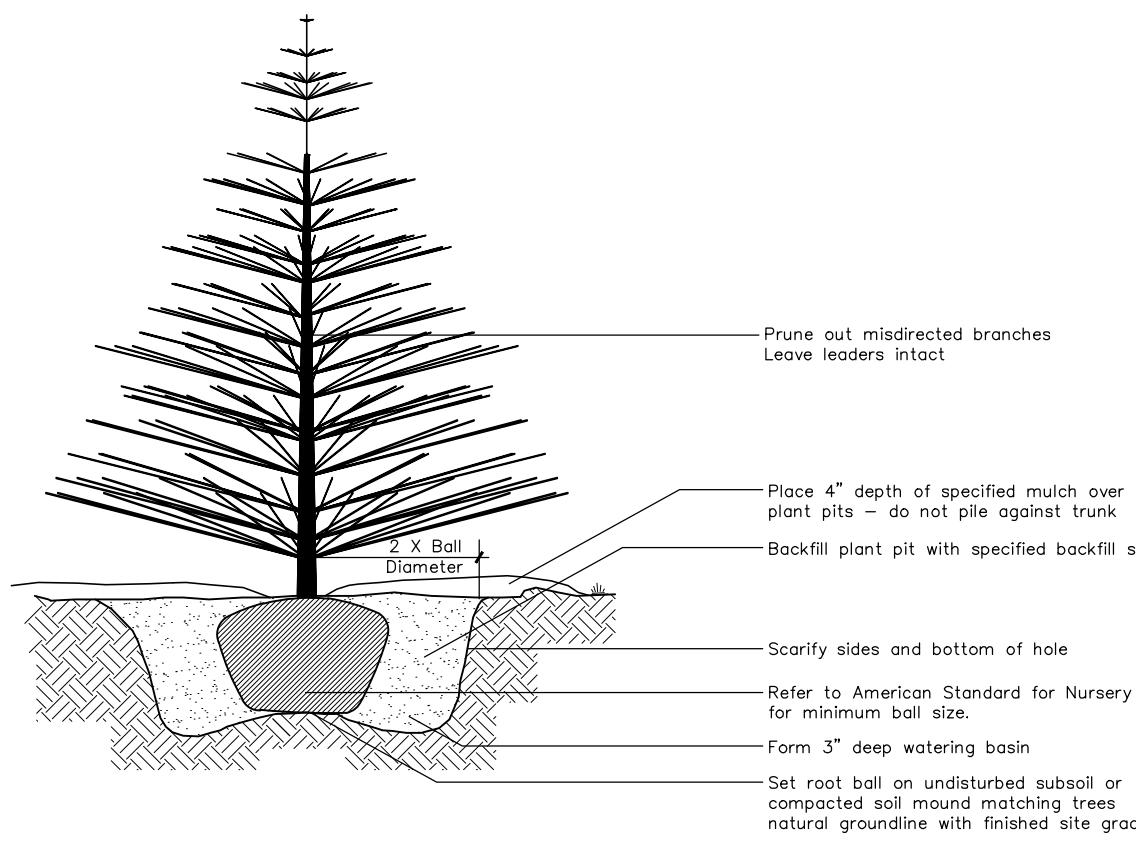
SITING BOARD REVIEW

DATE: 03/15/2016

SHEET: 4 of 12

SEEDING NOTES:

1. THE CONTRACTOR SHALL HYDROSEED ALL DISTURBED AREAS ASSOCIATED WITH THE CONSTRUCTION OF THE SOLAR FACILITY. CONTRACTOR SHALL USE AN APPROVED LOW GROWTH LOW MAINTENANCE SEED MIX APPROVED BY THE APPROPRIATE GOVERNING AUTHORITY.

EVERGREEN TREE DETAIL**Westwood**

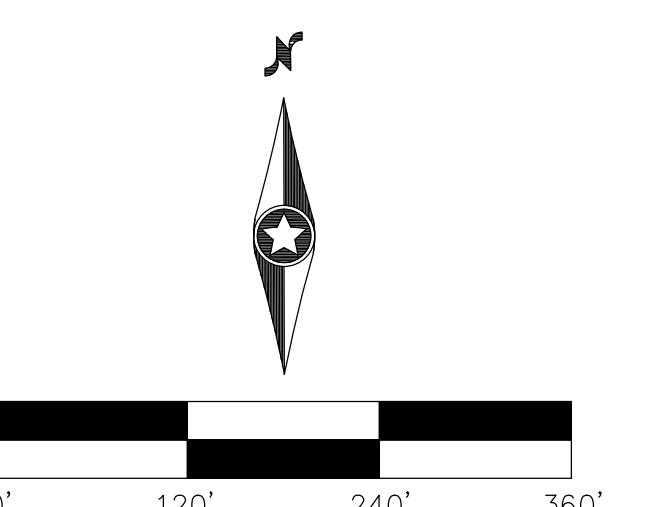
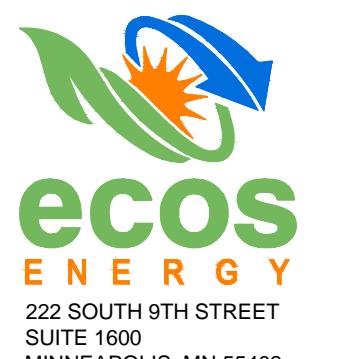
Phone (480) 747-6558 6909 East Greenway Parkway, Suite 250
 Fax (480) 376-8025 Scottsdale, AZ 85254
 westwoodps.com

Westwood Professional Services, Inc.

Designed: ADC
 Checked: SAW
 Drawn: SJB
 Record Drawing by/date:

Revisions: DATE DESCRIPTION
 - 03/15/2016 CT SITING BOARD SUBMISSION

Prepared for:

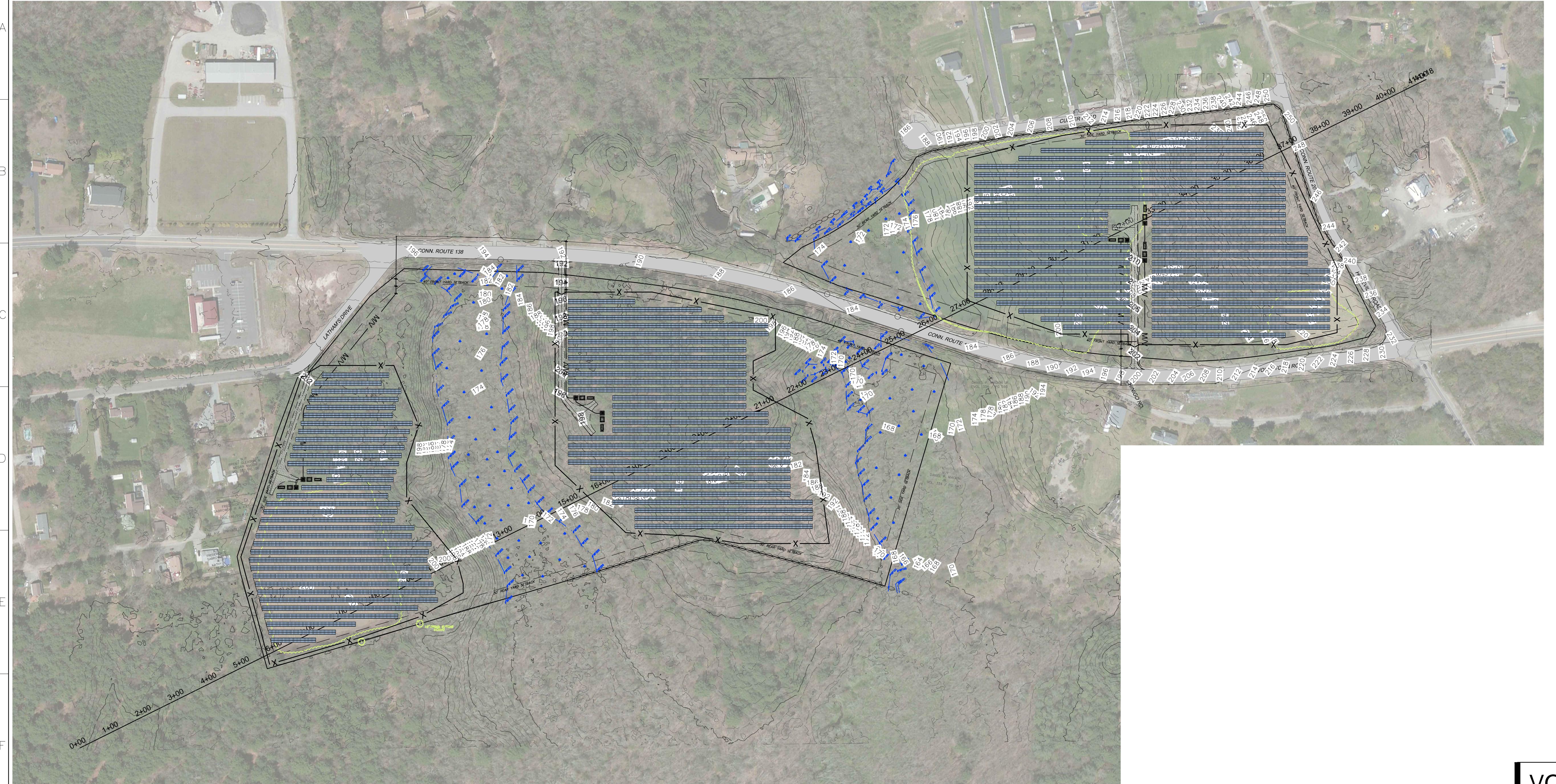


**VOLUNTOWN RD.
SOLAR**
1219 & 1240 VOLUNTOWN RD.
GRISWOLD, CT 06351
NEW LONDON COUNTY

**LANDSCAPE
PLAN****SITING BOARD REVIEW**

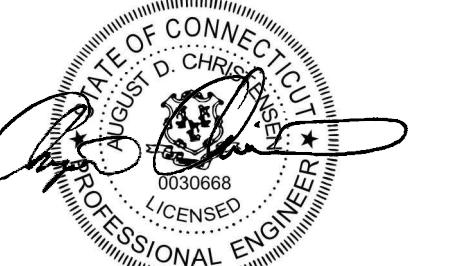
DATE: 03/15/2016

SHEET: 8 of 12

PROJECT CROSS SECTION:**Westwood**

Phone (480) 747-6558 6909 East Greenway Parkway, Suite 250
 Fax (480) 376-8025 Scottsdale, AZ 85254
 westwoodps.com

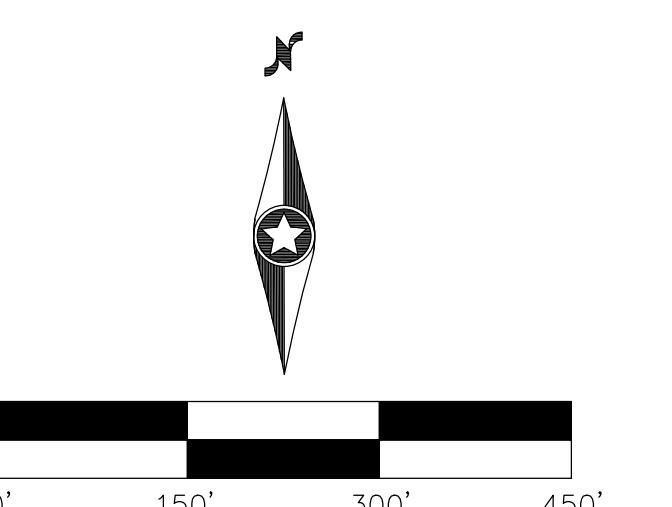
Westwood Professional Services, Inc.



Designed: ADC
 Checked: SAW
 Drawn: SJB
 Record Drawing by/date:

Revisions: DATE DESCRIPTION
 - 03/15/2016 CT SITING BOARD SUBMISSION

Prepared for:

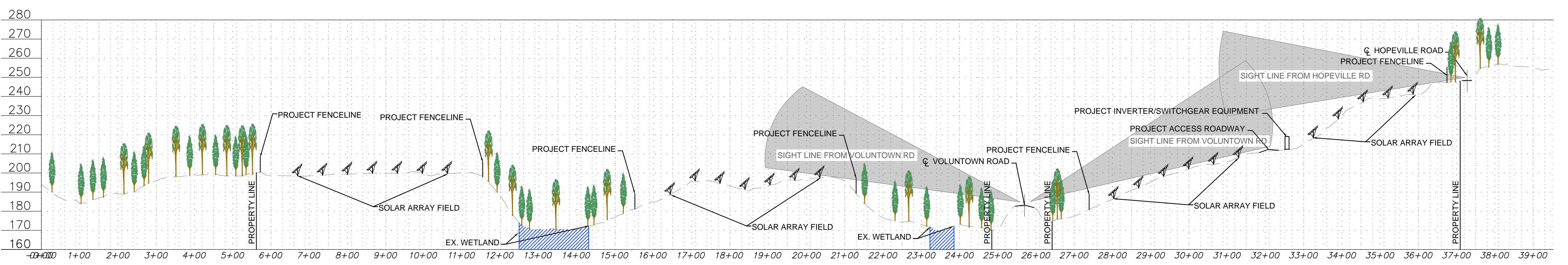
**VOLUNTOWN RD.
SOLAR**

1219 & 1240 VOLUNTOWN RD.
 GRISWOLD, CT 06351
 NEW LONDON COUNTY

**PROJECT
CROSS
SECTION****SITING BOARD REVIEW**

DATE: 03/15/2016

SHEET: 9 of 12

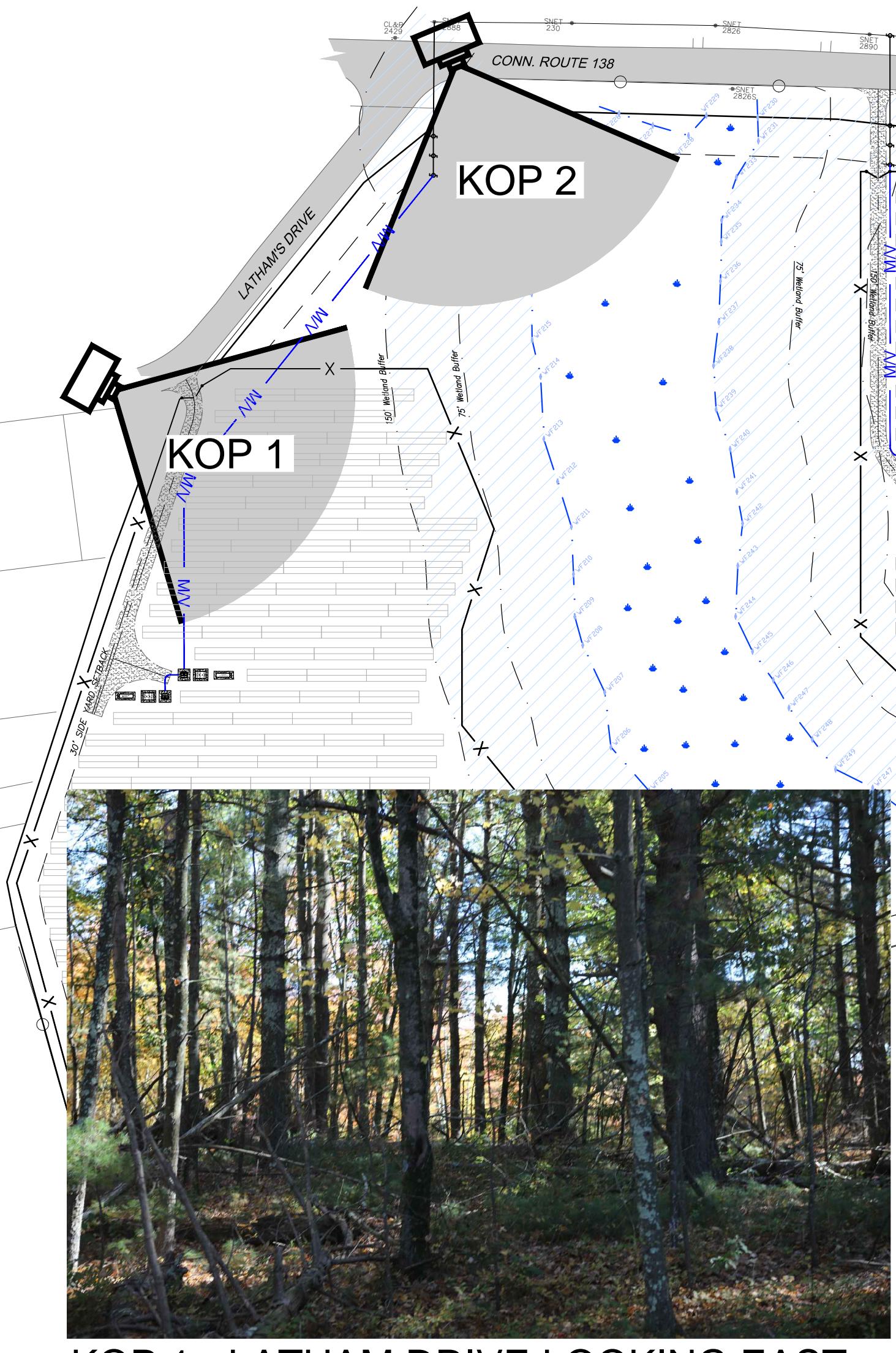
PROJECT PROFILE:



KOP 2 - ROUTE 138 LOOKING SOUTH



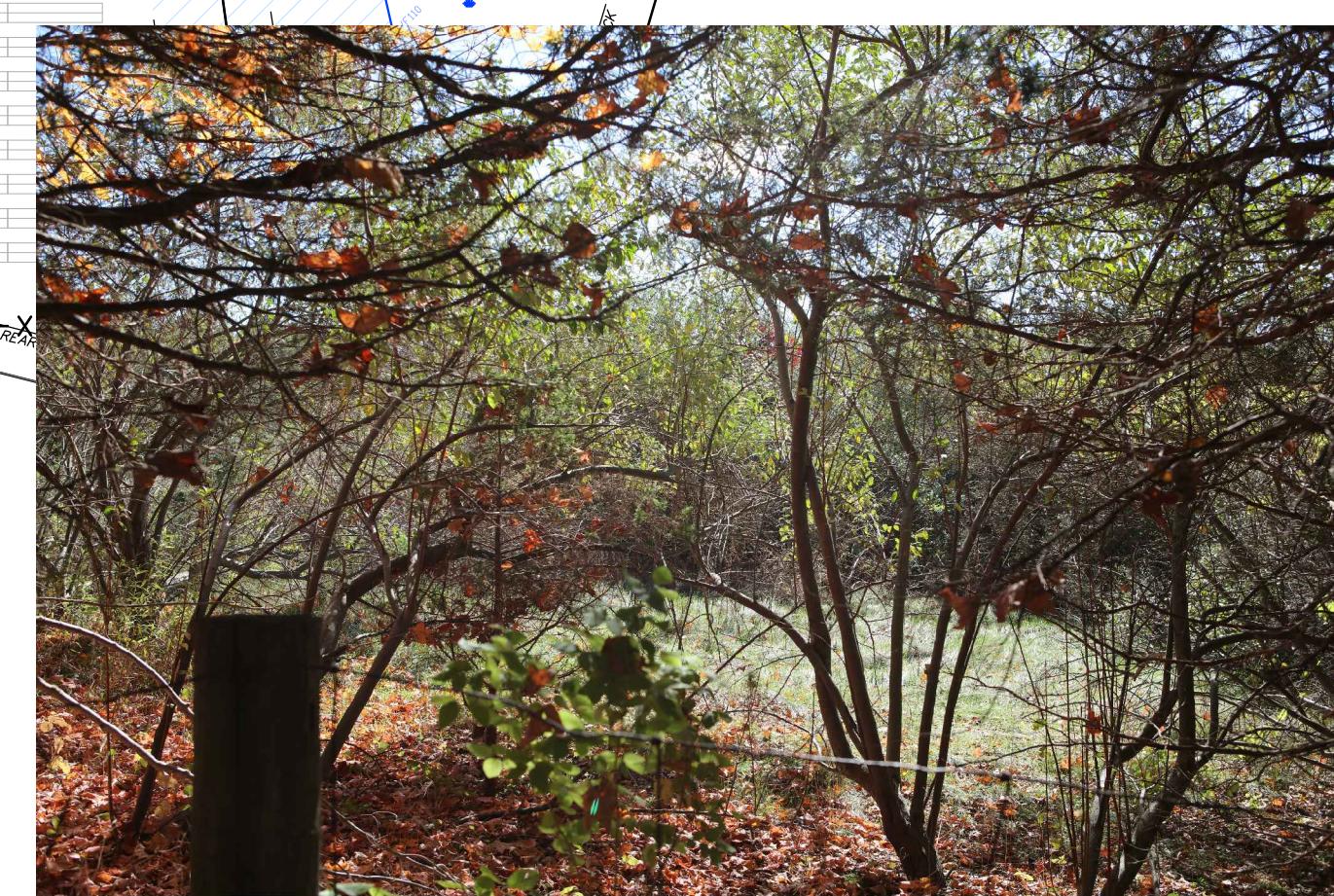
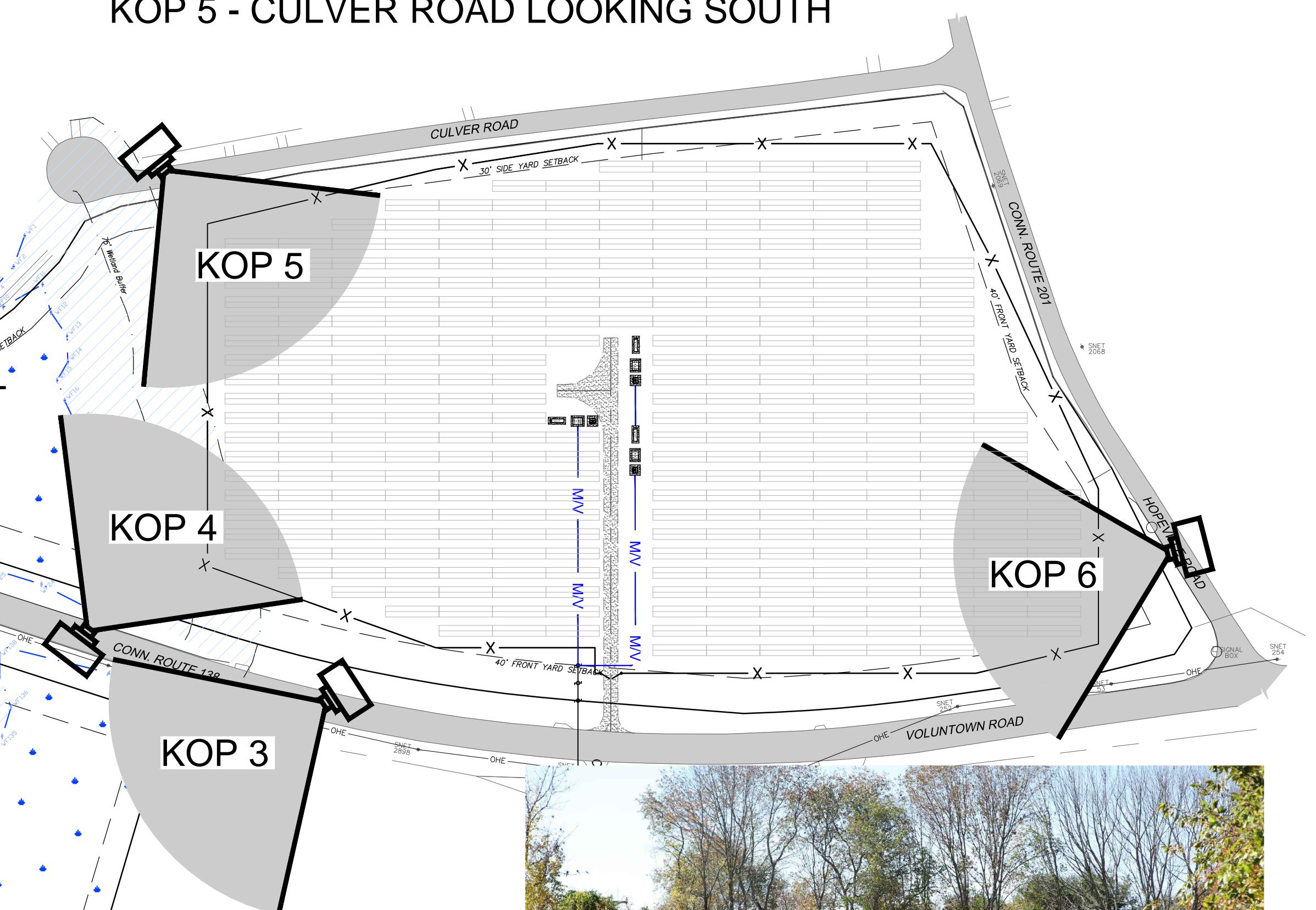
KOP 4 - ROUTE 138 LOOKING NORTHEAST



KOP 1 - LATHAM DRIVE LOOKING EAST



KOP 5 - CULVER ROAD LOOKING SOUTH



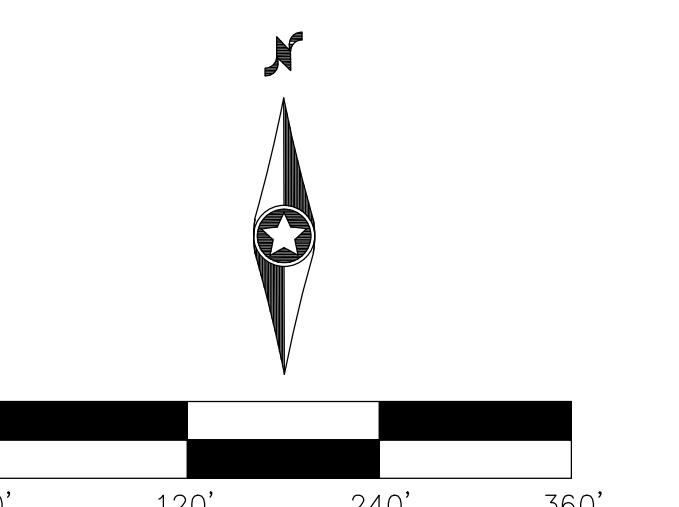
KOP 3 - ROUTE 138 LOOKING WEST



KOP 6 - HOPEVILLE ROAD LOOKING WEST

Designed: ADCChecked: SAWDrawn: SJBRecord Drawing by/date:

Revisions: DATE DESCRIPTION
 - 03/15/2016 CT SITING BOARD SUBMISSION

Prepared for: 

VOLUNTOWN RD. SOLAR

1219 & 1240 VOLUNTOWN RD.
 GRISWOLD, CT 06351
 NEW LONDON COUNTY

KEY OBSERVATION POINT PLAN

SITING BOARD REVIEW

DATE: 03/15/2016

SHEET: 10 of 12

ROAD DESIGN PARAMETERS

1. ROAD MAINTENANCE CAN BE EXPECTED OVER THE LIFE OF THE PERMANENT FACILITY.

SPECIAL PROVISIONS FOR GRADING AND EROSION CONTROL

THE CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES AS PLANNED AND SPECIFIED FOLLOWING BEST MANAGEMENT PRACTICES AS OUTLINED BY THE STATE OF CONNECTICUT AND BEING IN CONFORMANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL STORMWATER PERMIT. SEE THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR EROSION CONTROL AND RESTORATION SPECIFICATIONS. UNLESS OTHERWISE NOTED OR MODIFIED HEREIN, ALL SECTIONS OF THE GENERAL CONDITIONS SHALL APPLY.

EXECUTION

1. CLEARING AND GRUBBING

A. THE CONTRACTOR SHALL BE REQUIRED TO REMOVE ALL TREES, STUMPS, BRUSH, AND DEBRIS WITHIN THE GRADING LIMITS SHOWN ON THE PLANS. THE CONTRACTOR IS TO REMOVE ONLY THOSE TREES WHICH ARE DESIGNATED BY THE OWNER'S REPRESENTATIVE FOR REMOVAL, AND SHALL EXERCISE EXTREME CARE AROUND EXISTING TREES TO BE SAVED.

2. TOPSOIL STRIPPING

A. TOPSOIL SHALL BE STRIPPED FROM ALL ROADWAY AREAS THROUGH THE ROOT ZONE. TOPSOIL SHALL NOT BE STRIPPED OUTSIDE OF THE DESIGNATED DISTURBANCE AREAS.

B. ANY TOPSOIL, THAT HAS BEEN STRIPPED, SHALL BE RE-SPREAD OR STOCKPILED WITHIN GRADING AREAS AND/OR USED AS FILL OUTSIDE OF THE DISTURBANCE AREAS, AS DIRECTED BY THE ENGINEER.

3. EMBANKMENT CONSTRUCTION.

A. EMBANKMENT CONSTRUCTION SHALL CONSIST OF THE PLACING OF SUITABLE FILL MATERIAL, AFTER TOPSOIL STRIPPING, ABOVE THE EXISTING GRADE. GENERALLY, EMBANKMENTS SHALL HAVE COMPAKTED SUPPORT SLOPES OF TWO AND A HALF FEET HORIZONTAL TO ONE FOOT VERTICAL. THE MATERIAL FOR EMBANKMENT CONSTRUCTION SHALL BE OBTAINED FROM THE ACCESS ROAD EXCAVATION (SEE GEOTECHNICAL REPORT FOR RESTRICTIONS), OR ANY SUITABLE, APPROVED SOIL OBTAINED OFFSITE BY CONTRACTOR, AS DIRECTED OR APPROVED BY THE ENGINEER. THIS MATERIAL SHALL BE PLACED IN LIFTS NOT TO EXCEED 9".

B. SIDE SLOPES GREATER THAN 2.5:1 WILL NOT BE PERMITTED, UNLESS OTHERWISE NOTED ON THE PLAN.

TESTING REQUIREMENTS:

1. TESTING SHALL BE PERFORMED BY A DESIGNATED INDEPENDENT TESTING AGENCY.
2. SUBMIT TESTING AND INSPECTION RECORDS SPECIFIED TO THE CIVIL ENGINEER OF RECORD FOR REVIEW.
 - A. THE ENGINEER WILL REVIEW THE TESTING AND INSPECTION RECORDS TO CHECK CONFORMANCE WITH THE DRAWINGS AND SPECIFICATIONS. THE ENGINEER'S REVIEW DOES NOT RELIEVE THE CONSTRUCTION CONTRACTOR FROM THE RESPONSIBILITY FOR CORRECTING DEFECTIVE WORK.
3. PROOF ROLLING:
 - A. PROOF-ROLLING SHALL BE PERFORMED IN THE PRESENCE OF THE GEOTECHNICAL ENGINEER OR QUALIFIED GEOTECHNICAL REPRESENTATIVE USING A FULLY LOADED TANDEM AXLE DUMP TRUCK WITH A MINIMUM GROSS WEIGHT OF 25 TONS OR A FULLY LOADED WATER TRUCK WITH AN EQUIVALENT AXLE LOADING. PROOF-ROLLING ACCEPTANCE STANDARDS INCLUDE NO RUTTING GREATER THAN 1.5 INCHES, AND NO "PUMPING" OF THE SOIL BEHIND THE LOADED TRUCK.
4. SIEVE ANALYSIS:
 - A. SIEVE ANALYSIS SHALL BE CONDUCTED IN ACCORDANCE WITH AASHTO T27
5. PROCTOR:
 - A. PROCTORS SHALL BE DETERMINED IN ACCORDANCE WITH ASTM D-1557
6. ATTERBERG LIMITS:
 - A. ATTERBERG LIMITS SHALL BE DETERMINED IN ACCORDANCE WITH AASHTO T89 AND T90
7. MOISTURE DENSITY (NUCLEAR DENSITY):
 - A. MOISTURE DENSITY TESTING SHALL BE DONE IN ACCORDANCE WITH AASHTO T310

SUBGRADE COMPACTION, TEST ROLLING AND AGGREGATE BASE COMPACTION:

1. FILL MATERIAL:

A. SOILS USED AS FILL MATERIAL SHALL BE TESTED FOR GRAIN SIZE ANALYSIS, MOISTURE CONTENT, ATTERBERG LIMITS ON FINES CONTENT, AND PROCTOR TESTS (MODIFIED DRY MAXIMUM DENSITY).
a. FOR PLACED & COMPAKTED FILLS, PROVIDE ONE COMPACTION TEST PER LIFT FOR EVERY 1000 FT OF ROAD LENGTH. INCLUDE THE LOCATION, DRY DENSITY, MOISTURE CONTENT, AND COMPACTION PERCENT BASED ON MODIFIED PROCTOR MAXIMUM DRY DENSITY.

B. IN ROADWAY CUT AREAS, OR WHERE EMBANKMENT CONSTRUCTION REQUIRES LESS THAN 12 INCHES OF FILL PLACEMENT, COMPACT TO A MINIMUM OF 95 PERCENT OF THE MATERIAL'S MODIFIED PROCTOR MAXIMUM DRY DENSITY.

