

PETITION OF WINDHAM SOLAR LLC

FISK ROAD SOLAR FACILITY

**FOR A DECLARATORY RULING FOR THE CONSTRUCTION
AND OPERATION OF THREE 2.0 MEGAWATT AND FOUR 1.0 MW
SOLAR PHOTOVOLTAICRENEWABLE ENERGY GENERATING
FACILITIES LOCATED NEAR 390 HARTFORD TURNPIKE,
HAMPTON, 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.....	5
D. Interconnection	7
E. Service Life and Capacity Factor.....	7
IV. PROJECT BENEFITS.....	8
V. LOCAL INPUT & NOTICE.....	9
VI. POTENTIAL ENVIRONMENTAL EFFECTS	9
A. Natural Environment and Ecological Balance.....	10
B. Public Health and Safety	10
C. Air Quality.....	11
D. Scenic Values and Visual Renderings.....	12
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 four (4) 1.0 MW solar electric generating facilities (the “Facilities”), located on commercially-zoned land located near 390 Hartford Turnpike, Hampton, 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 the 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 (commercial zone—the Site is located in one of the only “commercial zones”³ in the entire Town of Hampton, solar resource, soil, and topographic characteristics that allow for efficient facility design and construction),

³ <http://www.hamptonct.org/images/land%20use%20map.pdf>

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

An official address has not yet been assigned to the Site since its vacant land, however, it’s located near 390 Hartford Turnpike, Hampton, CT. The Site is a 99.3 acre parcel that is located in a ‘commercial zone’ designated by the Town of Hampton. The Site is currently vacant and contains no structures. The entire site is completely wooded as of the date of this application. Approximately 8.9 acres of the Site has been delineated wetlands, factoring in the wetland buffers, this leaves approximately 50.2 acres of the 99.3 acre parcel with upland areas. Topography on the site undulates and the parcel drainage is bisected either to the Northwest or the Southeast, the projects roadway was placed on top of the drainage divide to minimize grading and maintain natural drainage. The solar facility encompasses 39.7 Acres within the projects two fence lines with modules placed in locations that limits grading within the array field. Adjacent parcels land uses vary, with a majority of the abutters being un-cleared vacant land. Other uses such as light agriculture, commercial and a small number of residences are located to the northwest 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 (Soils and Wetlands Report) shows an aerial view of the Site and the mapped wetlands on 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 Eversource meter. Each 2.0 MW Facility will consist of approximately 6,790 solar modules and the 1.0 MW Facilities 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 23kV (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 Fisk Street and Hartford Turnpike, also known as CT RT 138. 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 the perimeter of the Site to shield it from view along the roadways and from neighboring properties. The Facilities' footprint area will encompass 39.7 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 Hartford Turnpike, also known as CT RT 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 Eversource 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 NO_x, SO_x, 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 Hampton's Land Use Planner/Zoning Enforcement Officer to introduce the project. The project has been sited per the Town of Hampton's Zoning Regulations for structure setbacks and the Town of Hamptons Conservation Commission wetland buffer requirements. The Facilities are sited and designed so as to be a positive addition to the community by complying with local siting requirements and the Petitioner will work with the town throughout the review of the project, a tentative meeting is scheduled with the town in April 2016.

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., 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 577,000 tons of CO₂ equivalent, which is equal to 109,000 vehicles off the road, 188,000 tons of avoided landfill waste, 118 tons of NO_x emissions avoided, or 295 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 not be visible to neighboring property owners nor visible to drivers and passengers traveling along the Hartford Turnpike or Fisk Street. 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. The Facilities would be set far enough back from Plainfield Pike Road and adjacent property boundaries so that a robust buffer of trees and natural vegetation can be maintained so that the Facilities will be completely screened from neighboring properties in the area. 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. 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 G)

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 100-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 January 12, 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 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 2.3 acres of land for access roadways, no grading will occur within the solar array field. 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 four (4) – 1.0 megawatt solar photovoltaic renewable energy generating facilities to be located near 390 Hartford Turnpike in the Town of Hampton. 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 Hampton.”

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 and residential.

VIII. CONCLUSION

The Facilities will provide numerous and significant benefits to the Town of Hampton, 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

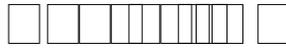
transmission and distribution system including, but not limited to . . . photovoltaic systems and, as demonstrated herein, each Facility will meet DEEP air and water quality standards. The Facilities will not produce air emissions, will not utilize water to produce electricity, were designed to minimize 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:  _____

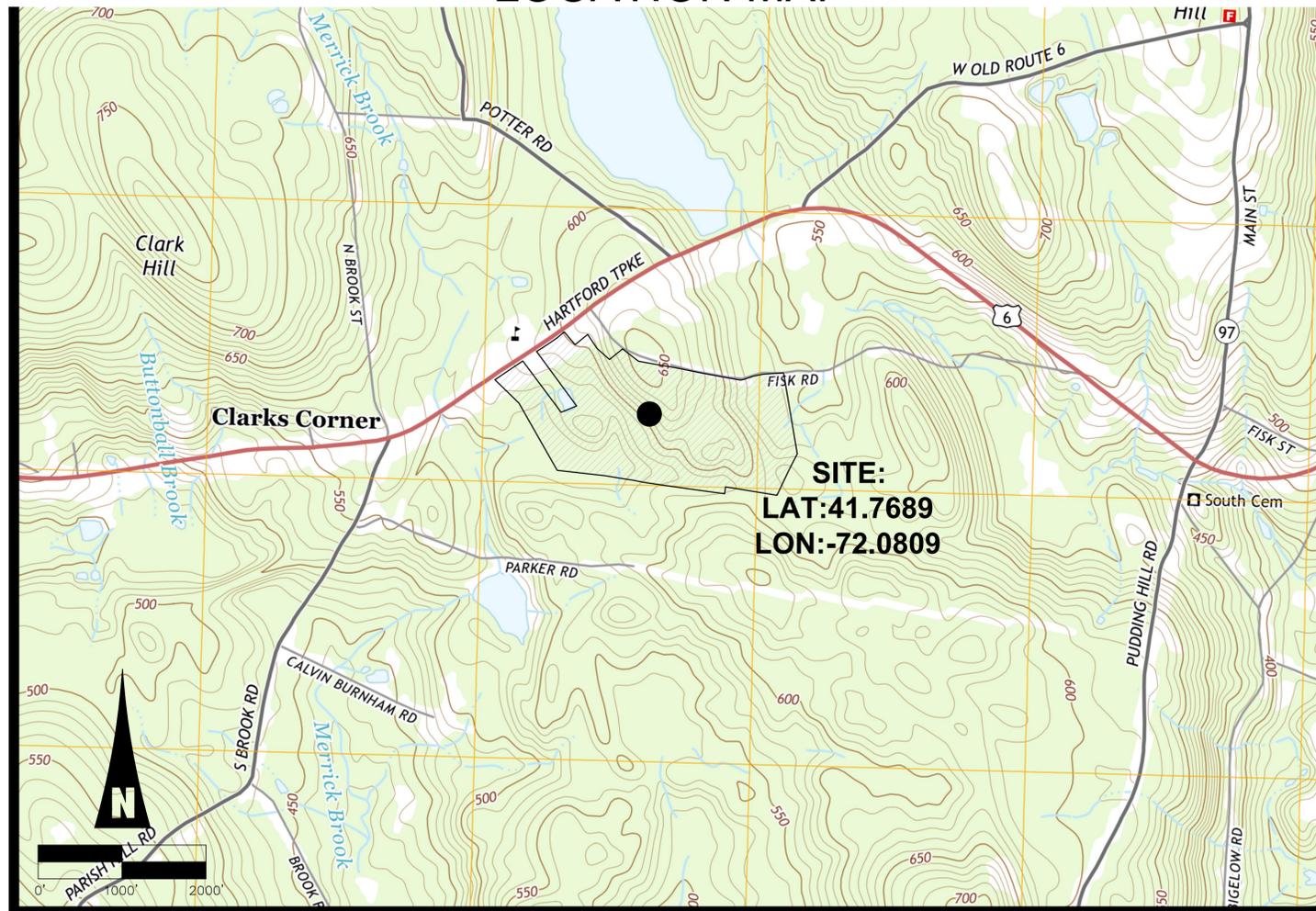
Steve Broyer
Windham Solar LLC
c/o Ecos Energy LLC
222 South 9th Street
Suite 1600
Minneapolis, MN 55402
Phone (612) 326-1500
steve.broyer@ecosrenewable.com



FISK ROAD SOLAR CONNECTICUT SITING BOARD DOCUMENTS

FOR
Site/Electrical Layout, Grading/Drainage/Erosion Control/Landscaping
IN
HAMPTON, CONNECTICUT

LOCATION MAP



SHEET INDEX

●	03/15/2016	1	COVER SHEET
●	01/21/2016	2	ALTA SURVEY (BY HELLSTROM LS, LLC)
●	01/21/2016	3	ALTA SURVEY (BY HELLSTROM LS, LLC)
●	03/15/2016	4	OVERALL SITE PLAN
●	03/15/2016	5	NORTH REMOVAL & EROSION CONTROL PLAN - 1"=50'
●	03/15/2016	6	CENTRAL REMOVAL & EROSION CONTROL PLAN - 1 - 1"=50'
●	03/15/2016	7	CENTRAL REMOVAL & EROSION CONTROL PLAN - 2 - 1"=50'
●	03/15/2016	8	SOUTH REMOVAL & EROSION CONTROL PLAN - 1"=50'
●	03/15/2016	9	NORTH SITE & GRADING PLAN - 1"=50'
●	03/15/2016	10	CENTRAL SITE & GRADING PLAN - 1 - 1"=50'
●	03/15/2016	11	CENTRAL SITE & GRADING PLAN - 2 - 1"=50'
●	03/15/2016	12	SOUTH SITE & GRADING PLAN - 1"=50'
●	03/15/2016	13	OVERALL LANDSCAPE PLAN
●	03/15/2016	14	SITE CROSS SECTION
●	03/15/2016	15	KEY OBSERVATION POINT PLAN
●	03/15/2016	16	CIVIL NOTES
●	03/15/2016	17	CIVIL DETAILS

DRAWING INDEX LEGEND

FILLED CIRCLE INDICATES DRAWING INCLUDED WITHIN THIS ISSUE
 MOST RECENT REVISION NUMBER
 MOST RECENT ISSUE OR REVISION DATE

○ - X/XX/201X X SHEET TITLE

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

GEOTECHNICAL ENGINEER:
TERRACON
201 HAMMER MILL ROAD
ROCKY HILL, CT 06067

Westwood

Phone (480) 747-6558 6909 East Greenway Parkway, Suite 250
 Fax (480) 376-8925 Scottsdale, AZ 85254
 westwoodsps.com

Westwood Professional Services, Inc.



Designed: ADC

Checked: SAW

Drawn: SJB

Record Drawing by/date:

Revisions #	DATE	DESCRIPTION
-	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



FISK ROAD SOLAR

390 HARTFORD TURNPIKE
HAMPTON, CT 06247
WINDHAM COUNTY

COVER SHEET

SITING BOARD REVIEW

DATE: 3/15/2016

SHEET: 1 of 17

MAP STANDARD NOTES:

1. THIS SURVEY (OR 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 #6).
3. TOPOGRAPHIC FEATURES WERE PREPARED IN ACCORDANCE WITH CLASS T-D PER EGCS ENGINEERS, 1 FOOT INTERVAL CONTOURS.
4. PARCEL IS ZONED C-1 VILLAGE COMMERCIAL DISTRICTS.
5. THE INTENDED PURPOSE OF THIS MAP/SURVEY IS TO DEMONSTRATE TOPOGRAPHIC FEATURES, WETLAND LOCATION AND TOPOGRAPHY RELATIVE TO THE BOUNDARY.
6. PARCELS ARE NOT LOCATED IN A FLOOD ZONE AS DETERMINED PER THE NATIONAL FLOOD INSURANCE PROGRAM, FRM, WINDHAM COUNTY, COMMUNITY #090170, PANEL #5, EFF. DATE DEC. 4, 1985.

GRISWOLD TOWN PARCEL REFERENCE:
TOWN OF HAMPTON LOT 5.6, VOL. 66 / PG. 414

MAP REFERENCES:

1. "LOT PLAN PREPARED FOR FELIX WINTERS, OLD FISKE ROAD, HAMPTON, CONNECTICUT, ASSESSORS PARCEL NO. 15, SCALE 1" = 20', PROJ.#07-104, SHEET 1, REVISED TO DEC. 8, 1992, RECORDED APRIL 1, 1993 BY MESSIER & ASSOCIATES.
2. "SITE PLAN PREPARED FOR HAMPTON HILL GARAGE, LLC, CONNECTICUT ROUTE 6 (HARTFORD TURNPIKE) HAMPTON, CONNECTICUT, SCALE 1" = 100' (OR AS NOTED), JOB #98-06-02, DATED MAY 18, 1999, REVISED TO AUG. 10, 1999 BY DATUM ENGINEERING & SURVEYING, LLC.
3. "COMPILED PLAN PREPARED FOR CORDELLS DATA TRANSFER, INC., FISKE ROAD, HAMPTON, CT, SCALE 1" = 200', SHEET 1 OF 4, DATED NOV. 12, 1996, REVISED TO JUL. 3, 1999 BY STANLEY W. SZESTOWSKI.
4. "TOWN OF HAMPTON, MAP SHOWING LAND ACQUIRED FROM PETER P. FREIMAN BY THE STATE OF CONNECTICUT, DEPT. OF TRANSPORTATION, U.S. ROUTE 6, SCALE 1" = 40', TOWN NO.62, PROJ. # 62-90, SERIAL NO. 2, SHEET 1, DATED OCT. 1991, REVISED TO MAR. 25, 1992.
5. "TOWN OF HAMPTON, MAP SHOWING LAND ACQUIRED FROM PETER P. FREIMAN BY THE STATE OF CONNECTICUT, U.S. ROUTE 6, SCALE 1" = 40', TOWN NO.62, PROJ. # 62-90, SERIAL NO. 12, SHEET 1, DATED OCT. 1991, REVISED TO MAY 1, 1992.
6. "LOCATION OF RIGHT OF WAY OF THE CONNECTICUT LIGHT & POWER COMPANY, ACROSS THE PROPERTY OF PAUL NAVIN, TOWN OF HAMPTON COUNTY OF WINDHAM, STATE OF CONNECTICUT, SCALE 1" = 200', SHEET 1 & 2 OF 2, DATED OCT. 1968.
7. "CONNECTICUT STATE HIGHWAY DEPARTMENT, RIGHT OF WAY MAP, TOWN OF HAMPTON, WILLAMANTIC-HAMPTON ROAD, FROM THE CHARTER TOWN LINE EASTERLY TO HAMPTON ST., SCALE 1" = 40', NO. 62-04, SHEET 1A, DATED NOV. 5, 1957, REVISED TO OCT. 10, 1968.

LEGEND

- PROPERTY LINE
- STONE WALL
- GUARDRAIL
- ANGLE POINT
- IRON PIN OR PIPE FOUND
- 5/8" REBAR SET
- DRILL HOLE SET
- CHD MONUMENT FOUND
- △ SURVEYOR CONTROL POINT
- △ "BOUNDARY" PLACARD PLACED ON TREES WITH WIRE HELD FOR BOUNDARY
- TREES SHOWN ARE WITH WIRE AND ARE AS MARKED

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

JOHN IANNI
SOIL SCIENTIST

SEE SHEET 1
MATCH MARK

WOODED

N/F
EST OF PETER P. FREIMAN

COMMITMENT FOR TITLE INSURANCE NOTE:
FIRST AMERICAN TITLE INSURANCE COMPANY OWNERS POLICY
REFERENCE FILE NO.: XXX
POLICY NUMBER: XXXXXX
EFF. DATE OF POLICY: XXX

SEE SCHEDULE B & SCHEDULE B, SEC. 2 OF THE POLICY OR POLICIES WHICH CONTAINS SPECIAL EXCEPTIONS: a. THROUGH c. ?

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 PLAN AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA AND NSPS IN 2005, AND INCLUDES ITEMS 2 - 4, 6 - 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.

TOTAL AREA
4,326,139.6± SQ.FT.
99.3± ACRES

SEE SHEET 1
MATCH MARK

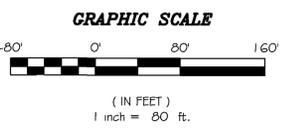
WOODED

N/F
HALMORA LLC
185 WEST FISKE ROAD

N/F
PATRICK J NAVIN & LINDA
SERENITY-NAVIN
PARKER ROAD

CL&P EASEMENT

EDGE C.L.&P. EASEMENT



NO.	DATE	DESCRIPTION
2	1-21-16	FRIEMAN PARCEL FISKE RD. AREA ADJUSTMENT
1	1-13-16	FRIEMAN PARCEL ADJUSTMENT & STREETLINE PER DOT

REVISIONS

ALL RIGHTS RESERVED
ANY REPRODUCTION, POSSESSION OR USE OF THIS DRAWING OR ANY PART THEREOF WITHOUT THE WRITTEN PERMISSION OF THE SURVEYOR INDICATED BELOW IS PROHIBITED. VIOLATORS WILL BE PROSECUTED TO THE FULL EXTENT OF THE LAW.

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

THIS DRAWING IS NOT VALID UNLESS IT BEARS AN ORIGINAL INK SIGNATURE AND EMBOSSED SEAL.