2. COMPAKTED SUBGRADE:

A. THE ENTIRE SUBGRADE SHALL BE PROOF-ROLLED PRIOR TO THE PLACEMENT OF THE AGGREGATE BASE TO IDENTIFY AREAS OF UNSTABLE SUBGRADE.

B. IF PROOF ROLLING DETERMINES THAT THE SUBGRADE STABILIZATION CANNOT BE ACHIEVED, THE FOLLOWING ALTERNATIVES WILL BE IMPLEMENTED:

- a. REMOVE UNSUITABLE MATERIAL AND REPLACE WITH SUITABLE EMBANKMENT
- b. SCARIFY, DRY, AND RECOMPACT SUBGRADE AND PERFORM ADDITIONAL PROOF ROLL.
- c. INCREASE ROAD BASE THICKNESS.

3. AGGREGATE BASE:

A. AGGREGATE BASE SHALL BE PROOF-ROLLED OVER THE ENTIRE LENGTH. PROVIDE 1 SIEVE ANALYSIS PER 2500 CY OF ROAD BASE PLACED.

- a. IF PROOF ROLLING DETERMINES THAT THE ROAD IS UNSTABLE, ADDITIONAL AGGREGATE SHALL BE ADDED UNTIL THE UNSTABLE SECTION IS ABLE TO PASS A PROOF ROLL.

TABLE 1: TESTING SCHEDULE SUMMARY		
LOCATION	TEST	FREQUENCY
STRUCTURAL FILL	GRAIN SIZE ANALYSIS, MOISTURE CONTENT, ATTERBERG LIMITS ON FINES CONTENT, AND PROCTOR	1 PER MAJOR SOIL TYPE
	MOISTURE DENSITY	1 PER 2,000 CY OR MIN. 1 PER LIFT
COMPACTED SUBGRADE	PROOF-ROLL	ENTIRE LENGTH
	MOISTURE DENSITY TEST (NUCLEAR DENSITY)	1 PER 1,000 FT OR MIN. 5 FOR THE SITE
AGGREGATE BASE	PROOF-ROLL	ENTIRE LENGTH
	SIEVE ANALYSIS	1 PER 2,500 CY

GENERAL NOTES:

1. THE PLANIMETRIC FEATURES, GROUND SURFACE CONTOURS ON A LIDAR SURFACE PROVIDED NOAA.
2. NO GRADING OR SOIL DISTURBANCE IS PERMITTED OUTSIDE OF THE GRADING LIMITS IDENTIFIED ON THE PLANS.
3. GRADE ALL PROPOSED ROADS TO THE SLOPES PROPOSED ON THE PLANS.
4. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING DRAINAGE THROUGHOUT THE CONSTRUCTION OF THIS PROJECT. CONSTRUCTION ACTIVITIES SHALL NOT BLOCK THE NATURAL OR MANMADE CREEKS OR DRAINE SWALES CAUSING RAINWATER TO POND. ADDITIONAL CULVERTS IN EXCESS OF THOSE ON THE PLANS MAY BE REQUIRED AS APPROVED BY THE ENGINEER.
5. THE CONTRACTOR SHALL NOTIFY DIGSAFE AT LEAST 48 HOURS BEFORE EXCAVATION ACTIVITIES COMMENCE.
6. WETLAND INFORMATION SHOWN ON THE PLAN WAS PROVIDED BY ROB HELLSROM LAND SURVEYING AND FLAGGED BY HIGHLANDS SOILS. THE GENERAL CONTRACTOR SHALL VERIFY THAT ALL WETLAND PERMITS HAVE BEEN SUBMITTED AND APPROVED PRIOR TO CONSTRUCTION COMMENCING.
7. ELECTRICAL COLLECTION SYSTEM SHOWN ON THE PLAN SHALL BE CONSIDERED PRELIMINARY. CONTRACTOR SHALL REFER TO FINAL ELECTRICAL DESIGN PLANS FOR ACTUAL DESIGN LOCATIONS.

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

1. REFER TO THE SWPPP BOOKLET FOR SEDIMENT AND EROSION CONTROL PROCEDURES, LOCATIONS OF BMPs, DETAILS, AND INSPECTION INFORMATION.
2. ALL AREAS DISTURBED DURING CONSTRUCTION ACTIVITIES AND NOT COVERED BY ROAD SURFACING MATERIALS, SHALL BE SEDED IN ACCORDANCE WITH THE SWPPP PLAN.
3. TEMPORARY EROSION CONTROL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE TEMPORARY EROSION CONTROL PLAN SHALL BE IN ACCORDANCE WITH STATE OF CONNECTICUT, THE EPA, AND THE SWPPP ON FILE.

SLOPE STABILIZATION:

ALL AREAS DESIGNATED ON THE PLAN FOR SLOPE STABILIZATION SHALL BE GRADED AND COMPAKTED, SMOOTH AND CLEAN TO THE FINISH CONTOURS SHOWN ON THE PLAN, WITH A MINIMUM OF 4 INCHES OF TOPSOIL PLACED ON THE AREA. STABILIZATION SHALL BE ACHIEVED IN ONE OF TWO MANNERS:

EITHER: 1) HAND-PLACED RIPRAP

OR:

2) SEED WITH EROSION CONTROL AND REVEGITATION MAT (ECRM)

1. PLACEMENT OF RIPRAP

RIPRAP HAND PLACED, HAND-PLACED RIPRAP SHALL CONSIST OF ROUGH UNHEWN QUARRY STONES, APPROXIMATELY RECTANGULAR, PLACED DIRECTLY ON THE SPECIFIED SLOPES OR SURFACES. IT SHALL BE SO LAID THAT THE WEIGHT OF THE LARGE STONES IS CARRIED BY THE SOIL RATHER THAN BY ADJACENT STONES. STONES SHALL WEIGH BETWEEN 50 AND 150 LB. EACH AND AT LEAST 60 % OF THEM SHALL WEIGH MORE THAN 100 LB. EACH WHEN USED ON EMBANKMENT CONSTRUCTION. RIP RAP FOR BMPs SHALL BE 6"-8" DIA. PREPARATION FOR HAND-PLACED RIP RAP. BEFORE ANY RIP RAP IS PLACED, THE SURFACE TO BE COVERED SHALL BE FULLY COMPAKTED AND GRADED TO THE REQUIRED SLOPE. PLACE MIRAFITM8 OR APPROVED EQUAL GEOTEXTILE ON SLOPE. RIP RAP ON SLOPES SHALL COMMENCE COMMENCE IN A TRENCH BELOW THE TOW OF THE SLOPE AND SHALL PROGRESS UPWARD, EACH STONE BEING LAID BY HAND PERPENDICULAR TO THE SLOPE WITH THE LONG DIMENSION VERTICAL, FIRMLY BEDDED AGAINST THE SLOPE AND AGAINST THE ADJOINING STONE, WITH ENDS IN CONTACT, AND WITH WELL-BROKEN JOINTS. SIMILAR METHODS SHALL BE USED WHEN LAYING RIPRAP ON STREAM BEDS, IN DITCHES, AND ON LEVEL SURFACES.

THE FINISHED SURFACE OF THE RIPRAP SHALL PRESENT AN EVEN, TIGHT SURFACE, NOT LESS THAN 12 INCHES THICK, MEASURED PERPENDICULAR TO THE SLOPE.

THE STONES WEIGHING MORE THAN 100 LB. SHALL BE WELL DISPERSED THROUGHOUT THE AREA WITH THE 50-100 LB. STONES LAID BETWEEN THEM IN SUCH A MANNER THAT ALL STONES WILL BE IN CLOSE CONTACT. THE REMAINING VOIDS SHALL BE FILLED WITH SPALLS OF SUITABLE SIZE AND WELL TAMPED TO PRODUCE A FIRM AND COMPACT REVETMENT.

2. STABILIZATION WITH EROSION CONTROL AND REVEGITATION MAT (ECRM)

1) AREA MUST BE GRADED SMOOTH AND CLEAN TO FINISH GRADES, AND COMPAKTED.

2) SEED AND MULCH AREA. USE SEED MIX APPROVED BY THE ENGINEER.

3) INSTALL ECRM PER MANUFACTURER'S INSTRUCTIONS, HOWEVER THESE MUST INCLUDE THE FOLLOWING MINIMUM REQUIREMENTS:

A) GRADE GROUND TO FINISH CONTOURS. REMOVE ALL ROCKS, DIRT CLODS, STUMPS, ROOTS, TRASH, AND OTHER OBSTRUCTIONS LYING IN DIRECT CONTACT WITH THE SOIL SURFACE.

B) DIG MAT ANCHOR TRENCHES (MINIMUM 12" DEEP, 6" WIDE) AT TERMINAL ENDS AND PERIMETER SIDES WHERE MAT IS TO BE INSTALLED.

C) INSTALL MAT BY ROLLING UPHILL PARALLEL TO WATER FLOW, STARTING AT TRENCH. OVERLAP ROLLS BY MINIMUM OF 3". FASTEN TO GROUND WITH 18" PINS AND 1 1/2" WASHERS, OR EQUIVALENT. PIN MAT AT ENDS, AND EVERY 3' TO 5' ALONG OVERLAPS. DO NOT STRETCH MAT. SPlicing ROLLS SHOULD BE DONE IN A CHECK SLOT. BACKFILL TO COVER ENDS AND FASTENERS, ROLLING MAT ACROSS BACKFILL AND PIN AGAIN.

FOR MAT USE MIRAFI MIRAMAT TM8 OR EQUIVALENT.

SEEDING:

1. COMPOSITION OF SEED MIX CHANGES YEARLY. SEED SPECIFICATIONS MUST BE SUBMITTED TO ENGINEER 2 WEEKS PRIOR TO INSTALLATION. ALL SPECIES MUST BE NATIVE TO WORCESTER COUNTY.

2. RESTORED AREAS TO BE SEDED WITH ABOVE MIX OR EQUAL (SUBJECT TO ENGINEERS APPROVAL). SEED TO BE LIGHTLY RAKED TO ALLOW FOR PROPER SEED/SOIL CONTACT.

3. CONTRACTOR SHALL OVERSEED AND/OR RE-MULCH AS NECESSARY TO ESTABLISH A GOOD COVER OF VEGETATION, WHETHER DUE TO POOR INITIAL COVER, INCLEMENT WEATHER BEFORE/DURING/AFTER SEEDING, OR THE ONSET OF WINTER.

4. RILLING, GULLIES, OR OTHER EROSION DUE TO POOR COVER SHALL BE RAKED AND/OR REFILLED AND REMULCH/RESEDED.

5. CONTRACTOR SHALL WARRANTEE SEEDING, MULCHING AND EROSION CONTROL FABRIC FOR ONE YEAR FROM THE SUBSTANTIAL COMPLETION OF THE RELEVANT AREA OF WORK.

INVASIVE SPECIES:

1. ALL EQUIPMENT SHALL BE INSPECTED UPON ARRIVAL. EQUIPMENT ARRIVING WITH OBSERVABLE SOIL OR PLANT FRAGMENTS WILL BE REMOVED AND CLEANED.

2. HAY BALES ARE NOT BE USED ON SITE; ONLY WEED-FREE STRAW BALES ARE APPROVED.

3. OFF-SITE TOPSOIL MUST BE FREE OF INVASIVE SPECIES. THE ENGINEER SHALL BE NOTIFIED OF THE TOPSOIL SOURCE 6 WEEKS BEFORE DELIVERY.

Westwood

Phone (480) 747-6558 6909 East Greenway Parkway, Suite 250
Fax (480) 376-8025 Scottsdale, AZ 85254
westwoodps.com

Westwood Professional Services, Inc.



Designed: ADC

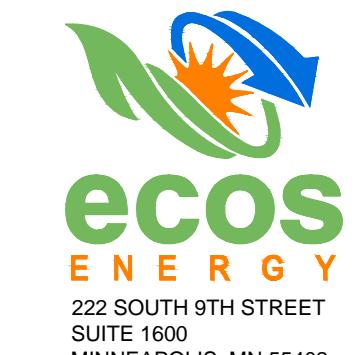
Checked: SAW

Drawn: SJB

Record Drawing by/date:

Revisions: DATE DESCRIPTION
- 03/15/2016 CT SITING BOARD SUBMISSION

Prepared for:



222 SOUTH 9TH STREET
SUITE 1600
MINNEAPOLIS, MN 55402

VOLUNTOWN RD. SOLAR

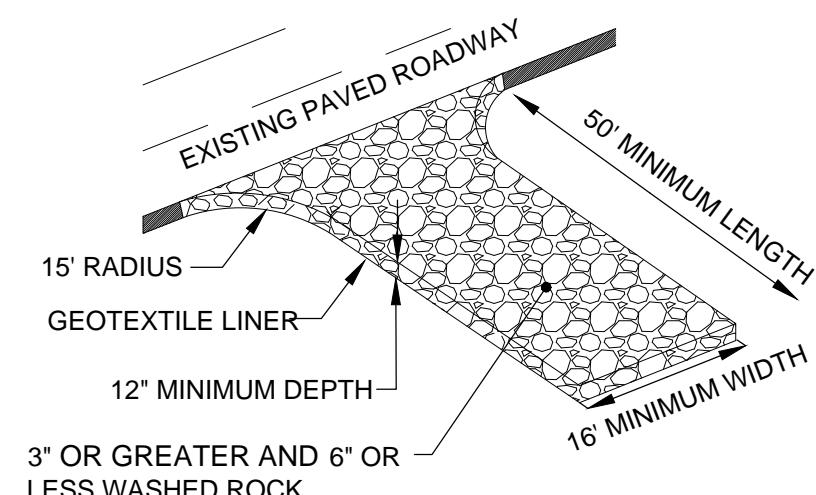
1219 & 1240 VOLUNTOWN RD.
GRISWOLD, CT 06351
NEW LONDON COUNTY

CIVIL AND EROSION CONTROL NOTES

SITING BOARD REVIEW

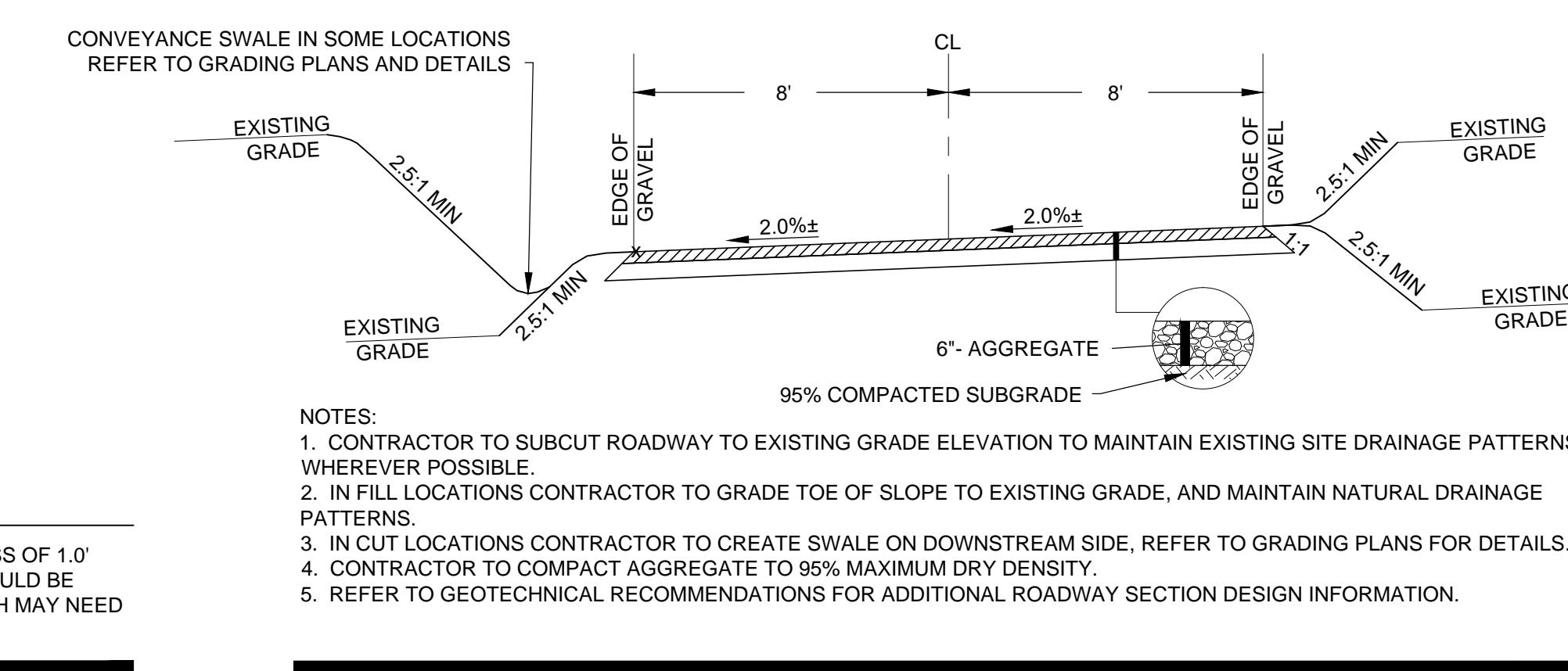
DATE: 03/15/2016

SHEET: 11 of 12

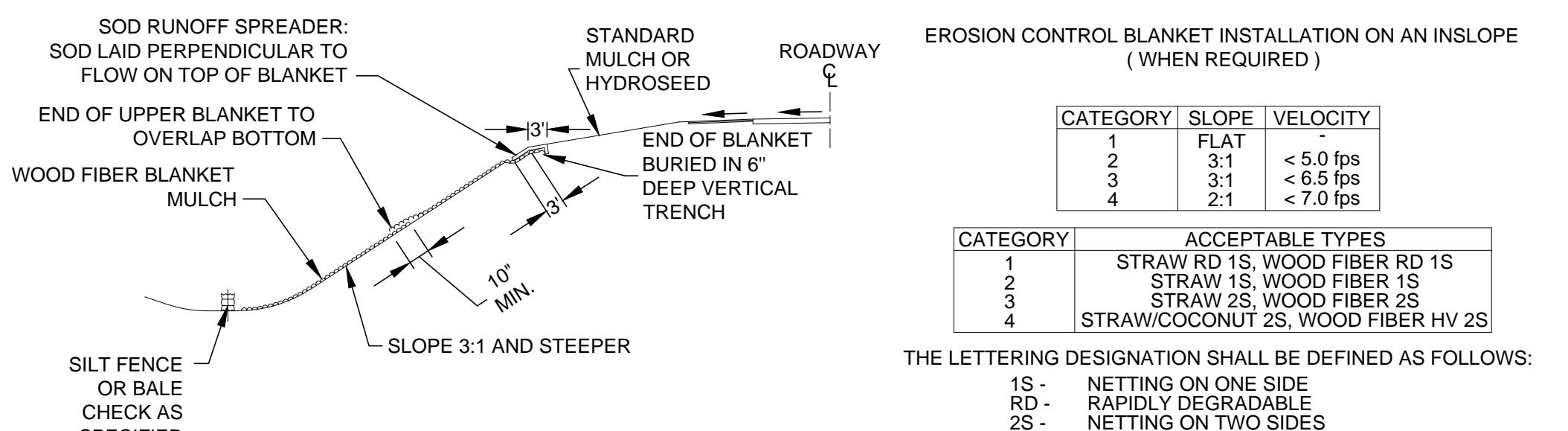


NOTE:
ROCK CONSTRUCTION ENTRANCE SHOULD BE A MINIMUM THICKNESS OF 1.0' AND CONTAIN MAXIMUM SIDE SLOPES OF 4:1. ROCK ENTRANCE SHOULD BE INSPECTED AND MAINTAINED REGULARLY. ROCK ENTRANCE LENGTH MAY NEED TO BE EXTENDED IN CLAY SOILS.

ROCK CONSTRUCTION ENTRANCE



ACCESS ROAD DETAIL



EROSION CONTROL BLANKET INSTALLATION ON AN INSLOPE (WHEN REQUIRED)

CATEGORY	SLOPE	VELOCITY
1	FLAT	-
2	3:1	< 5.0 fps
3	3:1	< 6.5 fps
4	2:1	< 7.0 fps

CATEGORY	ACCEPTABLE TYPES
1	STRAW RD 1S, WOOD FIBER RD 1S
2	STRAW 1S, WOOD FIBER 1S
3	STRAW 2S, WOOD FIBER 2S
4	STRAW/COCONUT 2S, WOOD FIBER HV 2S

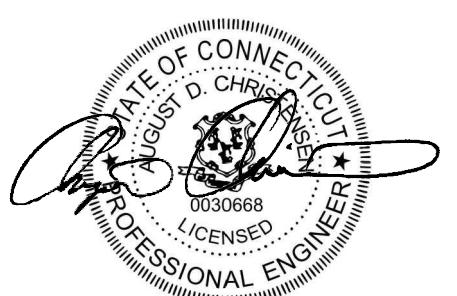
THE LETTERING DESIGNATION SHALL BE DEFINED AS FOLLOWS:

1S - NETTING ON ONE SIDE
RD - RAPIDLY DEGRADABLE
2S - NETTING ON TWO SIDES
HV - HIGH VELOCITY

Westwood

Phone (480) 747-6558 6909 East Greenway Parkway, Suite 250
Fax (480) 376-8025 Scottsdale, AZ 85254
westwoodps.com

Westwood Professional Services, Inc.



Designed: ADC

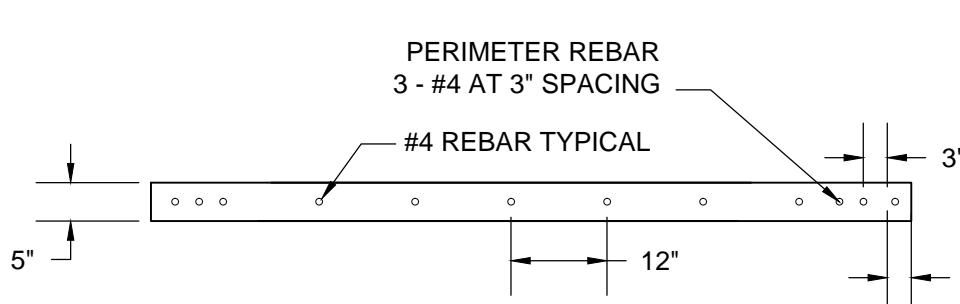
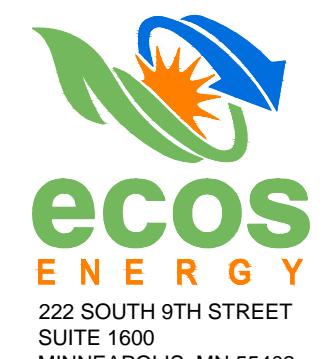
Checked: SAW

Drawn: SJB

Record Drawing by/date:

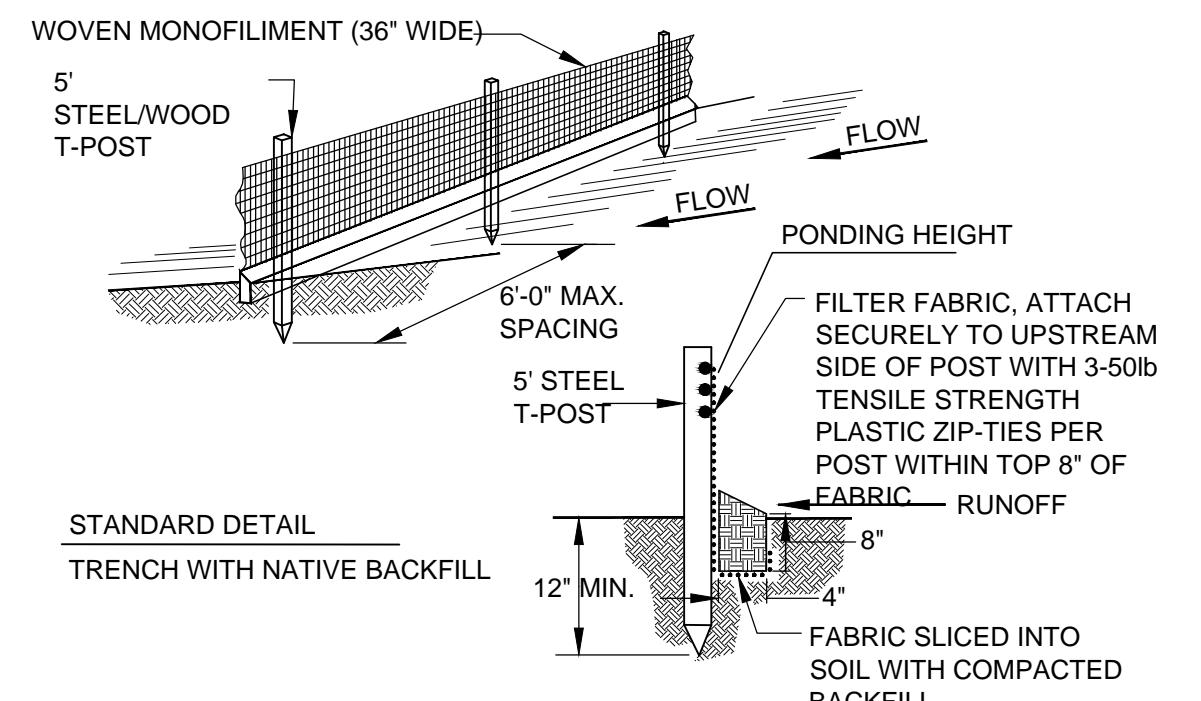
Revisions: # DATE DESCRIPTION
- 03/15/2016 CT SITING BOARD SUBMISSION

Prepared for:



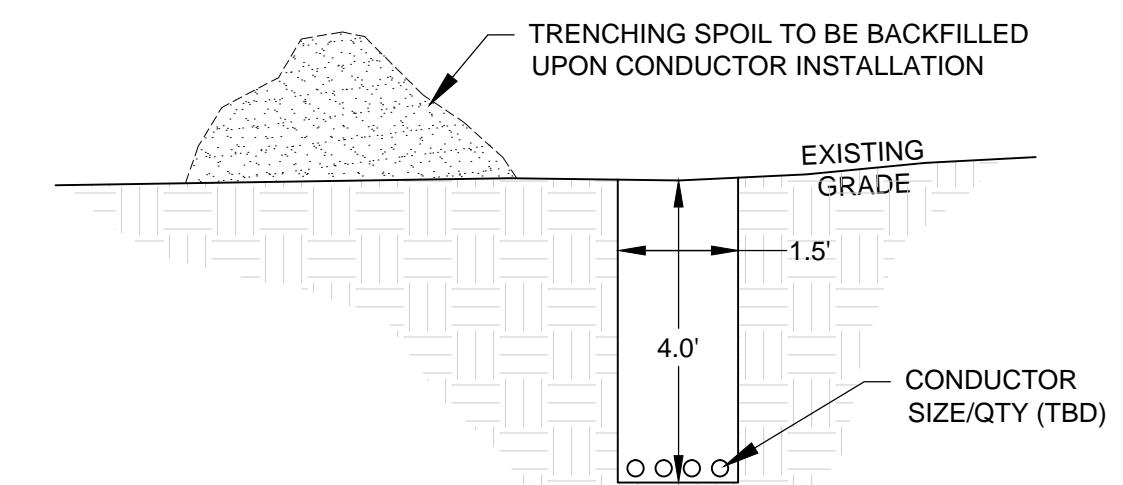
NOTES:
REBAR 3" FROM ALL EDGES & CUTOUTS. 3" SPACING ON FIRST THREE PERIMETER REBARS, 12" ON ALL OTHER INTERIOR.
3,000 PSI CONCRETE. TOP TO BE SMOOTH AND LEVEL. TOP EDGES TO HAVE 1" BEVEL.
FINAL PAD DESIGN DEPENDENT ON FINAL EQUIPMENT WEIGHT AND STRUCTURAL ENGINEERS DETERMINATION

UTILITY PADS CONCRETE SECTION



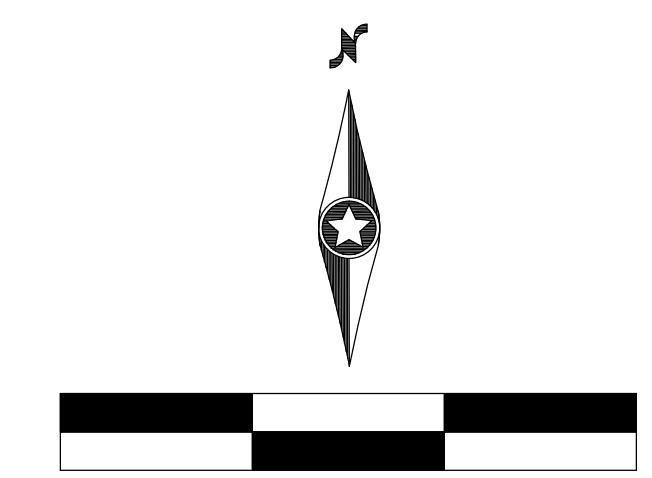
STANDARD DETAIL
TRENCH WITH NATIVE BACKFILL
NOTE:
1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN ACCUMULATED TO 1/3 THE HEIGHT OF THE FABRIC OR MORE.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
3. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
4. ALL ENDS OF THE SILT FENCE SHALL BE WRAPPED UPSLOPE SO THE ELEVATION OF THE BOTTOM OF FABRIC IS HIGHER THAN "PONDING HEIGHT".

SILT FENCE



NOTES:
1. CONDUCTOR CLEARANCES DEPENDENT ON GEOTECHNICAL PARAMETERS AND ELECTRICAL DESIGN
2. CONDUCTOR SIZING AND QUANTITIES PER TRENCH DEPENDENT ON FINAL ELECTRICAL DESIGN TRENCH DIMENSIONS FOR EARTHWORK QUANTITIES ARE CONSERVATIVE.

TRENCHING DETAIL



VOLUNTOWN RD. SOLAR

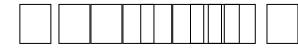
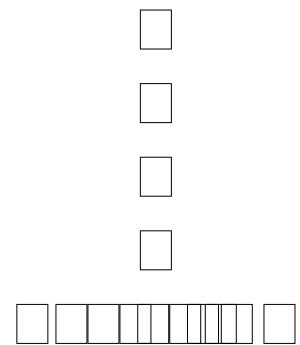
1219 & 1240 VOLUNTOWN RD.
GRISWOLD, CT 06351
NEW LONDON COUNTY

CIVIL AND EROSION CONTROL DETAILS

SITING BOARD REVIEW

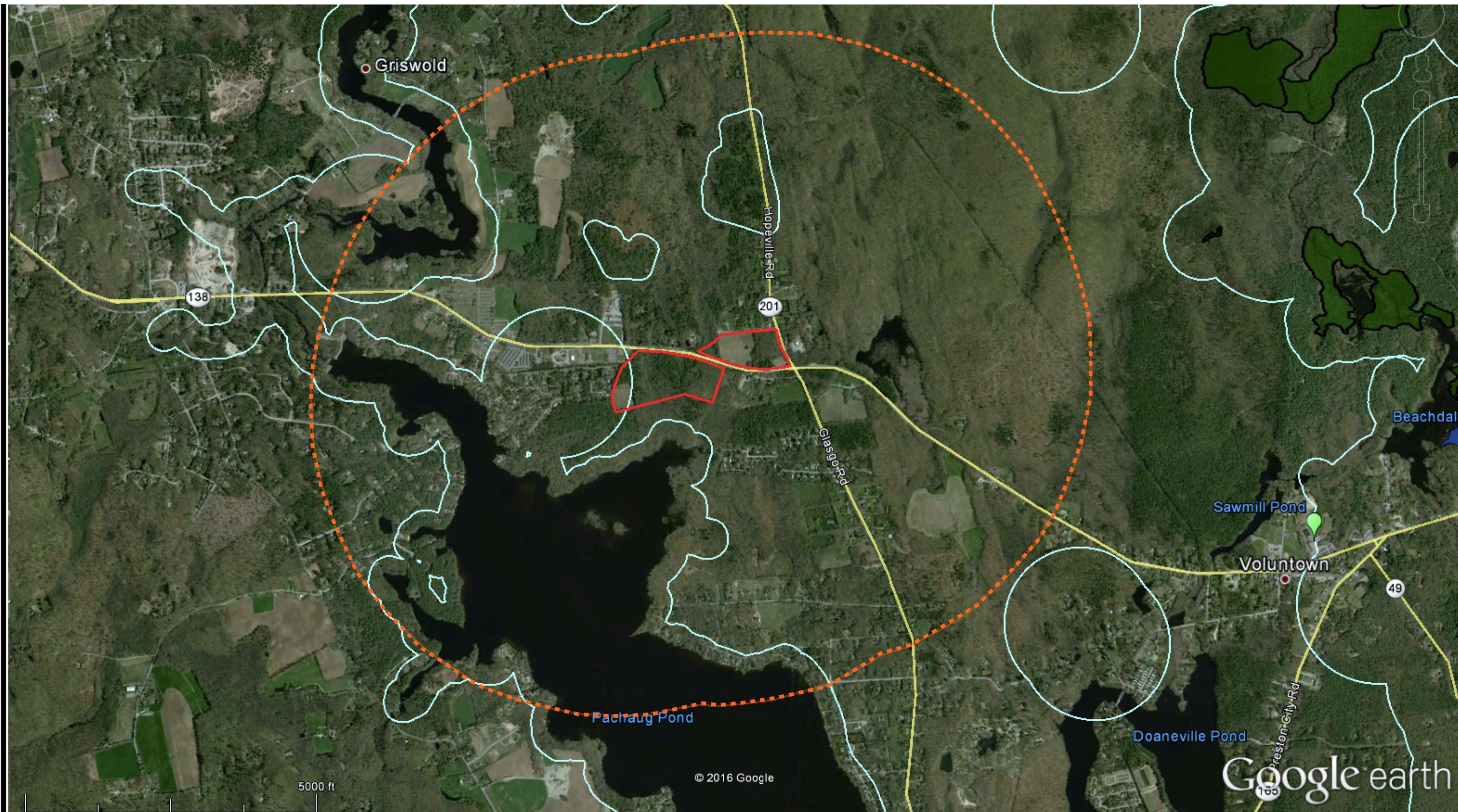
DATE: 03/15/2016

SHEET: 12 of 12



□ I □ M □ □ □ □





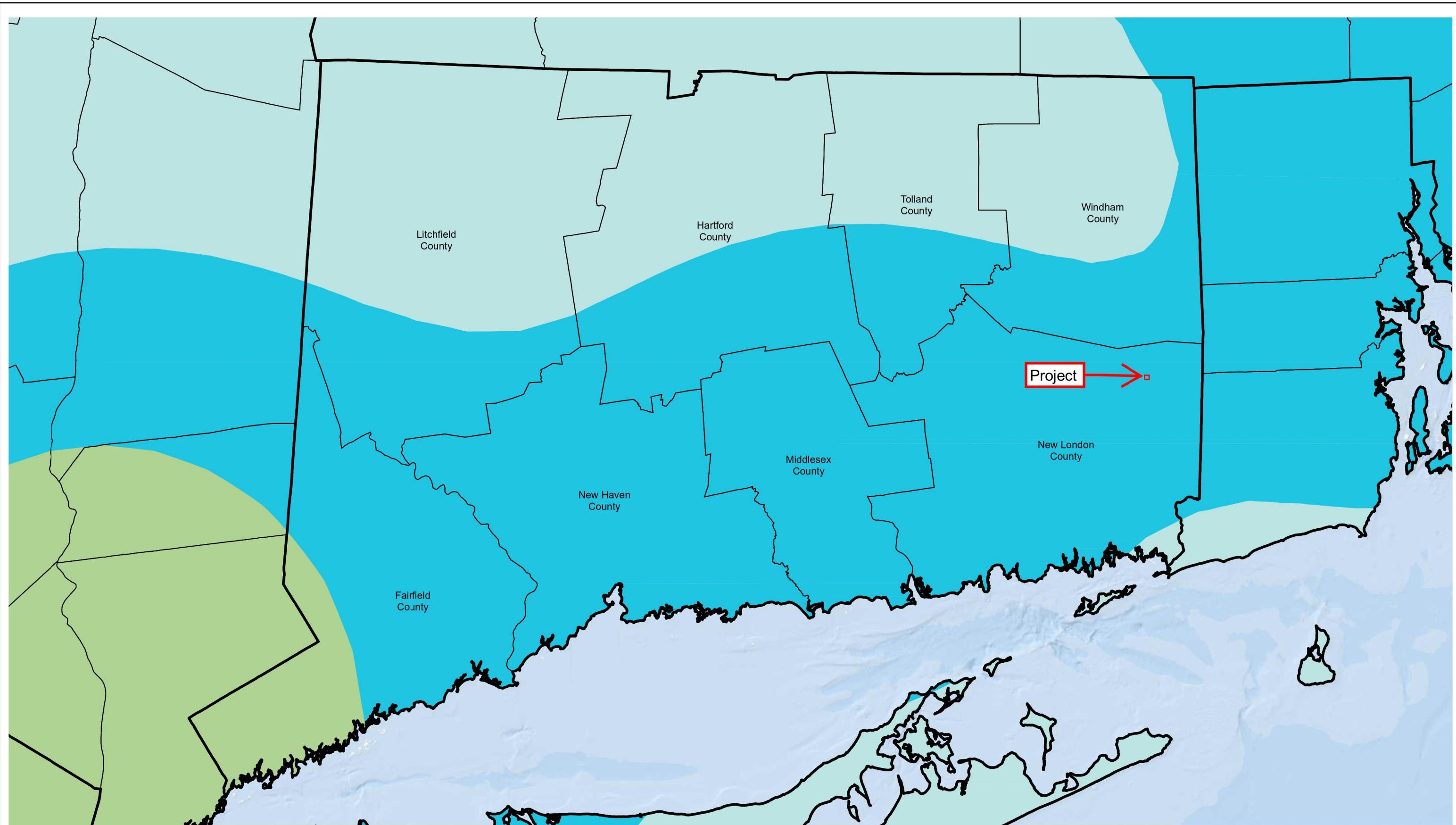
Data Source(s): DEEP (2016);
Google Imagery (Accessed 2016).

Notes:
 1. No hospitals within map extent.
 2. No group homes within map extent.
 3. No historic areas within map extent.
 4. No areas of geologic or archaeological interest within map extent.

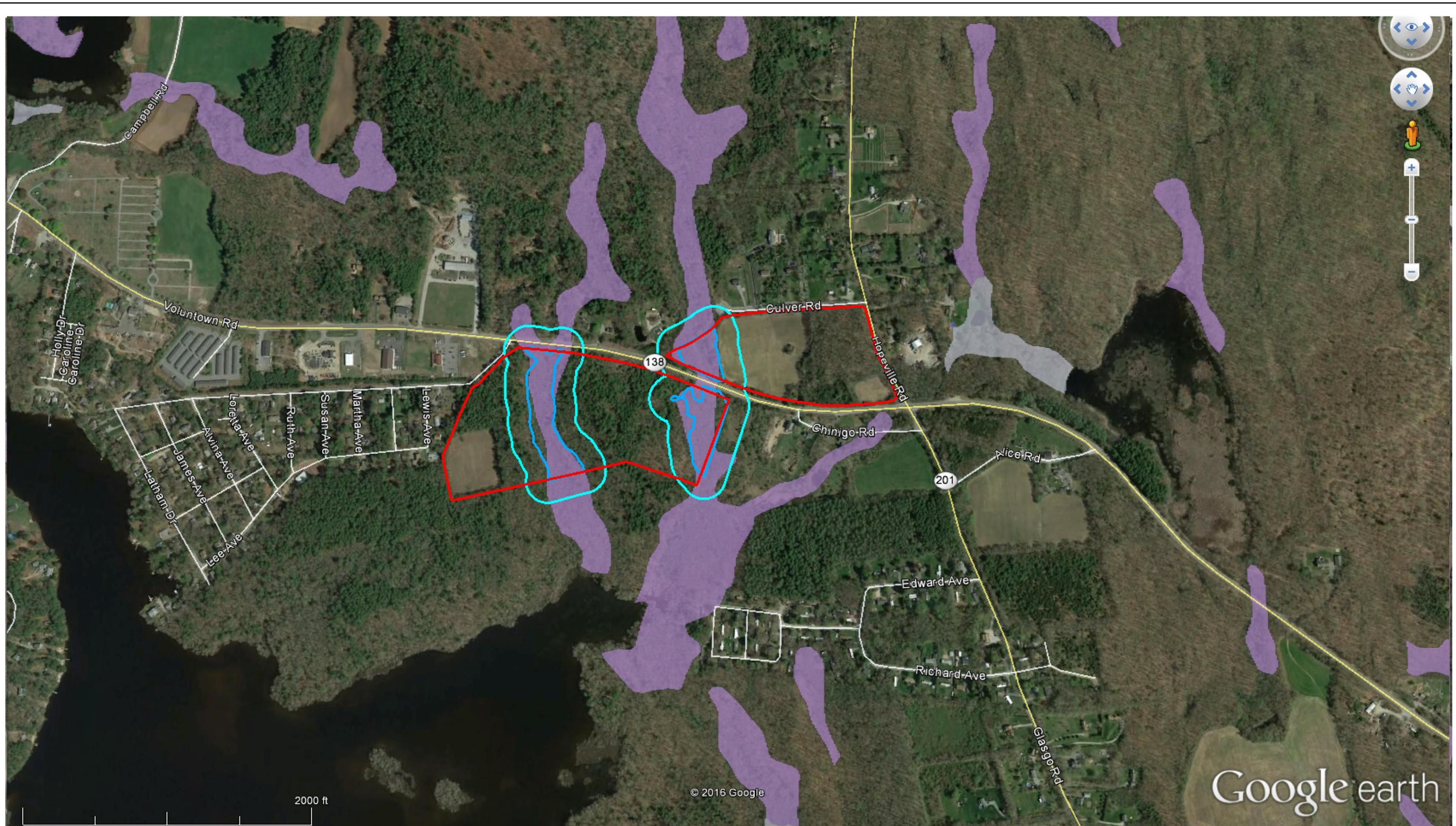
Legend		Critical Habitat	
	Project Area		Natural Diversity Area
	1 Mile Project Buffer		Palustrine Forested
	County Border		WMA
	School		Transmission Line
			Palustrine Non-Forested
			Road

Voluntown Solar
New London County, Connecticut
Vicinity Map

February 4, 2016



Voluntown Solar
New London County, Connecticut
2014 Connecticut
Hazard Map
February 4, 2016



Legend

Notes:
1. Project site is not located within one mile of areas regulated under the Tidal Wetlands Act and Coastal Zone Management Act.

Project Area

Inland Wetland Soils

Poorly Drained and Very Poorly Drained Soils

Alluvial and Floodplain Soils

Wetland Delineated

Wetland Buffer Delineated

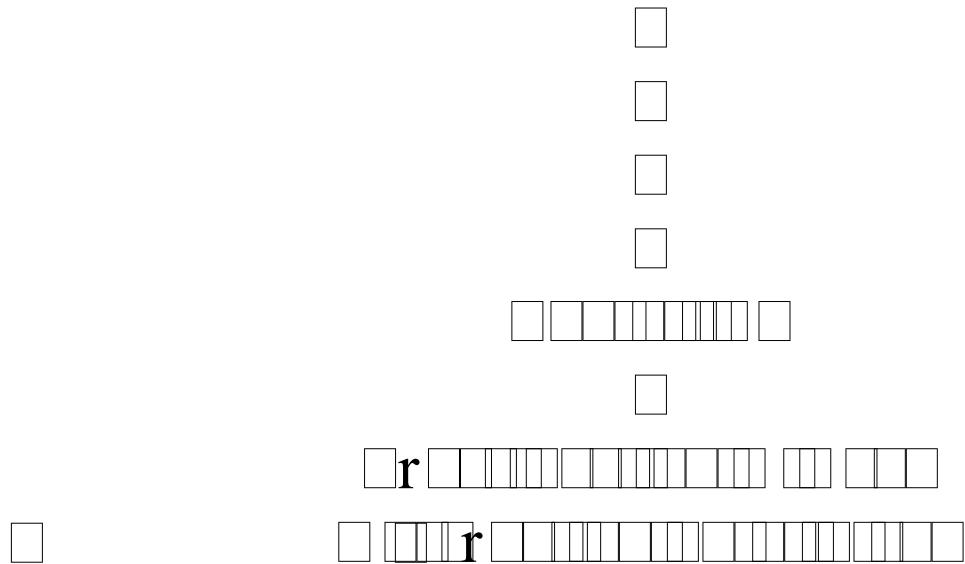
Voluntown Solar

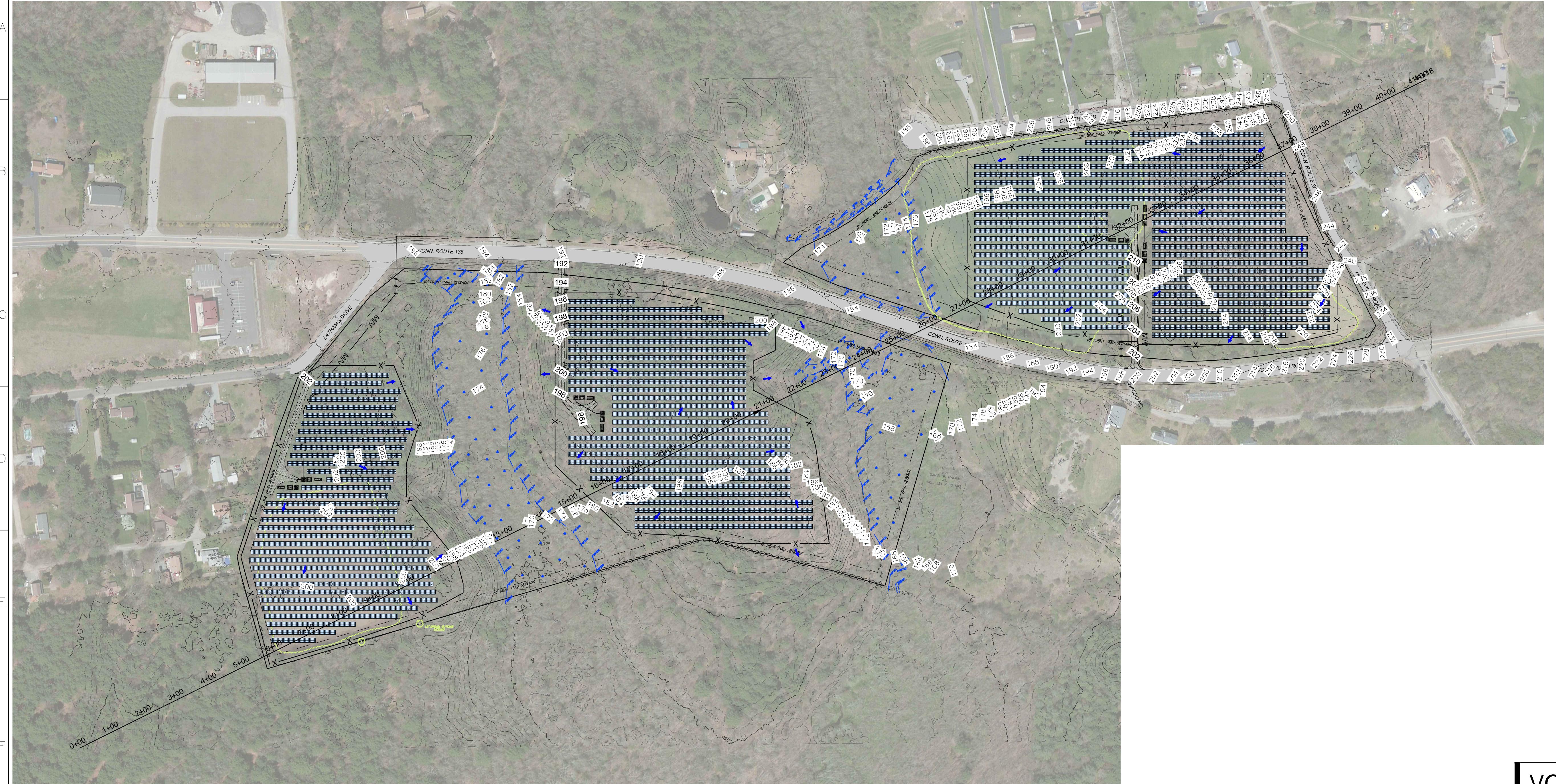
New London County, Connecticut

Soils and

Delineated Wetlands

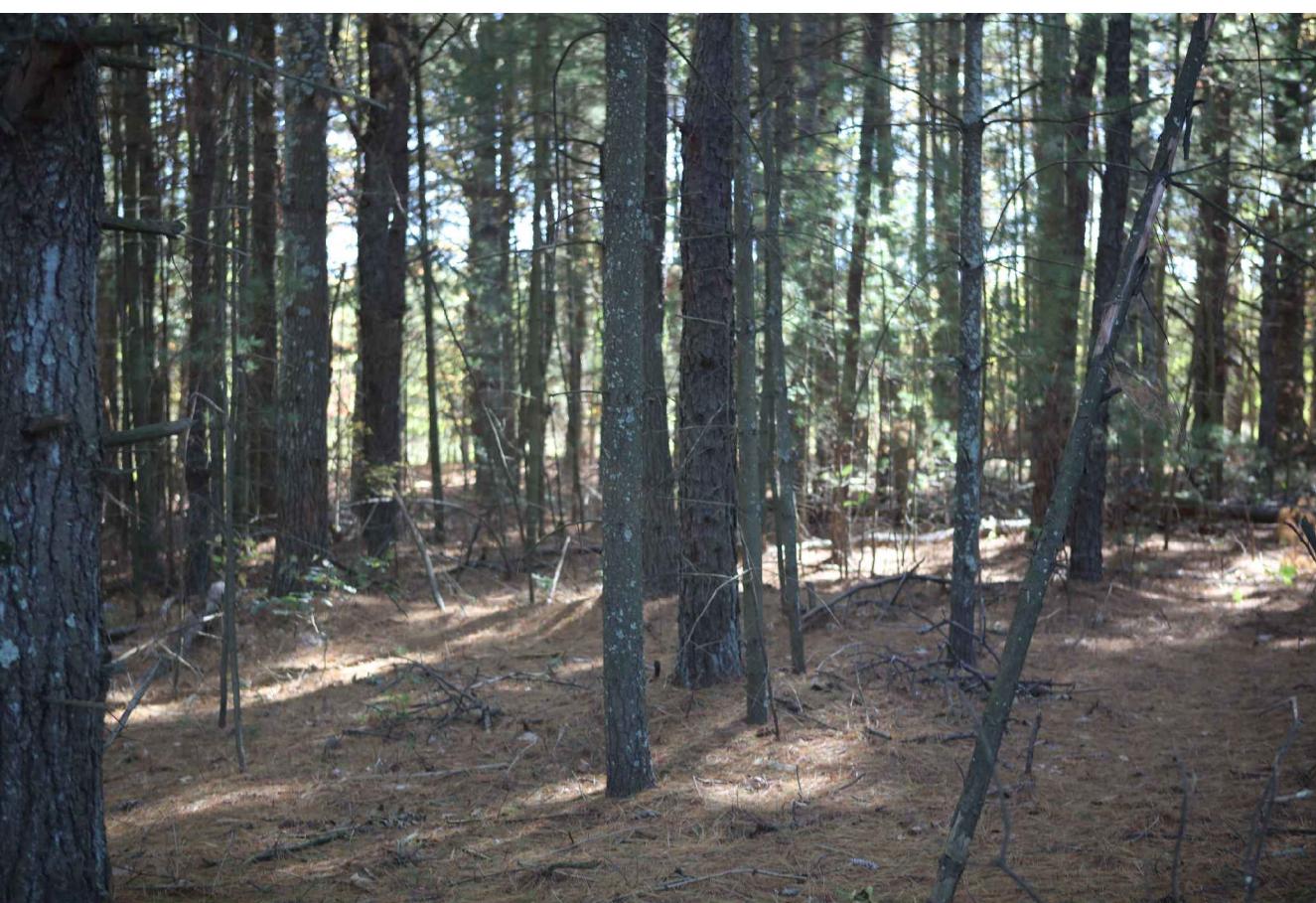
February 4, 2016



PROJECT CROSS SECTION:



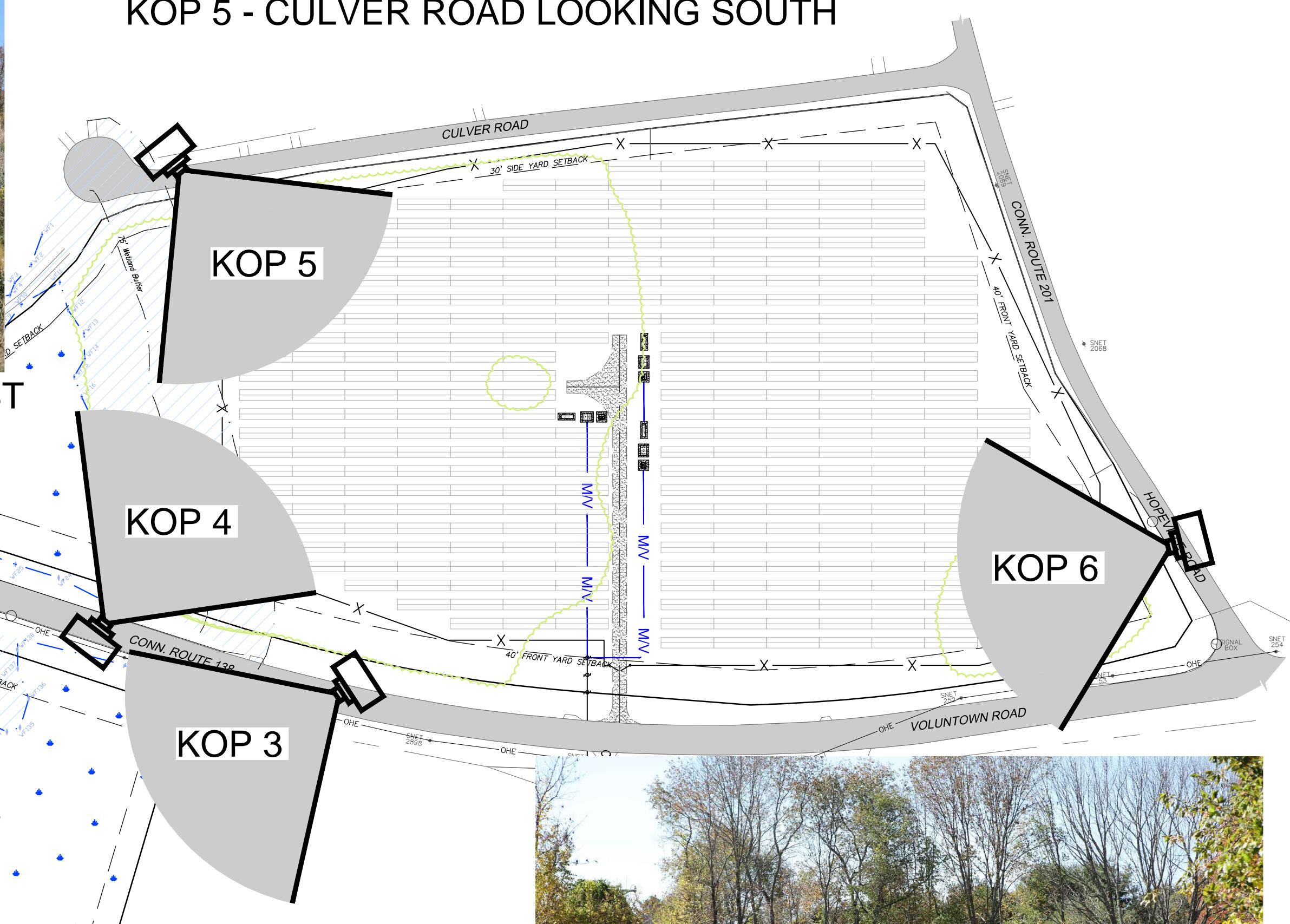
KOP 5 - CULVER ROAD LOOKING SOUTH



KOP 2 - ROUTE 138 LOOKING SOUTH



KOP 4 - ROUTE 138 LOOKING NORTHEAST



KOP 6 - HOPEVILLE ROAD LOOKING WEST



KOP 1 - LATHAM DRIVE LOOKING EAST



KOP 3 - ROUTE 138 LOOKING WEST

Westwood

Phone (480) 747-6558 6909 East Greenway Parkway, Suite 250
 Fax (480) 376-8025 Scottsdale, AZ 85254
 westwoodps.com

Westwood Professional Services, Inc.

Designed: ADC

Checked: SAW

Drawn: SJB

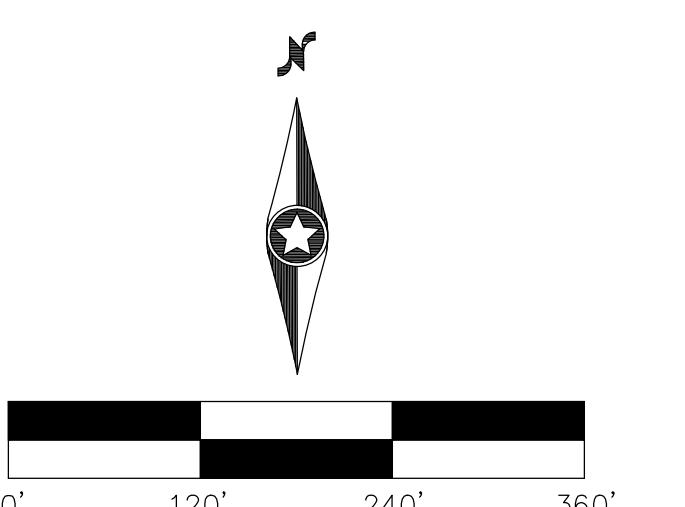
Record Drawing by/date:

Revision:	DATE	DESCRIPTION
-	03/03/2016	CT SITING BOARD SUBMISSION

Prepared for:



ecos
ENERGY
222 SOUTH 9TH STREET
SUITE 1600
MINNEAPOLIS, MN 55402



VOLUNTOWN RD. SOLAR

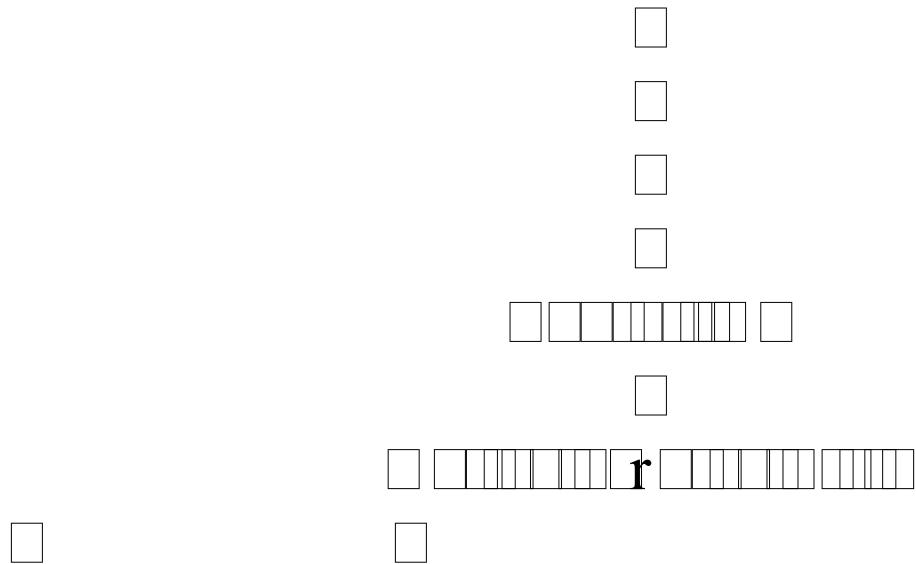
1219 & 1240 VOLUNTOWN RD.
GRISWOLD, CT 06351
NEW LONDON COUNTY

KOP PLAN

SITING BOARD REVIEW

DATE: 03/03/2016

SHEET: 10 of 12



Voluntown Road Solar - Abutters Map

The map displays a coastal town with the following key features:

- Search Properties:** Located in the top left corner.
- Property Info:** Located in the top left corner.
- SCCOG:** Located in the top left corner.
- Help:** Located in the top left corner.
- Maps:** Located in the top left corner.
- Base:** Base Map (selected) and Thematic Overlay (none).
- Legend:** Legend, Printable Map, Link.
- Abutters:** Search distance 100 ft, Sort by Address.
- Spreadsheets:** Mailing Labels, Abutters Report.
- Geographic Features:** Roads (e.g., State Hwy 201, State Hwy 138, Trail 2 Rd, Cutoff Rd, Popple Bridge Rd), Water bodies (e.g., Beachdale Pond, Pachaug Pond, Sawmill Pond, Town Line Pond, Rubber Pond, No Dam Pond), and Land parcels.
- Buildings and Structures:** Riswold Volunteer Fire Department Station 55, Riswold Est., and various residential and commercial buildings.
- Inset Map:** Located in the bottom right corner, showing the town's location within a regional context, including towns like WINDHAM, LEBANON, SPRAGUE, FRANKLIN, LISBON, COLCHESTER, BOZRAH, NORWICH, PRESTON, NORTH STONINGTON, SALEM, MONTVILLE, LEDYARD, WATERFORD, EAST LYME, GROTON, and the highway 95/1A corridor.

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

071S00777793

USPS CERTIFIED MAIL



9407 1102 0079 3924 7737 73

Pachaug Pond Owners Assn
63 Osga Ln
GRISWOLD CT 06351-8831



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

071S00777793

USPS CERTIFIED MAIL



9407 1102 0079 3924 7743 29

Joseph Pysyk
7 Hamilton Ave
NORWICH CT 06360-5903



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0083 0083 4400 44

Kenneth Gibson
22 Latham Dr
GRISWOLD CT 06351-3409



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 3991 2284 19

Brent Gleason and Megan McGory
10 Lewis Ave
GRISWOLD CT 06351-3432



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 3991 2286 86

Frederick and Kathy Sabrowski
5 Lee Ave
GRISWOLD CT 06351-3423



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0083 0083 4409 52

Daniel Mackin Jr
5 Chinigo Rd
GRISWOLD CT 06351-1602

071S00777793



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 2951 5031 15

Frederick and Kathy Sabrowski
6 Lee Ave
GRISWOLD CT 06351-3422



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 2951 5033 75

State of Connecticut
79 Elm St
HARTFORD CT 06106-1650



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0082 8951 5906 25

Rose Anna Riley
40 Culver Rd
GRISWOLD CT 06351-1606



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 3991 2302 52

Michael and Eileen Caliendo
36 Culver Rd
GRISWOLD CT 06351-1606



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 1951 4307 97

Vinod and Bhumika Patel
32 Russell St
JEWETT CITY CT 06351-1906



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 2951 5046 17

Marc and Claudia Manville
PO Box 272
JEWETT CITY CT 06351-0272



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0082 9951 5573 80

Raymond and Robert Coughlin
16 Coughlin Dr
GRISWOLD CT 06351-1010



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 3991 2313 89

Patricia Dority
1451 Hopeville Rd
GRISWOLD CT 06351-1614



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 3991 2317 78

Donald and Pauline Saucier
1454 Hopeville Rd
GRISWOLD CT 06351-1615



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 2951 5056 45

Lida Allard
1202 Voluntown Rd
GRISWOLD CT 06351-1620



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 1951 4325 24

Robert and Jeanne Coleman
1458 Hopeville Rd
GRISWOLD CT 06351-1615



Voluntown Solar Petition for Declaratory Ruling

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 1951 0726 90
Office of the Attorney General
George C. Jepsen, Attorney General
55 Elm Street
HARTFORD CT 06106-1746



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 2951 1441 65

Department of Public Health
Dr. Jewel Mullen, Commissioner
410 Capitol Avenue
PO Box 340308
HARTFORD CT 06106-1373



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 3990 8634 82

Department of Agriculture
Steven K. Reviczky, Commissioner
165 Capitol Avenue
HARTFORD CT 06106-1659



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 2951 1447 14

Office of Policy and Management
Benjamin Barnes, Secretary
450 Capitol Avenue
HARTFORD CT 06106-1379



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0082 8951 2350 21

Department of Transportation
James P. Redeker, Commissioner
2800 Berlin Turnpike
NEWINGTON CT 06111-4113



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0083 0083 0595 98

Department of Consumer Protection
Jonathan A. Harris, Commissioner
State Office Building
165 Capitol Avenue, Room 103
HARTFORD CT 06106-1630



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 3990 8644 27

Department of Labor
Scott D. Jackson, Commissioner
200 Folly Brook Blvd
WETHERSFIELD CT 06109-1153



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0083 0083 0601 12

Dept of Energy & Environmental Protection
Rob Klee, Commissioner
79 Elm Street
HARTFORD CT 06106-5127



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0082 8951 2361 34

Council on Environmental Quality
Susan D. Merrow, Chair
79 Elm Street
HARTFORD CT 06106-1650



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 1951 0751 34

Public Utilities Regulatory Authority
Arthur H. House, Chairman
Ten Franklin Square
NEW BRITAIN CT 06051-2655



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0082 9951 2028 15
Dept of Economic and Community Develop
Catherine H. Smith, Commissioner
505 Hudson Street
HARTFORD CT 06106-7106



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 2951 1469 30

Dept of Emerg Services and Public Protection
Dora B. Schriro, Commissioner
1111 Country Club Road
MIDDLETOWN CT 06457-2389



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 2951 1472 27

Department of Administrative Services
Melody A. Currey, Commissioner
State Office Building
165 Capitol Avenue, Room 427
HARTFORD CT 06106-1629



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0082 8951 2374 90

CT State Representative District 045
Paul Brycki, State Representative
Legislative Office Building
Room 5008
HARTFORD CT 06106-1591



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 2951 1477 08

CT State Senate District S18
Andrew M. Maynard, State Senator
Legislative Office Building
Room 2300
HARTFORD CT 06106



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0083 0083 0626 97

Town of Griswold
Kevin Skulczyck, First Selectman
28 Main Street
GRISWOLD CT 06351-2204



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0082 8951 2383 81

Town of Griswold Zoning Board of Appeals
Theodore Faulise, Chairman
28 Main Street
GRISWOLD CT 06351-2204



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 2951 1484 91

Town of Griswold Plann and Zoning Comm
Martin McKinney, Chairman
28 Main Street
GRISWOLD CT 06351-2204



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0083 0083 0633 80

Town of Griswold
Mario Tristany, Town Planner
28 Main Street
GRISWOLD CT 06351-2204



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 3990 8684 32

Town of Griswold Conservation Commission
Courtland Kinnie, Chairman
28 Main Street
GRISWOLD CT 06351-2204



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 3990 8687 22

Twon of Griswold Inland Wetlands Comm
Courtland Kinnie, Chairman
28 Main Street
GRISWOLD CT 06351-2204



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0079 3924 4071 59

Town of Griswold Town Clerk
Valerie Pudvah, Town Clerk
28 Main Street
GRISWOLD CT 06351-2204



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0082 8951 2399 13

Town of Voluntown
Robert A. Sirpenski, First Selectman
115 Main Street
VOLUNTOWN CT 06384-1820



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 1951 0786 47

Town of Voluntown Zoning Board of Appeals
Wendy Gauthier
115 Main Street
VOLUNTOWN CT 06384-1820



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0082 8951 2403 39

Town of Voluntown Plann and Zoning Comm
Albert Dawley, Chairman
115 Main Street
VOLUNTOWN CT 06384-1820



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0079 3924 4086 06

Town of Voluntown
Peter Zvingilas, Bldg Insp and Zoning Enf
115 Main Street
VOLUNTOWN CT 06384-1820



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0079 3924 4089 27

Town of Voluntown Recreation Commission
Lloyd VanLanen, Chairman
115 Main Street
VOLUNTOWN CT 06384-1820



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0088 2951 1525 66

Twoon of Voluntown Inland Wetlands Comm
Thomas Sweet, Chairman
115 Main Street
VOLUNTOWN CT 06384-1820



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL



9407 1102 0082 9951 2089 16

Town of Voluntown Town Clerk
Pam Theroux, Town Clerk
115 Main Street
VOLUNTOWN CT 06384-1820



Petition for Declaratory Ruling for Voluntown Solar Project

Ecos Energy
222 S 9th St
Suite 1600
MINNEAPOLIS MN 55402-3382

US POSTAGE AND FEES PAID
FIRST-CLASS
Mar 15 2016
Mailed from ZIP 55402
1 oz First-Class Mail Letter



endicia.com

USPS CERTIFIED MAIL

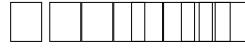


9407 1102 0083 0083 0680 19

Northeastern CT Council of Governments
James Butler, Executive Director
5 Connecticut Avenue
NORWICH CT 06360-1501



Petition for Declaratory Ruling for Voluntown Solar Project



□□□□□ **I** □□□ **r** □□□ □□□□□



Phase I Environmental Site Assessment

**1219 Voluntown Road
Griswold, Connecticut**

Prepared for:

Ecos Energy, LLC

Prepared by:

Rincon Consultants, Inc.
December 21, 2015





Rincon Consultants, Inc.