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
robs1949@sbclglobal.net
hellstromsurveying@yahoo.com
www.hellstromlandsurveying.com

DATE: DECEMBER 16, 2015

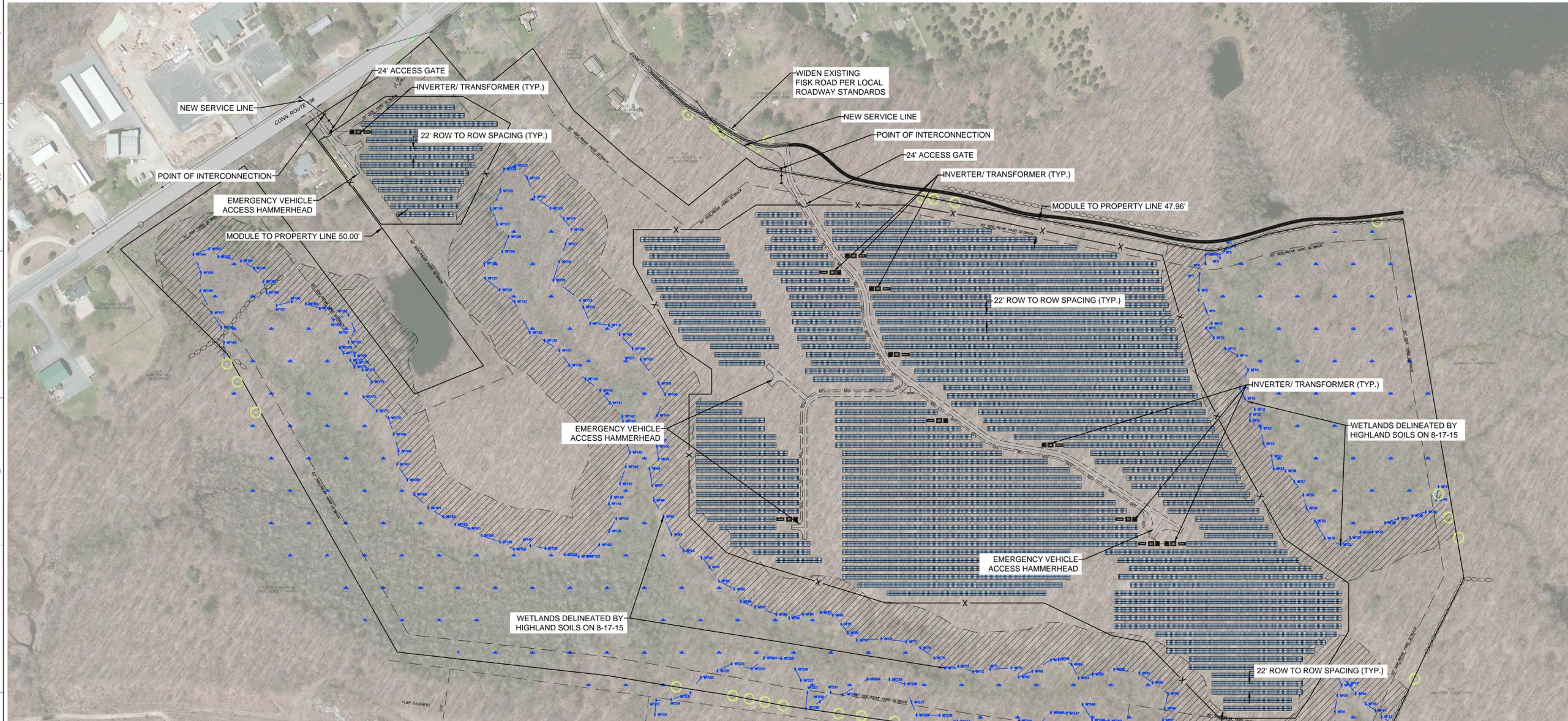
BOUNDARY SURVEY
- PREPARED FOR -
PLH, LLC
HARTFORD TURNPIKE - CONN. ROUTE 6
& FISKE ROAD

HAMPTON CONNECTICUT

SHEET NO.: 2 OF 2	JOB NO.: 2015-066
BY: ROBIN H. /RWH	SCALE: 1" = 80'
FILE NO.: EC15066 SH2	



AERIAL SITE PLAN:



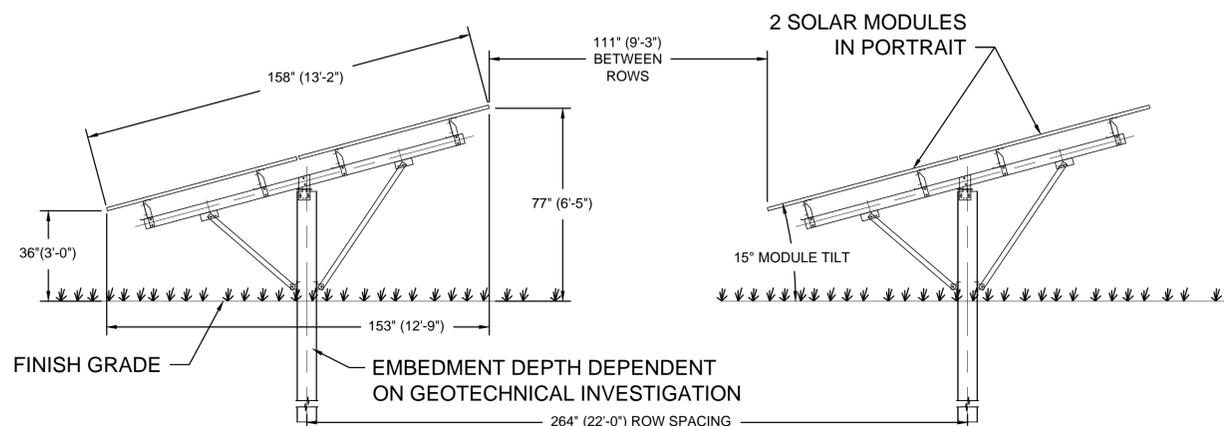
LEGEND:

- EXISTING PROPERTY LINE
- x- PROPOSED PROJECT FENCE
- PROPOSED GRAVEL ACCESS ROAD
- M/V- PROPOSED AC DISTRIBUTION
- ▨ 150' WETLAND BUFFER AREA
- - - WETLAND DELINEATION LINE
- ▤ 18 x 2 SOLAR MODULE BOCK

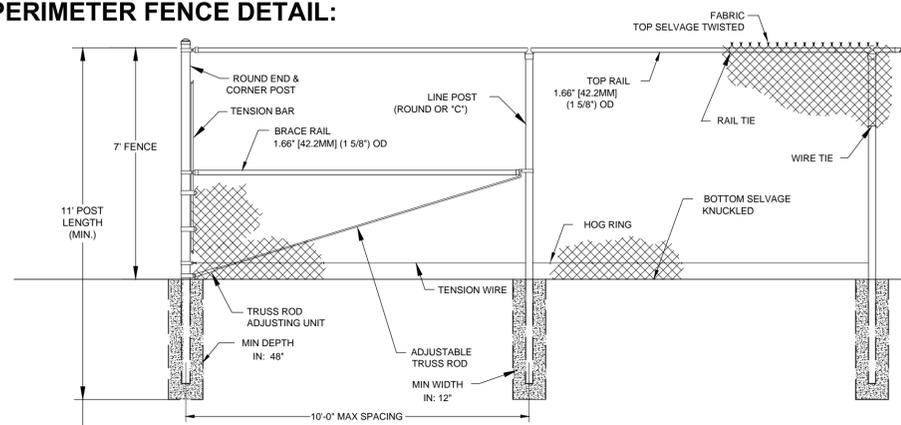
PROJECT AREAS & IMPACTS:

TOTAL SITE AREA = 99.3 ACRES
 ARRAY FOOTPRINTS (FENCE LIMITS) = 39.7 AC
 PROPOSED IMPERVIOUS:
 GRAVEL ACCESS ROADS ON SITE = 1.2 AC
 GRAVEL ACCESS ROADS OFF SITE = 0.2 AC
 EQUIPMENT PADS = 0.1 AC

RACKING PROFILE DETAIL:



PERIMETER FENCE DETAIL:



Westwood

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

Westwood Professional Services, Inc.

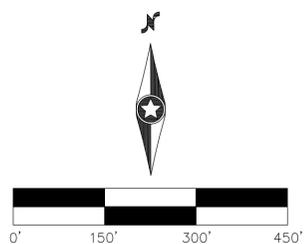


Designed: ADC
 Checked: SAW
 Drawn: SJB

Record Drawing by/date:

Revisions	DATE	DESCRIPTION
-	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



FISK ROAD SOLAR

390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

OVERALL SITE PLAN

SITING BOARD REVIEW

DATE: 3/15/2016
 SHEET: 4 of 17

LEGEND:

- EXISTING PROPERTY LINE
- x- PROPOSED PROJECT FENCE
- ▨ PROPOSED GRAVEL ACCESS ROAD
18 x 2 SOLAR MODULE BOCK
- ▨ 100' WETLAND BUFFER AREA
- ▨ WETLAND DELINEATION LINE/AREA
- PROPOSED SILT FENCE
- ▨ 100' WETLAND BUFFER CLEARING AREA
- ▨ SITE CLEARING AREA

CONSTRUCTION SEQUENCING NOTES:

1. THE CONTRACTOR SHALL PERFORM ALL TREE REMOVAL ACTIVITIES ON SITE TO ALLOW FOR BMP INSTALLATION, NO GRUBBING IS TO OCCUR DURING TREE REMOVAL, PRIOR TO BMP INSTALLATION.
2. ALL BMP'S IDENTIFIED ON THE PLAN SHALL BE STAKED BY A REGISTERED SURVEYOR AND INSTALLED PER PLANS PRIOR TO ANY CONSTRUCTION ACTIVITY.
3. AS-BUILT DRAWINGS SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT THE CONSTRUCTION OF THE PROJECT.

PROJECT FOOTPRINT REMOVAL NOTES

AREAS WITHIN THE PROJECT FENCELINE LIMITS SHALL BE CLEARED BY THE FOLLOWING METHODS:

OPEN FIELD AREAS (0.0 ACRES):

1. PRIOR TO CONSTRUCTION VEGETATION SHALL BE CUT AT 6" IN HEIGHT

BRUSH FIELD (0.0 ACRES):

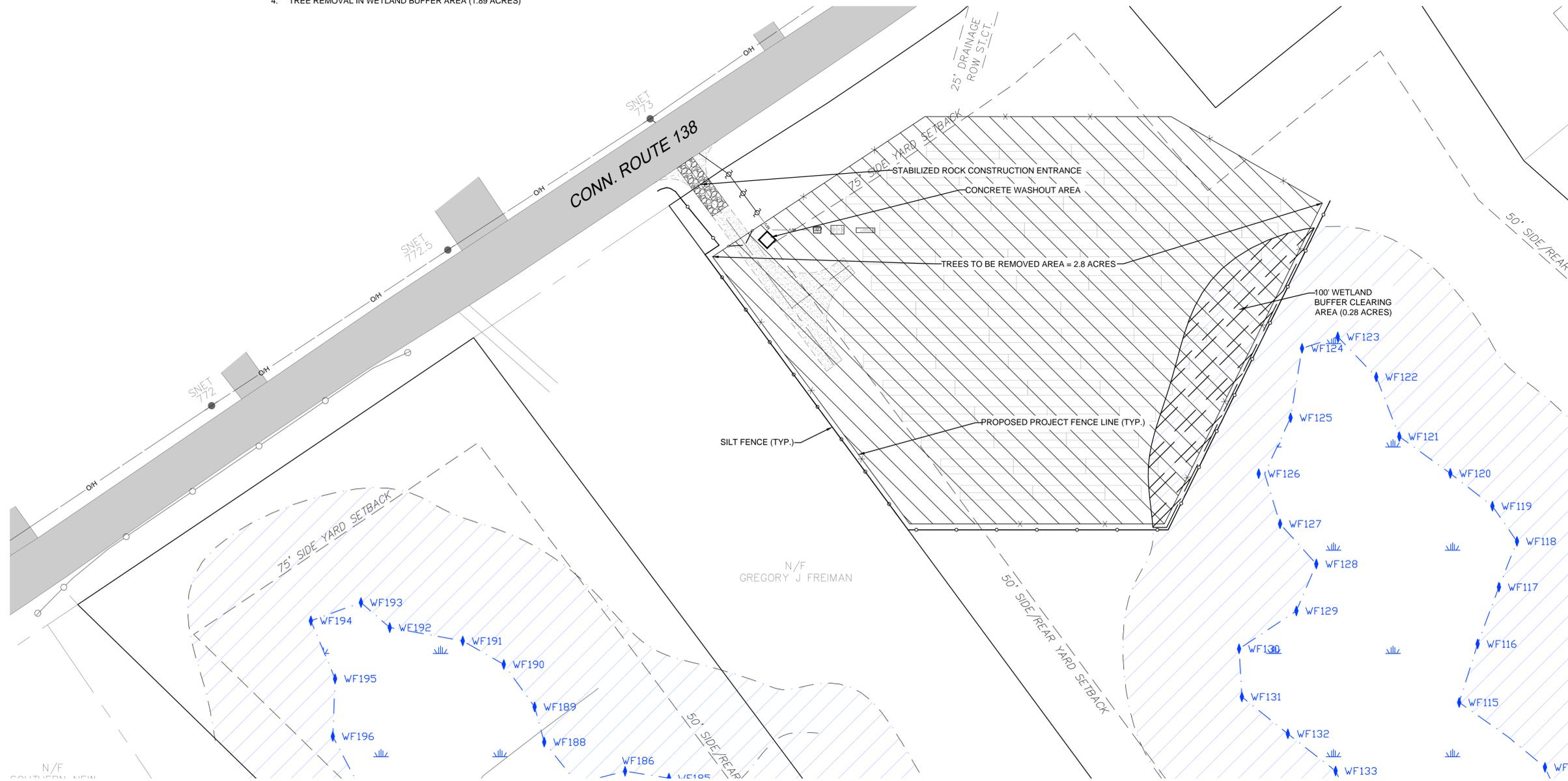
1. BRUSH AND LOW GROWTH VEGETATION SHALL BE CUT AT 6" IN HEIGHT
2. TREES AND VEGETATION LESS THAN 4" IN DIAMETER SHALL BE REMOVED

TREE CANOPY AREAS (39.7 ACRES):

1. TREES AND VEGETATION LESS THAN 4" IN DIAMETER SHALL BE REMOVED
2. TREES GREATER THAN 4" IN DIAMETER SHALL BE CUT AT EXISTING GRADE
3. STUMPS GREATER THAN 4" IN DIAMETER SHALL BE REMOVED IN THE FOLLOWING LOCATIONS:
 - 3.1. AREAS ILLUSTRATED IN GRADING LIMITS
 - 3.2. INVERTER / EQUIPMENT SKID
 - 3.3. 3' DIAMETER EACH ARRAY PIER
 - 3.4. ALL TRENCHING LOCATIONS (MAY OCCUR DURING TRENCHING OPERATIONS)
4. TREE REMOVAL IN WETLAND BUFFER AREA (1.89 ACRES)

EROSION CONTROL NOTES:

1. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED BEFORE ANY SOIL DISTURBANCE.
2. THE AREA OF DISTURBANCE SHALL BE KEPT TO A MINIMUM. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 14 DAYS SHALL BE STABILIZED.
3. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. SEDIMENT IN RUNOFF WATER SHALL BE TRAPPED AND RETAINED WITHIN THE PROJECT AREA USING APPROVED MEASURES.
4. WETLAND AREAS AND SURFACE AREAS SHALL BE PROTECTED FROM SEDIMENT. OFF-SITE SURFACE WATER AND RUNOFF FROM UNDISTURBED AREAS SHALL BE DIVERTED AWAY FROM DISTURBED AREAS WHERE FEASIBLE OR CARRIED THROUGH THE PROJECT AREA WITHOUT CAUSING EROSION. INTEGRITY OF DOWNSTREAM DRAINAGE SYSTEMS SHALL BE MAINTAINED.
5. ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. STABILIZATION MEASURES SUCH AS HYDROSEEDING OR APPLICATION OF HAY/MULCH OR SOIL NETTING SHALL BE APPLIED PRIOR TO REMOVAL OF TEMPORARY EROSION MEASURES AND INSPECTED WEEKLY UNTIL STABILIZATION IS COMPLETE. TEMPORARY EROSION CONTROL MEASURES MAY BE REMOVED ONCE STABILIZATION OF ALL SITE SOILS HAS BEEN ACHIEVED AND WRITTEN AUTHORIZATION TO DO SO HAS BEEN PROVIDED BY THE STORMWATER AUTHORITY. TRAPPED SEDIMENT SHALL BE REMOVED IMMEDIATELY WITH TEMPORARY EROSION CONTROL METHODS AND LAWFULLY DISPOSED OF OFF-SITE. OTHER DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN THIRTY DAYS.
6. DEVELOPER TO OBTAIN AN NPDES PERMIT PRIOR TO CONSTRUCTION.



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

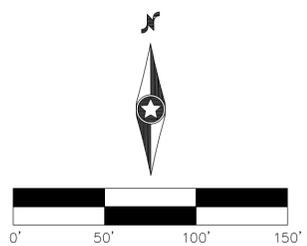
Checked: SAW

Drawn: SJB

Record Drawing by/date:

Revisions	DATE	DESCRIPTION
1	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



FISK ROAD SOLAR

390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

NORTH REMOVAL & EROSION CONTROL PLAN

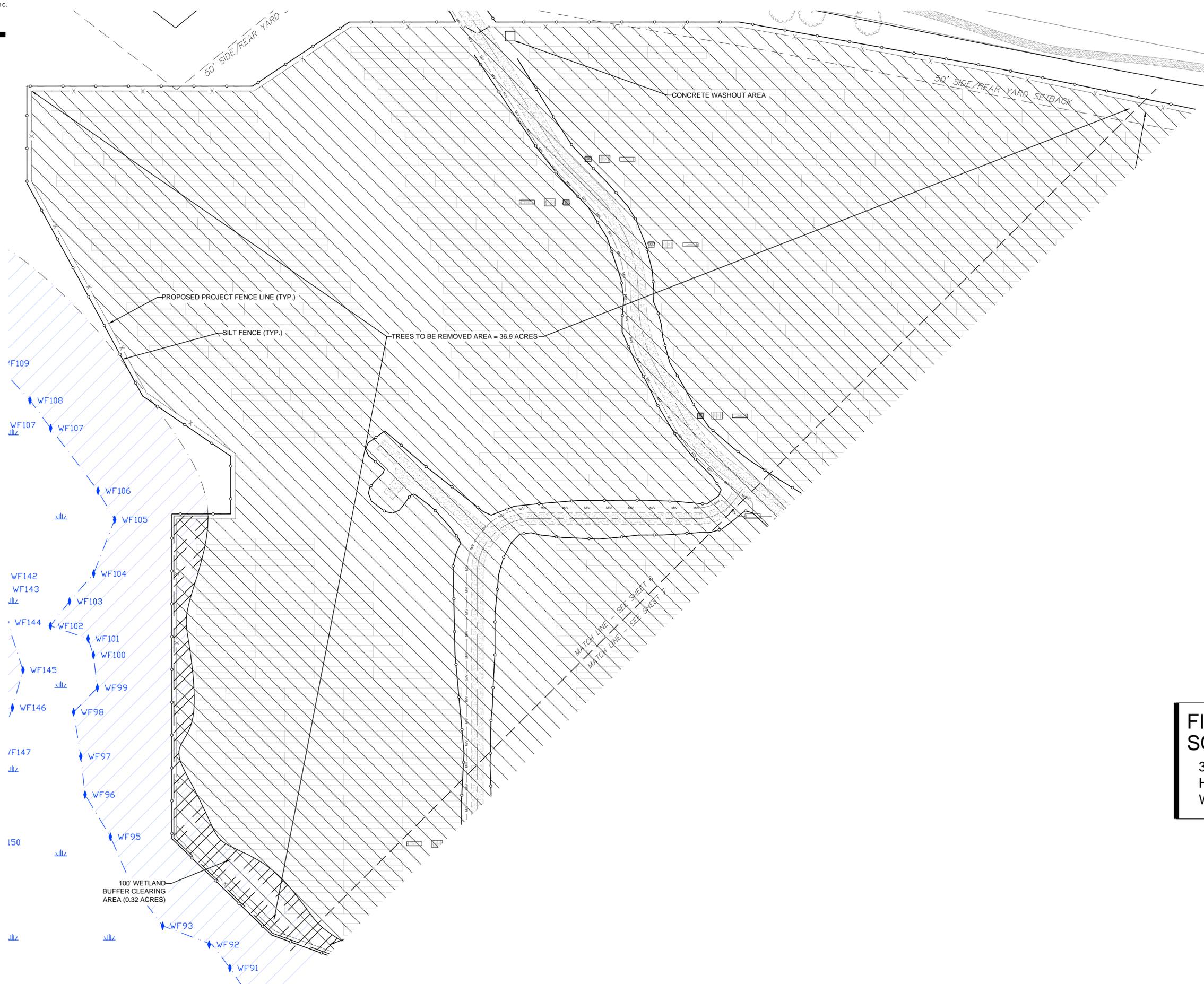
SITING BOARD REVIEW

DATE: 3/15/2016

SHEET: 5 of 17

NOTES & LEGEND:

SEE SHEET 5



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
-	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