5135 Avenida Encinas, Suite A
Carlsbad, California 92008

760 918 9444
FAX 918 9449

info@rinconconsultants.com
www.rinconconsultants.com

December 21, 2015
Project 15-02082

Brad Wilson
Project Manager, Ecos Energy LLC
222 South 9th Street, #1600
Minneapolis, Minnesota 55402

**Phase I Environmental Site Assessment
1219 Voluntown Road, Griswold, Connecticut**

Dear Mr. Wilson:

This report presents the findings of a Phase I Environmental Site Assessment (ESA) completed by Rincon Consultants, Inc. for the site located at 1219 Voluntown Road in Griswold, Connecticut. The Phase I ESA was performed in accordance with our proposal and contract dated October 8, 2015.

The accompanying report presents our findings and provides an opinion regarding the presence of recognized environmental conditions. Our work program for this project, as referenced in our contract, is intended to meet the guidelines outlined in the American Society for Testing and Materials (ASTM), Standard Practice for Environmental Site Assessments: *Phase I Environmental Site Assessment Process* (ASTM Standard E-1527-13). Our scope of services, pursuant to ASTM practice, did not include any inquiries with respect to asbestos, lead-based paint, lead in drinking water, wetlands, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, vapor intrusion or other indoor air quality, mold, or high voltage power lines.

Thank you for selecting Rincon for this project. If you have any questions, or if we can be of any future assistance, please contact us.

Sincerely,
RINCON CONSULTANTS, INC.

A handwritten signature in black ink that reads "Sarah A. Larese".

Sarah A. Larese
Senior Environmental Scientist

A handwritten signature in blue ink that reads "Walt Hamann".
Walt Hamann, PG, CEG, CHG
Vice President

Table of Contents

Phase I Environmental Site Assessment

1219 Voluntown Road

Griswold, Connecticut

Executive Summary	1
Introduction	3
Purpose	3
Scope of Services	4
Significant Assumptions, Limitations, Deviations, Exceptions, Special Terms, and Conditions	4
User Reliance	5
Site Description	5
Location	5
Subject Property and Vicinity General Characteristics	5
Descriptions of Structures, Roads, Other Improvements on the Site	6
User Provided Information	6
Records Review	7
Physical Setting Sources	7
Topography	7
Geology and Hydrogeology	7
Site Geology	7
Regional Groundwater Occurrence and Quality	8
Standard Environmental Record Sources	8
Subject Property	8
Offsite Properties	9
Orphan Listings	9
Additional Environmental Record Sources	10
Review of Agency Files	10
Subject Property	10
Adjacent Properties	10
Upgradient Release Sites	10
Known or Suspect Contaminated Release Sites with Potential Vapor Migration	11
Review of State of Connecticut Oil and Gas Sites	11
Historical Use Information on the Property and the Adjoining Properties	12
Review of Historic Aerial Photographs	12
Review of City Directory Listings	12
Review of Fire Insurance Maps	12
Review of Historic Topographic Maps	12
Review of Town of Griswold Building Permit Records	12
Other Historic Sources	12
Summary of Historic Uses	12
Subject Property	12
Northern Adjacent Properties	14



Eastern Adjacent Properties	14
Southern Adjacent Properties	15
Western Adjacent Properties.....	15
Gaps in Historical Sources	15
Interviews.....	15
Interview with Owner.....	15
Interview with Site Manager.....	16
Interviews with Occupants	16
Interviews with Local Government Officials.....	16
Interviews with Others	17
Site Reconnaissance	17
Methodology and Limiting Conditions.....	17
Current Use of the Property and Adjacent Properties	17
Past Use of the Property and Adjacent Properties.....	17
Current or Past Uses in the Surrounding Areas.....	17
Geologic, Hydrogeologic, Hydrologic and Topographic Conditions.....	17
General Description of Structures	18
Interior and Exterior Observations	18
Storage Tanks.....	18
Drums	18
Hazardous Substances and Petroleum Products.....	18
Unidentified Substance Containers	18
Odors.....	18
Pools of Liquid.....	18
Indications of Polychlorinated Biphenyls (PCBs).....	18
Other Conditions of Concern.....	19
Evaluation	19
Findings & Opinions	19
Conclusions & Recommendations	19
Deviations.....	20
References	20
Signatures of Environmental Professionals.....	21
Qualifications of Environmental Consultants.....	22
Figures	
Figure 1 – Vicinity Map	
Figure 2 – Site Map	
Figure 3 – Adjacent Land Use Map	
Figures 4 and 5 – Site Photographs	
Appendices	
Appendix 1 – Interview Documentation	
Appendix 2 – Regulatory Records Documentation	
Appendix 3 – Historical Research Documentation	



EXECUTIVE SUMMARY

This report presents the findings of a Phase I Environmental Site Assessment (ESA) for the property located at 1219 Voluntown Road, Griswold, Connecticut (Figure 1, Vicinity Map). The subject property is currently dense, undeveloped woodland with an area of formerly cleared land in the southwestern portion of the property.

Rincon Consultants performed a reconnaissance of the subject property on October 21, 2015. The purpose of the reconnaissance was to observe existing subject property conditions and to obtain information indicating the presence of recognized environmental conditions in connection with the subject property. With the exception of an empty one-quart container of motor oil observed on the western portion of the subject property near Latham Drive, the use, storage or disposal of hazardous materials on the subject property was not observed on the subject property during the site reconnaissance.

The subject property is located in an area that is primarily comprised of residential, agricultural, and vacant land uses. Properties in the vicinity of the subject property include single-family residences, agricultural fields, commercial buildings, and undeveloped woodland.

Environmental Data Resources, Inc. (EDR) was contracted to provide a database search of public lists of sites that generate, store, treat or dispose of hazardous materials or sites for which a release or incident has occurred. The EDR search was conducted for the subject property and included data from surrounding sites within a specified radius of the property. The subject property was not listed in any of the databases searched by EDR. However, portions of the subject property are listed on the National Wetlands Inventory and State Wetlands databases. One nearby property, located approximately 600 feet to the northwest of the subject property across Voluntown Road, was listed in the following databases searched by EDR:

- **Enforcement:** The Enforcement database listing for this property indicates that the Bureau of Waste Management carried out “enforcement actions” in September and December 2000 and in June 2004. The December action included a \$400 penalty to the onsite facility. No additional information was provided in the EDR report.
- **CT Manifest:** The Connecticut Manifest database listing for this property indicates that in 2000, the onsite facility generated waste that was transported, treated, stored, and disposed of offsite by a separate entity. In three separate occurrences, 197 gallons of “flammable liquid toxic, not otherwise specified” waste, 93 gallons of “flammable liquid, not otherwise specified” waste, and 187 gallons of “corrosive liquid, not otherwise specified” waste were generated onsite and disposed.
- **NPDES:** The National Pollutant Discharge Elimination System (NPDES) database listing for this property indicates that the onsite facility held a permit from September 2000 to October 2002, and holds an active permit for “stormwater industrial activities” from October 2011 to September 2016.

These listings indicate that the onsite facility is a hazardous waste generator. According to the Town of Griswold Public Works Department website, the property is the Griswold Public Works garage, which accepts “normal” household bulky waste including appliances, recyclables, green waste, electronics, batteries, and other designated hazardous materials items. In addition, the facility does not accept municipal solid waste, auto parts containing fluids, business or industrial waste, or recyclables mixed with garbage for disposal.



Although the anticipated direction of groundwater flow is to the south to southeast (towards the subject property), the Town of Griswold site was not listed on any hazardous release databases and therefore is not expected to adversely impact the subject property.

With the exception of the Town of Griswold property, located nearby to the northwest of the subject property, no other nearby or up-gradient listed sites are release sites.

Historical sources reviewed as part of the Phase I ESA include aerial photographs and topographic maps. The photos and maps reviewed indicate that the majority of the subject property appears to be undeveloped from approximately 1893 to 2012; however, from 1934 to 1991, several areas in the western, northern, and eastern portions of the subject property appear to be cleared or tilled for agricultural purposes. From 1996 to 2005, three areas in the western, northern, and eastern portions of the subject property appear to be fallow agricultural fields. From 2006 to 2008, an area in the western portion of the subject property appears to be maintained for agricultural uses, and two areas in the northern and eastern portions of the subject property appear to be fallow agricultural fields. From 2010 to 2012, an area in the western portion of the subject property appears to be maintained for agricultural uses, and an area in the eastern portion of the subject property appears to be a fallow agricultural field. The historic topographic maps reviewed depict the subject property as undeveloped, with the majority of the subject property covered by woodland and southern portions covered by wooded marsh or swamp in 1893, 1915, 1943, 1946, 1953, 1970, and 1984.

Based on the findings of this Phase I ESA, it is our opinion that one suspect environmental condition was identified for the subject property:

- ***Former agricultural use of the subject property*** – Based on our review of historical sources, it appears that several areas in the western, northern, and eastern portions of the subject property appear to be cleared or tilled, likely for agricultural uses, from approximately 1934 to 1941. From 1996 to 2005, three areas in the western, northern, and eastern portions of the subject property appear to be fallow agricultural fields. From 2006 to 2008, an area in the western portion of the subject property appears to be maintained for agricultural uses, and two areas in the northern and eastern portions of the subject property appear to be fallow agricultural fields. From 2010 to 2012, an area in the western portion of the subject property appears to be maintained for agricultural uses, and an area in the eastern portion of the subject property appears to be a fallow agricultural field. Information obtained during our review of the owner questionnaire indicates that pesticides were formerly used on the subject property in connection with the onsite farm.

Rincon has performed a Phase I ESA in general conformance with the scope and limitations of ASTM E 1527-13 for the property located at 1219 Voluntown Road, Griswold, Connecticut. This assessment has revealed evidence of one suspect environmental condition in connection with the subject property. Based on information obtained during our review of the completed owner questionnaire, there is a potential for soil impacted by organochlorine pesticides (OCPs) to be located on the subject property. In order to confirm or deny the presence of OCP-impacted soil on the subject property, Rincon recommends conducting soil sampling in the areas formerly used for agricultural purposes.

INTRODUCTION

This report presents the findings of a Phase I ESA conducted for the property located at 1219 Voluntown Road, Griswold, Connecticut (Figure 1, Vicinity Map). The Phase I ESA was performed by Rincon Consultants, Inc. for Ecos Energy, LLC in general conformance with ASTM E 1527-13 and our proposal and contract dated October 8, 2015. The following sections present our findings and provide our opinion as to the presence of recognized environmental conditions.

PURPOSE

The purpose of this Phase I ESA was to assess the environmental conditions of a property, taking into account commonly and reasonably ascertainable information and to qualify for Landowner Liability Protections under the Brownfields Amendments to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

A recognized environmental condition (REC) is defined pursuant to ASTM E 1527-13 as,

"the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to any release to the environment; 2) under conditions indicative of a release to the environment; 3) under conditions that pose a material threat of a future release to the environment".

A Controlled REC is defined pursuant to ASTM E 1527-13 as,

"a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). A condition considered by the environmental professional to be a controlled recognized environmental condition shall be listed in the findings section of the Phase I Environmental Site Assessment report, and as a recognized environmental condition in the conclusions section of the Phase I Environmental Site Assessment report".

A Historical REC is defined pursuant to ASTM E 1527-13 as,

"a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by regulatory authority, without subjecting the property to any required controls (for example, use restrictions, activity and use limitations, institutional controls, or engineering controls). Before calling the past release a historical recognized environmental condition, the environmental professional must determine whether the past release is a recognized environmental condition at the time the Phase I Environmental Site Assessment is conducted (for example, if there has been a change in the regulatory criteria). If the EP [Environmental Professional] considers the past release to be a recognized environmental condition at the time the Phase I ESA is conducted, the condition shall be included in the conclusions section of the report as a recognized environmental condition".



A de minimis condition is defined pursuant to ASTM E 1527-13 as,

"a condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de minimis conditions are not recognized environmental conditions nor controlled recognized environmental conditions".

SCOPE OF SERVICES

The scope of services conducted for this study is outlined below:

- Perform a reconnaissance of the site to identify obvious indicators of the existence of hazardous materials.
- Observe adjacent or nearby properties from public thoroughfares in an attempt to see if such properties are likely to use, store, generate, or dispose of hazardous materials.
- Obtain and review an environmental records database search from Environmental Data Resources, Inc. (EDR) to obtain information about the potential for hazardous materials to exist at the subject property or at properties located in the vicinity of the subject property.
- Review files for the subject property and immediately adjacent properties as identified in the EDR report, as applicable.
- Review the current U.S. Geological Survey (USGS) topographic map to obtain information about the subject property's topography and uses of the subject property and properties in the vicinity of the subject property.
- Review additional pertinent record sources (e.g., online databases of hazardous substance release sites), as necessary, to identify the presence of RECs at the subject property.
- Review reasonably ascertainable historical resources (e.g., aerial photographs, topographic maps, fire insurance maps, city directories) to assess the historical land use of the subject property and adjacent properties.
- Provide a property owner interview questionnaire to the property owner or a designated subject property representative identified to Rincon by the client.
- Provide a user interview questionnaire to a representative of the client, the user of the Phase I ESA.
- Conduct interviews with other property representatives (e.g., key site manager, occupants), as applicable.
- Review Client-provided information (e.g., previous environmental reports, title documentation), as applicable.

SIGNIFICANT ASSUMPTIONS, LIMITATIONS, DEVIATIONS, EXCEPTIONS, SPECIAL TERMS, AND CONDITIONS

This work is intended to adhere to good commercial, customary, and generally accepted environmental investigation practices for similar investigations conducted at this time and in this geographic area. No guarantee or warranties, expressed or implied are provided. The findings and opinions conveyed in this report are based on findings derived from a site reconnaissance, review of an environmental database report, specified regulatory records and



historical sources, and comments made by interviewees. This report is not intended as a comprehensive site characterization and should not be construed as such. Standard data sources relied upon during the completion of Phase I ESAs may vary with regard to accuracy and completeness. Although Rincon believes the data sources are reasonably reliable, Rincon cannot and does not guarantee the authenticity or reliability of the data sources it has used. Additionally, pursuant to our contract, the data sources reviewed included only those that are practically reviewable without the need for extraordinary analysis.

Rincon has not found evidence that hazardous materials or petroleum products exist at the subject property at levels likely to warrant mitigation. Rincon does not under any circumstances warrant or guarantee that not finding evidence of hazardous materials or petroleum products means that hazardous materials or petroleum products do not exist on the subject property. Additional research, including surface or subsurface sampling and analysis, can reduce the client's risks, but no techniques commonly employed can eliminate these risks altogether.

In addition, pursuant to ASTM E 1527-13 practice, our scope of services did not include any inquiries with respect to asbestos containing building materials, biological agents, cultural and historic resources, ecological resources, endangered species, health and safety, indoor air quality unrelated to release of hazardous substances or petroleum products into the environment, industrial hygiene, lead-based paint, lead in drinking water, mold, radon, regulatory compliance, wetlands, or high voltage power lines.

USER RELIANCE

Ecos Energy, LLC has requested this assessment and will use the assessment to provide information for the purposes of purchasing or acquiring said property. This Phase I ESA was prepared for use solely and exclusively by Ecos Energy, LLC. No other use or disclosure is intended or authorized by Rincon. Also, this report is issued with the understanding that it is to be used only in its entirety. It is intended for use only by the client, and no other person or entity may rely upon the report without the express written consent of Rincon.

SITE DESCRIPTION

Location

The subject property is a 38-acre property located south of Voluntown Road and east of Latham Drive in Griswold, Connecticut (Figure 2, Site Map). The property is identified as Assessor's Parcel Number (APN) 59-119-3.3.

Subject Property and Vicinity General Characteristics

The subject property is currently dense, undeveloped woodland with an area of formerly cleared land in the southwestern portion of the property.

The subject property is located in an area that is primarily comprised of residential, agricultural, and vacant land uses. Properties in the vicinity of the subject property include single-family



residences, agricultural fields, commercial buildings, and undeveloped woodland. The current adjacent land uses are described in Table 1 and depicted on Figure 3, Adjacent Land Use Map.

Table 1 - Current Uses of Adjacent Properties

Area	Use
Northern Properties	Voluntown Road (State Highway 138), followed by single-family residences and undeveloped woodland
Eastern Properties	Single-family residences, cleared fields, and undeveloped woodland
Southern Properties	Undeveloped woodland
Western Properties	Single-family residences, DEF Services Group, and undeveloped woodland

Descriptions of Structures, Roads, Other Improvements on the Site

During the site reconnaissance, no structures, roads or other improvements were observed on the subject property.

Access to the subject property is available from Voluntown Road and Latham Drive.

The subject property is not serviced by any utility providers. However, Connecticut Water Company and Jewett City Water Company provide water and sewer service, Northeast Utilities Service Company provides electrical service, and private vendors provide solid waste collection and disposal services in the area.

USER PROVIDED INFORMATION

As described in ASTM E 1527-13 Section 6, Ecos Energy, LLC was interviewed for actual knowledge pertaining to the subject property to help identify recognized environmental conditions in connection with the property. Brad Wilson, Project Developer for Ecos Energy, LLC, completed the User Questionnaire as provided by ASTM Appendix X3. A copy of the completed questionnaire is included as Appendix 1.

Based on our review of the completed questionnaire, the user did not review the following sources of information and/or is unaware of information regarding the following:

- recorded land title records (or judicial records, where appropriate) that identify any environmental liens filed or recorded against the property
- recorded land title records (or judicial records, where appropriate) that identify any activity and land use limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the property and/or have been filed or recorded against the property under federal, tribal, state or local law
- Title Report that identifies information pertaining to environmental cleanup liens or activity and use limitations (AULs) for the subject property
- specialized knowledge or experience related to the property or nearby properties
- commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases



- obvious indicators that point to the presence or likely presence of releases at the property
- pending, threatened, or past litigation relevant to hazardous substances or petroleum products, in, on, or from the site
- pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the site
- notice from any government entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products

Additionally, the user indicated that the purchase price being paid for the subject property reasonably reflects the fair market value of the property, and he is not aware of a reduction in value for the subject property relative to any known environmental issues.

RECORDS REVIEW

PHYSICAL SETTING SOURCES

Topography

The current USGS topographic map (Jewett City Quadrangle, 1984) indicates that the subject property is situated at an elevation of about 125 to 200 feet above mean sea level with topography gently sloping to the southeast. The adjacent topography consists of gently sloping hills and valleys and Pachaug Pond to the south.

Geology and Hydrogeology

According to *The Face of Connecticut: People, Geology, and the Land, State Geological and Natural History Survey of Connecticut, Bulletin 110*, Connecticut is fundamentally divided into a Collision terrane and a Great Crack terrane. The Collision terrane corresponds to the Eastern and Western Uplands, and the Great Crack corresponds to the Central Valley. The terranes may be further divided into four terranes from west to east of the state: the Proto-North American, Iapetos, Newark, Iapetos again, and Avalonian terranes. The Newark Terrane corresponds with the Central Valley Great Crack, and the others are subdivisions of the Uplands Collision terrane. Connecticut's present-day Uplands consist of moderate-sized plateaus and rolling hills.

Site Geology

According to the Connecticut Geological and Natural History Survey, Bedrock Geology of Connecticut, 2000, the subject property is mainly underlain by mylonite along Paleozoic faults, which is described as fault-related rocks and as "*a compact, chert-like rock without cleavage, but with a streaky or banded structure, produced by the extreme granulation and shearing of rocks that have been pulverized and rolled during overthrusting or intense dynamic metamorphism.*" The eastern corner of the subject property is underlain by Waterford Group gneiss, which is described as "interlayered part of Waterford Group, light to dark, generally medium-grained gneiss."



According to the US Department of Agriculture's Natural Resources Conservation Service online Web Soil Survey database, the subject property is mainly comprised of Hinckley loamy sand, Merrimac fine sandy loam, and Sudbury sandy loam in approximately zero to 15 percent slopes.

Regional Groundwater Occurrence and Quality

According to the USGS Mineral Resources Online Spatial Data database, the subject property is located within the USGS Quinebaug hydrologic unit and the USGS Connecticut Coast hydrologic subregion.

During the preparation of this Phase I ESA, we reviewed the USGS's online Groundwater Watch database to determine groundwater elevation in the vicinity of the subject property:

- According to the field groundwater level measurement data for the USGS groundwater well (CT-NSN 77 North Stonington) located near Wyassup Road, on October 27, 2015 groundwater was reported to be 16.83 feet below ground surface. This well is located approximately 13 miles to the south-southeast of the subject property.
- According to the field groundwater level measurement data for the USGS groundwater well (CT-NSN 78) located near Wyassup Road, on September 23, 2015 groundwater was reported to be 5.07 feet below ground surface. This well is located approximately 13 miles to the southeast of the subject property.

Based on the subject property topography and Pachaug Pond to the south, groundwater in the vicinity of the subject property is anticipated to flow to the south to southeast in accordance with the topographic gradient.

STANDARD ENVIRONMENTAL RECORD SOURCES

Environmental Data Resources, Inc. (EDR) was contracted to provide a database search of public lists of sites that generate, store, treat or dispose of hazardous materials or sites for which a release or incident has occurred. The EDR search was conducted for the subject property and included data from surrounding sites within specified radii of the property. A copy of the EDR report, which specifies the ASTM search distance for each public list, is included as Appendix 2. As shown on the attached EDR report, federal, state and county lists were reviewed as part of the research effort. Please refer to Appendix 2 for a complete listing of sites reported by EDR and a description of the databases reviewed.

The Map Findings Summary, included in the EDR report, provides a summary of the databases searched, the number of reported facilities within the search radii, and whether the facility is located onsite or adjacent to the subject property. The following information is based on our review of the Map Findings Summary and the information contained in the EDR report.

Subject Property

The subject property was not listed on any of the regulatory databases reviewed. However, portions of the subject property are listed on the National Wetlands Inventory and State Wetlands databases.

Offsite Properties

Offsite properties listed by EDR fall under two general categories of databases: those reporting unauthorized releases of hazardous substances (e.g., LUST, National Priority List [a.k.a. Superfund sites], and corrective action facilities), and databases of businesses permitted to use hazardous materials or generate hazardous wastes, for which an unauthorized release has not been reported to a regulatory agency.

Rincon reviewed the EDR Radius Map and select detailed listings to evaluate their potential to impact the subject property, based on the following factors:

- Reported distance of the facility from the subject property
- The nature of the database on which the facility is listed, and/or whether the facility was listed on a database reporting unauthorized releases of hazardous materials, petroleum products, or hazardous wastes
- Reported case type (e.g., soil only, failed UST test only)
- Reported substance released (e.g., chlorinated solvents, gasoline, metals)
- Reported regulatory agency status (e.g., case closed, “no further action”)
- Location of the facility with respect to the reported groundwater flow direction (discussed in the Geology and Hydrogeology section of this report)

Only one facility/property was identified by EDR within a one-mile radius of the subject property (Table 2). This facility/property was interpreted by Rincon to be of potential environmental concern to the subject property, based on one or more of the factors listed above. In accordance with ASTM, contamination migration pathways in soil, groundwater, and soil vapor were considered in our analysis of offsite properties of potential environmental concern.

Table 2 - EDR Listing Summary of Select Sites within One-Half Mile of the Subject Site

Site Name	EDR Site ID	Site Address	Distance from Subject Property (miles)	Database Reference
Nearby Properties				
Town of Griswold	1	1148 Voluntown Road	Adjacent Property – Northwest	ENF, Manifest, NPDES

Regulatory agency information reviewed for the listings in the table above are summarized in the Additional Environmental Record Sources section of this report.

Orphan Listings

EDR reported three orphan or unmapped site listings, which EDR is unable to plot due to insufficient address information. Based on Rincon’s review of the limited address information or site descriptions for the orphan listings, none of the listings are expected to impact the subject property.



ADDITIONAL ENVIRONMENTAL RECORD SOURCES

Review of Agency Files

As a follow-up to the database search, Rincon reviewed regulatory information for facilities within the specified search radii that were interpreted to have the potential to impact the subject property, based on one or more factors previously discussed (e.g., distance, open case status, up-gradient location, soil vapor migration).

The following is a summary of our review of regulatory information obtained from review of online sources (e.g., Town of Griswold Public Works Department website). Because no EDR database-listed sites were interpreted to be of potential environmental concern to the subject property, no agency files were reviewed as part of this research effort.

Subject Property

The subject property was not listed in any of the databases searched by EDR. However, portions of the subject property are listed on the National Wetlands Inventory and State Wetlands databases.

Adjacent Properties

No adjacent properties were listed in any of the databases searched by EDR.

Upgradient Release Sites

One nearby property was listed in databases searched by EDR: Town of Griswold was listed as an Enforcement, CT Manifest, and NPDES site. This property is located approximately 600 feet to the northwest of the subject property, across Voluntown Road.

- **Enforcement:** The Enforcement database listing for this property indicates that the Bureau of Waste Management carried out “enforcement actions” in September and December 2000 and in June 2004. The December action included a \$400 penalty to the onsite facility. No additional information was provided in the EDR report.
- **CT Manifest:** The Connecticut Manifest database listing for this property indicates that in 2000, the onsite facility generated waste that was transported, treated, stored, and disposed of offsite by a separate entity. In three separate occurrences, 197 gallons of “flammable liquid toxic, not otherwise specified” waste, 93 gallons of “flammable liquid, not otherwise specified” waste, and 187 gallons of “corrosive liquid, not otherwise specified” waste were generated onsite and disposed.
- **NPDES:** The National Pollutant Discharge Elimination System (NPDES) database listing for this property indicates that the onsite facility held a permit from September 2000 to October 2002, and holds an active permit for “stormwater industrial activities” from October 2011 to September 2016.

These listings indicate that the onsite facility is a hazardous waste generator. According to the Town of Griswold Public Works Department website, the property is the Griswold Public Works garage, which accepts “normal” household bulky waste including appliances, recyclables, green waste, electronics, batteries, and other designated hazardous materials items. In addition, the facility does not accept municipal solid waste, auto parts containing fluids, business or industrial waste, or recyclables mixed with garbage for disposal.



Although the anticipated direction of groundwater flow at the nearby Town of Griswold site is to the south to southeast (towards the subject property) and the property is located adjacent to the subject property, the Town of Griswold site was not listed on any hazardous release databases and therefore is not expected to adversely impact the subject property.

With the exception of the Town of Griswold property, no other nearby or up-gradient listed sites are release sites.

KNOWN OR SUSPECT CONTAMINATED RELEASE SITES WITH POTENTIAL VAPOR MIGRATION

The EDR report was reviewed to identify nearby known or suspect contaminated sites that have the potential for contaminated vapor originating from the nearby site to be migrating beneath the subject property. Based on the ASTM E 2600-10, *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*, the following minimum search distances were initially used to determine if contaminated soil vapors from a nearby known or suspect contaminated site have the potential to be migrating beneath the subject property:

- 1/10 mile (528 feet) for petroleum hydrocarbons
- 1/3 mile (1,760 feet) for other contaminants of concern (COCs)

If up-gradient known or suspect contaminated sites are located within the above referenced distances from the subject property, online resources are reviewed to determine the extent of the contaminated plume at those sites. The following describes search distances for contaminated plumes of petroleum hydrocarbons and other COCs.

Petroleum Hydrocarbons

Based on our review of the EDR report information as indicated above, there are no adjacent or up-gradient known or suspect petroleum hydrocarbon impacted soil or groundwater plumes located within 30 feet of the subject property.

Other COCs

Based on our review of the EDR report, there are no adjacent or up-gradient known or suspect contaminated soil or groundwater plumes located within 100 feet of the subject property.

Review of State of Connecticut Oil and Gas Sites

EDR indicated that there are no oil wells in the state of Connecticut. In addition, a review of Connecticut oil and gas fracking sites¹ indicates that no natural gas drilling sites are located within 1/4 mile of the subject property.

¹ Drilling Maps: Map of Connecticut Oil & Gas Fracking Health & Safety Issues,
<http://www.drillingmaps.com/connecticut.html#.VilePvIVhBc>



HISTORICAL USE INFORMATION ON THE PROPERTY AND THE ADJOINING PROPERTIES

The historic records review completed for this Phase I ESA includes aerial photographs, topographic maps, and city directories as detailed in the following sections. Copies of the historical resources reviewed are included in Appendix 3. Table 3 provides a summary of the historical use information available for the subject property.

Review of Historic Aerial Photographs

Aerial photographs from EDR's aerial photograph collection were obtained and reviewed.

Review of City Directory Listings

EDR was contracted to provide copies of city directory listings for the subject property. As indicated in the attached report, no records were available for the subject property or western, eastern, or southern adjacent properties.

Review of Fire Insurance Maps

EDR was contracted to provide copies of fire insurance maps for the subject property. As indicated in the attached report, fire insurance maps were not available for the subject property or adjacent properties.

Review of Historic Topographic Maps

Historic topographic maps from EDR's map collection were reviewed.

Review of Town of Griswold Building Permit Records

Because the subject property has never been developed, building permit records for the subject property were not reviewed.

Other Historic Sources

According to the Town of Griswold Tax Assessor online database, the subject property is identified as Property ID 59-119-3.3 and Parcel ID 10453, is owned by Frank Chinigo, established by co-owner Paul S Chinigo, Executor. The subject property was last sold in December 2011 as an "improved" lot. In addition, the subject property comprises 6 acres of tillable land, 19.2 acres of forest/woodland, and 12.8 acres of swamp/ledge/scrubland.

Summary of Historic Uses

Subject Property

Based on our review of the documents listed above and summarized in Table 3 below, it appears that the majority of the subject property appears to be undeveloped from approximately 1893 to 2012; however, from 1934 to 1991, several areas in the western, northern,



and eastern portions of the subject property appear to be cleared or tilled for agricultural uses. From 1996 to 2005, three areas in the western, northern, and eastern portions of the subject property appear to be fallow agricultural fields. From 2006 to 2008, an area in the western portion of the subject property appears to be maintained for agricultural uses, and two areas in the northern and eastern portions of the subject property appear to be fallow agricultural fields. From 2010 to 2012, an area in the western portion of the subject property appears to be maintained for agricultural uses, and an area in the eastern portion of the subject property appears to be a fallow agricultural field. The historic topographic maps reviewed depict the subject property as undeveloped, with the majority of the subject property covered by woodland and southern portions covered by wooded marsh or swamp in 1893, 1915, 1943, 1946, 1953, 1970, and 1984. City directories and fire insurance maps were not available for the subject property.

Table 3 - Historical Use of the Subject Property

Year	Use	Source
1219 Voluntown Road, Griswold, Connecticut		
1893	The subject property appears to be vacant and undeveloped.	Topographic Map (TM) – Moosup Quadrangle
1915	Similar to the 1893 TM.	TM – Moosup Quadrangle
1934	The majority of the subject property appears to be undeveloped; four areas in the western, northern, and eastern portions of the subject property appear to be cleared or tilled for agricultural purposes.	Aerial Photograph (AP) - USGS
1943	The subject property appears to be undeveloped; a portion of the subject property consists of woodland.	TM – Putnam Quadrangle
1946	The subject property appears to be undeveloped; the majority of the subject property consists of woodland and hilly terrain. Southern portions of the subject property may consist of a wooded marsh or swamp.	TM – Jewett City
1951	The majority of the subject property appears to be undeveloped; three areas in the western, northern, and eastern portions of the subject property appear to be cleared or tilled for agricultural purposes.	AP - USGS
1953	Similar to the 1946 TM.	TM – Jewett City
1970 (photorevised from 1953)	Similar to the 1953 TM.	TM – Jewett City
1970	Similar to the 1951 AP.	AP - EDR
1974	Similar to the 1970 AP.	AP - EDR
1984	The subject property appears to be undeveloped; the majority of the subject property consists of woodland with areas of wooded marsh or swamp.	TM – Jewett City
1986	Similar to the 1974 AP.	AP - USGS
1990	Similar to the 1986 AP.	AP - EDR
1991	Similar to the 1990 AP.	AP – USGS/DOQQ



Year	Use	Source
1996	The majority of the subject property appears to be undeveloped; three areas in the western, northern, and eastern portions of the subject property appear to be fallow agricultural fields.	AP – USGS/DOQQ
2005	Similar to the 1996 AP.	AP - EDR
2006	The majority of the subject property appears to be undeveloped; an area in the western portion of the subject property appears to be maintained for agricultural uses; two areas in the northern and eastern portions of the subject property appear to be fallow agricultural fields.	AP – USDA/NAIP
2008	Similar to the 2006 AP.	AP – USDA/NAIP
2010	The majority of the subject property appears to be undeveloped; an area in the western portion of the subject property appears to be maintained for agricultural purposes, and an area in the eastern portion of the subject property appears to be a fallow agricultural field.	AP – USDA/NAIP
2012	Similar to the 2010 AP.	AP – USDA/NAIP

Northern Adjacent Properties

Based on our review of the documents listed above, it appears that the northern adjacent properties were primarily undeveloped in 1934 with one residence and agricultural fields present; by 1951, two residences were present; from 1970 to 1974, three residences were present; by 1986, five residences were present; by 1990, six residences were present. From 1996 to 2012, the northern adjacent properties resemble their present-day configurations, and the agricultural fields appear to be fallow. The historic topographic maps reviewed depict the northern adjacent properties as undeveloped woodland in 1893, 1915, and 1943; one building is depicted north of Voluntown Road in 1946 and 1953, and two buildings are depicted in 1970 and 1984. City directories available for the northern adjacent properties indicate that 1166, 1168, 1182 and 1202 Voluntown Road were occupied by residents in 2003, 2008, and 2013; 1148 Voluntown Road was occupied by Town of Griswold in 1999, 2008, and 2013.

Eastern Adjacent Properties

Based on our review of the documents listed above, it appears that the eastern adjacent properties were in use as residences, agricultural fields and a greenhouse from 1934 to 2012. Three residences, an unknown structure, and agricultural fields are present on the eastern adjacent properties from 1934 to 1951. By 1970, Voluntown Road appears in its current configuration, and present-day Chinigo Road was established; three residences, an unknown structure and a greenhouse are present on the eastern adjacent properties. From 1974 to 1991, the eastern adjacent properties appear to be developed with three residences, a greenhouse, and agricultural fields. By 1996, the agricultural fields appear to be fallow. From 2005 to 2012, the eastern adjacent properties resemble their present-day configurations. The historic topographic maps reviewed depict the eastern adjacent properties as developed with one building in 1893 and 1915, vacant in 1943, developed with two buildings in 1946, and developed with three buildings in 1953, 1970, and 1984. City directories and fire insurance maps were not available for the eastern adjacent properties.



Southern Adjacent Properties

Based on our review of the documents listed above, it appears that the southern adjacent properties were undeveloped land from 1934 to 2012. The historic topographic maps reviewed depict the southern adjacent properties as undeveloped woodland and wooded swamp/marshland followed by Pachaug Pond in 1893, 1915, 1943, 1946, 1953, and 1970. In 1984, the southern adjacent properties are depicted as located within the Pachaug State Forest and covered with woodland and wooded swamp/marshland followed by Pachaug Pond. City directories and fire insurance maps were not available for the southern adjacent property.

Western Adjacent Properties

Based on our review of the documents listed above, it appears that the western adjacent property adjacent to Voluntown Road was undeveloped from 1934 to 1951, developed with an airport landing strip from 1970 to 1991, cleared in 1996, vacant in 2005, and developed with one building from 2006 to 2012. The other western adjacent properties were undeveloped in 1934, cleared and vacant in 1951, and developed with residences from 1970 to 2012. The historic topographic maps reviewed depict the western adjacent properties as developed with one building in 1893 and 1915, vacant in 1943, developed with one building in 1946, vacant in 1953, developed with a "landing strip" in 1970, and developed with a building and Lakeside Airport in 1984. City directories and fire insurance maps were not available for the western adjacent properties.

Gaps in Historical Sources

Several gaps of greater than 5 years were identified in the historical records reviewed, from 1893 to 1915, from 1915 to 1934, from 1934 to 1943, from 1953 to 1970, from 1974 to 1984, and from 1996 to 2005. These gaps are considered insignificant because the subject property use appears to be similar prior to and following the gaps.

INTERVIEWS

Rincon Consultants performed interviews regarding the subject property and surrounding areas. The purpose of the interviews was to discuss current and historical subject property conditions and to obtain information indicating the presence of recognized environmental conditions in connection with the property.

INTERVIEW WITH OWNER

An interview questionnaire was provided to the property owner, Paul F. Chinigo, Executor of the Estate of Frank Chinigo. Although not the current owner of the subject property, Frank Chinigo owned the subject property since approximately 1960. A copy of the completed questionnaire is included in Appendix 1. In addition, the property owner was contacted via telephone on December 18, 2015. The following information is based on information obtained during this interview and our review of the completed questionnaire.



The property owner indicated the following:

- The subject property was formerly used as a farm and is currently raw land. Although the owner questionnaire also states that a greenhouse was located on the subject property, during the follow-up phone interview with Mr. Chinigo, he stated that the greenhouse is not actually located on the subject property.
- The northern adjacent property is currently Connecticut Route 138 followed by raw land.
- The northern adjacent property was formerly developed with a street followed by raw land and a farm.
- The eastern adjacent property was formerly and is currently developed with residences.
- The southern adjacent property was formerly and is currently developed with state forest land.
- The western adjacent property was formerly developed with a rural airport is currently developed with a commercial strip mail, used for retail.
- PLH, LLC bought the subject property from the Estate of Frank Chinigo in October 2015.
- The subject property has been raw land for approximately 20 years.

The property owner indicated that he is unaware of the presence of industrial drums, storage tanks (above or below ground), fill dirt, vent pipes, fill pipes, access ways, pits, ponds, lagoons, sumps, clarifiers, solvent degreasers, stained surfaces, stained soil, hazardous materials or hazardous wastes on the site.

The property owner indicated that pesticides/fertilizers were used on the subject property during its use as a farm.

The property owner indicated that he is not aware of any pending, threatened, or past litigation or administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property. In addition, he is not aware of any notice from any government entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products or activity use limitations on the subject property.

INTERVIEW WITH SITE MANAGER

A site manager for the subject property was not identified during the completion of this Phase I ESA.

INTERVIEWS WITH OCCUPANTS

Because the subject property is undeveloped woodland, no occupants were interviewed as part of this research effort.

INTERVIEWS WITH LOCAL GOVERNMENT OFFICIALS

No local government officials were interviewed during the completion of this Phase I ESA.

INTERVIEWS WITH OTHERS

Rincon did not attempt to interview neighboring property owners or others as part of this research effort.

SITE RECONNAISSANCE

Rincon Consultants performed a reconnaissance of the subject property on October 21, 2015. The purpose of the reconnaissance was to observe existing subject property conditions and to obtain information indicating the presence of recognized environmental conditions in connection with the property.

METHODOLOGY AND LIMITING CONDITIONS

The site reconnaissance was conducted by 1) observing the subject property from public thoroughfares, 2) observing the adjacent properties from public thoroughfares, and 3) observing the subject property from dirt roads and walking paths.

The majority of the subject property was inaccessible due to minimal access areas and dense woods. Rincon was able to hike through the southwestern portion of the subject property, and the remainder of the property was viewed from vantage points along Latham Drive and Voluntown Road.

CURRENT USE OF THE PROPERTY AND ADJACENT PROPERTIES

The subject property is currently dense woodlands. Adjacent properties include single-family residences and barns, vacant, undeveloped land and DEF Services Group.

PAST USE OF THE PROPERTY AND ADJACENT PROPERTIES

Based on our site reconnaissance, past uses at the subject property and adjacent properties are not readily apparent. However, the southwestern portion of the subject property appears to have been cleared at some point, possibly for former agricultural purposes.

CURRENT OR PAST USES IN THE SURROUNDING AREAS

The subject property is surrounded by residential, commercial and vacant, undeveloped land uses as detailed in the Site Description section of this report. Past uses of the surrounding area are not readily apparent based on the site reconnaissance.

GEOLOGIC, HYDROGEOLOGIC, HYDROLOGIC AND TOPOGRAPHIC CONDITIONS

Geologic, hydrogeologic, hydrologic and topographic information are as previously stated in the Physical Settings Section of this report.



GENERAL DESCRIPTION OF STRUCTURES

The subject property is undeveloped land covered in dense woodlands. There are no onsite structures.

INTERIOR AND EXTERIOR OBSERVATIONS

Storage Tanks

During the site reconnaissance, above-ground storage tanks or evidence of underground storage tanks were not observed.

Drums

No drums were observed on the subject property during the site reconnaissance.

Hazardous Substances and Petroleum Products

An empty one-quart container of motor oil was observed on the western portion of the subject property, near Latham Drive. The container appeared to be roadside trash. Rincon did not observe indications of releases from this container.

Unidentified Substance Containers

Unidentified substance containers or unidentified containers that might contain hazardous substances were not observed during the site reconnaissance.

Odors

During the site reconnaissance, Rincon did not identify any strong, pungent, or noxious odors.

Pools of Liquid

During the site reconnaissance, Rincon did not identify any pools of liquid including standing surface water. In addition, sumps containing liquids likely to be hazardous substances or petroleum products were not observed.

Indications of Polychlorinated Biphenyls (PCBs)

No indications of PCBs were observed during the site reconnaissance.



Other Conditions of Concern

During the site reconnaissance Rincon did not note any of the following:

- stains or corrosion
- clarifiers and sumps
- degreasers/parts washers
- pits, ponds, and lagoons
- stained soil or stained pavement
- stressed vegetation
- waste water
- wells
- septic systems/effluent disposal system

Solid Waste/Debris- An empty one-quart container of motor oil was observed on the subject property. No indications of releases were observed.

EVALUATION

FINDINGS & OPINIONS

Known or suspect environmental conditions associated with the subject property include the following:

A. *Former agricultural use of the subject property* – Based on our review of historical sources, it appears that several areas in the western, northern, and eastern portions of the subject property appear to be cleared or tilled, likely for agricultural uses, from approximately 1934 to 1941. From 1996 to 2005, three areas in the western, northern, and eastern portions of the subject property appear to be fallow agricultural fields. From 2006 to 2008, an area in the western portion of the subject property appears to be maintained for agricultural uses, and two areas in the northern and eastern portions of the subject property appear to be fallow agricultural fields. From 2010 to 2012, an area in the western portion of the subject property appears to be maintained for agricultural uses, and an area in the eastern portion of the subject property appears to be a fallow agricultural field. Information obtained during our review of the owner questionnaire indicates that pesticides were formerly used on the subject property in connection with the onsite farm. Therefore, there is a potential for soil impacted with organochlorine pesticides (OCPs) to be located on the subject property and is considered a *suspect environmental condition*.

CONCLUSIONS & RECOMMENDATIONS

Rincon has performed a Phase I ESA in general conformance with the scope and limitations of ASTM E 1527-13 for the property located at 1219 Voluntown Road, Griswold, Connecticut. This assessment has revealed evidence of one suspect environmental condition in connection with the subject property. Based on information obtained during our review of the completed owner questionnaire, there is a potential for OCP-impacted soil to be located on the subject property.



In order to confirm or deny the presence of OCP-impacted soil on the subject property, Rincon recommends conducting soil sampling in the areas formerly used for agricultural purposes.

DEVIATIONS

Deviations from ASTM Practice were encountered during the completion of this Phase I ESA. A lien search and chain of title review were not completed as part of this assessment.

REFERENCES

The following published reference materials were used in preparation of this Phase I ESA:

Environmental database: Environmental Data Resources (EDR) report dated October 9, 2015.

Geology: Connecticut Department of Environmental Protection, State Geological and Natural History Survey of Connecticut, and Michael Bell, *Bulletin 110, The Face of Connecticut: People, Geology, and the Land*, 1985:

http://www.tmsc.org/face_of_ct/index.html; USGS Mineral Resources Online Spatial Data database, <https://mrdata.usgs.gov/geology/state/state.php?state=CT>; United States Department of Agriculture (USDA), National Resources Conservation Service (NRCS), *Web Soil Survey* (WSS): <http://websoilsurvey.nrcs.usda.gov/app/>.

Groundwater: USGS Mineral Resources Online Spatial Data database, <https://mrdata.usgs.gov/geology/state/state.php?state=CT>; USGS Groundwater Watch Long-Term Groundwater Data Network, <http://groundwaterwatch.usgs.gov/Net/OGWNetworkLTN.asp?ncd=ltn&a=1&d=1>.

Topography: USGS topographic map (1984, Jewett City Quadrangle).

Oil and gas records: Drilling Maps: Map of Connecticut Oil & Gas Fracking Health & Safety Issues, <http://www.drillingmaps.com/connecticut.html#.VilePvIhBc>; EDR Report dated October 9, 2015.

Aerial photographs: Photos provided by EDR.

Fire insurance maps: Maps provided by EDR.

City directory listings: Listings provided by EDR.

Historic topographic maps: Maps provided by EDR.

Parcel data: Southeastern Connecticut Council of Governments online GIS Map Viewer, <http://www.mapgeo.com/SCCOGCT/>.



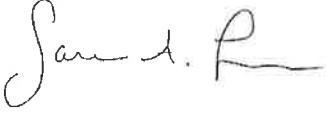
SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

The qualified environmental professionals that are responsible for preparing the report include Walt Hamann and Sarah A. Larese. Their qualifications are summarized in the following section.

"We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in 312.10 of 40 CFR 312. We have the specific qualifications based on education, training and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312."


Signature

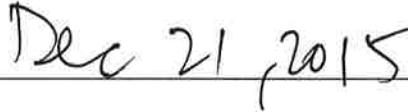
Walt Hamann, PG, CEG, CHG
Name


Signature

Sarah A. Larese
Name


Date

Vice President
Title


Date

Senior Environmental Scientist
Title



QUALIFICATIONS OF ENVIRONMENTAL CONSULTANTS

The environmental consultants responsible for conducting this Phase I ESA and preparing the report include Walt Hamann, Sarah A. Larese, Lauren Kodama Roenicke, and Savanna Vrevich. Their qualifications are summarized below.

Environmental Professional Qualifications	X2.1.1 (2) (i) - Professional Engineer or Professional Geologist License or Registration, and 3 years of full-time relevant experience	X2.1.1 (2) (ii) - Licensed or certified by the Federal Government, State, Tribe, or U.S. Territory to perform environmental inquiries	X2.1.1 (2) (iii) – Baccalaureate or Higher Degree from and accredited institution of higher education in a discipline of engineering or science and the equivalent of 5 years of full-time relevant experience	X2.1.1 (2) (iii) – Equivalent of 10 years of full-time relevant experience
Walt Hamann	PG, CHG, CEG		MS Geology	30 years
Sarah A. Larese			BA Environmental Studies	16 years
Lauren Kodama Roenicke			BS Environmental Studies	3 years
Savanna Vrevich			BS Environmental Studies	1 year

Walt Hamann, PG, CEG, CHG, is a Principal and Senior Geologist with Rincon Consultants. He holds a Bachelor of Arts degree in geology from the University of California, Santa Barbara and a Master of Science degree in geology from the University of California, Los Angeles. He has over 30 years of experience conducting assessment and remediation projects and has prepared or overseen the preparation of hundreds of Phase I and Phase II Environmental Site Assessments throughout California. Mr. Hamann is a Professional Geologist (#4742), Certified Engineering Geologist (#1635), and Certified Hydrogeologist (#208) with the State of California.

Sarah A. Larese is a Senior Environmental Scientist with Rincon Consultants. She holds a Bachelor of Science degree in environmental studies from the University of California, Santa Barbara, California. Ms. Larese has experience in development, implementation and project management of environmental assessment and remediation projects, especially relating to underground storage tanks. Ms. Larese's responsibilities at Rincon include implementation of Phase I and II Environmental Site Assessments as well as conducting site remediation field activities and preparation of environmental reports. She has 16 years of experience conducting research, assessment and remediation projects.

Lauren G. Kodama Roenicke is an Environmental Scientist with Rincon Consultants. She holds a Bachelor of Science degree in Environmental Studies with an outside concentration of Ecology, Evolution, and Marine Biology from the University of California, Santa Barbara. Ms. Kodama has experience working on Phase I Environmental Site Assessments for a variety of commercial, rural, and industrial properties. In addition, Ms. Kodama has been involved in working on large scale, multi-site projects. Ms. Kodama's responsibilities at Rincon include implementation of Phase I and Phase II Environmental Site Assessment Reports.

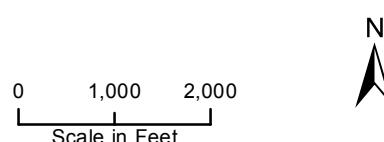


Savanna Vrevich is an Environmental Scientist with Rincon Consultants. She holds a Bachelor of Science degree in Environmental Studies with an outside concentration of Ecology, Evolution, and Marine Biology from the University of California, Santa Barbara. Ms. Vrevich's responsibilities at Rincon include implementation of Phase I Environmental Site Assessment Reports.





Imagery provided by National Geographic Society, ESRI and its licensors © 2015. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.



Vicinity Map

Figure 1

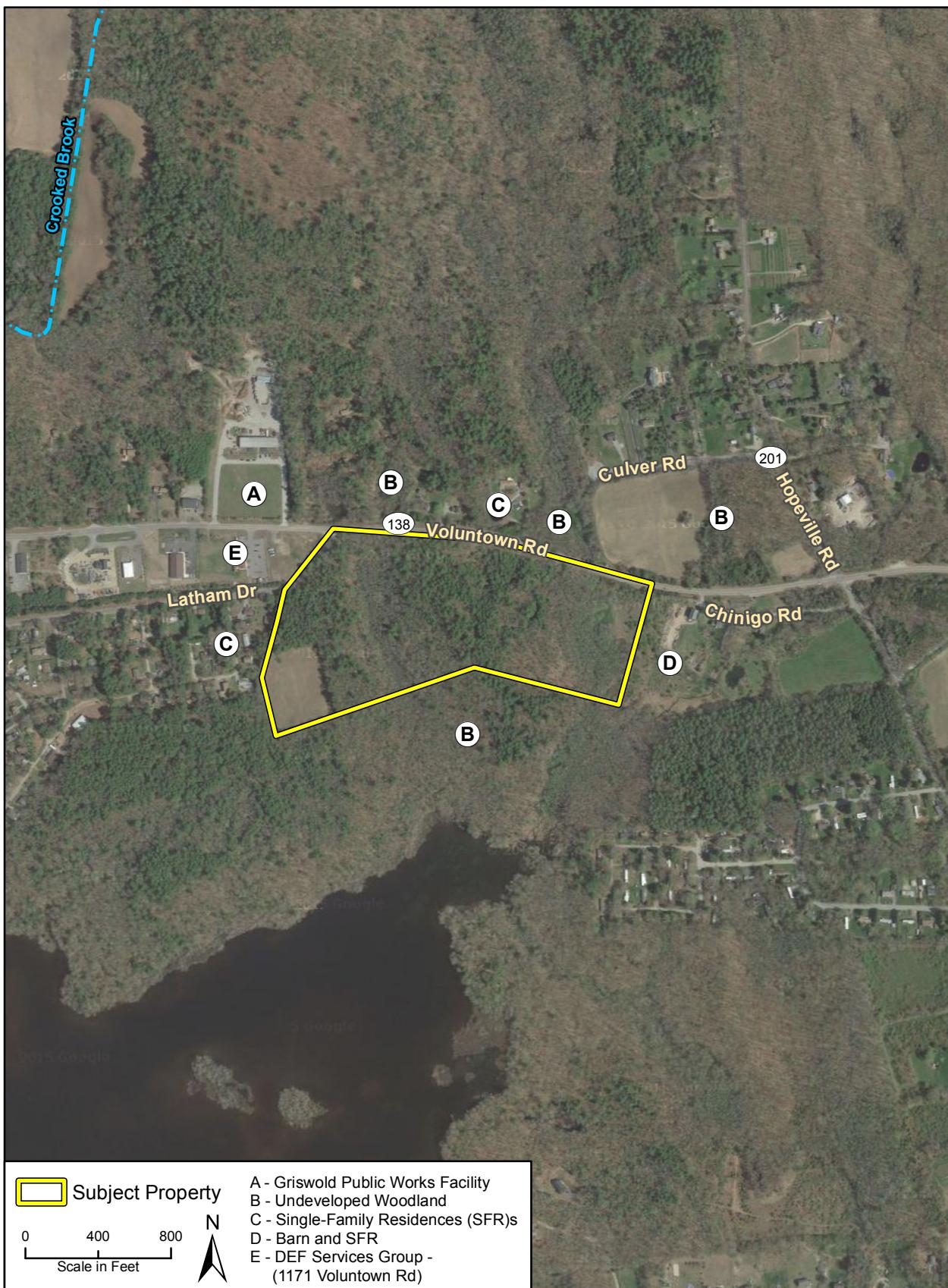


Imagery provided by Google and its licensors © 2015.

Site Map

Figure 2

Rincon Consultants, Inc.



Imagery provided by Google and its licensors © 2015.

Adjacent Land Use Map

Figure 3

Rincon Consultants, Inc.



Photograph 1: View of woodlands at the western portion of the subject property.



Photograph 2: View of the formerly cleared field at the southwestern portion of the subject property, facing south.



Photograph 3: View of Latham Drive along the western side of the subject property, facing south.



Photograph 4: View of woodlands at the subject property, facing south.



Photograph 5: View of Voluntown Road and woodlands adjacent to the north of the subject property, facing east.



Photograph 6: View of the residence and barn adjacent to the east of the subject property, facing south.

Site Photographs

Figure 4
Rincon Consultants, Inc.



Photograph 7: View of DFF Services Group property adjacent to the west of the subject property, facing west.



Photograph 8: View of the single-family residence adjacent to the west of the subject property, facing south.

Site Photographs

Figure 5

Rincon Consultants, Inc.



Phase I Environmental Site Assessment

**1240 Voluntown Road
Griswold, Connecticut**

Prepared for:

Ecos Energy, LLC

Prepared by:

Rincon Consultants, Inc.
December 21, 2015





Rincon Consultants, Inc.

5135 Avenida Encinas, Suite A
Carlsbad, California 92008

760 918 9444
FAX 918 9449

info@rinconconsultants.com
www.rinconconsultants.com

December 21, 2015
Project 15-02082

Brad Wilson
Project Manager, Ecos Energy LLC
222 South 9th Street, #1600
Minneapolis, Minnesota 55402

**Phase I Environmental Site Assessment
1240 Voluntown Road, Griswold, Connecticut**

Dear Mr. Wilson:

This report presents the findings of a Phase I Environmental Site Assessment (ESA) completed by Rincon Consultants, Inc. for the site located at 1240 Voluntown Road in Griswold, Connecticut. The Phase I ESA was performed in accordance with our proposal and contract dated October 8, 2015.

The accompanying report presents our findings and provides an opinion regarding the presence of recognized environmental conditions. Our work program for this project, as referenced in our contract, is intended to meet the guidelines outlined in the American Society for Testing and Materials (ASTM), Standard Practice for Environmental Site Assessments: *Phase I Environmental Site Assessment Process* (ASTM Standard E-1527-13). Our scope of services, pursuant to ASTM practice, did not include any inquiries with respect to asbestos, lead-based paint, lead in drinking water, wetlands, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, vapor intrusion or other indoor air quality, mold, or high voltage power lines.

Thank you for selecting Rincon for this project. If you have any questions, or if we can be of any future assistance, please contact us.

Sincerely,
RINCON CONSULTANTS, INC.

A handwritten signature in black ink, appearing to read "Sarah A. Larese".

Sarah A. Larese
Senior Environmental Scientist

A handwritten signature in blue ink, appearing to read "Walt Hamann".
Walt Hamann, PG, CEG, CHG
Vice President

Table of Contents

Phase I Environmental Site Assessment

1240 Voluntown Road

Griswold, Connecticut

Executive Summary	1
Introduction	2
Purpose	3
Scope of Services	4
Significant Assumptions, Limitations, Deviations, Exceptions, Special Terms, and Conditions	4
User Reliance	5
Site Description	5
Location	5
Subject Property and Vicinity General Characteristics	5
Descriptions of Structures, Roads, Other Improvements on the Site	6
User Provided Information	6
Records Review	7
Physical Setting Sources	7
Topography	7
Geology and Hydrogeology	7
Site Geology	7
Regional Groundwater Occurrence and Quality	8
Standard Environmental Record Sources	8
Subject Property	9
Offsite Properties	9
Orphan Listings	9
Additional Environmental Record Sources	10
Review of Agency Files	10
Subject Property	10
Adjacent Properties	10
Nearby Sites	10
Up-gradient Release Sites	11
Known or Suspect Contaminated Release Sites with Potential Vapor Migration	11
Review of State of Connecticut Oil and Gas Sites	11
Historical Use Information on the Property and the Adjoining Properties	12
Review of Historic Aerial Photographs	12
Review of City Directory Listings	12
Review of Fire Insurance Maps	12
Review of Historic Topographic Maps	12
Review of Town of Griswold Building Permit Records	12
Other Historic Sources	12
Summary of Historic Uses	12
Subject Property	12



Northern Adjacent Properties	14
Eastern Adjacent Properties	14
Southern Adjacent Properties	14
Western Adjacent Properties (1202 Voluntown Rd)	14
Gaps in Historical Sources	15
Interviews.....	15
Interview with Owner.....	15
Interview with Site Manager.....	16
Interviews with Occupants	16
Interviews with Local Government Officials.....	16
Interviews with Others	16
Site Reconnaissance	16
Methodology and Limiting Conditions.....	16
Current Use of the Property and Adjacent Properties	17
Past Use of the Property and Adjacent Properties.....	17
Current or Past Uses in the Surrounding Areas.....	17
Geologic, Hydrogeologic, Hydrologic and Topographic Conditions.....	17
General Description of Structures	17
Interior and Exterior Observations	17
Storage Tanks.....	17
Drums	17
Hazardous Substances and Petroleum Products.....	17
Unidentified Substance Containers	18
Odors.....	18
Pools of Liquid.....	18
Indications of Polychlorinated Biphenyls (PCBs).....	18
Other Conditions of Concern.....	18
Evaluation	18
Findings	18
Opinions.....	19
Conclusions & Recommendations	19
Deviations	19
References	20
Signatures of Environmental Professionals.....	21
Qualifications of Environmental Consultants.....	22
Figures	
Figure 1 – Vicinity Map	
Figure 2 – Site Map	
Figure 3 – Adjacent Land Use Map	
Figure 4 – Site Photographs	
Appendices	
Appendix 1 – Interview Documentation	
Appendix 2 – Regulatory Records Documentation	
Appendix 3 – Historical Research Documentation	



EXECUTIVE SUMMARY

This report presents the findings of a Phase I Environmental Site Assessment (ESA) for the property located at 1240 Voluntown Road, Griswold, Connecticut (Figure 1, Vicinity Map). The subject property is currently vacant, undeveloped woodland and some cleared undeveloped areas.

Rincon Consultants performed a reconnaissance of the subject property on October 21, 2015. The purpose of the reconnaissance was to observe existing subject property conditions and to obtain information indicating the presence of recognized environmental conditions in connection with the subject property. The majority of the subject property was inaccessible due to dense vegetation. The use, storage or disposal of hazardous materials on the subject property was not observed during the site reconnaissance.

The subject property is located in an area that is primarily comprised of residential and agricultural land and undeveloped woodland. Properties in the vicinity of the subject property include single-family residences, agricultural fields, commercial buildings, and undeveloped woodland.

Environmental Data Resources, Inc. (EDR) was contracted to provide a database search of public lists of sites that generate, store, treat or dispose of hazardous materials or sites for which a release or incident has occurred. The EDR search was conducted for the subject property and included data from surrounding sites within a specified radius of the property. The subject property and adjacent properties were not listed in any of the databases searched by EDR. Only one facility/property was identified by EDR within a one-mile radius of the subject property. The nearby Town of Griswold site, located approximately 0.25 mile to the west of the subject property, was listed in the following databases searched by EDR:

- **CT Manifest:** The Connecticut Manifest database listing for this property indicates that in 2000, the onsite facility generated waste that was transported, treated, stored, and disposed of offsite by a separate entity. In three separate occurrences, 197 gallons of “flammable liquid toxic, not otherwise specified” waste, 93 gallons of “flammable liquid, not otherwise specified” waste, and 187 gallons of “corrosive liquid, not otherwise specified” waste were generated onsite and disposed.
- **NPDES:** The National Pollutant Discharge Elimination System (NPDES) database listing for this property indicates that the onsite facility held a permit for “stormwater industrial activities from September 2000 to October 2002, and holds an active permit for “stormwater industrial activities” from October 2011 to September 2016.
- **Enforcement:** The Enforcement database listing for this property indicates that the Bureau of Waste Management carried out “enforcement actions” in September and December 2000 and in June 2004. The December action included a \$400 penalty to the onsite facility. No additional information was provided in the EDR report.

These listings are not indicative of a hazardous materials release; however, they do indicate that the onsite facility is a hazardous waste generator. According to the Town of Griswold Public Works Department website, the property is the Griswold Public Works garage, which accepts “normal” household bulky waste including appliances, recyclables, green waste, electronics, batteries, and other designated hazardous materials items. In addition, the facility does not accept



municipal solid waste, auto parts containing fluids, business or industrial waste, or recyclables mixed with garbage for disposal. Based on the anticipated direction of groundwater flow (south to southeast, crossgradient to the subject property) and distance to the subject property (approximately 0.25 mile), the Town of Griswold site is not expected to adversely impact the subject property.

Historical sources reviewed as part of the Phase I ESA include aerial photographs and topographic maps. The photos and maps reviewed indicate that the majority of the subject property was cleared or tilled for agricultural purposes from approximately 1934 to 2012; however, the northeastern and western portions of the subject property appear to be undeveloped woodland. From 1934 to at least 1953, two structures were present near the southern boundary of the subject property. The historic topographic maps reviewed depict the subject property as undeveloped, with portions of the subject property covered by woodland and a marsh, swamp, and intermittent stream located in the western corner of the subject property in 1893, 1915, 1943, 1946, 1953, 1970, and 1984.

Based on the findings of this Phase I ESA, it is our opinion that one suspect environmental condition was identified for the subject property:

- *Former agricultural use of the subject property* – Based on our review of historical sources, it appears that the majority of the subject property was cleared or tilled for agricultural purposes from approximately 1934 to 2012, and a small orchard appears to be located in the southern portion of the subject property in the 1934 aerial photograph. The northeastern and western portions of the subject property appear to be undeveloped woodland from approximately 1934 to 2012. Information obtained during our review of the owner questionnaire indicates that pesticides were formerly used on the subject property in connection with the onsite farm. Therefore, there is a potential for soil impacted by organochlorine pesticides (OCPs) to be located on the subject property and is considered a suspect environmental condition.