**FISK ROAD
SOLAR**

390 HARTFORD TURNPIKE
HAMPTON, CT 06247
WINDHAM COUNTY

**CENTRAL
REMOVAL &
EROSION
CONTROL PLAN - 1**

SITING BOARD REVIEW

DATE: 3/15/2016

SHEET: 6 of 17

NOTES & LEGEND:

SEE SHEET 5

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
1	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



**FISK ROAD
SOLAR**

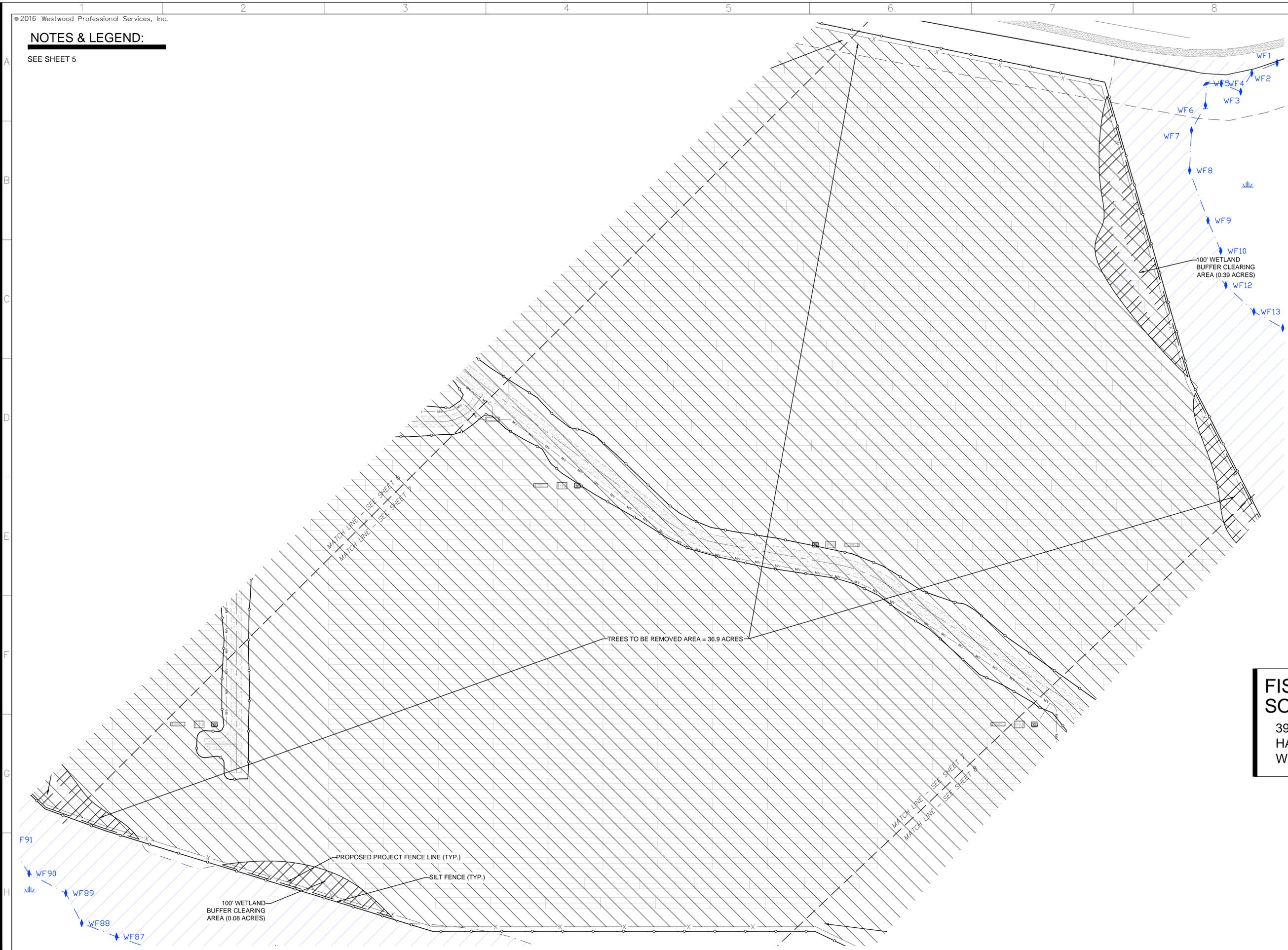
390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

**CENTRAL
REMOVAL &
EROSION
CONTROL PLAN - 2**

SITING BOARD REVIEW

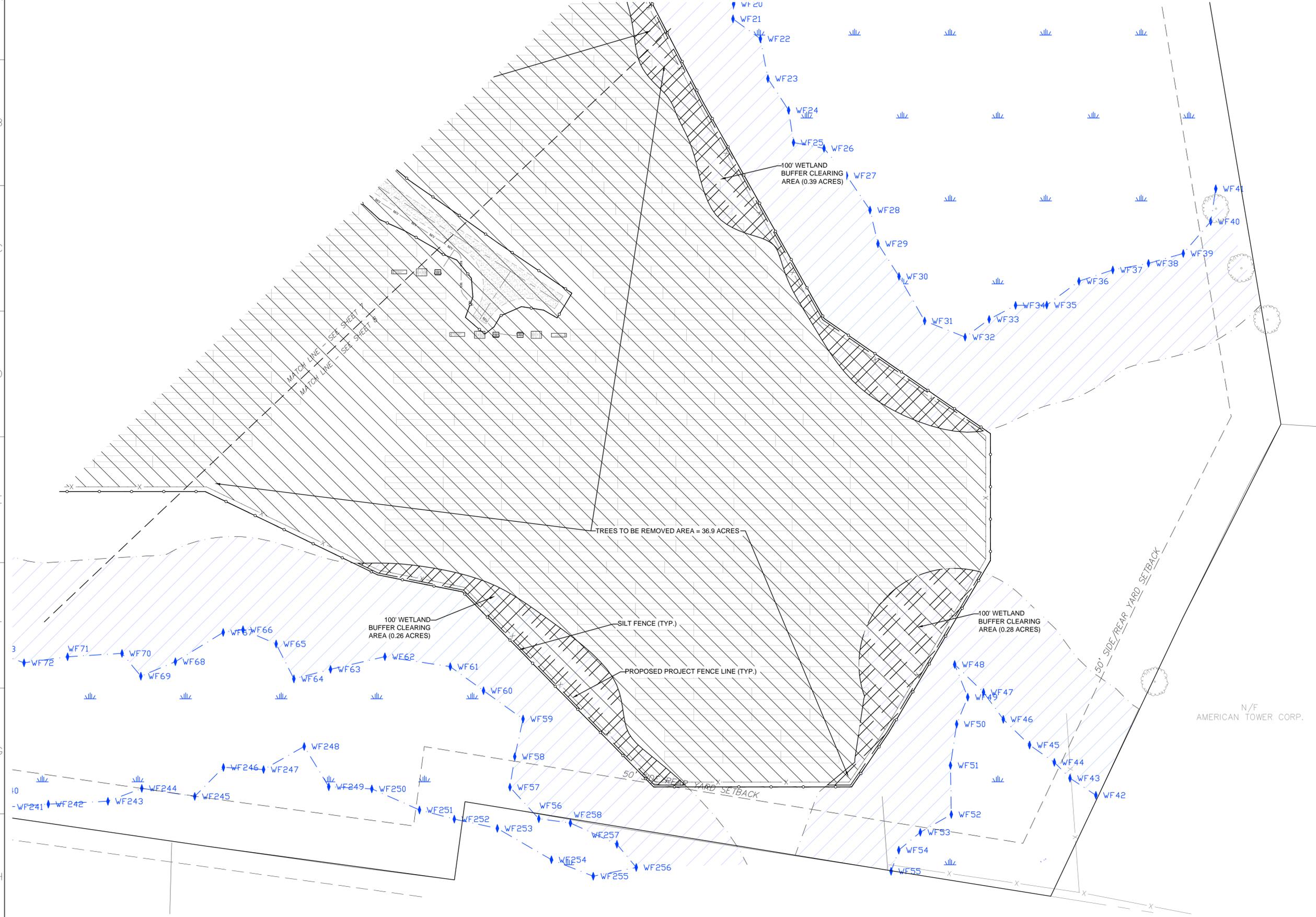
DATE: 3/15/2016

SHEET: 7 of 17



NOTES & LEGEND:

SEE SHEET 5



Westwood

Phone (480) 747-6558 6909 East Greenway Parkway, Suite 250
 Fax (480) 376-8925 Scottsdale, AZ 85254
 westwoodps.com

Westwood Professional Services, Inc.



Designed: ADC
 Checked: SAW
 Drawn: SJB

Record Drawing by/date:

Revisions:	DATE	DESCRIPTION
1	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



FISK ROAD SOLAR
 390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

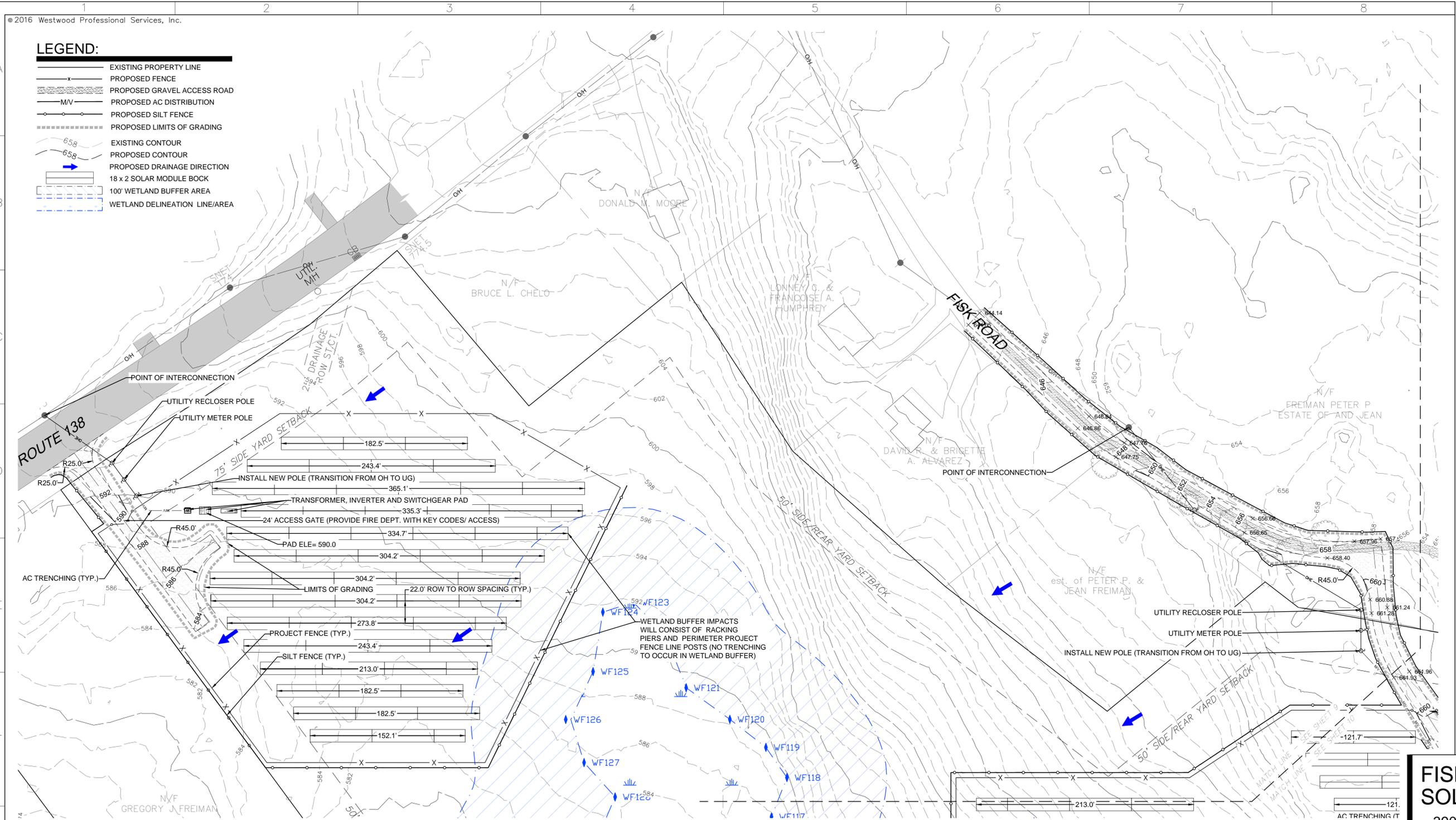
SOUTH REMOVAL & EROSION CONTROL PLAN

SITING BOARD REVIEW

DATE: 3/15/2016
 SHEET: 7 of 17

LEGEND:

- EXISTING PROPERTY LINE
- - - PROPOSED FENCE
- ▨ PROPOSED GRAVEL ACCESS ROAD
- MV - PROPOSED AC DISTRIBUTION
- - - PROPOSED SILT FENCE
- - - PROPOSED LIMITS OF GRADING
- 658 EXISTING CONTOUR
- 658 PROPOSED CONTOUR
- PROPOSED DRAINAGE DIRECTION
- 18 x 2 SOLAR MODULE BOCK
- 100' WETLAND BUFFER AREA
- WETLAND DELINEATION LINE/AREA



Westwood

Phone (480) 747-6558 6909 East Greenway Parkway, Suite 250
 Fax (480) 376-8925 Scottsdale, AZ 85254
 westwoodps.com

Westwood Professional Services, Inc.

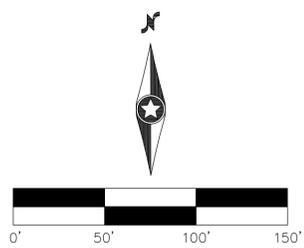


Designed: ADC
 Checked: SAW
 Drawn: SJB

Record Drawing by/date:

Revisions:	DATE	DESCRIPTION
1	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



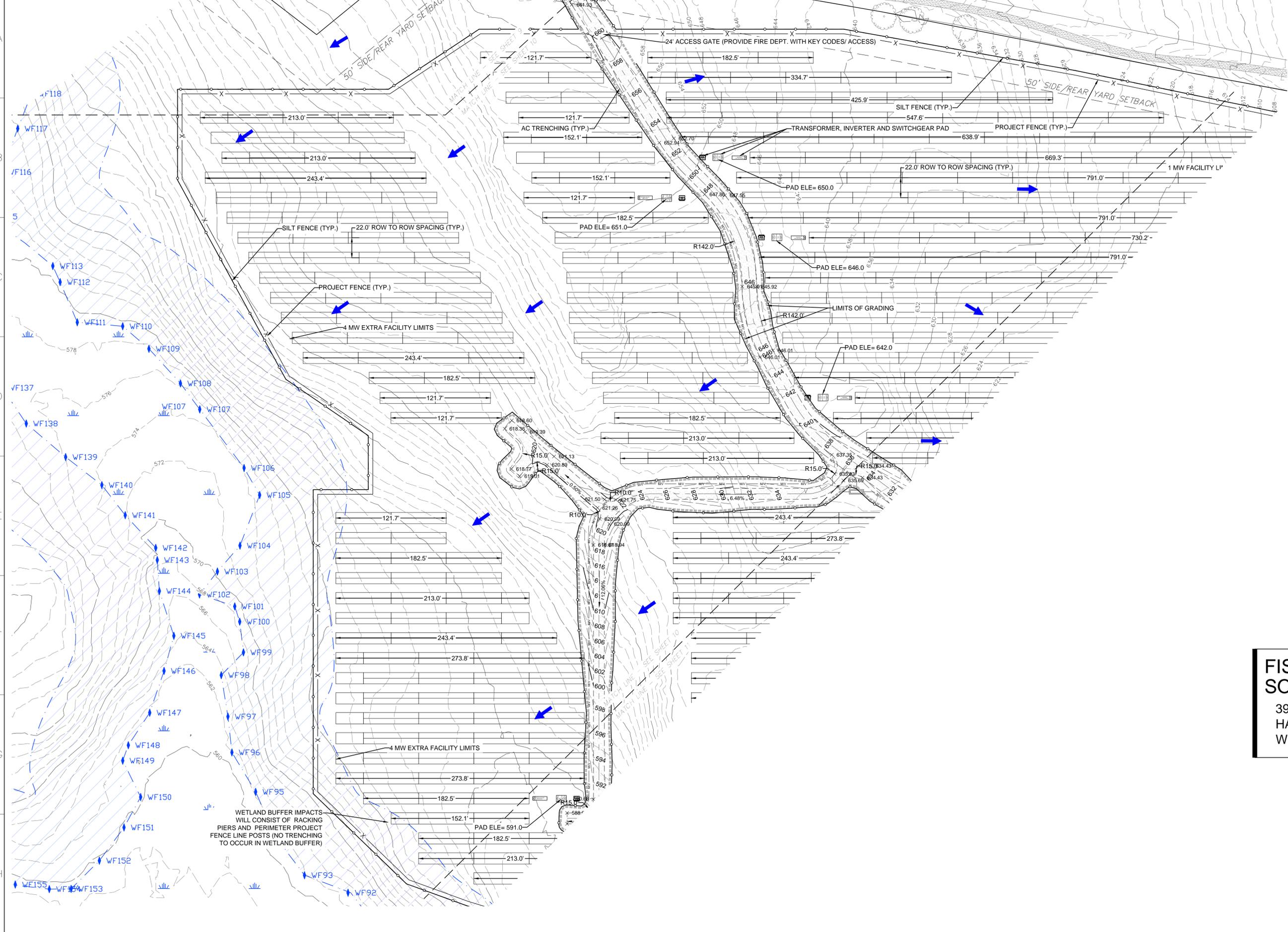
FISK ROAD SOLAR
 390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

NORTH SITE & GRADING PLAN

SITING BOARD REVIEW

DATE: 3/15/2016

SHEET: 9 of 17



Westwood

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

Westwood Professional Services, Inc.

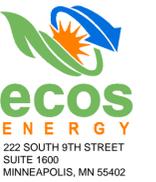


Designed: ADC
 Checked: SAW
 Drawn: SJB

Record Drawing by/date:

Revisions	DATE	DESCRIPTION
1	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



FISK ROAD SOLAR
 390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

SOUTH SITE/GRADING/ EROSION CONTROL PLAN

SITING BOARD REVIEW

DATE: 3/15/2016
 SHEET: 10 of 17

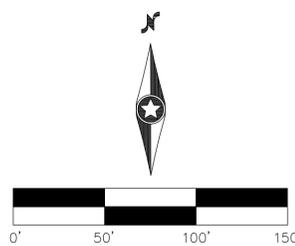


Designed: ADC
 Checked: SAW
 Drawn: SJB

Record Drawing by/date:

Revisions	DATE	DESCRIPTION
1	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



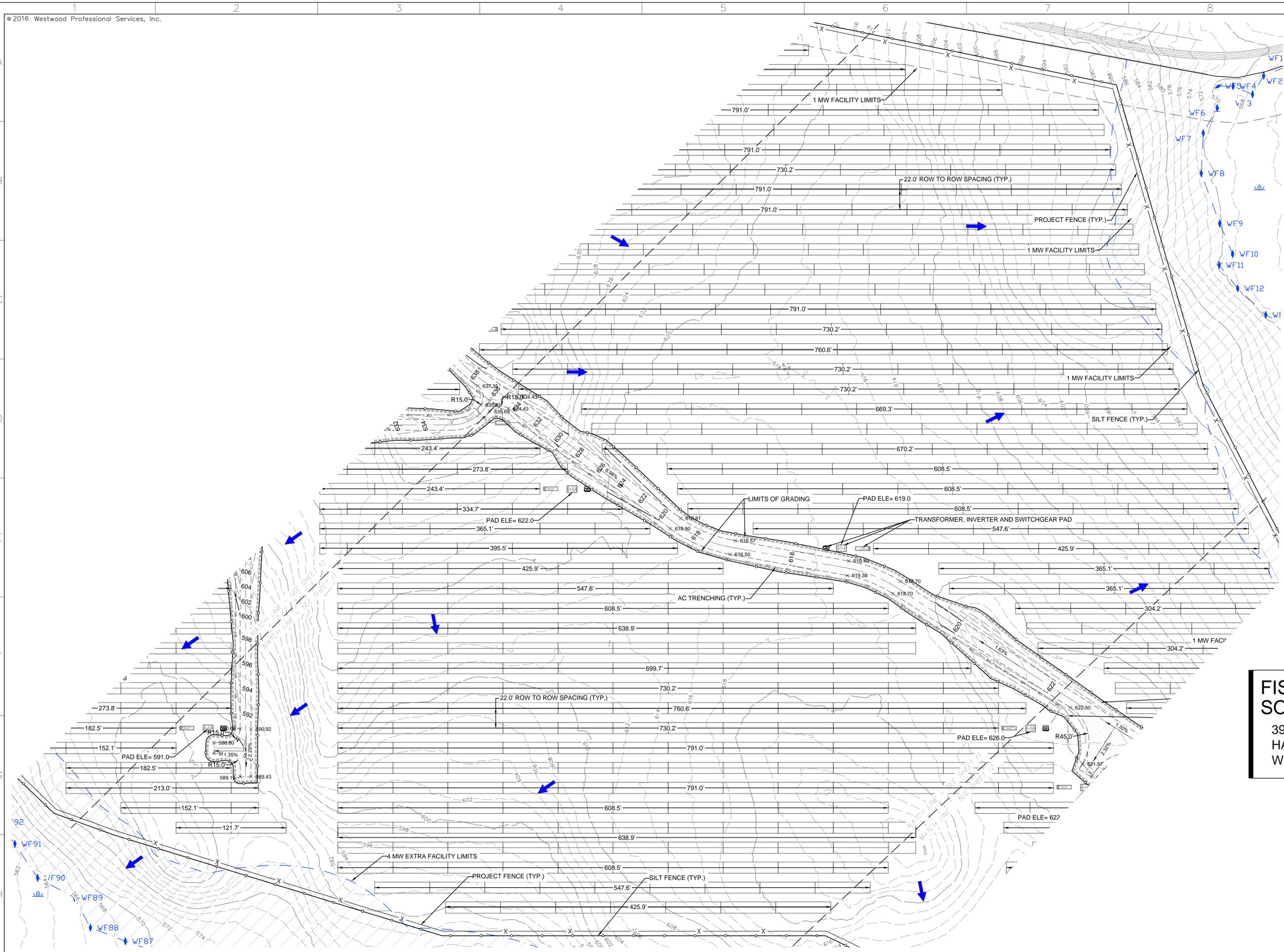
FISK ROAD SOLAR

390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

SOUTH SITE/GRADING/ EROSION CONTROL PLAN

SITING BOARD REVIEW

DATE: 3/15/2016
 SHEET: 11 of 17



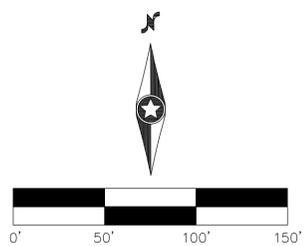


Designed: ADC
 Checked: SAW
 Drawn: SJB

Record Drawing by/date:

Revisions	DATE	DESCRIPTION
1	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



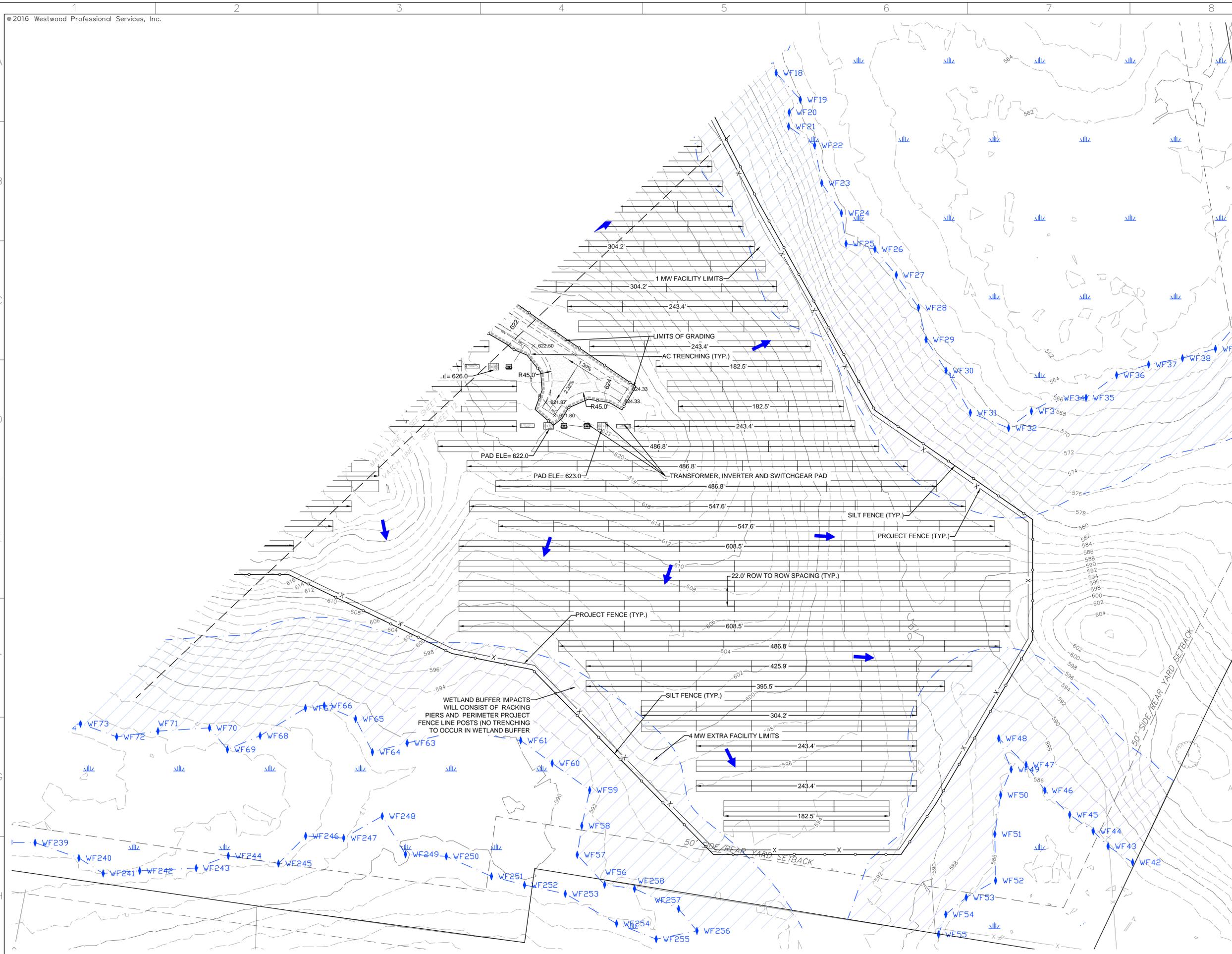
**FISK ROAD
 SOLAR**

390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

**SOUTH
 SITE/GRADING/
 EROSION CONTROL
 PLAN**

SITING BOARD REVIEW

DATE: 3/15/2016
 SHEET: 12 of 17



WETLAND BUFFER IMPACTS
 WILL CONSIST OF RACKING
 PIERS AND PERIMETER PROJECT
 FENCE LINE POSTS (NO TRENCHING
 TO OCCUR IN WETLAND BUFFER)

50' SIDE REAR YARD SETBACK

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.



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
1	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



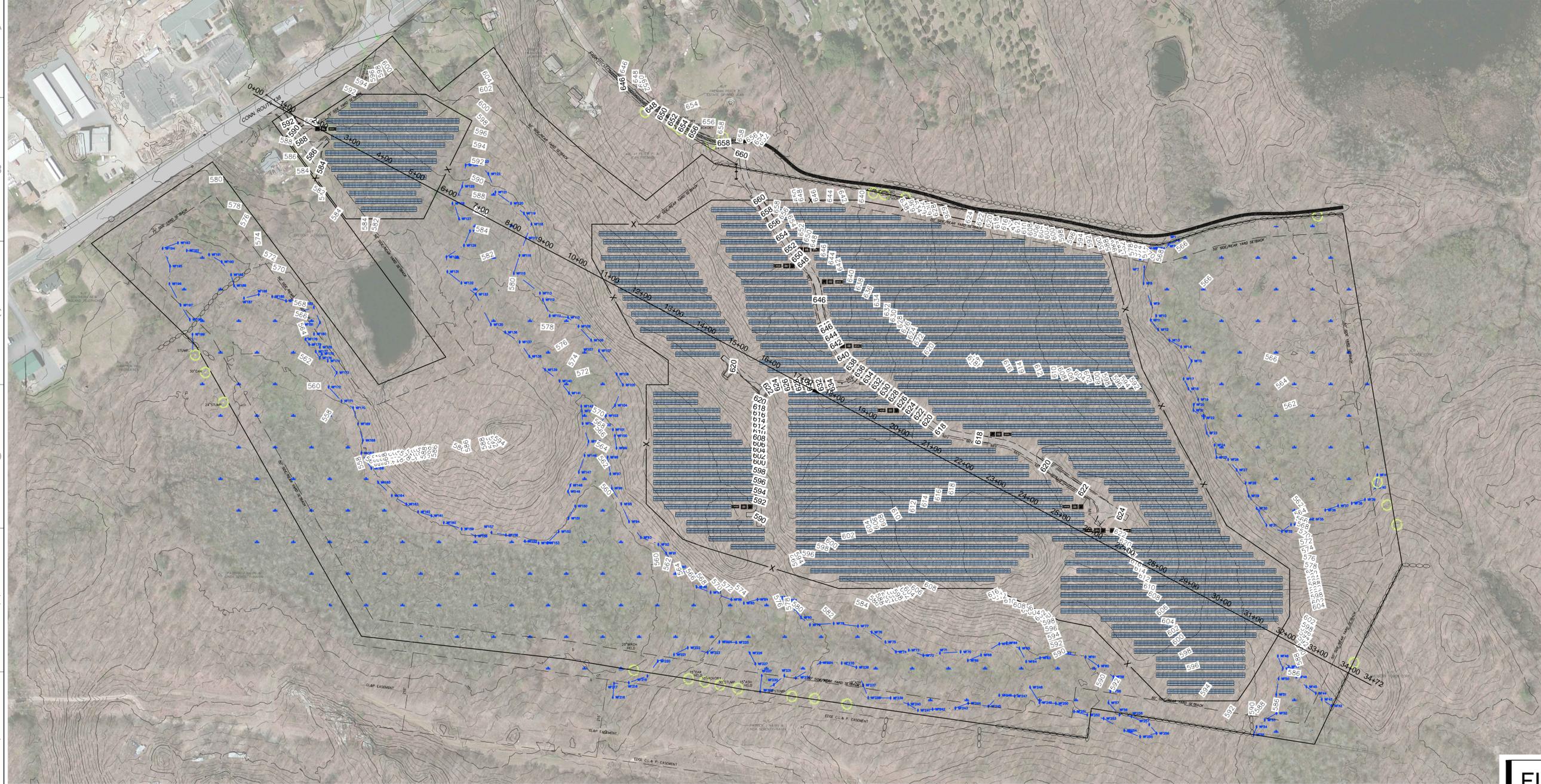
FISK ROAD SOLAR
 390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

LANDSCAPE PLAN

SITING BOARD REVIEW

DATE: 3/15/2016
 SHEET: 13 of 17

PROJECT CROSS SECTION:



Westwood

Phone (480) 747-8558 6909 East Greenway Parkway, Suite 250
 Fax (480) 376-8925 Scottsdale, AZ 85254 westwoodsps.com

Westwood Professional Services, Inc.



Designed: ADC
 Checked: SAW
 Drawn: SJB

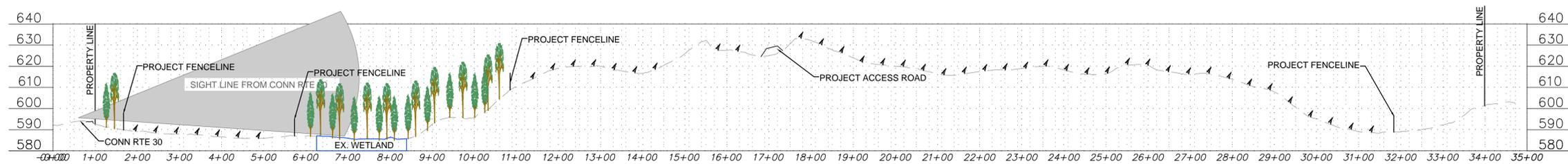
Record Drawing by/date:

Revisions:	DATE	DESCRIPTION
-	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



PROJECT PROFILE:



FISK ROAD SOLAR

390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

PROJECT CROSS SECTION

SITING BOARD REVIEW

DATE: 3/15/2016

SHEET: 14 of 17



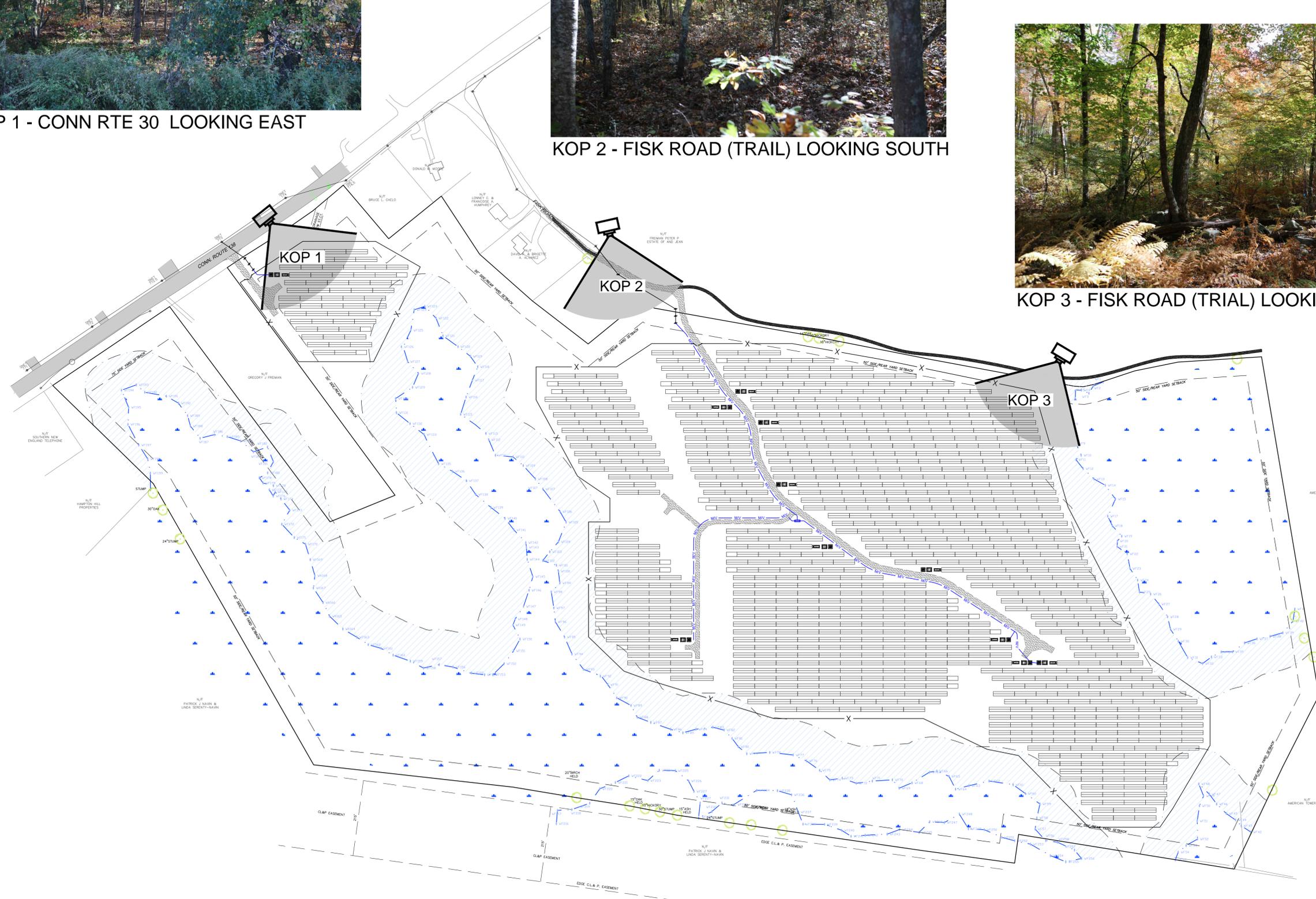
KOP 1 - CONN RTE 30 LOOKING EAST



KOP 2 - FISK ROAD (TRAIL) LOOKING SOUTH



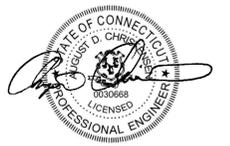
KOP 3 - FISK ROAD (TRAIL) LOOKING SOUTH



Westwood

Phone (480) 747-6558 6909 East Greenway Parkway, Suite 250
 Fax (480) 376-8925 Scottsdale, AZ 85254
 westwoodsps.com

Westwood Professional Services, Inc.



Designed: ADC
 Checked: SAW
 Drawn: SJB

Record Drawing by/date:

Revisions	DATE	DESCRIPTION
-	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



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



**FISK ROAD
 SOLAR**

390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

**KEY
 OBSERVATION
 POINT PLAN**

SITING BOARD REVIEW

DATE: 3/15/2016

SHEET: 15 of 17

ROAD DESIGN PARAMETERS

- 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

- CLEARING AND GRUBBING
 - 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.
- TOPSOIL STRIPPING
 - TOPSOIL SHALL BE STRIPPED FROM ALL ROADWAY AREAS THROUGH THE ROOT ZONE. TOPSOIL SHALL NOT BE STRIPPED OUTSIDE OF THE DESIGNATED DISTURBANCE AREAS.
 - 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.
- EMBANKMENT CONSTRUCTION.
 - EMBANKMENT CONSTRUCTION SHALL CONSIST OF THE PLACING OF SUITABLE FILL MATERIAL, AFTER TOPSOIL STRIPPING, ABOVE THE EXISTING GRADE. GENERALLY, EMBANKMENTS SHALL HAVE COMPACTED 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".
 - SIDE SLOPES GREATER THAN 2.5:1 WILL NOT BE PERMITTED, UNLESS OTHERWISE NOTED ON THE PLAN.