Rincon has performed a Phase I ESA in general conformance with the scope and limitations of ASTM E 1527-13 for the property located at 1240 Voluntown Road, Griswold, Connecticut. This assessment has revealed evidence of one suspect environmental condition in connection with the subject property. Based on information obtained during our review of the completed owner questionnaire, there is a potential for soil impacted by organochlorine pesticides (OCPs) to be located on the subject property. In order to confirm or deny the presence of OCP-impacted soil on the subject property, Rincon recommends conducting soil sampling in the areas formerly used for agricultural purposes.

INTRODUCTION

This report presents the findings of a Phase I ESA conducted for the property located at 1240 Voluntown Road, Griswold, Connecticut (Figure 1, Vicinity Map). The Phase I ESA was performed by Rincon Consultants, Inc. for Ecos Energy, LLC in general conformance with ASTM E 1527-13 and our proposal and contract dated October 8, 2015. The following sections present our findings and provide our opinion as to the presence of recognized environmental conditions.



PURPOSE

The purpose of this Phase I ESA was to assess the environmental conditions of a property, taking into account commonly and reasonably ascertainable information and to qualify for Landowner Liability Protections under the Brownfields Amendments to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

A recognized environmental condition (REC) is defined pursuant to ASTM E 1527-13 as,

"the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to any release to the environment; 2) under conditions indicative of a release to the environment; 3) under conditions that pose a material threat of a future release to the environment".

A Controlled REC is defined pursuant to ASTM E 1527-13 as,

"a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). A condition considered by the environmental professional to be a controlled recognized environmental condition shall be listed in the findings section of the Phase I Environmental Site Assessment report, and as a recognized environmental condition in the conclusions section of the Phase I Environmental Site Assessment report".

A Historical REC is defined pursuant to ASTM E 1527-13 as,

"a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by regulatory authority, without subjecting the property to any required controls (for example, use restrictions, activity and use limitations, institutional controls, or engineering controls). Before calling the past release a historical recognized environmental condition, the environmental professional must determine whether the past release is a recognized environmental condition at the time the Phase I Environmental Site Assessment is conducted (for example, if there has been a change in the regulatory criteria). If the EP [Environmental Professional] considers the past release to be a recognized environmental condition at the time the Phase I ESA is conducted, the condition shall be included in the conclusions section of the report as a recognized environmental condition".

A de minimis condition is defined pursuant to ASTM E 1527-13 as,

"a condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de minimis conditions are not recognized environmental conditions nor controlled recognized environmental conditions".

SCOPE OF SERVICES

The scope of services conducted for this study is outlined below:

- Perform a reconnaissance of the site to identify obvious indicators of the existence of hazardous materials.
- Observe adjacent or nearby properties from public thoroughfares in an attempt to see if such properties are likely to use, store, generate, or dispose of hazardous materials.
- Obtain and review an environmental records database search from Environmental Data Resources, Inc. (EDR) to obtain information about the potential for hazardous materials to exist at the subject property or at properties located in the vicinity of the subject property.
- Review files for the subject property and immediately adjacent properties as identified in the EDR report, as applicable.
- Review the current U.S. Geological Survey (USGS) topographic map to obtain information about the subject property's topography and uses of the subject property and properties in the vicinity of the subject property.
- Review additional pertinent record sources (e.g., online databases of hazardous substance release sites), as necessary, to identify the presence of RECs at the subject property.
- Review reasonably ascertainable historical resources (e.g., aerial photographs, topographic maps, fire insurance maps, city directories) to assess the historical land use of the subject property and adjacent properties.
- Provide a property owner interview questionnaire to the property owner or a designated subject property representative identified to Rincon by the client.
- Provide a user interview questionnaire to a representative of the client, the user of the Phase I ESA.
- Conduct interviews with other property representatives (e.g., key site manager, occupants), as applicable.
- Review Client-provided information (e.g., previous environmental reports, title documentation), as applicable.

SIGNIFICANT ASSUMPTIONS, LIMITATIONS, DEVIATIONS, EXCEPTIONS, SPECIAL TERMS, AND CONDITIONS

This work is intended to adhere to good commercial, customary, and generally accepted environmental investigation practices for similar investigations conducted at this time and in this geographic area. No guarantee or warranties, expressed or implied are provided. The findings and opinions conveyed in this report are based on findings derived from a site reconnaissance, review of an environmental database report, specified regulatory records and historical sources, and comments made by interviewees. This report is not intended as a comprehensive site characterization and should not be construed as such. Standard data sources relied upon during the completion of Phase I ESAs may vary with regard to accuracy and completeness. Although Rincon believes the data sources are reasonably reliable, Rincon cannot and does not guarantee the authenticity or reliability of the data sources it has used.



Additionally, pursuant to our contract, the data sources reviewed included only those that are practically reviewable without the need for extraordinary analysis.

Rincon has not found evidence that hazardous materials or petroleum products exist at the subject property at levels likely to warrant mitigation. Rincon does not under any circumstances warrant or guarantee that not finding evidence of hazardous materials or petroleum products means that hazardous materials or petroleum products do not exist on the subject property. Additional research, including surface or subsurface sampling and analysis, can reduce the client's risks, but no techniques commonly employed can eliminate these risks altogether.

In addition, pursuant to ASTM E 1527-13 practice, our scope of services did not include any inquiries with respect to asbestos containing building materials, biological agents, cultural and historic resources, ecological resources, endangered species, health and safety, indoor air quality unrelated to release of hazardous substances or petroleum products into the environment, industrial hygiene, lead-based paint, lead in drinking water, mold, radon, regulatory compliance, wetlands, or high voltage power lines.

USER RELIANCE

Ecos Energy, LLC has requested this assessment and will use the assessment to provide information for the purposes of purchasing or acquiring said property. This Phase I ESA was prepared for use solely and exclusively by Ecos Energy, LLC. No other use or disclosure is intended or authorized by Rincon. Also, this report is issued with the understanding that it is to be used only in its entirety. It is intended for use only by the client, and no other person or entity may rely upon the report without the express written consent of Rincon.

SITE DESCRIPTION

Location

The subject property is a 17.30-acre property located north of Voluntown Road, west of Hopeville Road, and south of Culver Road in Griswold, Connecticut (Figure 2, Site Map). The property is identified as Assessor Parcel Number (APN) 58-118-1.

Subject Property and Vicinity General Characteristics

The subject property is currently vacant, undeveloped woodland and some cleared undeveloped areas.

The subject property is located in an area that is primarily comprised of residential and agricultural land and undeveloped woodland. Properties in the vicinity of the subject property include single-family residences, agricultural fields, commercial buildings, and undeveloped woodland. The current adjacent land uses are described in Table 1 and depicted on Figure 3, Adjacent Land Use Map.



Table 1 - Current Uses of Adjacent Properties

Area	Use
Northern Properties	Culver Road, followed by single-family residences, barns, and a dilapidated greenhouse
Eastern Properties	Hopeville Road, followed by single-family residences and a possible logging business
Western Properties	Undeveloped woodland and single-family residences
Southern Properties	Voluntown Road (State Highway 138), followed by single-family residences and undeveloped woodland

Descriptions of Structures, Roads, Other Improvements on the Site

During the site reconnaissance, no structures, roads or other improvements were observed on the subject property.

Access to the subject property is available from Culver Road, Hopeville Road, and Voluntown Road.

The subject property is not serviced by any utility providers. However, in the area, Connecticut Water Company and Jewett City Water Company provide water and sewer service, Northeast Utilities Service Company provides electrical service, and private vendors provide solid waste collection and disposal services.

USER PROVIDED INFORMATION

As described in ASTM E 1527-13 Section 6, Ecos Energy, LLC was interviewed for actual knowledge pertaining to the subject property to help identify recognized environmental conditions in connection with the property. Brad Wilson, Project Developer for Ecos Energy, LLC, completed the User Questionnaire as provided by ASTM Appendix X3. A copy of the completed questionnaire is included as Appendix 1.

Based on our review of the completed questionnaire, the user did not review the following sources of information and/or is unaware of information regarding the following:

- recorded land title records (or judicial records, where appropriate) that identify any environmental liens filed or recorded against the property
- recorded land title records (or judicial records, where appropriate) that identify any activity and land use limitations (AULs), such as engineering controls, land use restrictions or institutional controls that are in place at the property and/or have been filed or recorded against the property under federal, tribal, state or local law
- Title Report that identifies information pertaining to environmental cleanup liens or activity and use limitations (AULs) for the subject property
- specialized knowledge or experience related to the property or nearby properties
- commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases



- obvious indicators that point to the presence or likely presence of releases at the property
- pending, threatened, or past litigation relevant to hazardous substances or petroleum products, in, on, or from the site
- pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the site
- notice from any government entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products

Additionally, the user indicated that the purchase price being paid for the subject property reasonably reflects the fair market value of the property, and he is not aware of a reduction in value for the subject property relative to any known environmental issues.

RECORDS REVIEW

PHYSICAL SETTING SOURCES

Topography

The current USGS topographic map (Jewett City Quadrangle, 1984) indicates that the subject property is situated at an elevation of about 200 feet above mean sea level with topography gently sloping to the southwest. The adjacent topography consists of gently sloping hills and valleys and Pachaug Pond to the southwest.

Geology and Hydrogeology

According to *The Face of Connecticut: People, Geology, and the Land, State Geological and Natural History Survey of Connecticut, Bulletin 110*, Connecticut is fundamentally divided into a Collision terrane and a Great Crack terrane. The Collision terrane corresponds to the Eastern and Western Uplands, and the Great Crack corresponds to the Central Valley. The terranes may be further divided into four terranes from west to east of the state: the Proto-North American, Iapetos, Newark, Iapetos again, and Avalonian terranes. The Newark Terrane corresponds with the Central Valley Great Crack, and the others are subdivisions of the Uplands Collision terrane. Connecticut's present-day Uplands consist of moderate-sized plateaus and rolling hills.

Site Geology

According to the Connecticut Geological and Natural History Survey, Bedrock Geology of Connecticut, 2000, the subject property is mainly underlain by Waterford Group gneiss, which is described as an "interlayered part of Waterford Group, light to dark, generally medium-grained gneiss." The western corner of the subject property is underlain by mylonite along Paleozoic faults, which is described as fault-related rocks and as "*a compact, chert-like rock without cleavage, but with a streaky or banded structure, produced by the extreme granulation and shearing of rocks that have been pulverized and rolled during overthrusting or intense dynamic metamorphism.*" Along the eastern boundary of the subject property, Hope Valley alaskite gneiss



is present, which is described as light pink to grey and medium- to coarse-grained granitic gneiss.

According to the US Department of Agriculture's Natural Resources Conservation Service online Web Soil Survey database, the subject property is mainly comprised of Hinkley loamy sand, very rocky Charlton-Chatfield complex, and Timakwa and Natchaug soils in approximately zero to 15 percent slopes.

Regional Groundwater Occurrence and Quality

According to the USGS Mineral Resources Online Spatial Data database, the subject property is located within the USGS Quinebaug hydrologic unit and the USGS Connecticut Coast hydrologic subregion.

During the preparation of this Phase I ESA, we reviewed the USGS's online Groundwater Watch database to determine groundwater flow direction in the vicinity of the subject property:

- According to the field groundwater level measurement data for a groundwater well located near Wyassup Road, on September 23, 2015 groundwater was reported to be 16.30 feet below ground surface. This well is located approximately 13 miles to the south-southeast of the subject property.
- According to the field groundwater level measurement data for a groundwater well located near Wyassum Road, on September 23, 2015 groundwater was reported to be 6.10 feet below ground surface. This well is located approximately 13 miles to the southeast of the subject property.

Based on the site topography and Pachaug Pond to the southwest, groundwater in the vicinity of the subject property is anticipated to flow to the southwest in accordance with the topographic gradient.

STANDARD ENVIRONMENTAL RECORD SOURCES

Environmental Data Resources, Inc. (EDR) was contracted to provide a database search of public lists of sites that generate, store, treat or dispose of hazardous materials or sites for which a release or incident has occurred. The EDR search was conducted for the subject property and included data from surrounding sites within specified radii of the property. A copy of the EDR report, which specifies the ASTM search distance for each public list, is included as Appendix 2. As shown on the attached EDR report, federal, state and county lists were reviewed as part of the research effort. Please refer to Appendix 2 for a complete listing of sites reported by EDR and a description of the databases reviewed.

The Map Findings Summary, included in the EDR report, provides a summary of the databases searched, the number of reported facilities within the search radii, and whether the facility is located onsite or adjacent to the subject property. The following information is based on our review of the Map Findings Summary and the information contained in the EDR report.

Subject Property

The subject property was not listed on any of the regulatory databases reviewed. However, portions of the subject property are listed on the National Wetlands Inventory and State Wetlands databases.

Offsite Properties

Offsite properties listed by EDR fall under two general categories of databases: those reporting unauthorized releases of hazardous substances (e.g., LUST, National Priority List [a.k.a. Superfund sites], and corrective action facilities), and databases of businesses permitted to use hazardous materials or generate hazardous wastes, for which an unauthorized release has not been reported to a regulatory agency.

Rincon reviewed the EDR Radius Map and select detailed listings to evaluate their potential to impact the subject property, based on the following factors:

- Reported distance of the facility from the subject property
- The nature of the database on which the facility is listed, and/or whether the facility was listed on a database reporting unauthorized releases of hazardous materials, petroleum products, or hazardous wastes
- Reported case type (e.g., soil only, failed UST test only)
- Reported substance released (e.g., chlorinated solvents, gasoline, metals)
- Reported regulatory agency status (e.g., case closed, “no further action”)
- Location of the facility with respect to the reported groundwater flow direction (discussed in the Geology and Hydrogeology section of this report)

Only one facility/property was identified by EDR within a one-mile radius of the subject property (Table 2). This facility/property was interpreted by Rincon to be of potential environmental concern to the subject property, based on one or more of the factors listed above. In accordance with ASTM, contamination migration pathways in soil, groundwater, and soil vapor were considered in our analysis of offsite properties of potential environmental concern.

Table 2 - EDR Listing Summary of Select Sites Within One Mile of the Subject Site

Site Name	EDR Site ID	Site Address	Distance from Subject Property (miles)	Database Reference
Nearby Sites				
Town of Griswold	1	1148 Voluntown Road	Approximately 0.25 Mile – West	ENF, Manifest, NPDES

Regulatory agency information reviewed for the listings in the table above are summarized in the Additional Environmental Record Sources section of this report.

Orphan Listings

EDR reported three orphan or unmapped site listings, which EDR is unable to plot due to insufficient address information. Based on Rincon’s review of the limited address information or site descriptions for the orphan listings, none of the listings are expected to impact the subject property.



ADDITIONAL ENVIRONMENTAL RECORD SOURCES

Review of Agency Files

As a follow-up to the database search, Rincon reviewed regulatory information for facilities within the specified search radii that were interpreted to have the potential to impact the subject property, based on one or more factors previously discussed (e.g., distance, open case status, up-gradient location, soil vapor migration).

The following is a summary of our review of regulatory information obtained from review of online sources (e.g., Town of Griswold Public Works Department website). Because no EDR database-listed sites were interpreted to be of potential environmental concern to the subject property, no agency files were reviewed as part of this research effort.

Subject Property

The subject property was not listed in any of the databases searched by EDR. However, portions of the subject property are listed on the National Wetlands Inventory and State Wetlands databases.

Adjacent Properties

Adjacent properties were not listed in any of the databases searched by EDR.

Nearby Sites

One nearby property was listed in databases searched by EDR: Town of Griswold was listed as an Enforcement, CT Manifest, and NPDES site. This property is located approximately 0.25 mile to the west of the subject property.

- **CT Manifest:** The Connecticut Manifest database listing for this property indicates that in 2000, the onsite facility generated waste that was transported, treated, stored, and disposed of offsite by a separate entity. In three separate occurrences, 197 gallons of "flammable liquid toxic, not otherwise specified" waste, 93 gallons of "flammable liquid, not otherwise specified" waste, and 187 gallons of "corrosive liquid, not otherwise specified" waste were generated onsite and disposed.
- **NPDES:** The National Pollutant Discharge Elimination System (NPDES) database listing for this property indicates that the onsite facility held a permit for from September 2000 to October 2002, and holds an active permit for "stormwater industrial activities" for October 2011 to September 2016.
- **Enforcement:** The Enforcement database listing for this property indicates that the Bureau of Waste Management carried out "enforcement actions" in September and December 2000 and in June 2004. The December action included a \$400 penalty to the onsite facility. No additional information was provided in the EDR report.

These listings are not indicative of a release; however, they do indicate that the onsite facility is a hazardous waste generator. According to the Town of Griswold Public Works Department website, the property is the Griswold Public Works garage, which accepts "normal" household bulky waste including appliances, recyclables, green waste, electronics, batteries, and other designated hazardous materials items. In addition, the facility does not accept municipal solid waste, auto parts containing fluids, business or industrial waste, or recyclables mixed with garbage



for disposal. Based on the anticipated direction of groundwater flow (south to southeast, crossgradient to the subject property) and distance to the subject property (approximately 0.25 mile), the Town of Griswold site is not expected to adversely impact the subject property.

Up-gradient Release Sites

No up-gradient listed sites were reported by EDR.

KNOWN OR SUSPECT CONTAMINATED RELEASE SITES WITH POTENTIAL VAPOR MIGRATION

The EDR report was reviewed to identify nearby known or suspect contaminated sites that have the potential for contaminated vapor originating from the nearby site to be migrating beneath the subject property. Based on the *ASTM E 2600-10, Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions*, the following minimum search distances were initially used to determine if contaminated soil vapors from a nearby known or suspect contaminated site have the potential to be migrating beneath the subject property:

- 1/10 mile (528 feet) for petroleum hydrocarbons
- 1/3 mile (1,760 feet) for other contaminants of concern (COCs)

If up-gradient known or suspect contaminated sites are located within the above referenced distances from the subject property, online resources are reviewed to determine the extent of the contaminated plume at those sites. The following describes search distances for contaminated plumes of petroleum hydrocarbons and other COCs.

Petroleum Hydrocarbons

Based on our review of the EDR report information as indicated above, there are no adjacent or up-gradient known or suspect petroleum hydrocarbon impacted soil or groundwater plumes located within 30 feet of the subject property.

Other COCs

Based on our review of the EDR report, there are no adjacent or up-gradient known or suspect contaminated soil or groundwater plumes located within 100 feet of the subject property.

Review of State of Connecticut Oil and Gas Sites

EDR indicated that there are no oil wells in the state of Connecticut. In addition, a review of Connecticut oil and gas fracking sites¹ indicates that no natural gas drilling sites are located within 1/4 mile of the subject property.

¹ Drilling Maps: Map of Connecticut Oil & Gas Fracking Health & Safety Issues,
<http://www.drillingmaps.com/connecticut.html#.VilePvIVhBc>



HISTORICAL USE INFORMATION ON THE PROPERTY AND THE ADJOINING PROPERTIES

The historic records review completed for this Phase I ESA includes aerial photographs, topographic maps, fire insurance maps, and city directories as detailed in the following sections. Copies of the historical resources reviewed are included in Appendix 3. Table 3 provides a summary of the historical use information available for the subject property.

Review of Historic Aerial Photographs

Aerial photographs from EDR's aerial photograph collection were obtained and reviewed.

Review of City Directory Listings

EDR was contracted to provide copies of city directory listings for the subject property. As indicated in the attached report, no records were available for the subject property.

Review of Fire Insurance Maps

EDR was contracted to provide copies of fire insurance maps for the subject property. As indicated in the attached report, fire insurance maps were not available for the subject property or adjacent properties.

Review of Historic Topographic Maps

Historic topographic maps from EDR's map collection were reviewed.

Review of Town of Griswold Building Permit Records

Because no structures have ever been constructed onsite, building permit records for the subject property were not reviewed.

Other Historic Sources

According to the Town of Griswold Tax Assessor online database, the subject property is identified as Property ID 59-118-1 and Parcel ID 4373, is owned by Frank P. Chinigo, established by co-owner Paul S. Chinigo, Executor. The subject property was last sold in December 2011 as an "improved" lot. In addition, the subject property comprises 12.9 acres of tillable land and 4.4 acres of forest/woodland.

Summary of Historic Uses

Subject Property

Based on our review of the documents listed above and summarized in Table 3 below, it appears that the majority of the subject property was cleared or tilled for agricultural purposes from approximately 1934 to 2012; however, the northeastern and western portions of the subject property appear to be undeveloped woodland. From 1934 to at least 1953, one structure was



present along the southern boundary of the subject property. The historic topographic maps depict the subject property as undeveloped, with portions of the subject property covered by woodland and a marsh, swamp, and intermittent stream located in the western corner of the subject property in 1893, 1915, 1943, 1946, 1953, 1970, and 1984. City directories were not provided by EDR for the subject property.

Table 3 - Historical Use of the Subject Property

Year	Use	Source
1240 Voluntown Road, Griswold, Connecticut		
1893	The subject property appears to be undeveloped.	Topographic Map (TM) – Moosup Quadrangle
1915	Similar to the 1893 TM.	TM – Moosup Quadrangle
1934	The majority of the subject property appears to be cleared or tilled for agricultural uses, with a small orchard on the southern portion, and one structure is present along the southern boundary of the subject property.	Aerial Photograph (AP) - USGS
1943	The subject property appears to be undeveloped; the western portion of the subject property consists of woodland.	TM – Putnam Quadrangle
1946	The subject property is depicted as undeveloped; the western corner of the subject property consists of a wooded marsh or swamp.	TM – Jewett City
1951	Similar to the 1934 AP; the orchard is no longer depicted.	AP - USGS
1953	Similar to the 1946 TM.	TM – Jewett City
1970 (photorevised 1953)	Similar to the 1953 TM.	TM – Jewett City
1970	No structures are depicted on the subject property.	AP - EDR
1974	Similar to the 1970 AP.	AP - EDR
1984	The subject property appears to be undeveloped; the eastern portion of the subject property consists of woodland; an intermittent stream traverses the western corner of the subject property.	TM – Jewett City
1986	Similar to the 1974 AP.	AP - USGS
1990	A portion of the previously cleared or tilled land near the center of the subject property appears to contain a stream.	AP - EDR
1991	Similar to the 1990 AP.	AP – USGS/DOQQ
1996	Portions of the subject property along the southern boundary appear to be fallow agricultural fields.	AP – USGS/DOQQ
2005	The previously cleared or tilled areas on the subject property appear to be fallow agricultural fields.	AP - EDR
2006	Similar to the 2005 AP.	AP – USDA/NAIP
2008	Similar to the 2006 AP.	AP – USDA/NAIP
2010	Similar to the 2008 AP.	AP – USDA/NAIP



Year	Use	Source
2012	Similar to the 2008 AP.	AP – USDA/NAIP

Northern Adjacent Properties

Based on our review of the documents listed above, it appears that the northern adjacent properties were used for agricultural purposes from 1934 to at least 1974; by 1986, the agricultural fields appear to be fallow, and one residence is present adjacent to the north of Culver Road. From 1990 to 2006, a residence and a barn were present on the northern adjacent properties. By 2008, five residences and a barn were present on the northwestern adjacent properties; by 2010, the properties resembled their present-day configurations. The historic topographic maps reviewed depict the northern adjacent properties as undeveloped woodland in 1893, 1915, and 1943; and as vacant land in 1946, 1953, and 1970. One building is depicted adjacent to the northwest of the subject property, and Culver Road is depicted adjacent to the north of the subject property in 1984. City directories were not provided by EDR for the northern adjacent properties.

Eastern Adjacent Properties

Based on our review of the documents listed above, it appears that the eastern adjacent properties across Hopeville Road were undeveloped woodland from 1934 to 1951, developed with one building from 1970 to at least 1971, and developed with three buildings from 1986 to 2012. The eastern adjacent properties resembled their present-day configurations from approximately 1996 to 2012. The historic topographic maps reviewed depict the properties east of Hopeville Road as undeveloped woodland in 1893, 1915, 1943, 1946, 1953, and 1970; one building is depicted adjacent to the east of Hopeville Road in 1984. City directories were not provided by EDR for the eastern adjacent properties.

Southern Adjacent Properties

Based on our review of the documents listed above, it appears that the southern adjacent properties were used for agricultural and residential purposes from 1934 to 2012. Four structures and agricultural fields are present on the southern adjacent properties from 1934 to 1951. By 1970, Voluntown Road appears to be shifted to its current configuration, present-day Chinigo Road was established, and three residences, another structure and a greenhouse appear to be present on the southern adjacent properties. From 1974 to 1991, the southern adjacent properties appear to be developed with three residences, a greenhouse, and agricultural fields. By 1996, the agricultural fields appear to be fallow. From 2005 to 2012, the southern adjacent properties resemble their present-day configurations. The historic topographic maps reviewed depict the properties adjacent to the south of Voluntown Road as developed with one building in 1893 and 1915, vacant in 1943, developed with two buildings in 1946, and developed with three buildings in 1953, 1970, and 1984. Chinigo Road is depicted in the 1970 and 1984 historic topographic maps. City directories were not provided by EDR for the adjacent property.

Western Adjacent Properties (1202 Voluntown Rd)

Based on our review of the documents listed above, it appears that the western adjacent properties were undeveloped woodland and riparian areas from 1934 to at least 1951; from 1970 to 1986, one residence was present on the northwestern adjacent properties, and from 1986 to 2012 a residence and a barn were present on the northwestern adjacent properties. By 2010, the



western adjacent properties resembled their present-day configurations. The historic topographic maps reviewed depict the western adjacent properties as undeveloped woodland in 1893, 1915, 1943, 1946, and 1953; one building is depicted in 1970 and 1984. City directories provided by EDR for the western adjacent properties indicate that 1202 Voluntown Road was occupied by residents in 1999, 2008, and 2013.

Gaps in Historical Sources

Several gaps of greater than 5 years were identified in the historical records reviewed, from 1893 to 1915, from 1915 to 1934, from 1934 to 1943, from 1953 to 1970, from 1974 to 1984, and from 1996 to 2005. These gaps are considered insignificant because the subject property use appears to be similar prior to and following the gaps.

INTERVIEWS

Rincon Consultants performed interviews regarding the subject property and surrounding areas. The purpose of the interview was to discuss current and historical subject property conditions and to obtain information indicating the presence of recognized environmental conditions in connection with the property.

INTERVIEW WITH OWNER

An interview questionnaire was provided to the property owner, Paul F. Chinigo, Executor of the Estate of Frank Chinigo. Although Mr. Chinigo is not the current owner of the subject property, he owned the subject property from approximately 1960 to October 2015. A copy of the completed questionnaire is included in Appendix 1. The following information is based on information obtained during our review of the completed questionnaire.

The property owner indicated the following:

- The subject property was formerly a farm and is currently raw land.
- The northern adjacent property is currently developed with residential homes.
- The eastern adjacent property was formerly and is currently a state-owned forest.
- The southern adjacent property was formerly raw land and a farm and is currently developed with Connecticut Route 138 followed by raw land and a commercial strip mall.
- The western adjacent property is currently developed with raw land and residences.
- PLH, LLC bought the subject property from the Estate of Frank Chinigo in October 2015.

The property owner indicated that he is unaware of the presence of industrial drums, storage tanks (above or below ground), fill dirt, vent pipes, fill pipes, access ways, pits, ponds, lagoons, sumps, clarifiers, solvent degreasers, stained surfaces, stained soil, hazardous materials or hazardous wastes on the site.

The property owner indicated that pesticides/fertilizers were used on the subject property during its use as a farm.



The property owner indicated he is unaware of the presence of industrial drums, storage tanks (above or below ground), fill dirt, pits, ponds, lagoons, sumps, clarifiers, solvent degreasers, stained soil, hazardous materials or hazardous wastes on the site.

The property owner indicated that he is not aware of any pending, threatened, or past litigation or administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property. In addition, he is not aware of any notice from any government entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

INTERVIEW WITH SITE MANAGER

A site manager for the subject property was not identified during the completion of this Phase I ESA.

INTERVIEWS WITH OCCUPANTS

Because the subject property is undeveloped woodland, no occupants were interviewed as part of this research effort.

INTERVIEWS WITH LOCAL GOVERNMENT OFFICIALS

No local government officials were interviewed during the completion of this Phase I ESA.

INTERVIEWS WITH OTHERS

Rincon did not attempt to interview neighboring property owners or others as part of this research effort.

SITE RECONNAISSANCE

Rincon Consultants performed a reconnaissance of the subject property on October 21, 2015. The purpose of the reconnaissance was to observe existing subject property conditions and to obtain information indicating the presence of recognized environmental conditions in connection with the property.

METHODOLOGY AND LIMITING CONDITIONS

The site reconnaissance was conducted by 1) observing the subject property from public thoroughfares and 2) observing the adjacent properties from public thoroughfares.

The majority of the subject property was inaccessible due to dense vegetation. The subject property was viewed from Culver Road, Hopeville Road and Voluntown Road.



CURRENT USE OF THE PROPERTY AND ADJACENT PROPERTIES

The subject property is currently vacant, undeveloped woodland and some cleared undeveloped areas. Adjacent properties include single-family residences, a dilapidated greenhouse, barns and undeveloped woodland. In addition, a possible logging business is located adjacent to the east, as piles of logs were observed.

PAST USE OF THE PROPERTY AND ADJACENT PROPERTIES

Based on our site reconnaissance, past uses at the subject property and adjacent properties are not readily apparent.

CURRENT OR PAST USES IN THE SURROUNDING AREAS

The subject property is surrounded by residential, vacant/undeveloped, and possible commercial land uses as detailed in the Site Description section of this report. Past uses of the surrounding area are not readily apparent based on the site reconnaissance.

GEOLOGIC, HYDROGEOLOGIC, HYDROLOGIC AND TOPOGRAPHIC CONDITIONS

Geologic, hydrogeologic, hydrologic and topographic information are as previously stated in the Physical Settings Section of this report.

GENERAL DESCRIPTION OF STRUCTURES

The subject property is vacant, undeveloped woodland and some cleared undeveloped areas. There are no onsite structures.

INTERIOR AND EXTERIOR OBSERVATIONS

Storage Tanks

During the site reconnaissance, above-ground storage tanks or evidence of underground storage tanks were not observed.

Drums

No drums were observed on the subject property during the site reconnaissance.

Hazardous Substances and Petroleum Products

No hazardous substances or petroleum products were identified at the subject property.

Unidentified Substance Containers

Unidentified substance containers or unidentified containers that might contain hazardous substances were not observed during the site reconnaissance.

Odors

During the site reconnaissance, Rincon did not identify any strong, pungent, or noxious odors.

Pools of Liquid

During the site reconnaissance, Rincon did not identify any pools of liquid including standing surface water. In addition, sumps containing liquids likely to be hazardous substances or petroleum products were not observed.

Indications of Polychlorinated Biphenyls (PCBs)

No indications of PCBs were observed on the subject property.

Other Conditions of Concern

During the site reconnaissance Rincon did not note any of the following:

- stains or corrosion
- clarifiers and sumps
- degreasers/parts washers
- pits, ponds, and lagoons
- stained soil or stained pavement
- stressed vegetation
- solid waste/debris
- waste water
- wells
- septic systems/effluent disposal system

EVALUATION

FINDINGS

Known or suspect environmental conditions associated with the property include the following:

- Former agricultural use of the subject property
- Former structure located on the subject property
- Possible logging business located on the eastern adjacent property



OPINIONS

- A. *Former agricultural use of the subject property* – Based on our review of historical sources, it appears that the majority of the subject property was cleared or tilled for agricultural purposes from approximately 1934 to 2012, and a small orchard appears to be located in the southern portion of the subject property in the 1934 aerial photograph. The northeastern and western portions of the subject property appear to be undeveloped woodland from approximately 1934 to 2012. Information obtained during our review of the owner questionnaire indicates that pesticides were formerly used on the subject property in connection with the onsite farm. Therefore, there is a potential for OCP-impacted soil to be located on the subject property and the former agricultural use of the subject property is considered a *suspect environmental condition*.
- B. *Former structure located on the subject property* – Based on our review of historical sources, it appears that one structure was present along the southern boundary of the subject property from 1934 to at least 1953. Because Voluntown Road was constructed in its previous location and the subject property has since become overgrown with dense woodland, the former structure located on the subject property is considered a *de minimis condition*.
- C. *Possible logging business located on the eastern adjacent property* – During the site reconnaissance, piles of logs were observed on the eastern adjacent property, across Hopeville Road, indicating that a logging business may be located on the property. Because of the lack of reported releases of hazardous materials due to potential logging operations on the property, the possible logging business located on the eastern adjacent property is considered a *de minimis condition*.

CONCLUSIONS & RECOMMENDATIONS

Rincon has performed a Phase I ESA in general conformance with the scope and limitations of ASTM E 1527-13 for the property located at 1240 Voluntown Road, Griswold, Connecticut. This assessment has revealed evidence of one suspect environmental condition in connection with the subject property. Based on information obtained during our review of the completed owner questionnaire, there is a potential for soil impacted by organochlorine pesticides (OCPs) to be located on the subject property. In order to confirm or deny the presence of OCP-impacted soil on the subject property, Rincon recommends conducting soil sampling in the areas formerly used for agricultural purposes.