TESTING REQUIREMENTS:

- TESTING SHALL BE PERFORMED BY A DESIGNATED INDEPENDENT TESTING AGENCY.
- SUBMIT TESTING AND INSPECTION RECORDS SPECIFIED TO THE CIVIL ENGINEER OF RECORD FOR REVIEW.
 - 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.
- PROOF ROLLING:
 - 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.
- SIEVE ANALYSIS:
 - SIEVE ANALYSIS SHALL BE CONDUCTED IN ACCORDANCE WITH AASHTO T27
- PROCTOR:
 - PROCTORS SHALL BE DETERMINED IN ACCORDANCE WITH ASTM D-1557
- ATTERBERG LIMITS:
 - ATTERBERG LIMITS SHALL BE DETERMINED IN ACCORDANCE WITH AASHTO T89 AND T90
- MOISTURE DENSITY (NUCLEAR DENSITY):
 - MOISTURE DENSITY TESTING SHALL BE DONE IN ACCORDANCE WITH AASHTO T310

SUBGRADE COMPACTION, TEST ROLLING AND AGGREGATE BASE COMPACTION:

- FILL MATERIAL:
 - 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).
 - FOR PLACED & COMPACTED 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.
 - 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.
- COMPACTED SUBGRADE:
 - THE ENTIRE SUBGRADE SHALL BE PROOF-ROLLED PRIOR TO THE PLACEMENT OF THE AGGREGATE BASE TO IDENTIFY AREAS OF UNSTABLE SUBGRADE.
 - IF PROOF ROLLING DETERMINES THAT THE SUBGRADE STABILIZATION CANNOT BE ACHIEVED, THE FOLLOWING ALTERNATIVES WILL BE IMPLEMENTED:
 - REMOVE UNSUITABLE MATERIAL AND REPLACE WITH SUITABLE EMBANKMENT.
 - SCARIFY, DRY, AND RECOMPACT SUBGRADE AND PERFORM ADDITIONAL PROOF ROLL.
 - INCREASE ROAD BASE THICKNESS.
 - PROVIDE 1 MOISTURE DENSITY COMPACTION TESTS FOR EVERY 1000 L.F. OF ROAD LENGTH. COMPACTED SUBGRADE MUST BE COMPACTED TO A MINIMUM OF 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY AT ±3% OF OPTIMUM MOISTURE CONTENT FOR GRANULAR SOILS AND AT -1 TO +3% OF OPTIMUM MOISTURE CONTENT FOR COHESIVE SOILS.
- AGGREGATE BASE:
 - AGGREGATE BASE SHALL BE PROOF-ROLLED OVER THE ENTIRE LENGTH. PROVIDE 1 SIEVE ANALYSIS PER 2500 CY OF ROAD BASE PLACED.
 - 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:

- THE PLANIMETRIC FEATURES, GROUND SURFACE CONTOURS ON A LIDAR SURFACE PROVIDED NOAA.
- NO GRADING OR SOIL DISTURBANCE IS PERMITTED OUTSIDE OF THE GRADING LIMITS IDENTIFIED ON THE PLANS.
- GRADE ALL PROPOSED ROADS TO THE SLOPES PROPOSED ON THE PLANS.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING DRAINAGE THROUGHOUT THE CONSTRUCTION OF THIS PROJECT. CONSTRUCTION ACTIVITIES SHALL NOT BLOCK THE NATURAL OR MANMADE CREEKS OR DRAINAGE SWALES CAUSING RAINWATER TO POND. ADDITIONAL CULVERTS IN EXCESS OF THOSE ON THE PLANS MAY BE REQUIRED AS APPROVED BY THE ENGINEER.
- THE CONTRACTOR SHALL NOTIFY DIGSAFE AT LEAST 48 HOURS BEFORE EXCAVATION ACTIVITIES COMMENCE.
- WETLAND INFORMATION SHOWN ON THE PLAN WAS PROVIDED BY ROB HELLSTROM 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.
- 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):

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

SLOPE STABILIZATION:

ALL AREAS DESIGNATED ON THE PLAN FOR SLOPE STABILIZATION SHALL BE GRADED AND COMPACTED, 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 RIP-RAP

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 COMPACTED 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.

- STABILIZATION WITH EROSION CONTROL AND REVEGITATION MAT (ECRM)
 - AREA MUST BE GRADED SMOOTH AND CLEAN TO FINISH GRADES, AND COMPACTED.
 - 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:

- GRADE GROUND TO FINISH CONTOURS. REMOVE ALL ROCKS, DIRT CLOUDS, STUMPS, ROOTS, TRASH, AND OTHER OBSTRUCTIONS LYING IN DIRECT CONTACT WITH THE SOIL SURFACE.
- DIG MAT ANCHOR TRENCHES (MINIMUM 12"DEEP, 6" WIDE) AT TERMINAL ENDS AND PERIMETER SIDES WHERE MAT IS TO BE INSTALLED.
- 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 NO 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 T88 OR EQUIVALENT.

SEEDING:

- 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.
- RESTORED AREAS TO BE SEEDED WITH ABOVE MIX OR EQUAL (SUBJECT TO ENGINEERS APPROVAL). SEED TO BE LIGHTLY RAKED TO ALLOW FOR PROPER SEED/SOIL CONTACT.
- 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.
- RILLING, GULLIES, OR OTHER EROSION DUE TO POOR COVER SHALL BE RAKED AND/OR REFILLED AND REMULCH/RESEDED.
- CONTRACTOR SHALL WARRANTEE SEEDING, MULCHING AND EROSION CONTROL FABRIC FOR ONE YEAR FROM THE SUBSTANTIAL COMPLETION OF THE RELEVANT AREA OF WORK.

INVASIVE SPECIES:

- ALL EQUIPMENT SHALL BE INSPECTED UPON ARRIVAL. EQUIPMENT ARRIVING WITH OBSERVABLE SOIL OR PLANT FRAGMENTS WILL BE REMOVED AND CLEANED.
- HAY BALES ARE NOT BE USED ON SITE; ONLY WEED-FREE STRAW BALES ARE APPROVED.
- OFF-SITE TOPSOIL MUST BE FREE OF INVASIVE SPECIES. THE ENGINEER SHALL BE NOTIFIED OF THE TOPSOIL SOURCE 6 WEEKS BEFORE DELIVERY.



Designed: ADC

Checked: SAW

Drawn: SJB

Record Drawing by/date:

Revisions	DATE	DESCRIPTION
1	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



FISK ROAD SOLAR

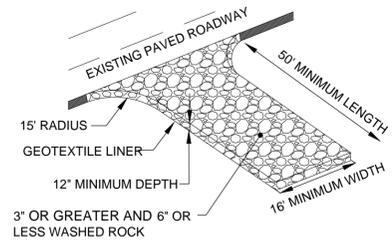
390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

CIVIL AND EROSION CONTROL NOTES

SITING BOARD REVIEW

DATE: 3/15/2016

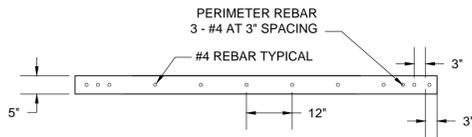
SHEET: 16 of 17



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



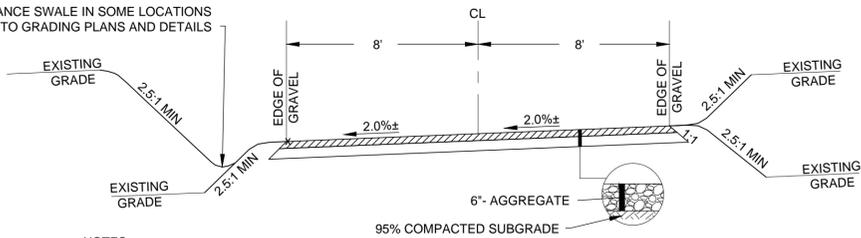
NOTES:
REBAR 3" FROM ALL EDGES & CUTOUTS. 3" SPACING ON FIRST THREE PERIMETER REBARS, 12" ON ALL OTHER INTERIOR.

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

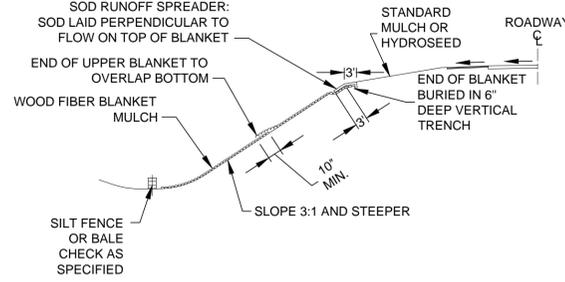
CONVEYANCE SWALE IN SOME LOCATIONS REFER TO GRADING PLANS AND DETAILS



NOTES:

1. CONTRACTOR TO SUBCUT ROADWAY TO EXISTING GRADE ELEVATION TO MAINTAIN EXISTING SITE DRAINAGE PATTERNS WHEREVER POSSIBLE.
2. IN FILL LOCATIONS CONTRACTOR TO GRADE TOE OF SLOPE TO EXISTING GRADE, AND MAINTAIN NATURAL DRAINAGE PATTERNS.
3. IN CUT LOCATIONS CONTRACTOR TO CREATE SWALE ON DOWNSTREAM SIDE, REFER TO GRADING PLANS FOR DETAILS.
4. CONTRACTOR TO COMPACT AGGREGATE TO 95% MAXIMUM DRY DENSITY.
5. REFER TO GEOTECHNICAL RECOMMENDATIONS FOR ADDITIONAL ROADWAY SECTION DESIGN INFORMATION.

ACCESS ROAD DETAIL



EROSION CONTROL BLANKET INSTALLATION ON AN SLOPE (WHEN REQUIRED)

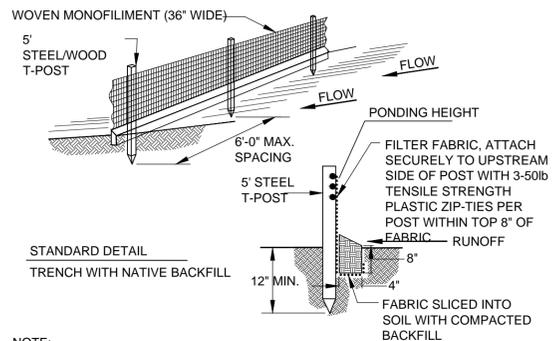
CATEGORY	SLOPE	VELOCITY
1	FLAT	-
2	3:1	< 5.0 fps
3	3:1	< 6.5 fps
4	2:1	< 7.0 fps

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

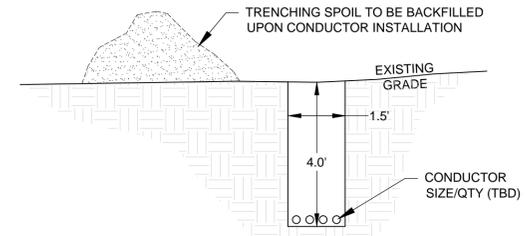
EROSION CONTROL BLANKET



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".

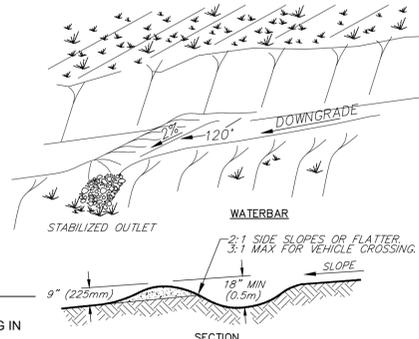
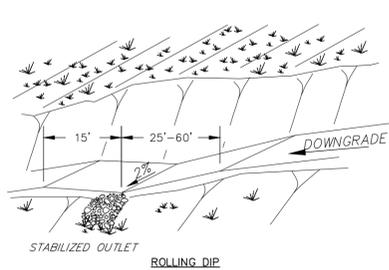
SILT FENCE



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

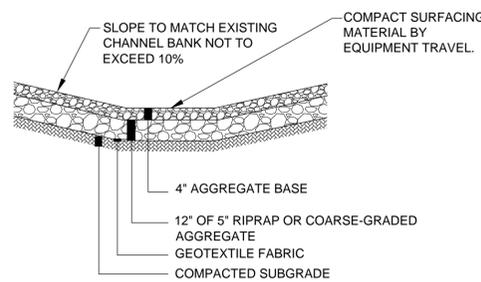


SLOPE (%)	SPACING (FT)
<5	125
5-10	100
10-20	75

NOTE:

1. CONTRACTOR HAS THE ABILITY DEPENDING ON FIELD LOCATED GRADE AND GRADE TRANSITIONS TO INSTALL ROLLING DIPS OR WATERBARS AT THE RECOMMENDED SPACING IN TABLE 1.
2. ROLLING DIPS AND WATERBARS WILL REQUIRE MAINTENANCE FOLLOWING RAINFALL EVENTS TO ENSURE FUNCTIONALITY.
3. THE ROLLING DIPS AND WATERBARS SHOULD BE BUILT AT AN ANGLE OF 45° TO 60° FROM THE CENTERLINE.
4. THE DIVERSION SHOULD HAVE A POSITIVE GRADE OF 2% MINIMUM.
5. FOR ROLLING DIPS, THE HEIGHT FROM CHANNEL BOTTOM TO THE TOP OF THE SETTLED RIDGE SHALL BE 18 INCHES AND THE SIDE SLOPES OF THE RIDGE SHALL BE 2:1 OR FLATTER.
6. STABLE OUTLETS SHALL EITHER BE AN EXTENSION OF AN ADJACENT SWALE, OR 2 CU. YD. 6" RIP RAP AT OTHER LOCATIONS.
7. SEDIMENT SHALL BE REMOVED FROM THE FLOW AREA THROUGHOUT THE DURATION OF THE PROJECT, REFER TO THE PROJECTS STORMWATER O&M MANUAL.

ROLLING DIP AND WATERBAR

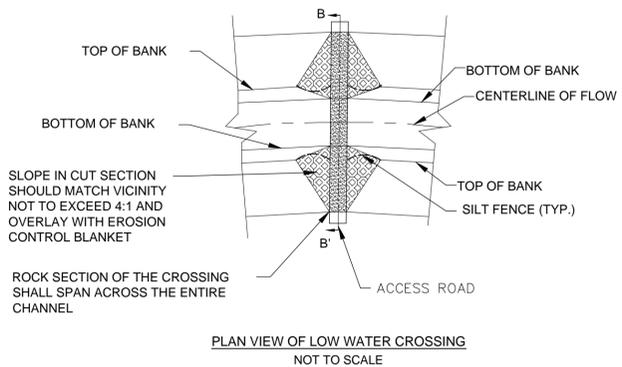


SECTION B' - B'
PROFILE ALONG CENTERLINE OF LOW WATER CROSSING
NOT TO SCALE

NOTE:

1. CROSSINGS SHALL HAVE THE TOP-MOST SURFACE LAYER EVEN OR BELOW THE ELEVATION OF THE EXISTING WETLAND.
3. THE ACCESS ROAD SHALL CROSS THE CONVEYANCE AT 90° ANGLE.
4. THE TOP BED OF THE ROCK CHANNEL CROSSING SHALL CONFORM TO THE EXISTING DITCH CROSS SECTIONAL SLOPES.
5. MATERIAL THICKNESSES MAY BE FIELD ADJUSTED TO ACHIEVE SUFFICIENT BEARING CAPACITIES AS ARE NECESSARY FOR ANTICIPATED ROAD USE.

LOW WATER CROSSING



PLAN VIEW OF LOW WATER CROSSING
NOT TO SCALE



Designed: ADC

Checked: SAW

Drawn: SJB

Record Drawing by/date:

Revisions	DATE	DESCRIPTION
-	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



FISK ROAD SOLAR

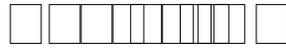
390 HARTFORD TURNPIKE
HAMPTON, CT 06247
WINDHAM COUNTY