DEVIATIONS

Deviations from ASTM Practice were encountered during the completion of this Phase I ESA. A lien search and chain of title review were not completed as part of this assessment.



REFERENCES

The following published reference materials were used in preparation of this Phase I ESA:

Environmental database: Environmental Data Resources (EDR) report dated October 9, 2015.

Geology: Connecticut Department of Environmental Protection, State Geological and Natural History Survey of Connecticut, and Michael Bell, *Bulletin 110, The Face of Connecticut: People, Geology, and the Land*, 1985:

http://www.tmsc.org/face_of_ct/index.html; USGS Mineral Resources Online Spatial Data database, <https://mrdata.usgs.gov/geology/state/state.php?state=CT>; United States Department of Agriculture (USDA), National Resources Conservation Service (NRCS), *Web Soil Survey* (WSS): <http://websoilsurvey.nrcs.usda.gov/app/>.

Groundwater: USGS Mineral Resources Online Spatial Data database, <https://mrdata.usgs.gov/geology/state/state.php?state=CT>; USGS Groundwater Watch Long-Term Groundwater Data Network, <http://groundwaterwatch.usgs.gov/Net/OGWNetworkLTN.asp?ncd=ltn&a=1&d=1>.

Topography: USGS topographic map (1984, Jewett City Quadrangle).

Oil and gas records: Drilling Maps: Map of Connecticut Oil & Gas Fracking Health & Safety Issues, <http://www.drillingmaps.com/connecticut.html#.VilePvlVhBc>; EDR Report dated October 9, 2015.

Aerial photographs: Photos provided by EDR.

Fire insurance maps: Maps provided by EDR.

City directory listings: Listings provided by EDR.

Historic topographic maps: Maps provided by EDR.

Parcel data: Southeastern Connecticut Council of Governments online GIS Map Viewer, <http://www.mapgeo.com/SCCOGCT/>.

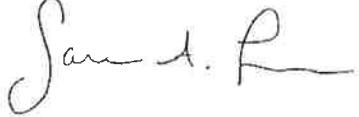
SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

The qualified environmental professionals that are responsible for preparing the report include Walt Hamann and Sarah A. Larese. Their qualifications are summarized in the following section.

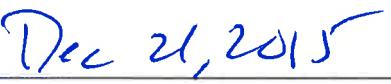
"We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in 312.10 of 40 CFR 312. We have the specific qualifications based on education, training and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312."


Signature

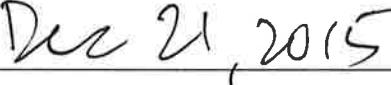
Walt Hamann, PG, CEG, CHG
Name


Signature

Sarah A. Larese
Name


Date

Vice President
Title


Date

Senior Environmental Scientist
Title



QUALIFICATIONS OF ENVIRONMENTAL CONSULTANTS

The environmental consultants responsible for conducting this Phase I ESA and preparing the report include Walt Hamann, Sarah A. Larese, Lauren Kodama Roenicke, and Savanna Vrevich. Their qualifications are summarized below.

Environmental Professional Qualifications	X2.1.1 (2) (i) - Professional Engineer or Professional Geologist License or Registration, and 3 years of full-time relevant experience	X2.1.1 (2) (ii) - Licensed or certified by the Federal Government, State, Tribe, or U.S. Territory to perform environmental inquiries	X2.1.1 (2) (iii) – Baccalaureate or Higher Degree from and accredited institution of higher education in a discipline of engineering or science and the equivalent of 5 years of full-time relevant experience	X2.1.1 (2) (iii) – Equivalent of 10 years of full-time relevant experience
Walt Hamann	PG, CHG, CEG		MS Geology	30 years
Sarah A. Larese			BA Environmental Studies	16 years
Lauren Kodama Roenicke			BS Environmental Studies	3 years
Savanna Vrevich			BS Environmental Studies	1 year

Walt Hamann, PG, CEG, CHG, is a Principal and Senior Geologist with Rincon Consultants. He holds a Bachelor of Arts degree in geology from the University of California, Santa Barbara and a Master of Science degree in geology from the University of California, Los Angeles. He has over 30 years of experience conducting assessment and remediation projects and has prepared or overseen the preparation of hundreds of Phase I and Phase II Environmental Site Assessments throughout California. Mr. Hamann is a Professional Geologist (#4742), Certified Engineering Geologist (#1635), and Certified Hydrogeologist (#208) with the State of California.

Sarah A. Larese is a Senior Environmental Scientist with Rincon Consultants. She holds a Bachelor of Science degree in environmental studies from the University of California, Santa Barbara, California. Ms. Larese has experience in development, implementation and project management of environmental assessment and remediation projects, especially relating to underground storage tanks. Ms. Larese's responsibilities at Rincon include implementation of Phase I and II Environmental Site Assessments as well as conducting site remediation field activities and preparation of environmental reports. She has 16 years of experience conducting research, assessment and remediation projects.

Lauren G. Kodama Roenicke is an Environmental Scientist with Rincon Consultants. She holds a Bachelor of Science degree in Environmental Studies with an outside concentration of Ecology, Evolution, and Marine Biology from the University of California, Santa Barbara. Ms. Kodama has experience working on Phase I Environmental Site Assessments for a variety of commercial, rural, and industrial properties. In addition, Ms. Kodama has been involved in working on large scale, multi-site projects. Ms. Kodama's responsibilities at Rincon include implementation of Phase I and Phase II Environmental Site Assessment Reports.



Savanna Vrevich is an Environmental Scientist with Rincon Consultants. She holds a Bachelor of Science degree in Environmental Studies with an outside concentration of Ecology, Evolution, and Marine Biology from the University of California, Santa Barbara. Ms. Vrevich's responsibilities at Rincon include implementation of Phase I Environmental Site Assessment Reports.





Imagery provided by National Geographic Society, ESRI and its licensors © 2015. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.

0 1,000 2,000
Scale in Feet



Vicinity Map

Figure 1



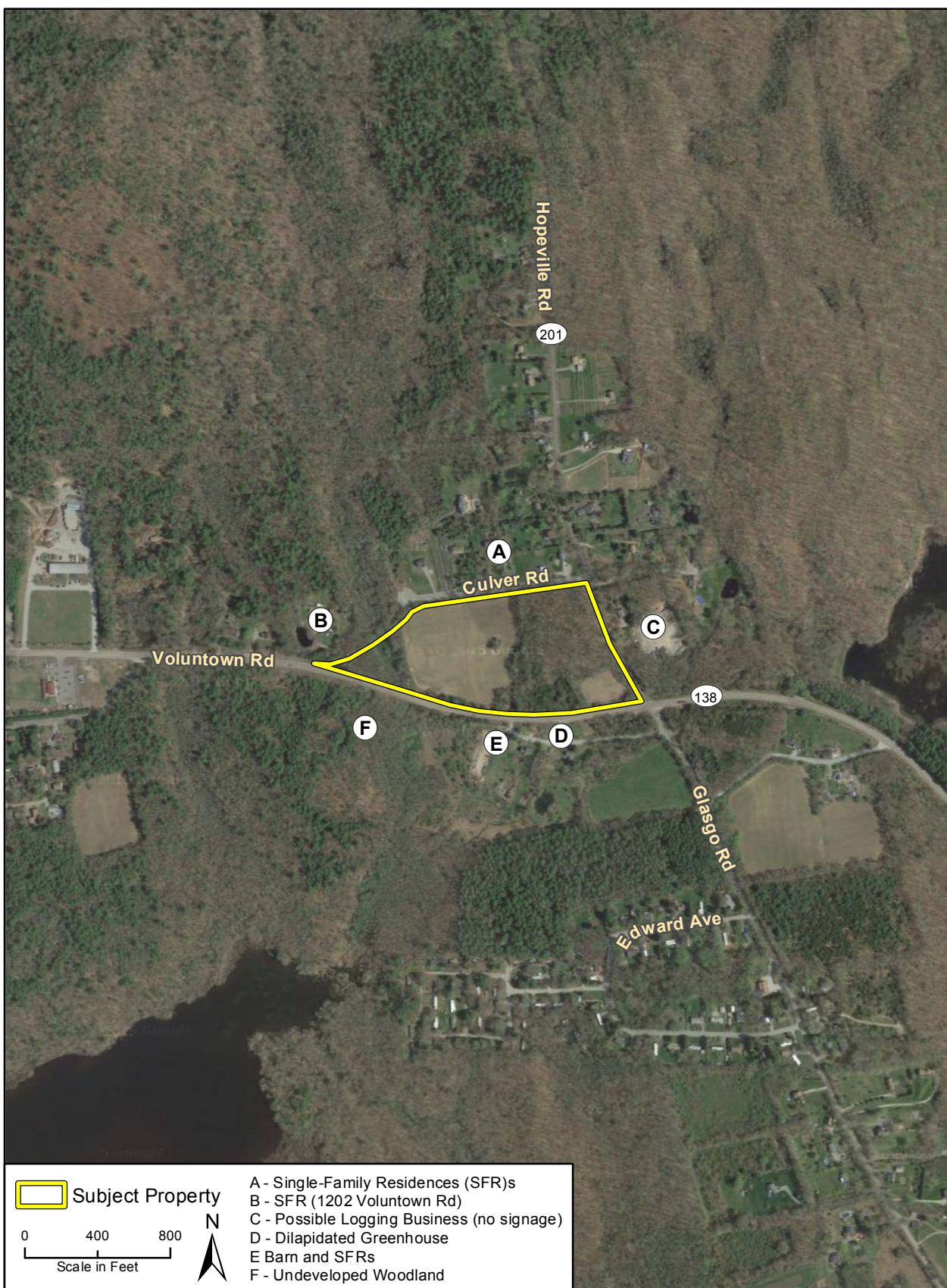


Imagery provided by Google and its licensors © 2015.

Site Map

Figure 2

Rincon Consultants, Inc.



Imagery provided by Google and its licensors © 2015.

Adjacent Land Use Map

Figure 3

Rincon Consultants, Inc.



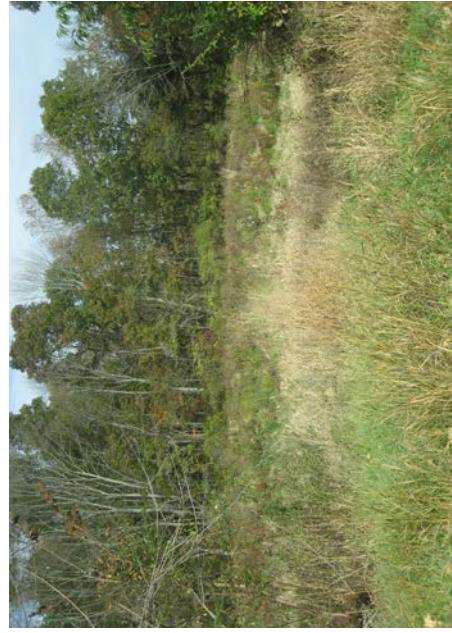
Photograph 1: View of woodlands at the northern portion of the subject property.



Photograph 2: View of the formerly cleared field at the subject property, facing south.



Photograph 3: View of woodlands at the subject property.



Photograph 4: View a formerly cleared field at the southeastern portion of the subject property.



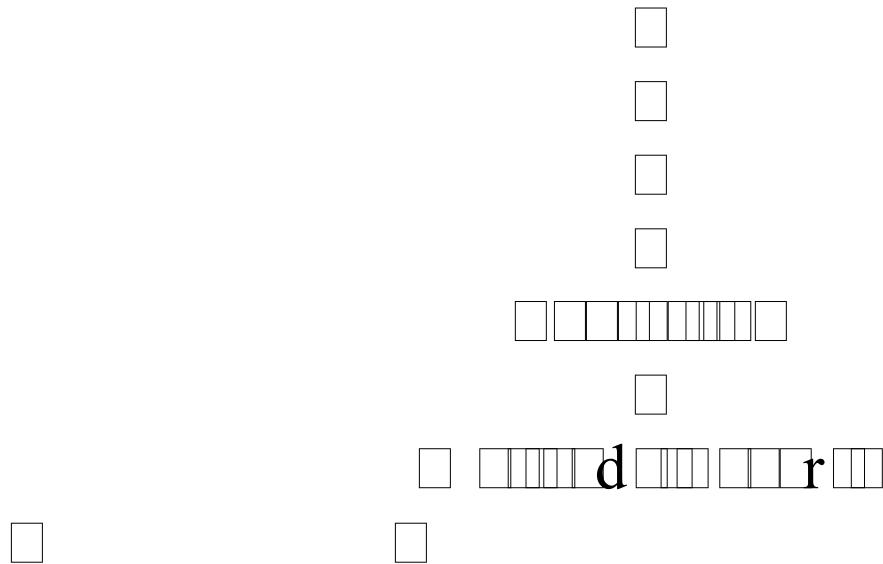
Photograph 5: View of a residence and dilapidated greenhouse adjacent to the south of the subject property, facing south.



Photograph 6: View of Culver Road and residences adjacent to the north of the subject property, facing west.

Site Photographs

Figure 4
Rincon Consultants, Inc.



HIGHLAND SOILS, LLC

February 2, 2016

Steve Broyer
Ecos Energy
222 S 9th St., Suite 1600
Minneapolis, MN 55402

**RE: VOLUNTOWN ROAD SOLAR
1219 & 1240 VOLUNTOWN ROAD
GRISWOLD, CT**

Dear Steve:

The inland wetland boundaries on the above-referenced properties were field delineated in July and August 2015. The wetlands were field delineated in accordance with the standards of the National Cooperative Soil Survey and the definition of wetlands as found in the Connecticut General Statutes, Chapter 440, Section 22A-38. I have reviewed the plans prepared by your office and have found the representation of the field delineated wetlands to be substantially correct.

I am currently out of the State and will submit a more detailed report once I am able to revisit the site and collect more site specific detailed information.

If you have any questions, or require additional information, please call me at (860) 742-5868.

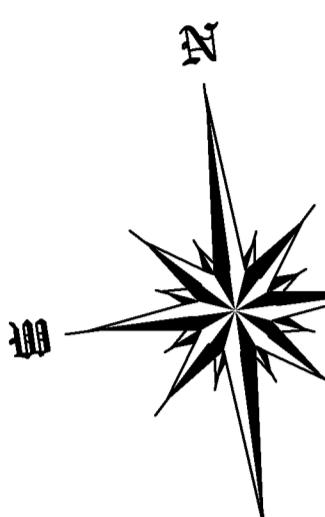
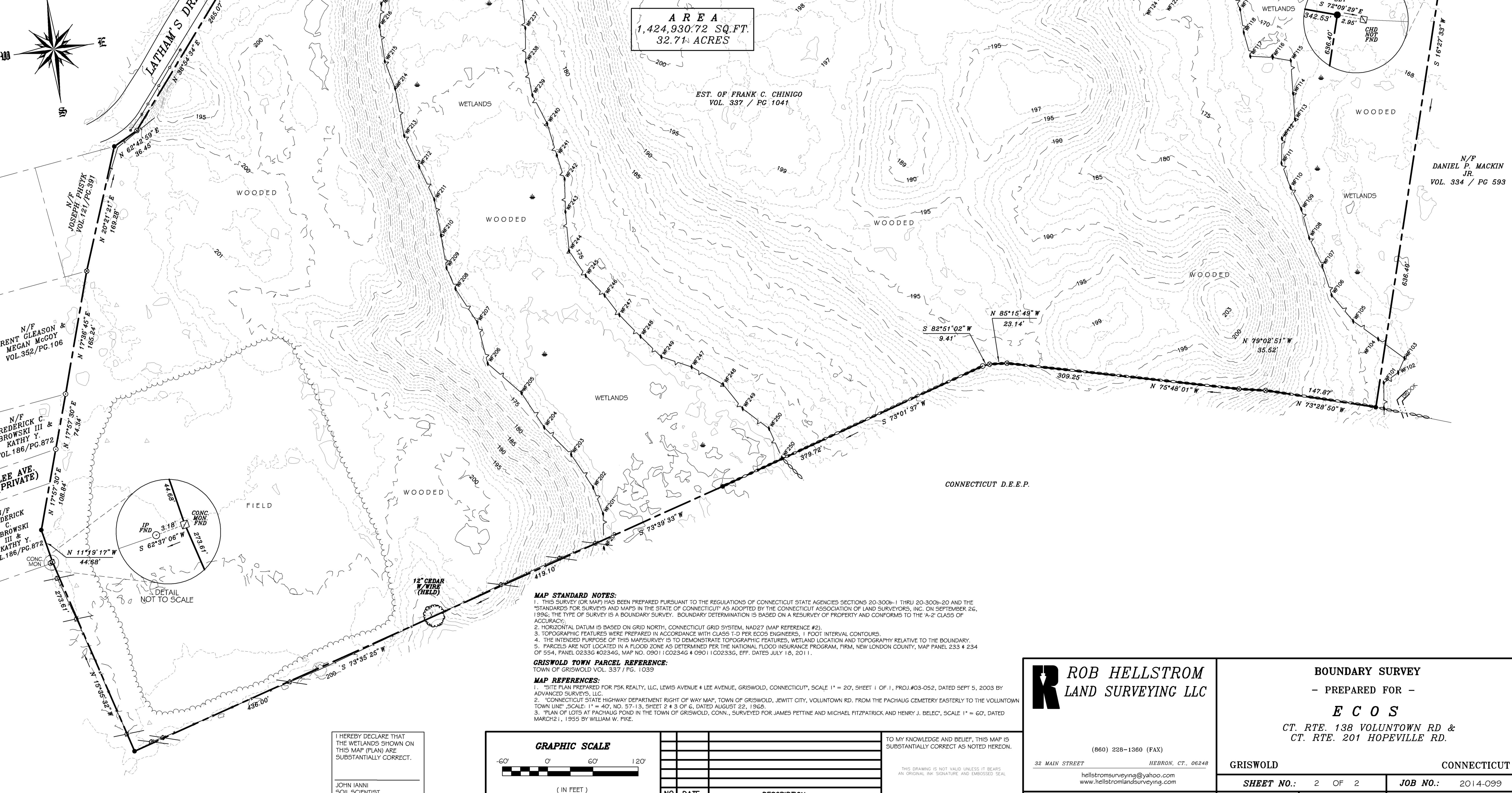
Very truly yours,

John P. Ianni

John P. Ianni, M.S.
Professional Soil Scientist
CPESC

LEGEND

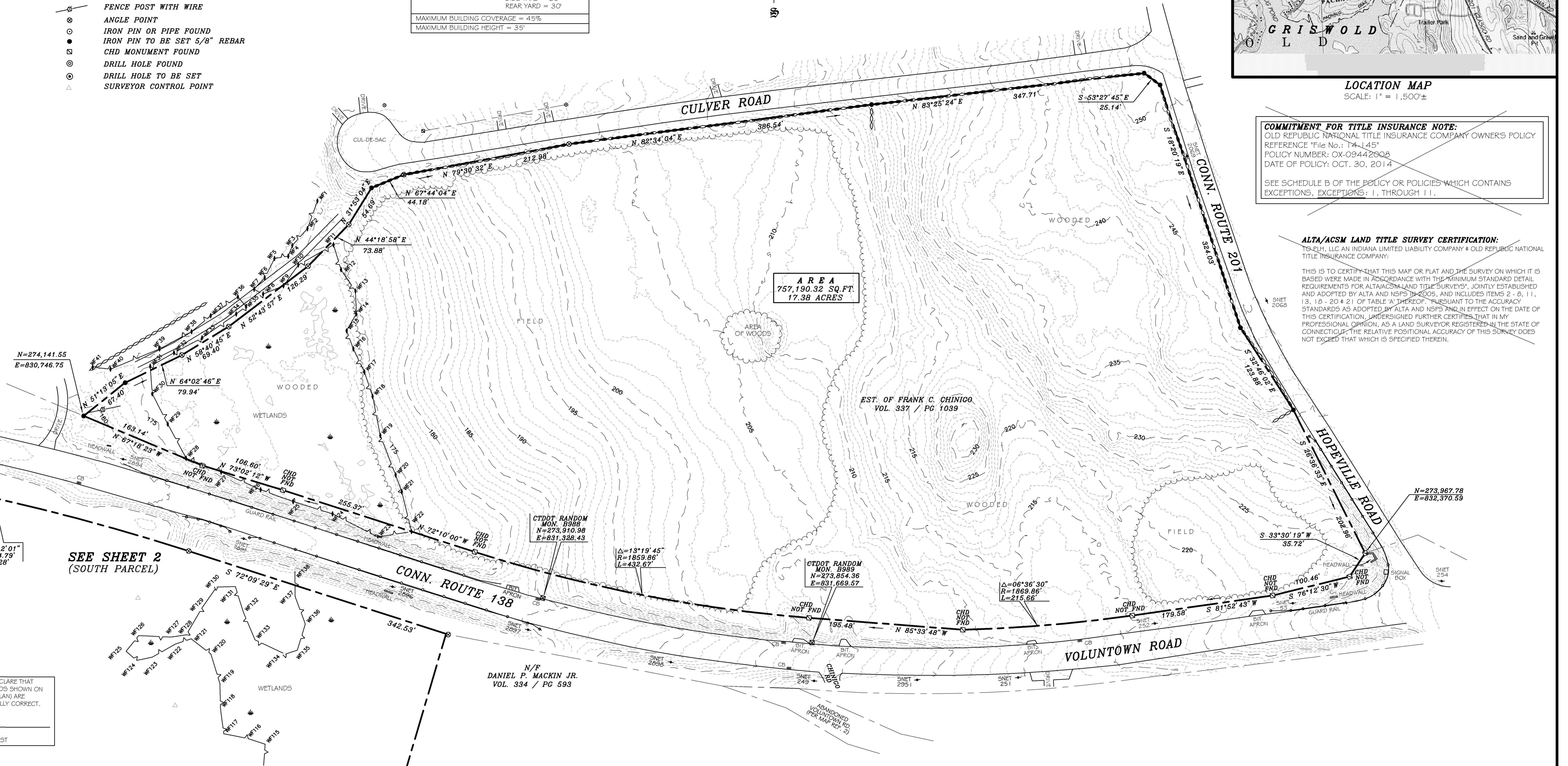
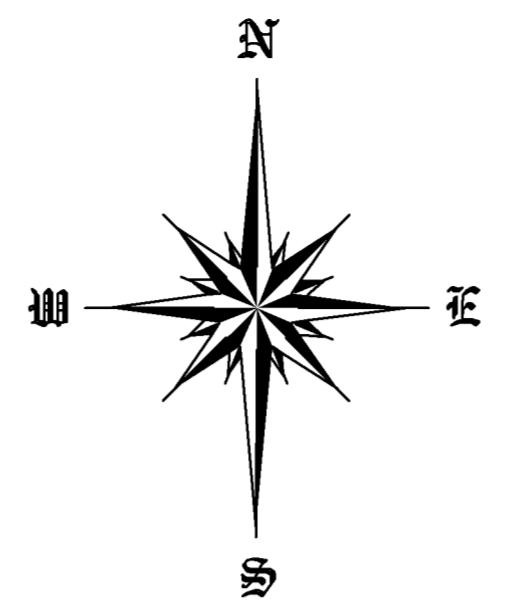
PROPERTY LINE
 STONE WALL
 WIRE FENCE
 EDGE BRUSH OR CLEARING
 GUARDRAIL
 BOX WIRE FENCE
 FENCE POST WITH WIRE or WIRE ON GROUND
 ANGLE POINT
 IRON PIN OR PIPE FOUND
 IRON PIN TO BE SET 5/8" REBAR
 CHD MONUMENT FOUND
 DRILL HOLE FOUND
 DRILL HOLE TO BE SET
 SURVEYOR CONTROL POINT
 TREE WITH WIRE AS MARKED


CONN. ROUTE 138
**SEE SHEET 1
(NORTH PARCEL)**


LEGEND

- PROPERTY LINE
- STONE WALL
- WIRE FENCE
- EDGE BRUSH OR CLEARING
- GUARDRAIL
- BOX WIRE FENCE
- FENCE POST WITH WIRE
- ANGLE POINT
- IRON PIN OR PIPE FOUND
- IRON PIN TO BE SET 5/8" REBAR
- CHD MONUMENT FOUND
- DRILL HOLE FOUND
- DRILL HOLE TO BE SET
- SURVEYOR CONTROL POINT

ZONING TABLE TOWN OF GRISWOLD	
ZONE 'C1' - VILLAGE COMMERCIAL DISTRICTS	
MIN. LOT AREA = 40,000 SQ.FT.	
MIN. STREET FRONTAGE = 150'	
BUILDING SETBACKS: FRONT YARD = 40' SIDE YARD = 30' REAR YARD = 30'	
MAXIMUM BUILDING COVERAGE = 45%	
MAXIMUM BUILDING HEIGHT = 35'	



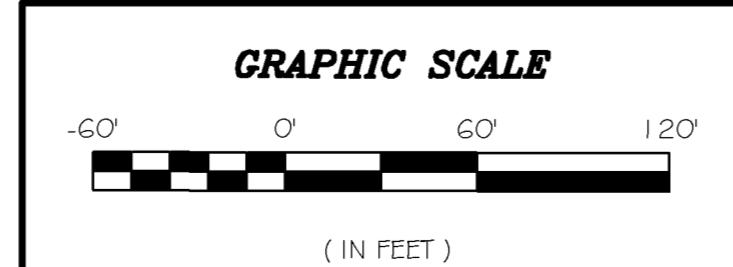
I HEREBY DECLARE THAT
THE WETLANDS SHOWN ON
THIS MAP (PLAN) ARE
SUBSTANTIALLY CORRECT.

JOHN IANNI
SOIL SCIENTIST

MAP STANDARD NOTES:
1. THE SURVEY (MAP) HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300B-1 THRU 20-300B-20 AND THE
"STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26,
1996; THE TYPE OF SURVEY IS A BOUNDARY SURVEY. BOUNDARY DETERMINATION IS BASED ON A RESURVEY OF PROPERTY AND CONFORMS TO THE A-2 CLASS OF
ACCURACY.
2. HORIZONTAL DATUM IS BASED ON GRID NORTH, CONNECTICUT GRID SYSTEM, NAD27 (MAP REFERENCE #2).
3. TOPOGRAPHIC FEATURES WERE PREPARED IN ACCORDANCE WITH CLASS T-D FOR ECOS ENGINEERS, 1 FOOT INTERVAL CONTOURS.
4. THE INTENDED PURPOSE OF THIS MAP/SURVEY IS TO DEMONSTRATE TOPOGRAPHIC FEATURES, WETLAND LOCATION AND TOPOGRAPHY RELATIVE TO THE BOUNDARY.
5. PARCELS ARE NOT LOCATED IN A FLOOD ZONE AS DETERMINED PER THE NATIONAL FLOOD INSURANCE PROGRAM, FIRM, NEW LONDON COUNTY, MAP PANEL 233 # 234
OF 554, FANCI 0233G 0234G, MAP NO. 09011C0234G # 09011C0233G, EFF. DATE JULY 18, 2011.

GRISWOLD TOWN PARCEL REFERENCE:
TOWN OF GRISWOLD VOL. 337 / PG. 1039

MAP REFERENCES:
1. SITE PLAN PREPARED FOR PSK REALTY, LLC, LEWIS AVENUE & LEE AVENUE, GRISWOLD, CONNECTICUT, SCALE 1" = 20', SHEET 1 OF 1, PROJ.#03-052, DATED SEPT 5, 2003 BY
ADVANCED SURVEYS, LLC.
2. CONNECTICUT STATE HIGHWAY DEPARTMENT RIGHT OF WAY MAP, TOWN OF GRISWOLD, JEWITT CITY, VOLUNTOWN RD. FROM THE PACHAUG CEMETERY EASTERLY TO THE VOLUNTOWN
TOWN LINE, SCALE 1" = 40', NO. 57-13, SHEET 2 & 3 OF 6, DATED AUGUST 22, 1968.
3. PLAN OF LOTS AT PACHAUG FOND IN THE TOWN OF GRISWOLD, CONN., SURVEYED FOR JAMES PETTINE AND MICHAEL FITZPATRICK AND HENRY J. BELEC, SCALE 1" = 60', DATED
MARCH 21, 1955 BY WILLIAM W. PIKE.



NO.	DATE	DESCRIPTION	REVISIONS
ROBERT W. HELLSTROM, L.S. #13626			

**ROB HELLSTROM
LAND SURVEYING LLC**
Mailing Address:
P.O. BOX 497
COLUMBIA, CT. 06237-0497
(860) 228-9853
(860) 228-1360 (FAX)

32 MAIN STREET HEBRON, CT. 06248

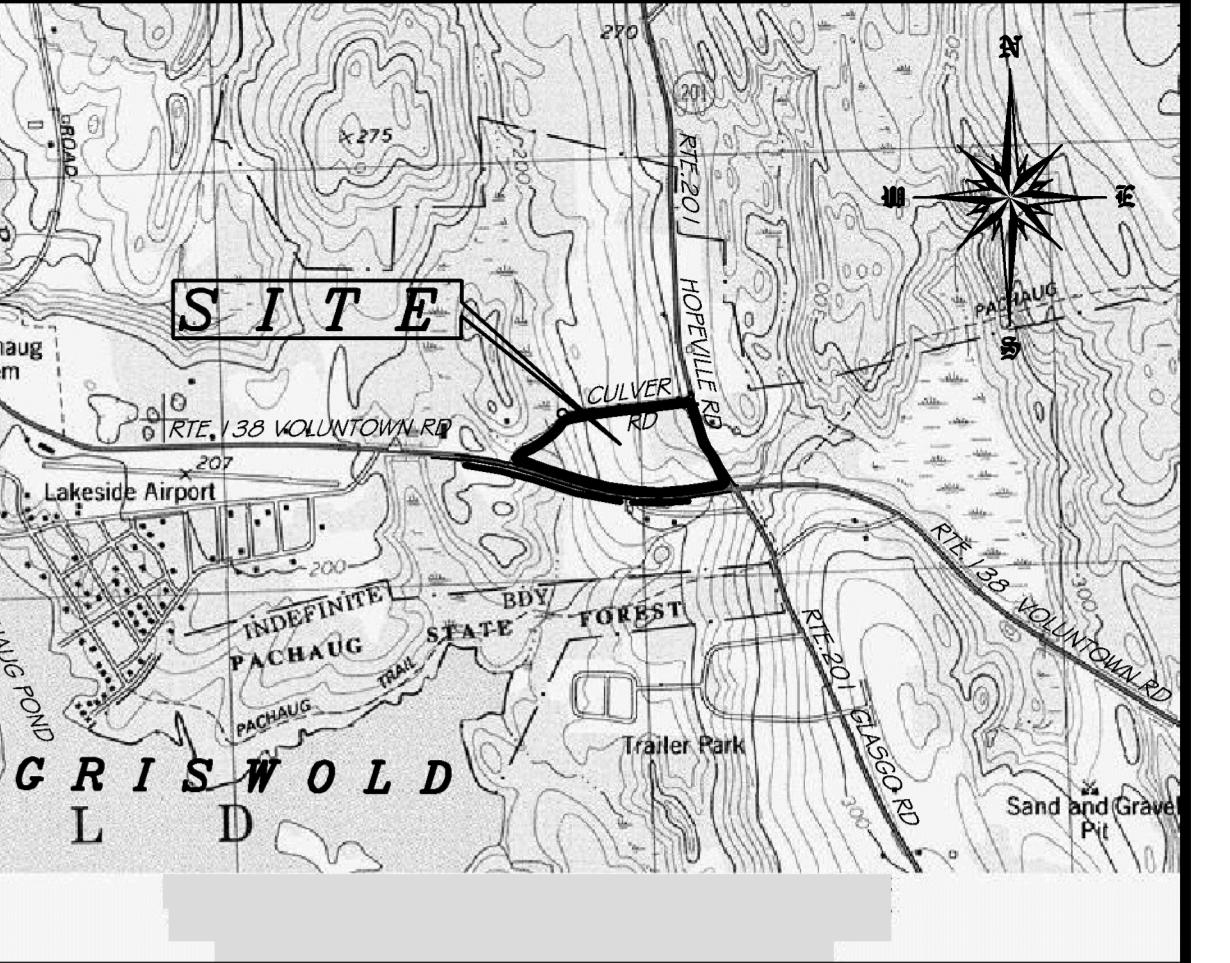
hellstromsurveyl@yahoo.com
www.hellstromlandsurveying.com

DATE: SEPTEMBER 3, 2015

BY: ROBIN H.

SCALE: 1" = 60'

FILE NO.: EC15067 NORTH



LOCATION MAP
SCALE: 1" = 1,500±

COMMITMENT FOR TITLE INSURANCE NOTE:
OLD REPUBLIC NATIONAL TITLE INSURANCE COMPANY OWNER'S POLICY
REFERENCE "File No.: T4-145"
POLICY NUMBER: OX-094420Q8
DATE OF POLICY: OCT. 30, 2014
SEE SCHEDULE B OF THE POLICY OR POLICIES WHICH CONTAINS
EXCEPTIONS, EXCEPTIONS: I. THROUGH III.