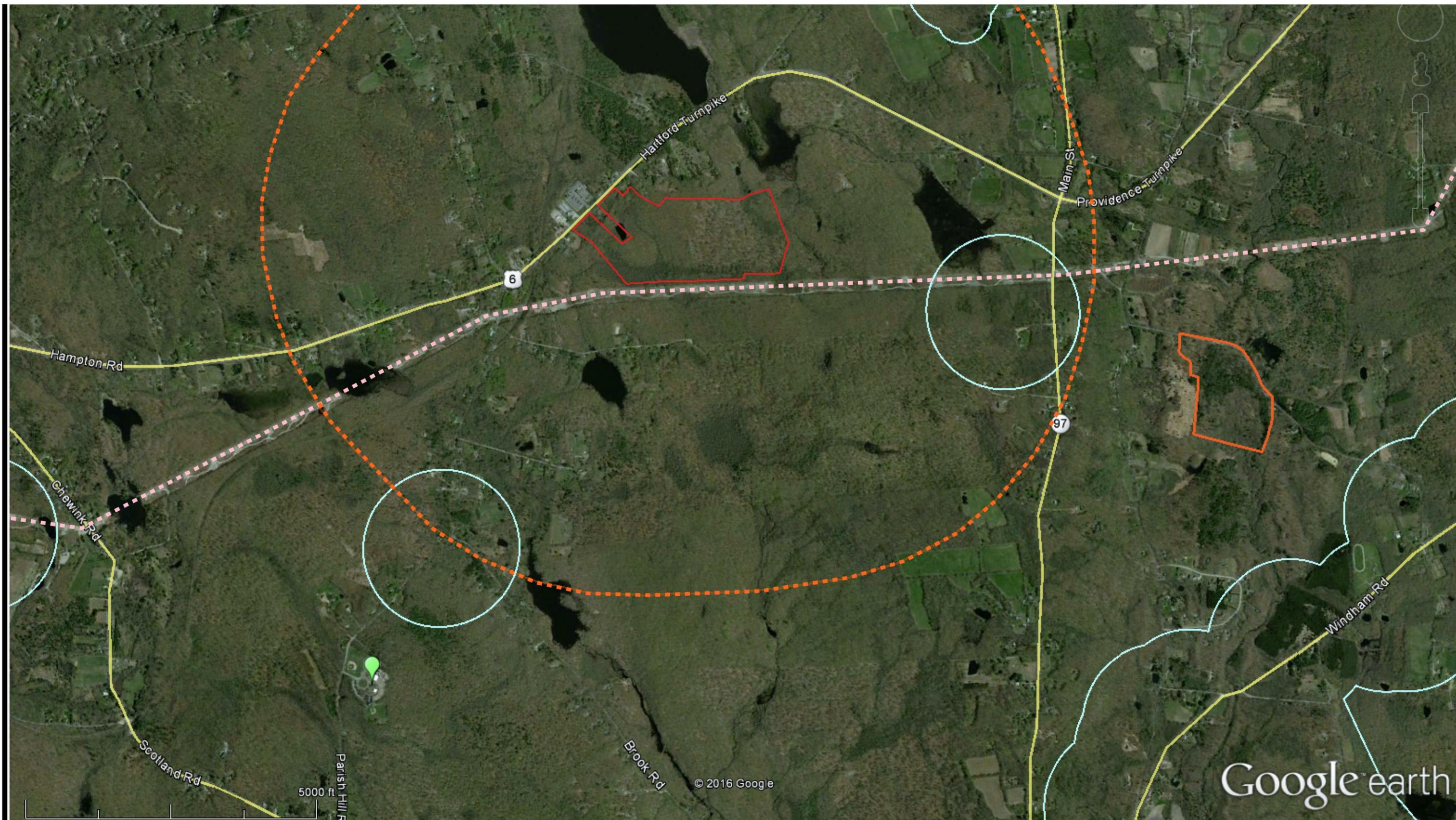
CIVIL AND EROSION CONTROL DETAILS

SITING BOARD REVIEW

DATE: 3/15/2016

SHEET: 17 of 17





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

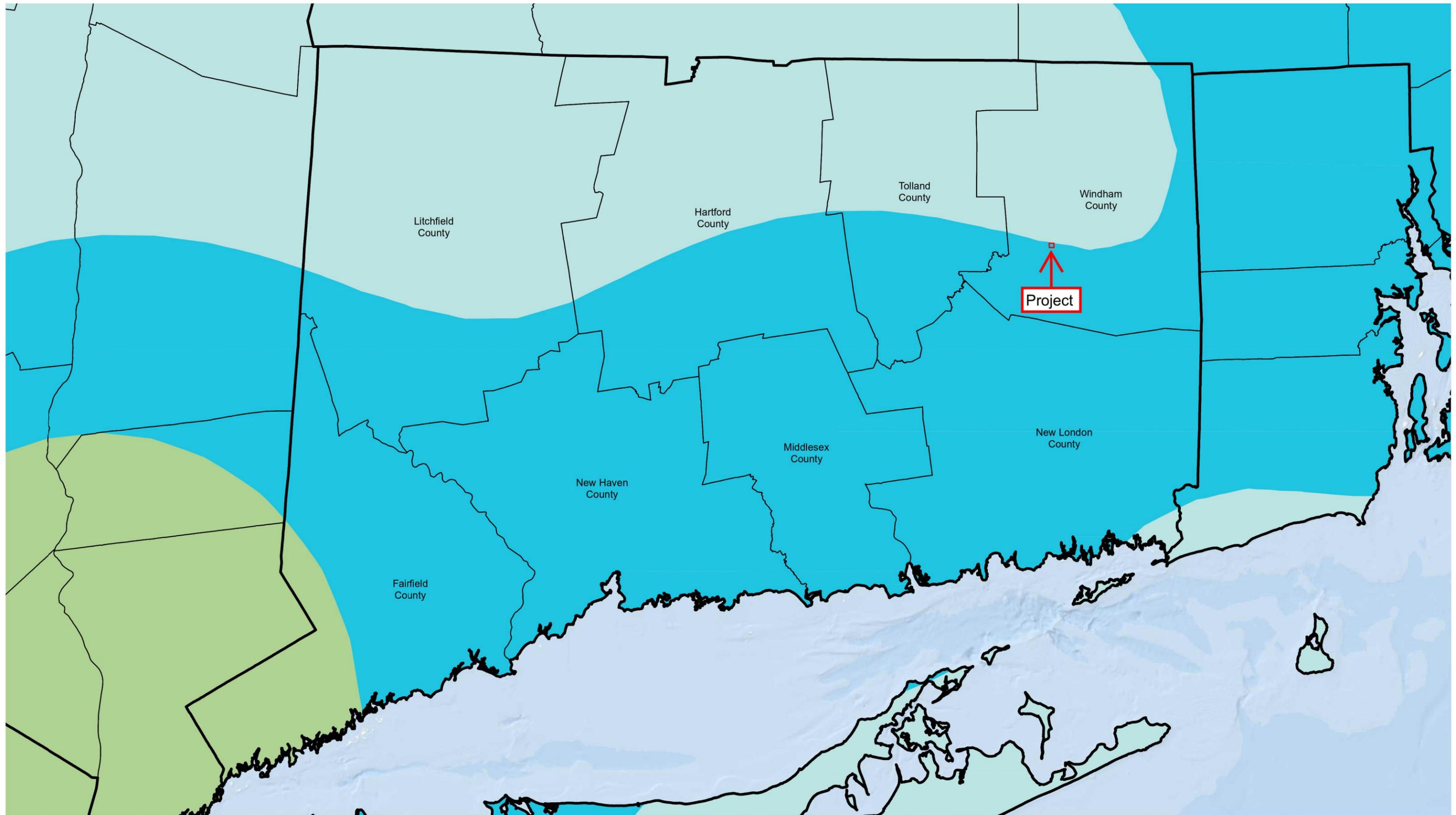
Notes:

- 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.

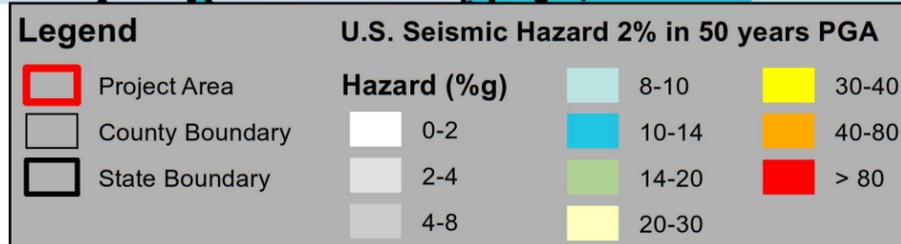
Legend		Critical Habitat
	Project Area	Palustrine Forested
	1 Mile Project Buffer	Natural Diversity Area
	County Border	WMA
	School	Transmission Line
	Road	

Fisk Solar
Windham County, Connecticut
Vicinity Map

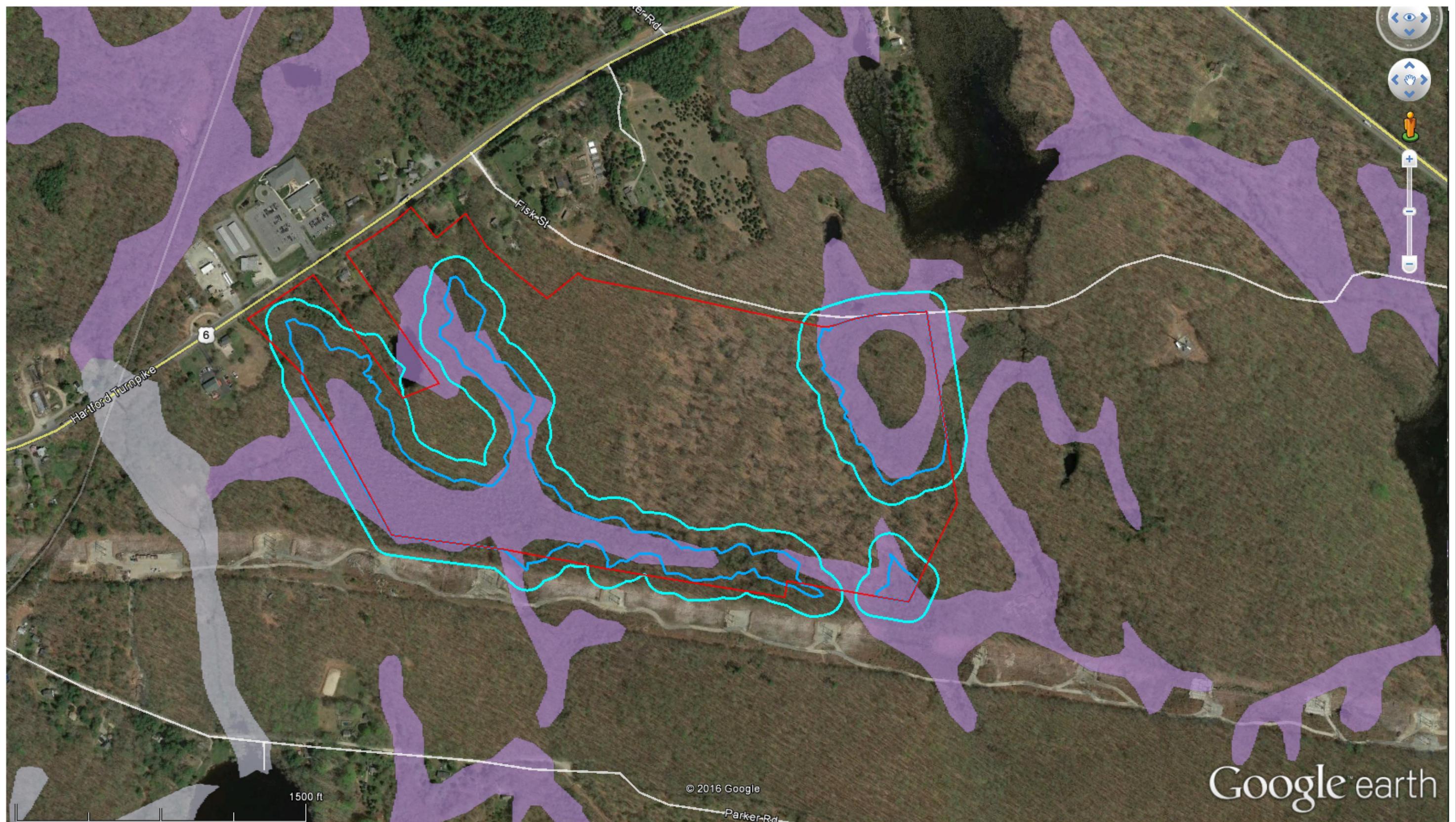
February 4, 2016



Data Source(s): World Oceans Map via Esri WMS (Accessed 2015);



Fisk Solar
 Windham County, Connecticut
 2014 Connecticut
 Hazard Map
 February 4, 2016



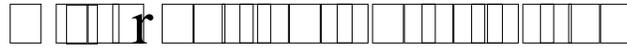
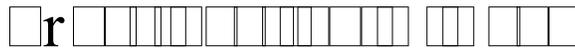
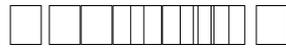
Data Source(s): DEEP (2015)

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

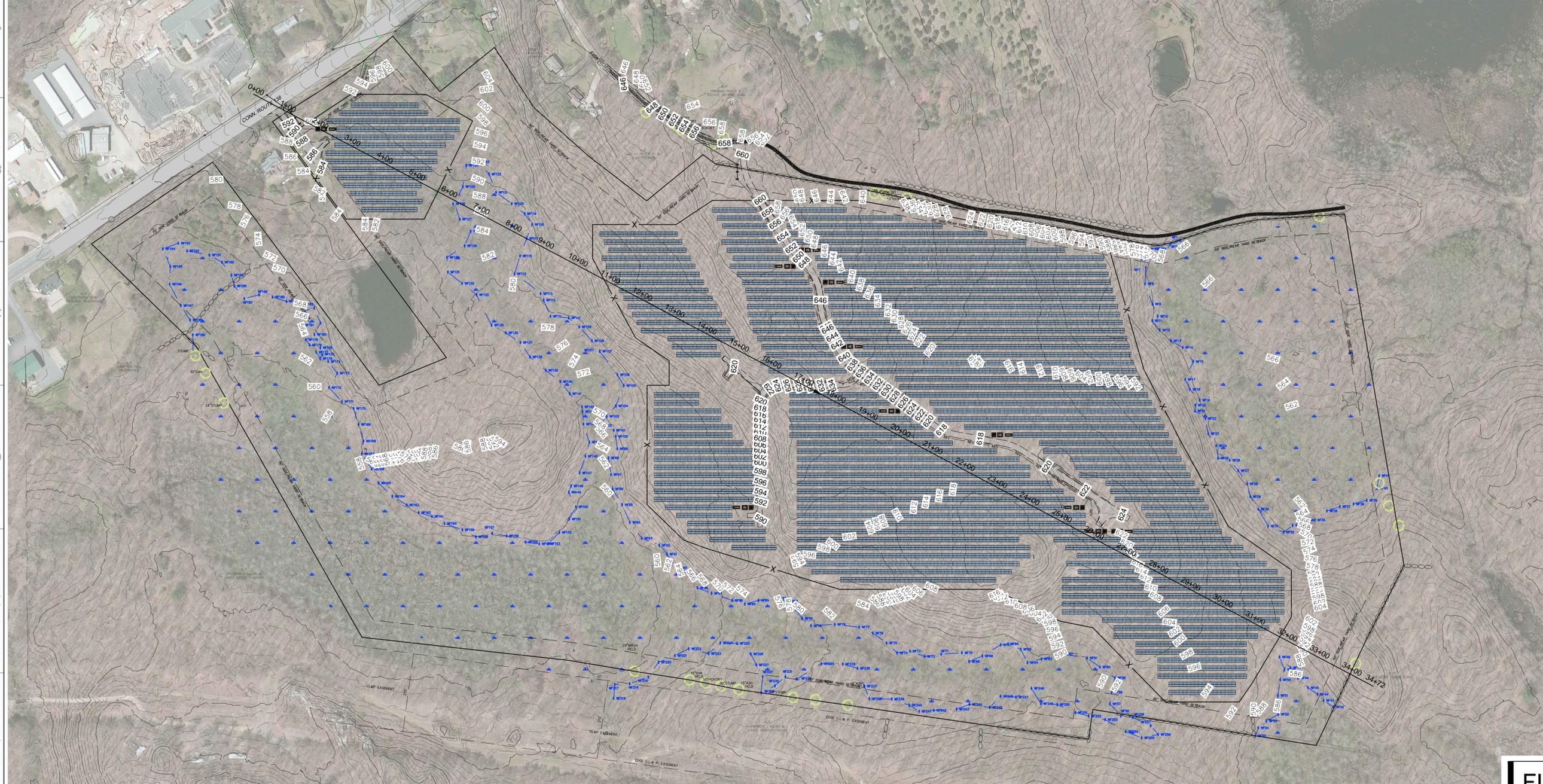
Legend

- Project Area
- Inland Wetland Soils**
- Poorly Drained and Very Poorly Drained Soils
- Alluvial and Floodplain Soils
- Wetland Delineated
- Wetland Buffer Delineated

Fisk Solar
 Windham County, Connecticut
Soils and Delineated Wetlands
 February 4, 2016



PROJECT CROSS SECTION:



Westwood

Phone (480) 747-8558 6909 East Greenway Parkway, Suite 250
 Fax (480) 376-8925 Scottsdale, AZ 85254 westwoodsps.com

Westwood Professional Services, Inc.



Designed: ADC
 Checked: SAW
 Drawn: SJB

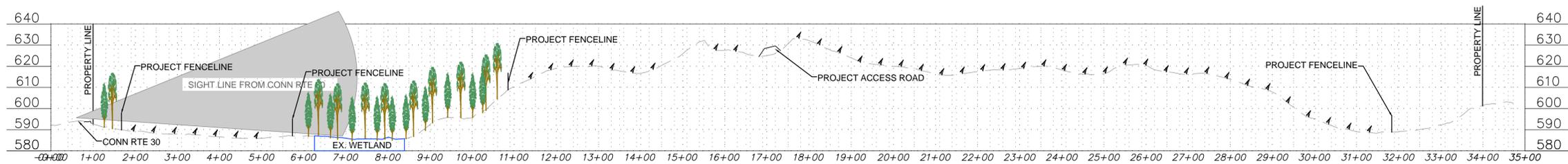
Record Drawing by/date:

Revisions:	DATE	DESCRIPTION
-	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



PROJECT PROFILE:



FISK ROAD SOLAR

390 HARTFORD TURNPIKE
 HAMPTON, CT 06247
 WINDHAM COUNTY

PROJECT CROSS SECTION

SITING BOARD REVIEW

DATE: 3/15/2016

SHEET: 14 of 17



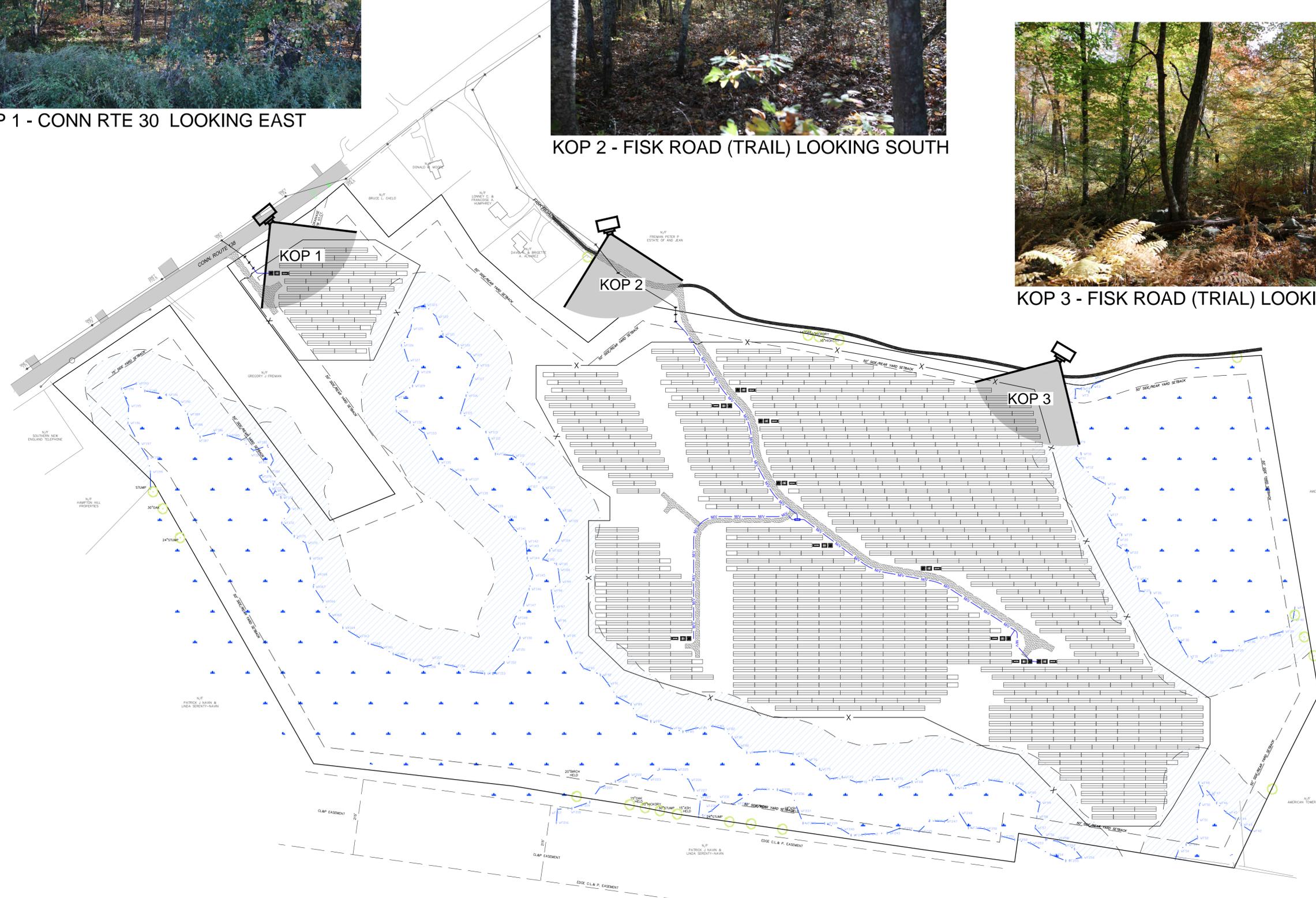
KOP 1 - CONN RTE 30 LOOKING EAST



KOP 2 - FISK ROAD (TRAIL) LOOKING SOUTH



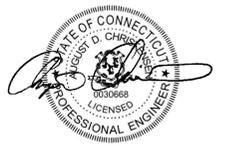
KOP 3 - FISK ROAD (TRAIL) LOOKING SOUTH



Westwood

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

Westwood Professional Services, Inc.