ALTA/ACSM LAND TITLE SURVEY CERTIFICATION:
TO PLH, LLC AN INDIANA LIMITED LIABILITY COMPANY & OLD REPUBLIC NATIONAL
TITLE INSURANCE COMPANY:
THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS
BASED WERE MADE IN ACCORDANCE WITH THE MINIMUM STANDARD DETAIL
REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS*, JOINTLY ESTABLISHED
AND ADOPTED BY ALTA AND NSPS IN 2005, AND INCLUDES ITEMS 2 - 8, 11,
13, 18 - 20 & 21 OF TABLE 'A' THEREOF. PURSUANT TO THE ACCURACY
STANDARDS AS ADOPTED BY ALTA AND NSPS AND IN EFFECT ON THE DATE OF
THIS CERTIFICATION, UNDERSIGNED FURTHER CERTIFIES THAT IN MY
PROFESSIONAL OPINION, AS A LAND SURVEYOR REGISTERED IN THE STATE OF
CONNECTICUT, THE RELATIVE POSITIONAL ACCURACY OF THIS SURVEY DOES
NOT EXCEED THAT WHICH IS SPECIFIED THEREIN.

* THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

*** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

**** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

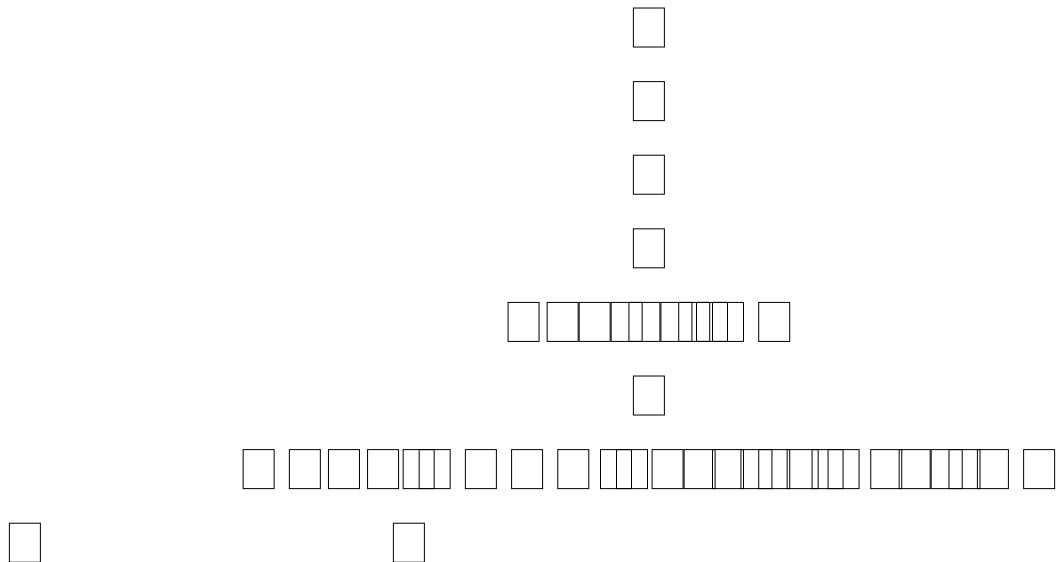
***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE ALTA/ACSM LAND TITLE SURVEY.

***** THE ALTA/ACSM LAND TITLE SURVEY CERTIFICATION IS PROVIDED FOR THE CONVENIENCE OF THE PARTIES AND IS NOT A SUBSTITUTION FOR THE





Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

1

□

1

1

1

—r—r—r—r—d—

三

□□□□□ r □□□□□

1

Dawn M. McKay

□ □ □ **M M** □ □

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



Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

□ □ □ □ □ □ **r** □ □ □ □ □
□
□ □ □ □ □ □ □ □ □ □ □
□ □ **d** □ □ □ **r** □ □ □ □
□ □ □ □ □ □ □ **r** □ □ □
□ □ □ □ □ □ □
M □ □ □ □ □ M □ □ □ □ □
□ □ □ □ □ □ □ □ □ □ □ **r** □ □ □ □ □

1

□

1

1

1

1

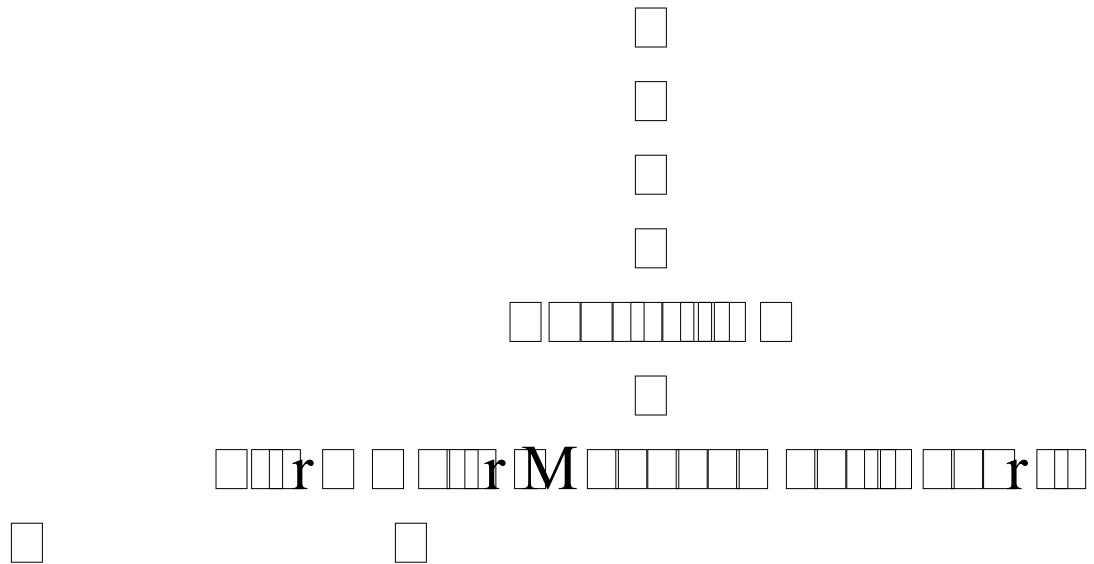
_____ **r** _____

1

Dawn M. McKay

□ □ □ **M M** □ □

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



MEMORANDUM

Date: February 26, 2016

Re: Voluntown Solar Project – Stormwater

File 0008558

To: Steve Broyer, Ecos Energy

From: Joe Fox, Water Resources Engineer

The memo summarizes stormwater modeling completed for the Voluntown Solar Project. The site is located on either side of Voluntown Road two miles west of the City of Voluntown, CT. HydroCAD modeling software was used to establish existing and proposed discharge rates from the site. Topographic data was furnished by the client.

Existing Conditions

The site is not within a FEMA flood zone. In existing conditions there is no impervious surface. The site is predominantly forested with two areas of pasture/hay field. Site soils are predominantly classified as A with smaller areas of B and C/D soils.

Proposed Conditions

The proposed design has solar panels installed in four sections – two sections on each side of Voluntown Road – for a total of 12.832 acres of panels. One gravel access road is proposed to service both solar array sections on the north side of the road. Two gravel roads allow access to the two sections on the south side of the road. Inverters and other associated electrical components are proposed for each solar array. The proposed ground cover beneath and around the panels is native grass.

In the two solar sections on the north side of Voluntown Road, storm water drains generally east to west across the project site. On the south side of the road, in the eastern-most section, storm water drains primarily to the east and also south and west. In the western section, water drains primarily east and also north and south. All runoff from the project eventually drains to Pachaug Pond, south of the site.

Modeling Results

The site was modeled in HydroCAD as three areas, using the proposed fence line as the watershed boundaries. Site conditions are shown in Table 1. Curve Numbers were calculated based on land cover and soil type.

Table 1. Site Conditions

Project Area [ac]	29.066	Area within fence
Solar Array [ac]	12.832	
Proposed Impervious Improvements [ac]	0.683	Gravel access roads and equipment pads

The discharge rates in proposed conditions are lower than or the same as, existing conditions rates. Table 2 shows the comparison. Given the slight increase in impervious due to the access roads, the planting of meadow grasses under and around the solar array helps to maintain the discharge rate in the 2-year and 10-year storms and achieves a decrease in the 100-year storm discharge (Table 2).

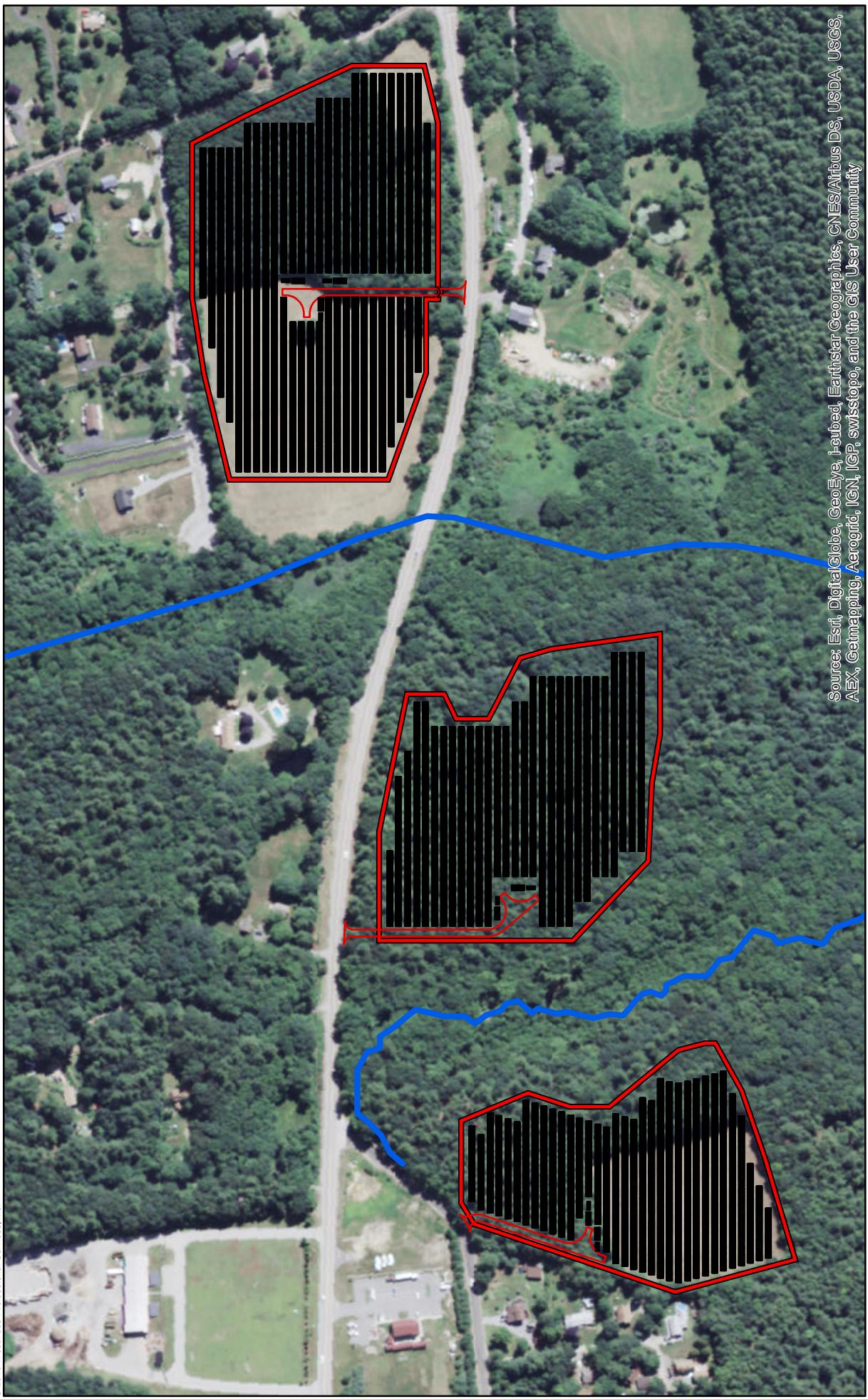
Table 2. Comparison of Discharge Rates

Event	Rainfall depth [in]	Existing [cfs]	Proposed [cfs]
2-year	3.38	2.2	2.2
10-year	5.04	10.1	10.1
100-year	7.69	27.8	27.5

Two intermittent streams flow near the project site (see attached map). In order to understand the hydrology of these streams, the StreamStats website from the USGS was used to predict peak discharge rates in the 100 year storm. In the western stream, the peak discharge is approximately 30 cfs; in the eastern stream, the peak is approximately 140 cfs. The channels are deep and wide enough to handle these flows without posing a risk to the solar arrays, access roads, or other project infrastructure.

Attachments

1. Drainage Map
2. Soil Information
3. Atlas 14 Precipitation Report



Voluntown Solar - ECOS Energy

Voluntown, Connecticut

Drainage Map

z

Feet
0 100

Streams

Solar Arra

Watershed Area - Fence Line

Westwood

Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.



NOAA Atlas 14, Volume 10, Version 2
Location name: Griswold, Connecticut, US*
Latitude: 41.5794°, Longitude: -71.9061°
Elevation: 164 ft*
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.326 (0.254-0.417)	0.395 (0.307-0.504)	0.507 (0.393-0.649)	0.600 (0.462-0.771)	0.728 (0.543-0.968)	0.827 (0.605-1.12)	0.926 (0.658-1.29)	1.05 (0.707-1.48)	1.22 (0.788-1.75)	1.34 (0.849-1.96)
10-min	0.462 (0.359-0.590)	0.560 (0.435-0.715)	0.719 (0.556-0.920)	0.850 (0.654-1.09)	1.03 (0.769-1.37)	1.17 (0.856-1.58)	1.31 (0.932-1.82)	1.49 (1.00-2.09)	1.72 (1.12-2.48)	1.90 (1.20-2.78)
15-min	0.544 (0.423-0.694)	0.658 (0.511-0.841)	0.845 (0.654-1.08)	1.00 (0.770-1.29)	1.21 (0.905-1.61)	1.38 (1.01-1.86)	1.54 (1.10-2.14)	1.75 (1.18-2.46)	2.03 (1.31-2.92)	2.24 (1.42-3.27)
30-min	0.754 (0.586-0.963)	0.913 (0.709-1.17)	1.17 (0.907-1.50)	1.39 (1.07-1.78)	1.68 (1.26-2.24)	1.91 (1.40-2.58)	2.14 (1.52-2.97)	2.43 (1.64-3.41)	2.81 (1.82-4.05)	3.10 (1.96-4.54)
60-min	0.965 (0.750-1.23)	1.17 (0.907-1.49)	1.50 (1.16-1.92)	1.77 (1.37-2.28)	2.15 (1.61-2.86)	2.45 (1.79-3.30)	2.74 (1.95-3.80)	3.11 (2.09-4.37)	3.60 (2.33-5.18)	3.97 (2.51-5.80)
2-hr	1.25 (0.981-1.59)	1.52 (1.19-1.93)	1.95 (1.52-2.48)	2.30 (1.78-2.94)	2.79 (2.10-3.69)	3.17 (2.34-4.26)	3.55 (2.54-4.92)	4.06 (2.74-5.66)	4.72 (3.07-6.76)	5.23 (3.32-7.59)
3-hr	1.46 (1.15-1.84)	1.76 (1.38-2.23)	2.26 (1.76-2.86)	2.67 (2.07-3.39)	3.23 (2.43-4.26)	3.67 (2.71-4.91)	4.10 (2.95-5.67)	4.69 (3.18-6.52)	5.47 (3.56-7.80)	6.06 (3.85-8.77)
6-hr	1.88 (1.48-2.35)	2.25 (1.78-2.83)	2.87 (2.26-3.62)	3.38 (2.65-4.28)	4.09 (3.10-5.35)	4.63 (3.44-6.17)	5.18 (3.74-7.10)	5.91 (4.02-8.17)	6.88 (4.50-9.75)	7.62 (4.86-11.0)
12-hr	2.37 (1.88-2.95)	2.83 (2.25-3.53)	3.59 (2.84-4.49)	4.22 (3.32-5.29)	5.08 (3.87-6.60)	5.75 (4.29-7.59)	6.42 (4.64-8.72)	7.29 (4.98-10.0)	8.45 (5.54-11.9)	9.32 (5.97-13.3)
24-hr	2.82 (2.25-3.49)	3.38 (2.70-4.18)	4.29 (3.41-5.33)	5.04 (3.99-6.29)	6.09 (4.66-7.85)	6.89 (5.16-9.03)	7.69 (5.60-10.4)	8.75 (6.00-11.9)	10.1 (6.67-14.2)	11.2 (7.19-15.9)
2-day	3.17 (2.56-3.90)	3.83 (3.08-4.72)	4.90 (3.93-6.05)	5.79 (4.61-7.18)	7.02 (5.41-9.01)	7.96 (6.01-10.4)	8.91 (6.53-12.0)	10.2 (7.02-13.8)	11.9 (7.86-16.5)	13.2 (8.51-18.6)
3-day	3.44 (2.78-4.22)	4.15 (3.35-5.09)	5.31 (4.27-6.52)	6.27 (5.01-7.74)	7.59 (5.87-9.71)	8.61 (6.52-11.2)	9.63 (7.08-12.9)	11.0 (7.62-14.9)	12.9 (8.55-17.9)	14.3 (9.26-20.1)
4-day	3.68 (2.98-4.50)	4.43 (3.58-5.42)	5.65 (4.55-6.92)	6.66 (5.33-8.20)	8.05 (6.24-10.3)	9.13 (6.93-11.8)	10.2 (7.52-13.7)	11.7 (8.09-15.7)	13.7 (9.07-18.9)	15.2 (9.82-21.3)
7-day	4.36 (3.55-5.29)	5.18 (4.21-6.30)	6.53 (5.29-7.97)	7.65 (6.16-9.37)	9.20 (7.16-11.7)	10.4 (7.92-13.4)	11.6 (8.56-15.4)	13.2 (9.17-17.7)	15.4 (10.3-21.2)	17.1 (11.1-23.8)
10-day	5.03 (4.11-6.10)	5.90 (4.82-7.16)	7.33 (5.96-8.91)	8.51 (6.87-10.4)	10.1 (7.91-12.8)	11.4 (8.69-14.6)	12.6 (9.35-16.7)	14.3 (9.95-19.1)	16.6 (11.0-22.6)	18.2 (11.8-25.3)
20-day	7.17 (5.89-8.63)	8.09 (6.65-9.75)	9.61 (7.86-11.6)	10.9 (8.83-13.2)	12.6 (9.86-15.7)	13.9 (10.6-17.6)	15.3 (11.2-19.8)	16.7 (11.7-22.1)	18.7 (12.5-25.4)	20.2 (13.1-27.8)
30-day	8.96 (7.40-10.7)	9.92 (8.18-11.9)	11.5 (9.44-13.8)	12.8 (10.4-15.4)	14.6 (11.4-18.0)	16.0 (12.2-20.0)	17.3 (12.7-22.2)	18.6 (13.1-24.5)	20.4 (13.7-27.5)	21.7 (14.1-29.7)
45-day	11.2 (9.27-13.4)	12.2 (10.1-14.6)	13.8 (11.4-16.6)	15.2 (12.5-18.3)	17.1 (13.4-21.0)	18.5 (14.2-23.0)	20.0 (14.7-25.3)	21.1 (14.9-27.7)	22.6 (15.3-30.4)	23.8 (15.5-32.5)
60-day	13.0 (10.8-15.5)	14.1 (11.7-16.8)	15.8 (13.1-18.9)	17.3 (14.2-20.7)	19.2 (15.2-23.5)	20.8 (15.9-25.7)	22.3 (16.4-28.1)	23.4 (16.5-30.5)	24.8 (16.7-33.2)	25.9 (16.9-35.2)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

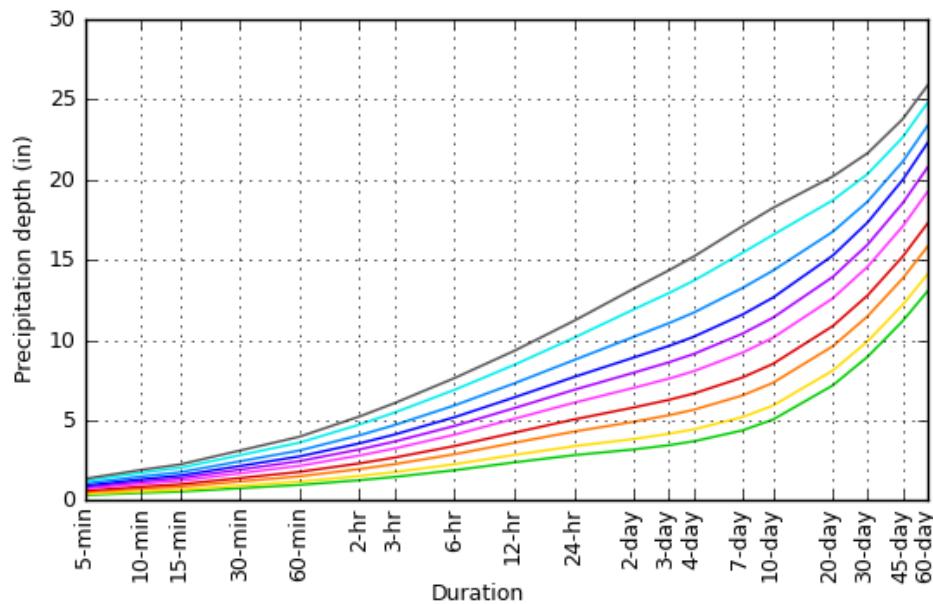
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

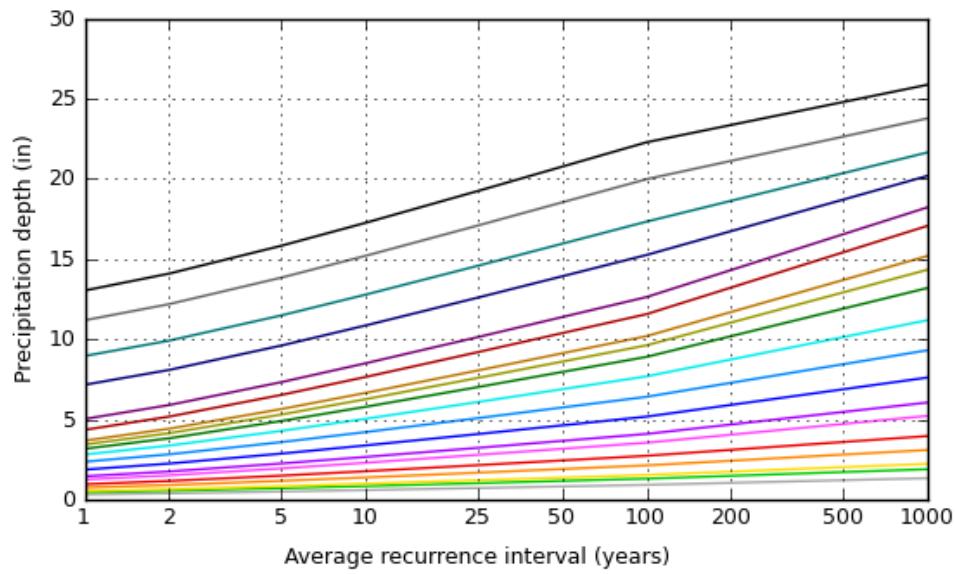
[Back to Top](#)

PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 41.5794°, Longitude: -71.9061°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000

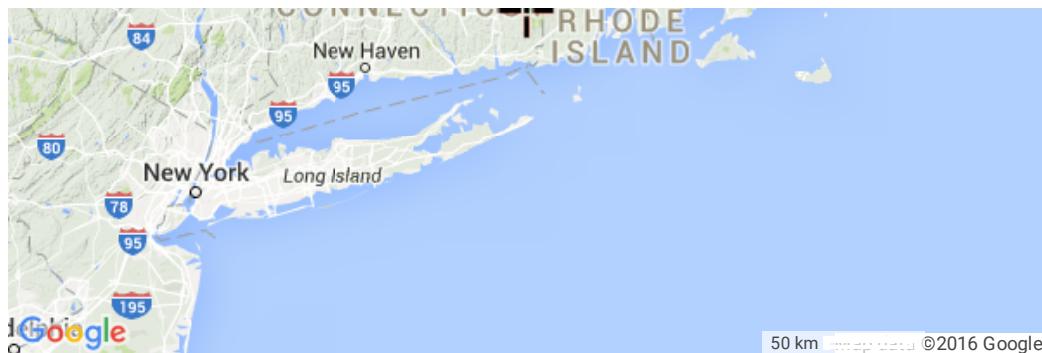


Duration
5-min
10-min
15-min
30-min
60-min
2-hr
3-hr
6-hr
12-hr
24-hr
2-day
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day

NOAA Atlas 14, Volume 10, Version 2

Created (GMT): Tue Feb 23 15:59:58 2016

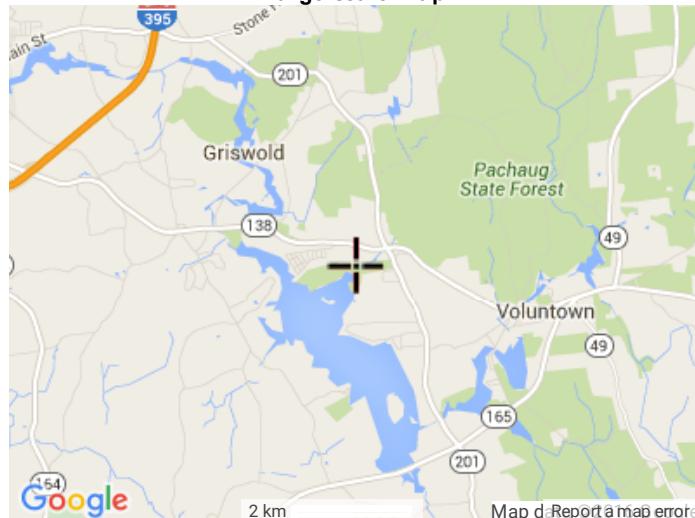
[Back to Top](#)**Maps & aerials****Small scale terrain**



Large scale terrain



Large scale map



Large scale aerial

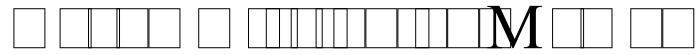
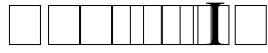




[Back to Top](#)

[US Department of Commerce](#)
[National Oceanic and Atmospheric Administration](#)
[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)



Voluntown Solar Project - Decommissioning Memo

This memo describes a Decommissioning Plan that establishes the approach to conduct decommissioning activities for the permanent closure of the Facilities at the end of the Facilities' useful life or the permanent cessation of the Facilities' operation, whichever comes first. The Plan describes the approach for removal and/or abandonment of facilities and equipment associated with the Facilities and describes anticipated land-restoration activities.

DECOMMISSIONING ACTIVITIES

Decommissioning will involve removal and disposal or recycling of all above-surface Project components. All recyclable materials will be transported to the appropriate nearby recycling facilities. Any non-recyclable materials will be properly disposed of at a nearby landfill. 95% or greater of the Facilities' components will be recyclable.

Decommissioning Preparation

The first step in the decommissioning process will be to assess existing site conditions and prepare the site for demolition. Site decommissioning and equipment removal can take up to six months to complete for a project of this size. Therefore, access roads, fencing, and electrical power will temporarily remain in place for use by the decommissioning and site restoration workers until no longer needed. Demolition debris will be placed in temporary on-site storage areas pending final transportation and disposal/recycling according to the procedures listed below.

PV Equipment Removal and Recycling

During decommissioning, all Facilities components will be either removed from the site and recycled or abandoned in place 12 inches below grade (for underground conduit and conductors). Equipment removal will include all pad-mounted cabinets, above ground wiring, solar modules, solar module racking, string inverters, and panel boards. Steel h-beams that supported the module racking and inverters/panelboards will be mechanically pulled out of the ground; any resulting holes will be backfilled with locally imported soil to match existing site soil conditions. The concrete transformer and interconnection equipment pads will be broken up and removed.

The demolition debris and removed equipment may be cut or dismantled into pieces that can be safely lifted or carried with the on-site equipment being used. The majority of glass and steel and aluminum will be processed for transportation and delivery to an off-site recycling center. The solar modules will be transported to and recycled at the nearest facility that will accept them. Minimal non-recyclable materials are anticipated; these will be properly disposed of at the nearest qualified disposal facility.

Internal Power Collection System

The DC and AC power collection system will be dismantled and removed. All underground cables and conduit will remain in place at a depth of 12 inches below ground surface. All conduit and cabling that is removed will be recycled.

Access Roads

The onsite 20-foot wide access driveway will remain in place to accomplish decommissioning at the end of the facility's life. At the time of decommissioning, if the landowner determines that this road will be beneficial for the future use of the site, the access road may remain after decommissioning. The future use of the site is undetermined at this time. Roads that will not be used will be restored to pre-construction conditions by removal of the aggregate base material, fill of the compacted base section with locally imported soil to match existing onsite soils, and a hydroseeding of a seed mix to match existing onsite groundcover.

Security Fence

The 7.5 foot high chain link perimeter security fence will remain in place during decommissioning activities for site safety and security purposes. At the time of decommissioning, if the landowner determines that this fence will be beneficial for the future use of the site, the fence may remain after decommissioning. The future use of the site is undetermined at this time. If the fencing is not used, it will be removed and transported to the nearest steel recycling facility. Holes left behind by the fence support posts will be backfilled with locally imported soil to match existing onsite soils, and a hydroseeding of a seed mix to match existing onsite groundcover.

Landscaping

The double row of screening vegetation along certain areas of the northern and western perimeter of the Site will remain in place during decommissioning activities for site safety and security purposes. At the time of decommissioning, if the landowner determines that this landscaping will be beneficial for the future use of the site, the landscaping may remain after decommissioning. The future use of the site is undetermined at this time. If the landscaping is not used, it will be removed and transported to the nearest plant material disposal facility for composting or mulching. Shrubs, bushes, and trees would be stump cut to just below ground level.

23 kV Interconnection Line

The overhead interconnection cabling that runs north from the project and across Williams Crossing Road to connect the Facilities to the CL&P distribution circuit will remain in place during decommissioning activities to provide electric service onsite during decommissioning. At the time of decommissioning, if the landowner determines that this electric service line will be beneficial for the future use of the site, the line may remain after

decommissioning. If the line is not used, it will be removed per CL&P guidelines and transported offsite to the nearest recycling facility. Underground cabling and conduit on private property will remain in place at a depth of 12 inches below ground level. Underground cabling and conduit within a public right-of-way will be removed completely, and the resulting trenches will be backfilled with locally imported soil to match existing onsite soils, and a hydroseeding of a seed mix to match existing onsite groundcover.

SITE RECLAMATION

After the Facilities are completely decommissioned, and all Facilities equipment has been removed from the Site, additional activities will be performed to return the resultantly vacant property back to pre-construction conditions.

Restoration Process

The decommissioning process will remove Project-related structures and infrastructure as described in the previous sections. Following decommissioning, site reclamation activities will occur. Reclamation will restore landform features, vegetative cover, and hydrologic function after the closure of the facility. The process will involve (where needed) the replacement of topsoil and vegetation, as well as modification of site topography where necessary to bring the Site back to pre-construction conditions. Restoration will bring the Site back to a natural pre-construction condition that is compatible with the adjacent surroundings.

If any excavated areas remain after removal of equipment pads or access road base material, these areas will be backfilled and compacted with locally imported soil to match existing onsite soils, and a hydroseeding of a seed mix to match existing onsite groundcover. Any other areas of lower than average ground surface level will receive the same treatment.

If any soils are determined to be compacted at levels that would affect successful revegetation, decompaction will occur. The method of decompaction will depend on how compacted the soil has become over the life of the Project. Following decompaction, re-contouring of the site will be conducted, if necessary, to return the Site to approximately match the pre-construction surface conditions and the surrounding area conditions. Original site drainage characteristics will be restored if they have not been maintained. It is unlikely that any or a significant amount of earthwork will be required, as the Project construction plan calls for minimal or no disturbance of the Site during Project construction. Grading activities will be limited to previously disturbed areas that require re-contouring. Efforts will be made to disturb as little of the natural drainages and existing natural vegetation that remain post-decommissioning as possible.

Any areas identified as remaining in bare earth will be hydroseeded with a seed mix to match existing onsite groundcover.

Site Restoration activities are anticipated to be very minimal, as the pre-construction conditions of the site are not planned to be significantly altered during Project construction. However, these activities as described, as well as any others that become necessary, will be performed to return the Site to a pre-construction condition.

Monitoring Activities

The Site will be monitored after Site Restoration activities are complete to confirm that any earthwork and revegetation were performed correctly and last permanently. The Site will be periodically inspected (at least twice annually) to check for any eroded earthwork or failed revegetation. Any deficiencies will be immediately corrected. This monitoring will continue for a period of five years, or until the Site is re-developed for another future purpose, whichever comes first.