Designed: ADC

Checked: SAW

Drawn: SJB

Record Drawing by/date:

Revisions	DATE	DESCRIPTION
-	3/15/2016	CT SITING BOARD SUBMISSION

Prepared for:



**FISK ROAD
SOLAR**

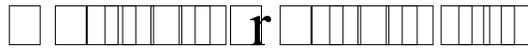
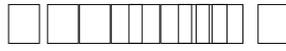
390 HARTFORD TURNPIKE
HAMPTON, CT 06247
WINDHAM COUNTY

**KEY
OBSERVATION
POINT PLAN**

SITING BOARD REVIEW

DATE: 3/15/2016

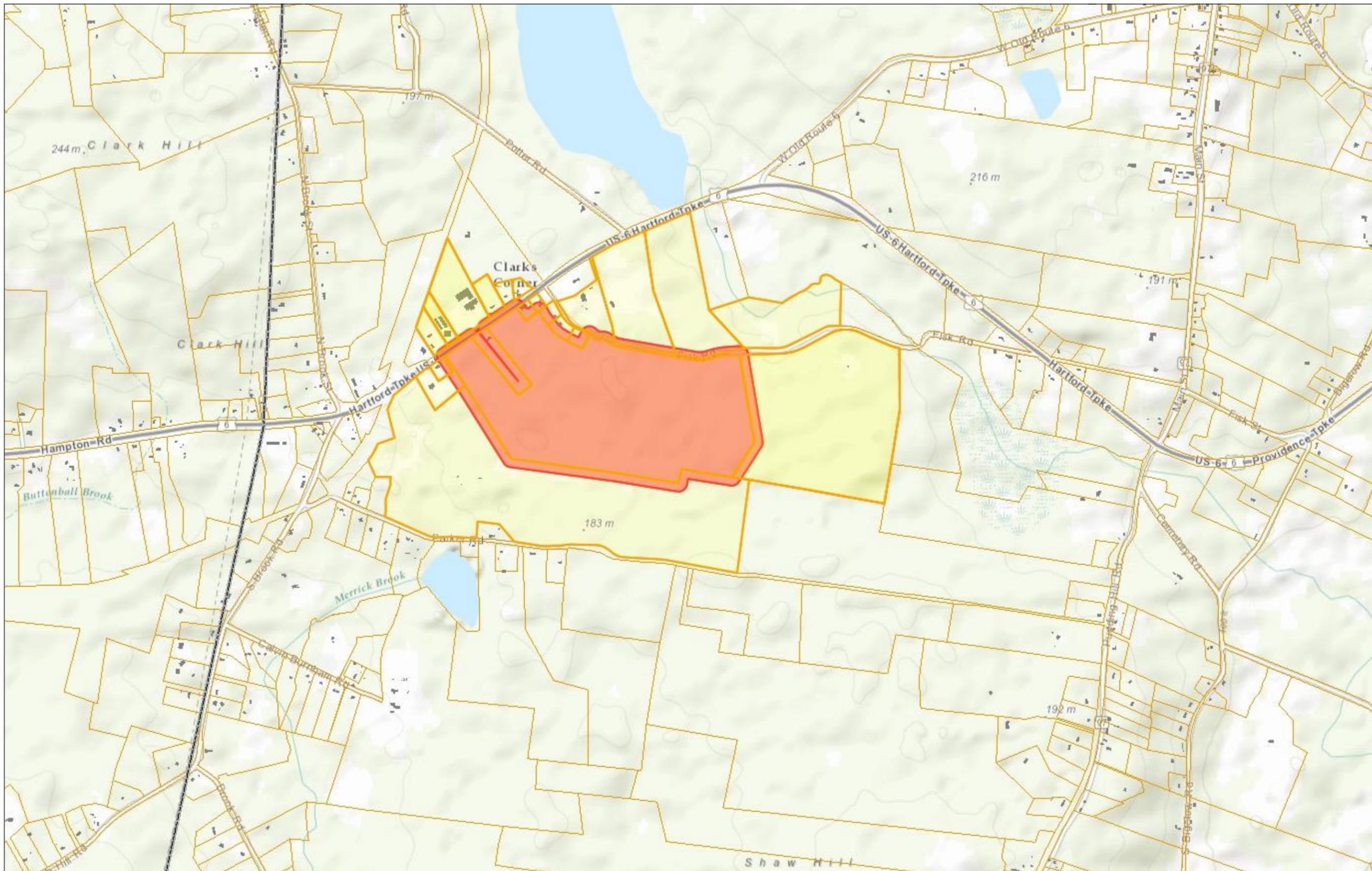
SHEET: 15 of 17





neccog

Fisk Solar Abutters Map



Legend

- Town
- Buildings
- Parcels

1: 18,055



0.6 0 0.28 0.6 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere
© Latitude Geographics Group Ltd.

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

HAMPTON HILL PROPERTIES LLC
407 HARTFORD TPKE
HAMPTON CT 06247

SCHIMMELPFENNIG JOHN L + WILLARD WAN
484 PROVIDENCE TPKE
HAMPTON CT 06247

SCHIMMELPFENNIG JOHN L + WILLARD WAN
484 PROVIDENCE TPKE
HAMPTON CT 06247

FREIMAN PETER ESTATE OF
379 HARTFORD TPKE
HAMPTON CT 06247

ANDERSEN BARBARA E & HUCHTHAUSEN TI
329 HARTFORD TURNPIKE
HAMPTON CT 06247

SOUTHERN NEW ENGLAND TELEPHONE CO
401 MERRITT 7
NORWALK CT 06851

NEXT DOOR FARM LLC
P O BOX 37
HAMPTON CT 06247

SMAT PETER A & NICLOLE A
362 HARTFORD TPKE
HAMPTON CT 06247

ALVAREZ DAVID R & BRIGETTE A
19 FISK RD
HAMPTON CT 06247

FREIMAN GREGORY J
379 HARTFORD TPKE
HAMPTON CY 06247

BBVK ASSOCIATES LLC
173 POND HILL RD
MOOSUP CT 06354

MOORE DONALD M
PO BOX 108
NO WINDHAM CT 06256

EASTCONN
376 HARTFORD TPKE
HAMPTON CT 06247

EASTCONN
376 HARTFORD TPKE
HAMPTON CT 06247

AP PROPANE INC D/B/A
POBOX 798
VALLEY FORGE PA 19482

AP PROPANE INC D/B/A
POBOX 798
VALLEY FORGE PA 19482

NAVIN PATRICK J & SERENTY-NAVIN LINDA
P O BOX 23
NO WINDHAM CT 06256

FREIMAN PETER P ESTATE OF AND JEAN
379 HARTFORD TPK
HAMPTON CT 06247

KINZER & KINZER ASSOCIATES LLC
PO BOX 423
CHAPLIN CT 06235

CHELO BRUCE L
2525 MENDON RD
CUMBERLAND RI 02864

KINZER & KINZER ASSOCIATES LLC
PO BOX 423
CHAPLIN CT 06235

KINZER & KINZER ASSOCIATES LLC
PO BOX 423
CHAPLIN CT 06235

HUMPHREY LONNEY C & HUMPHREY FRANC
17 FISK RD
HAMPTON CT 06247

HALMORA LLC
105-39 MAPLE AVE
VERNON CT 06066

AMERICAN TOWER CORP
P.O. BOX 723597
ATLANTA GA 31139

JOSHUAS TRACT CONSERVATION AND
P O BOX 4
MANSFIELD CENTER CT 06250

NEXT DOOR FARM LLC
PO BOX 37
HAMPTON CT 06247

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 0082 9950 9318 08

Hampton Hill Properties LLC
407 Hartford Turnpike
HAMPTON CT 06247-3622



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0079 3924 1219 63

John Schimmelpfenning and Wan Willard
484 Providence Turnpike
HAMPTON CT 06247-1430



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0079 3924 1222 12

Estate of Peter Freiman
379 Hartford Turnpike
HAMPTON CT 06247-3609



Fisk Road 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

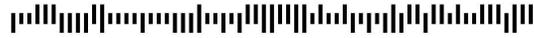
071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 3990 5921 08

Barbara Andersen and Ti Huchthausen
329 Hartford Turnpike
HAMPTON CT 06247-3608



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0083 0082 7721 15

Southern New England Telephone Co
401 Merritt 7
NORWALK CT 06851-1000



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 8950 9698 42

Next Door Farm LLC
PO Box 37
HAMPTON CT 06247-0037



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 9950 9333 76

Peter Smat and Nicole Smat
362 Hartford Turnpike
HAMPTON CT 06247-3612



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 9950 9336 35

David Alvarez and Brigette Alvarez
19 W. Fisk Road
HAMPTON CT 06247-1467



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 8950 9704 35

Gregory Freiman
379 Hartford Turnpike
HAMPTON CT 06247-3609



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 9950 9341 68

HamptonBelles LLC
10 Michelle Lane
MANSFIELD CENTER CT 06250-1652



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 8950 9708 79

Donald Moore
PO Box 108
HAMPTON CT 06247



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 3990 5938 15

Eastonn
376 Hartford Turnpike
HAMPTON CT 06247-1320



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0083 0082 7741 02

Amerigas Propane Inc
PO Box 798
VALLEY FORGE PA 19482-0798



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 9950 9352 26

Patrick Navin and Linda Serenity Navin
PO Box 23
NORTH WINDHAM CT 06256-0023



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 9950 9354 86

Estate of Peter and Jean Freiman
379 Hartford Turnpike
HAMPTON CT 06247-3609



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0079 3924 1254 73

Mickey Pankaj LLC
396 Hartford Turnpike
HAMPTON CT 06247-3612



Fisk Road 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

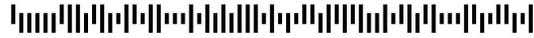
071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 3990 5950 48

Bruce Chelo
2525 Mendon Road
CUMBERLAND RI 02864-3707



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 1950 8080 47

Lonney Humphrey and Franc Humphrey
17 W. Fisk Road
HAMPTON CT 06247-1467



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 3990 5956 59

Halmora LLC
105-39 Maple Ave
VERNON CT 06066-5451



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 9950 9366 50

American Tower Corp
PO Box 723597
ATLANTA GA 31139-0597



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0083 0082 7760 90

Joshuas Tract Conservation
PO Box 4
MANSFIELD CENTER CT 06250-0004



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 8950 9737 95

Next Door Farm LLC
PO Box 37
HAMPTON CT 06247-0037



Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0079 3924 1695 90

Office of the Attorney General
George C. Jepsen, Attorney General
55 Elm Street
HARTFORD CT 06106-1746



Petition for Declaratory Ruling for Fisk Road Solar Project

3/14/2016

Print Label

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

071S0077793

USPS CERTIFIED MAIL



9407 1102 0088 3990 6658 64

Department of Public Health
Dr. Jewel Mullen, Commissioner
PO Box 340308
410 Capitol Avenue
HARTFORD CT 06134-0438



FOLD ALONG THIS LINE

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 0082 9950 9792 51

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



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 3990 6387 69

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



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 9950 9796 71

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



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 9950 9798 48

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 Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 1950 8517 08

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



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0079 3924 1717 39

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



Petition for Declaratory Ruling for Fisk Road 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



071S00777793

USPS CERTIFIED MAIL



9407 1102 0083 0082 8234 28

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



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 1950 8522 24

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



Petition for Declaratory Ruling for Fisk Road Solar Project

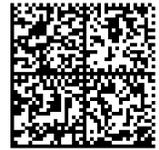
3/14/2016

Print Label

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 2090 12

Dept of Economic Community Development
Catherine H. Smith, Commissioner
505 Hudson Street
HARTFORD CT 06106-7106



FOLD ALONG THIS LINE

3/14/2016

Print Label

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 0082 9951 0230 07

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



FOLD ALONG THIS LINE

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 0082 8951 0181 67

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 Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 1950 8534 81

CT State Representative District 047
Doug Dubitsky, State Representative
Legislative Office Building
Room 4046
HARTFORD CT 06106-1591



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 1950 8536 72

CT State Senate District S35
Anthony Guglielmo, State Senator
Legislative Office Building
Room 3400
HARTFORD CT 06106



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 2950 9256 59

Town of Hampton
Allan Cahill, First Selectman
164 Main St
HAMPTON CT 06247-1442



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0079 3924 1742 80

Town of Hampton Zoning Board of Appeals
Edward Burchfield, Chairman
164 Main St
HAMPTON CT 06247-1442



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0079 3924 1745 94

Town of Hampton Planning and Zoning Commission
Kevin Grindle, Chairman
164 Main St
HAMPTON CT 06247-1442



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0079 3924 1748 53

Town of Hampton
Martha Fraenkel, Land Use Planner
164 Main St
HAMPTON CT 06247-1442



Petition for Declaratory Ruling for Fisk Road Solar Project

3/14/2016

Print Label

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 0083 0082 8772 78

Town of Hampton Conservation and Ag Commission
Don Bezason, Chair
164 Main St
HAMPTON CT 06247-1442



FOLD ALONG THIS LINE

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 1752 87

Twon of Hampton Inland Wetlands Commission
Stanley Crawford, Chair
164 Main St
HAMPTON CT 06247-1442



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 2950 9272 40

Town of Hampton Town Clerk
Leslie Wertam, Town Clerk
164 Main St
HAMPTON CT 06247-1442



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0083 0082 8276 00

Town of Chaplin
Matthew Cunningham, First Selectman
495 Phoenixville Road
CHAPLIN CT 06235-2420



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 3990 6434 04

Town of Chaplin Zoning Board of Appeals
Susan Peifer, Chairman
495 Phoenixville Road
CHAPLIN CT 06235-2420



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 1950 8561 61

Town of Chaplin Planning and Zoning Commission
Doug Dubitsky, Chairman
495 Phoenixville Road
CHAPLIN CT 06235-2420



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 8951 0217 61

Town of Chaplin
James Gigliotti, Zoning Officer
495 Phoenixville Road
CHAPLIN CT 06235-2420



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 1950 8568 02

Town of Chaplin Conservation Commission
Scott Matthies
495 Phoenixville Road
CHAPLIN CT 06235-2420



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0088 2950 9288 96

Town of Chaplin Inland Wetlands Commission
Scott Matthies, Chairman
495 Phoenixville Road
CHAPLIN CT 06235-2420



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL



9407 1102 0083 0082 8293 07

Town of Chaplin Town Clerk
Shari Smith, Town Clerk
495 Phoenixville Road
CHAPLIN CT 06235-2420



Petition for Declaratory Ruling for Fisk Road 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



071S00777793

USPS CERTIFIED MAIL



9407 1102 0082 8951 0226 90

Northeastern Connecticut Council of Governments
John Filchak, Executive Director
PO Box 759
DAYVILLE CT 06241-0759



Petition for Declaratory Ruling for Fisk Road 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

071S00777793

USPS CERTIFIED MAIL

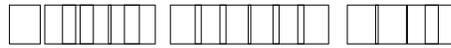


9407 1102 0082 9950 9374 28

State of Connecticut
24 Wolcott Hill Road
WETHERSFIELD CT 06109-1152



Fisk Road Solar Project



Phase I Environmental Site Assessment

**Fisk Road
Hampton, 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
Fisk Road, Hampton, 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 near Fisk Road in Hampton, 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 blue 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

Fisk Road

Hampton, Connecticut

Executive Summary	1
Introduction	3
Purpose	3
Scope of Services.....	4
Significant Assumptions, Limitations, Deviations, Exceptions, Special Terms, and Conditions.....	5
User Reliance.....	5
Site Description.....	6
Location	6
Subject Property and Vicinity General Characteristics	6
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	8
Regional Groundwater Occurrence and Quality	8
Standard Environmental Record Sources	8
Subject Property.....	9
Offsite Properties.....	9
Orphan Listings.....	10
Additional Environmental Record Sources	10
Review of Agency Files	10
Subject Property	10
Adjacent Properties.....	10
Nearby Sites.....	11
Known or Suspect Contaminated Release Sites with Potential Vapor Migration.....	12
Review of Connecticut Oil and Gas Sites.....	13
Historical Use Information on the Property and the Adjoining Properties	13
Review of Historic Aerial Photographs	13
Review of City Directory Listings.....	13
Review of Fire Insurance Maps	13
Review of Historic Topographic Maps	13
Review of Town of Hampton Building Permit Records.....	13
Other Historic Sources.....	13
Summary of Historic Uses	14
Subject Property	14



Northern Adjacent Properties (309, 329, 347, and 349 Hartford Turnpike).....	15
Eastern Adjacent Properties	15
Southern Adjacent Properties	15
Western Adjacent Properties (354-407 Hartford Turnpike).....	15
Gaps in Historical Sources	16
Interviews.....	16
Interview with Owner.....	16
Interview with Site Manager.....	18
Interviews with Occupants	18
Interviews with Local Government Officials.....	18
Interviews with Others	18
Site Reconnaissance	18
Methodology and Limiting Conditions.....	19
Current Use of the Property and Adjacent Properties	19
Past Use of the Property and Adjacent Properties.....	19
Current or Past Uses in the Surrounding Areas.....	19
Geologic, Hydrogeologic, Hydrologic and Topographic Conditions.....	19
General Description of Structures	19
Interior and Exterior Observations	19
Storage Tanks.....	19
Drums	19
Hazardous Substances and Petroleum Products.....	20
Unidentified Substance Containers	20
Odors.....	20
Pools of Liquid.....	20
Indications of Polychlorinated Biphenyls (PCBs).....	20
Other Conditions of Concern.....	20
Evaluation	21
Findings	21
Opinions.....	21
Conclusions	22
Recommendations	22
Deviations.....	22
References	23
Signatures of Environmental Professionals.....	24
Qualifications of Environmental Consultants.....	25

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 99.7-acre property located at Fisk Road, Hampton, Connecticut (Figure 1, Vicinity Map). The subject property is currently undeveloped woodland.

Rincon Consultants performed a reconnaissance of the subject property on October 20, 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. Because the subject property is currently dense woods with no trails, the subject property was observed from Fisk Road and Hartford Turnpike. The use, storage or disposal of hazardous materials on the subject property was not observed during the site reconnaissance. Power lines were observed along the southern border of the subject property.

The subject property is located in an area that is primarily comprised of residential, commercial, light industrial, agricultural, and vacant land uses. Properties in the vicinity of the subject property include single-family homes, farms, a conference center, a self-storage facility, Amerigas, a Frontier Communications facility, and an automobile garage.

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. Two adjacent properties were listed in databases searched by EDR: Prym's Mill was listed as a Brownfields site, and SNET was listed as a Property Transfer Filings (CT Property) and a Site Discovery and Assessment Database (SDADB) site.

- ***Prym's Mill - 400 Hartford Turnpike:*** This property, located approximately 80 feet to the northwest of the subject property across Hartford Turnpike, was listed in the Brownfields Inventory, which consists of over 200 brownfields sites identified by the Connecticut Brownfields Redevelopment Authority (CBRA) that are eligible for redevelopment. This listing indicates that the property was formerly used as a "metal shop." According to the State of Connecticut Department of Energy and Environmental Protection website, a brownfield site is defined by Connecticut General Statutes §32-9kk(a)(1) as "*any abandoned or underutilized site where redevelopment, reuse or expansion has not occurred due to the presence or potential presence of pollution in the buildings, soil or groundwater that requires investigation or remediation before or in conjunction with the restoration, redevelopment, reuse and expansion of the property.*" During the site reconnaissance, this former mill site was observed to be occupied by Amerigas. The property was not listed on the online Connecticut Department of Energy and Environmental Protection (DEEP) Brownfields Inventory¹. Rincon contacted Mr. Kevin Neary of the DEEP Remediation Division on November 10, 2015 requesting additional information on this site. On November 17, 2015 Mr. Neary indicated that the Remediation Division has no records for the former Prym's Mill property. In addition, Rincon submitted a request to the DEEP Records Center regarding records for this property. On November 20, 2015 the DEEP indicated that no records for the adjacent property were available for

¹ <http://www.ct.gov/deep/cwp/view.asp?a=2715&q=488996>



review. Based on the lack of any documented releases at this adjacent site and based on the anticipated groundwater flow direction to the southwest (away from the subject property), if an undocumented release had occurred at this adjacent site, it would not be expected to be adversely impacting soil or groundwater beneath the subject property.

- **SNET – 403 Hartford Turnpike:** This property, located approximately 150 feet to the west of the subject property, was listed in the Site Discovery and Assessment Database (SDADB), in which all listed sites are reported to Permitting, Enforcement, and Remediation Division with suspected hazardous waste disposal. This listing does not provide any discernible information indicating past or present disposal of hazardous waste on the property. In addition, the property was listed in the Property Transfer Filings (CT Property) database, which contains sites that meet the definition of a hazardous waste establishment, such as generators, dry cleaners, and furniture strippers. This listing indicates a Property Transfer Form was received in November 1998, which notes that “no release of hazardous waste has occurred at the parcel being transferred.” According to their website, Southern New England Telephone (SNET) America, Inc. is a long distance telephone company owned by Frontier Communications that serves Connecticut and other states. During the site reconnaissance, this property was observed to be occupied by a Frontier Communications facility. Based on the nature of the listing, this property does not represent an environmental concern to the subject property.

Two nearby properties were listed in databases searched by EDR: Hampton Hill Garage was listed as a Manifest site, and Goodwin Conservation Center was listed as an SDADB site.

- **Hampton Hill Garage- 407 Hartford Turnpike:** This property, located approximately 330 feet to the west of the subject property, was listed in the Hazardous Waste Manifest Data database, which tracks hazardous waste from generators through transports to treatment, storage, and disposal facilities. This listing indicates that United Oil Recovery, Inc. transported unspecified waste in May 2003 from the property. This listing is not indicative of a hazardous materials release, and therefore this property does not represent a concern to the subject property.
- **Goodwin Conservation Center:** The SDADB listing for this property, located approximately 0.25 mile to the north of the subject property, indicates that a spill or dump of hydrocarbons and/or fuel oil occurred onsite between 1993 and 1995. No additional information was provided in the EDR report. The property was not listed on the online DEEP List of Contaminated or Potentially Contaminated Sites in Connecticut². Rincon contacted Mr. Kevin Neary of the DEEP Remediation Division on November 10, 2015 requesting additional information on this site. On November 17, 2015, Mr. Neary indicated that the Remediation Division has no information on the site. In addition, Rincon submitted a request to the DEEP Records Center regarding records for this property. On November 20, 2015 the DEEP indicated that no records for the adjacent property were available for review. Based on the distance from the subject property (0.25 mile) and the anticipated groundwater flow direction to the southwest (away from the subject property), the spill associated with the Goodwin site would not be expected to be adversely impacting soil or groundwater beneath 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

² <http://www.ct.gov/deep/cwp/view.asp?A=2715&Q=325018>



property was undeveloped from approximately 1892 to 2012; areas in the northern and northwestern portions of the subject property appear to be cleared from 1934 to 1986. An east-west oriented overhead transmission power line appears to traverse the southern portion of the subject property along the southern boundary from approximately 1970 to 2012, and a swamp or marsh was present in the southwestern portion of the subject property from approximately 1991 to 1996. In addition, a pond was present near the northwestern portion of the subject property from approximately 1970 to 2012. The historic topographic maps reviewed depict the subject property as undeveloped woodland with wooded marsh or swamp in the southwestern portion of the subject property in 1892, 1915, 1947, and 1953; an east-west oriented power transmission line is depicted along the southern boundary of the subject property in 1970 and 1984. City directories and fire insurance maps were not available for the subject property.

Based on the findings of this Phase I ESA, it is our opinion that no recognized environmental conditions were identified for the subject property.

Because we have no evidence indicating that the subject property has been impacted by hazardous materials or petroleum products, no additional assessment is recommended.

INTRODUCTION

This report presents the findings of a Phase I ESA conducted for the 99.7-acre property located at Fisk Road, Hampton, 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 99.7-acre property located southeast of Hartford Turnpike and south of Fisk Road in Hampton, Connecticut (Figure 2, Site Map).

Subject Property and Vicinity General Characteristics

The subject property is currently undeveloped woodland.

The subject property is located in an area that is primarily comprised of residential, commercial, light industrial, agricultural, and vacant land uses. Properties in the vicinity of the subject property include single-family homes, farms, a conference center, a self-storage facility, Amerigas, a Frontier Communications facility, and an automobile garage. 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	Single-family residences, followed by Fisk Road, single-family residences, and farms
Eastern Properties	Vacant land
Southern Properties	Vacant land and a single-family residence
Southwestern Properties	Single-family residence and automobile garage
Northwestern Properties	Single-family residence and Hartford Turnpike, followed by single-family residences, a conference center, a self-storage facility, a Frontier Communications facility, and Amerigas

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. However, a high power transmission line traverses the southern boundary of the subject property.

Access to the subject property is available from Hartford Turnpike and Fisk Road.

The subject property is not serviced by any utility providers; however, Connecticut Water Company provides 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, we attempted to interview Ecos Energy, LLC for actual knowledge pertaining to the subject property to help identify recognized environmental conditions in connection with the property. Brad Wilson, Project Developer with Ecos Energy, LLC, completed the User Questionnaire as provided by ASTM Appendix X3 on December 17, 2015. A copy of the completed questionnaire is included as Appendix 1.



Based on our review of the completed questionnaire, the user indicated the following information:

- The Phase I ESA is required by the Connecticut solar project permitting process.
- A purchase property transaction is planned for the subject property.

Based on our review of the completed questionnaire, the user did not review the following sources of information and 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

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 (Hampton Quadrangle, 1984) indicates that the subject property is situated at an elevation of about 600 feet above mean sea level with topography sloping to the southwest. The adjacent topography consists of a low hill to the northeast, a lake to the north, a stream to the west, and low hills and valleys to the south and southeast.

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 Hebron gneiss, which is described as comprised of calc-silicate rock and schist. Calc-silicate rock is described as “greenish-grey fine- to medium-grained and locally scapolite,” and schist is described as “interlayered dark grey, medium- to coarse-grained and local lenses of graphitic two-mica schist.” In addition, the northwestern corner of the subject property is underlain by Canterbury gneiss, which is described as “light grey, medium-grained, variably foliated, locally strongly lineated 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 very rocky Charlton-Chatfield complex, extremely stony Woodbridge fine sandy loam, extremely stony Ridgebury, Leicester, and Whitman soils, and Timakwa and Natchaug soils in 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 Shetucket hydrologic unit and the USGS Connecticut Coastal 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-SC 19) located near Pudding Hill Road, on October 26, 2015 groundwater was reported to be 12.45 feet below ground surface. This well is located approximately 3.8 miles to the south of the subject property.
- According to the field groundwater level measurement data for the USGS groundwater well (CT-SC 20) located to the east of Pudding Hill Road, on October 26, 2015 groundwater was reported to be 11.87 feet below ground surface. This well is located approximately 3.9 miles to the south-southeast of the subject property.

Based on the site topography, 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.

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)

Facilities/properties that were interpreted by Rincon to be of potential environmental concern to the subject property, based on one or more of the factors listed above, are summarized in Table 2. 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
Adjacent Properties				
Prym's Mill	A1	400 Hartford Turnpike	Adjacent Property – West - Northwest	Brownfields
SNET	A2	403 Hartford Turnpike	Adjacent Property – West	SDADB, CT Property
Nearby Sites				
Hampton Hill Garage	A3	407 Hartford Turnpike	<1/8 Mile - West	Manifest
Goodwin Conservation Center	4	23 Potter Road	1/4-1/2 Mile – North	SDADB
Anchor Glass Manufacturing*	5	581 Hartford Turnpike	1/4-1/2 Mile – West	Brownfields

*Location appears to be incorrectly plotted by EDR; the site is actually located approximately 11 miles to the east of the subject property.



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 four 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., US EPA online RCRAInfo database) and/or files requested from the applicable regulatory agency, as described below.

Subject Property

The subject property was not listed in any of the databases searched by EDR.

Adjacent Properties

Two adjacent properties were listed in databases searched by EDR: Pryn's Mill was listed as a Brownfields site, and SNET was listed as a CT Property and a Site Discovery and Assessment Database (SDADB) site.

- ***Pryn's Mill - 400 Hartford Turnpike:*** This property, located approximately 80 feet to the northwest of the subject property across Hartford Turnpike, was listed in the Brownfields Inventory, which consists of over 200 Brownfields sites identified by the Connecticut Brownfields Redevelopment Authority (CBRA) that are eligible for redevelopment. This listing indicates that the property was formerly used as a "metal shop." According to the State of Connecticut Department of Energy and Environmental Protection website, a brownfield site is defined by Connecticut General Statutes §32-9kk(a)(1) as "*any abandoned or underutilized site where redevelopment, reuse or expansion has not occurred due to the presence or potential presence of pollution in the buildings, soil or groundwater that requires investigation or remediation before or in conjunction with the restoration, redevelopment, reuse and expansion of the property.*" During the site reconnaissance, this former mill site was observed to be occupied by Amerigas. The property was not listed on the online Connecticut Department of Energy and Environmental Protection (DEEP) Brownfields Inventory³. Rincon contacted Mr. Kevin Neary of the DEEP Remediation Division on November 10, 2015 requesting additional information on this site. On November 17, 2015, Mr. Neary indicated that the Remediation

³ <http://www.ct.gov/deep/cwp/view.asp?a=2715&q=488996>



Division has no information on the property. In addition, Rincon submitted a request to the DEEP Records Center regarding records for this property. On November 20, 2015, the DEEP indicated that no records for the adjacent property were available for review. Based on the lack of any documented releases at this adjacent site and based on the anticipated groundwater flow direction to the southwest (away from the subject property), if an undocumented release had occurred at this adjacent site, it would not be expected to be adversely impacting soil or groundwater beneath the subject property.

- ***SNET - 403 Hartford Turnpike***: This property, located approximately 150 feet to the west of the subject property, was listed in the Site Discovery and Assessment Database (SDADB), in which all listed sites are reported to Permitting, Enforcement, and Remediation Division with suspected hazardous waste disposal. This listing does not provide any discernible information indicating past or present disposal of hazardous waste on the property. In addition, the property was listed in the Property Transfer Filings (CT Property) database, which contains sites that meet the definition of a hazardous waste establishment, such as generators, dry cleaners, and furniture strippers. This listing indicates a Property Transfer Form was received in November 1998, which notes that “no release of hazardous waste has occurred at the parcel being transferred.” According to their website, Southern New England Telephone (SNET) America, Inc. is a long distance telephone company owned by Frontier Communications that serves Connecticut and other states. During the site reconnaissance, this property was observed to be occupied by a Frontier Communications facility. Based on the nature of the listings, this property does not represent an environmental concern to the subject property.

Nearby Sites

Three nearby properties were listed in databases searched by EDR: Hampton Hill Garage was listed as a Manifest site, Goodwin Conservation Center was listed as an SDADB site and Anchor Glass Manufacturing was listed as a Brownfields site.

- ***Hampton Hill Garage - 407 Hartford Turnpike***: This property, located approximately 330 feet to the west of the subject property, was listed in the Hazardous Waste Manifest Data database, which tracks hazardous waste from generators through transports to treatment, storage, and disposal facilities. This listing indicates that United Oil Recovery, Inc. transported unspecified waste in May 2003 from the property. This listing is not indicative of a hazardous materials release. Based on the nature of the listing and the distance from the subject property, this property does not represent an environmental concern to the subject property.
- ***Goodwin Conservation Center - 23 Potter Road***: The SDADB listing for this property, located approximately 0.25 mile to the north of the subject property, indicates that a spill or dump of hydrocarbons and/or fuel oil occurred onsite in between 1993 and 1995. No additional information was provided in the EDR report. The property was not listed on the online DEEP List of Contaminated or Potentially Contaminated Sites in Connecticut⁴. Rincon contacted Mr. Kevin Neary of the DEEP Remediation Division on November 10, 2015 requesting additional information on this site; on November 17, 2015 Mr. Neary indicated that the Remediation Division has no information on the site. In addition, Rincon submitted a request to the DEEP Records Center regarding records for this property. On November 20, 2015 the DEEP indicated that no records for the adjacent property were

⁴ <http://www.ct.gov/deep/cwp/view.asp?A=2715&Q=325018>



available for review. Based on the distance from the subject property (0.25 mile) and based on the anticipated groundwater flow direction to the southwest (away from the subject property), the spill associated with the Goodwin site would not be expected to be adversely impacting soil or groundwater beneath the subject property.

- ***Anchor Glass Manufacturing - 581 Hartford Turnpike:*** The Brownfields listing for this property, listed as located approximately 0.50 mile to the west of the subject property, indicates that the property was formerly used for “glass products manufacturing.” No additional information was provided in the EDR report. It appears that EDR incorrectly plotted this site at 581 Hartford Turnpike in Hampton instead of 581 Hartford Pike in Dayville, Connecticut (located approximately 11 miles to the east of the subject property). Therefore, this manufacturing site does not represent an environmental concern to the subject property.

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 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 sites⁵ indicates that no natural gas drilling sites are located within ¼ mile of the subject property.

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.

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 Hampton Building Permit Records

Because no structures appear to have been located on the subject property, no building permit records were reviewed.

Other Historic Sources

According to the Northeastern Connecticut Council of Governments online GIS Map Viewer, the subject property is owned by the Estate of Peter Freiman, classified as open space, and was last sold in October 2006.

⁵ Drilling Maps: Map of Connecticut Oil & Gas Fracking Health & Safety Issues,
<http://www.drillingmaps.com/connecticut.html#.VilePvIVhBc>



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 undeveloped from approximately 1892 to 2012; areas in the northern and northwestern portions of the subject property appear to be cleared from 1934 to 1986. An east-west oriented overhead transmission power line appears to traverse the southern portion of the subject property along the southern boundary from approximately 1970 to 2012, and a swamp or marsh was present in the southwestern portion of the subject property from approximately 1991 to 1996. In addition, a pond was present near the northwestern portion of the subject property from approximately 1970 to 2012. The historic topographic maps reviewed depict the subject property as undeveloped woodland with wooded marsh or swamp in the southwestern portion of the subject property in 1892, 1915, 1947, and 1953; an east-west oriented power transmission line is depicted along the southern boundary of the subject property in 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
Fisk Road, Hampton, Connecticut		
1892	The subject property is depicted as undeveloped.	Topographic Map (TM) – Woodstock Quadrangle
1915	The subject property is depicted as undeveloped woodland.	TM – Woodstock Quadrangle
1934	The majority of the subject property appears to be undeveloped; areas in the northern and northwestern portions of the subject property appear to be cleared or tilled for agricultural purposes.	Aerial Photograph (AP) - EDR
1941	Similar to the 1934 AP.	AP - EDR
1947	The subject property is depicted as undeveloped woodland and wooded marsh or swamp in the southwestern portion of the subject property.	TM – Hampton Quadrangle
1951	Similar to the 1941 AP.	AP - EDR
1953	Similar to the 1947 TM.	TM – Hampton Quadrangle
1970 (photorevised 1953)	The subject property is depicted as undeveloped woodland and wooded marsh or swamp in the southwestern portion of the subject property; an east-west oriented power transmission line is depicted along the southern boundary of the subject property.	TM – Hampton Quadrangle
1970	The previously cleared area in the northern portion of the subject property appears to be fallow; a pond appears to have formed near the northwestern portion of the subject property; a transmission line traverses the southern portion of the subject property along the southern boundary.	AP - EDR
1974	Similar to the 1970 AP.	AP - EDR
1984	Similar to the 1970 TM.	TM – Hampton Quadrangle



Year	Use	Source
1986	The previously cleared areas in the northwestern portion of the subject property appear to be fallow or have regrown.	AP - EDR
1990	Similar to the 1986 AP.	AP - EDR
1991	A marsh or swamp appears to be located in the southwestern portion of the subject property.	AP – USGS/DOQQ
1996	The marsh or swamp in the southwestern portion of the subject property appears to be covered in woodland.	AP – EDR
2005	Similar to the 1996 AP; the subject property resembles its present-day configuration.	AP – USDA/NAIP
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
2012	Similar to the 2010 AP.	AP – USDA/NAIP

Northern Adjacent Properties (309, 329, 347, and 349 Hartford Turnpike)

Based on our review of the documents listed above, it appears that the northern adjacent properties were developed with approximately one to nine residences, associated smaller structures, and potential agricultural fields from approximately 1892 to 2012. The historic topographic maps reviewed depict the northern adjacent properties as developed with one structure in 1892, undeveloped in 1915 and 1947, developed with three structures in 1953 and 1970, and developed with four structures in 1984. City directories available for the northern adjacent properties indicate that 309 Hartford Turnpike was occupied by residents from approximately 1995 to 2008, 329 Hartford Turnpike was occupied by residents and “Dove and Boar Farm” in 2008 and 2013, and 347 and 349 Hartford Turnpike were occupied by residents from approximately 1992 to 2013.

Eastern Adjacent Properties

Based on our review of the documents listed above, it appears that the eastern adjacent properties were undeveloped woodland from approximately 1892 to 2012. The historic topographic maps reviewed depict the eastern adjacent properties as undeveloped in 1892, 1915, 1947, 1953, 1970, and 1984. City directories were not available for the eastern adjacent properties.

Southern Adjacent Properties

Based on our review of the documents listed above, it appears that the majority of the southern adjacent properties were undeveloped from approximately 1892 to 2012, along with one residence and horse corral located adjacent to Parker Road. The historic topographic maps reviewed depict the southern adjacent properties as undeveloped in 1892 and 1915, and developed with one structure in 1947, 1953, 1970, and 1984. City directories were not available for the southern adjacent properties.

Western Adjacent Properties (354-407 Hartford Turnpike)

Based on our review of the documents listed above, it appears that the majority of the northwestern adjacent properties were cleared, with one residence present, from approximately



1934 to 1941; by 1951, two residences were present. By 1970, five residences were located on the northwestern adjacent properties; by 1974, seven buildings were present. By 1986, nine buildings were located on the northwestern adjacent properties; from 1990 to 2012, ten buildings were present and the northwestern adjacent properties resembled their present-day configurations. The historic topographic maps reviewed depict the northwestern adjacent properties as developed with one structure in 1892, undeveloped in 1915, developed with one structure in 1947, developed with two structures in 1953, developed with four structures in 1970, and developed with six structures in 1984. City directories available for the northwestern adjacent properties indicate the following:

- 354 Hartford Turnpike: Occupied by New England Center for Hearing Rehab from 2003 to 2013
- 362 Hartford Turnpike: Occupied by residents from 1995 to 2013
- 366 Hartford Turnpike: Occupied by residents from 1992 to 2013
- 376 Hartford Turnpike: Occupied by EastConn from 1992 to 2013
- 379 Hartford Turnpike: Occupied by residents in 2008 and 2013
- 396 Hartford Turnpike: Occupied by Service Master of Willimantic, Storage Solutions LLC, and Water Damage Drying Solutions from 1999 to 2013
- 400 Hartford Turnpike: Occupied by Amerigas in 2008 and 2013

Based on our review of the documents listed above, it appears that the majority of the southwestern adjacent properties were undeveloped from approximately 1892 to 2012; one residence was present from approximately 1970 to 2012, and another building was present from approximately 2005 to 2012. The historic topographic maps reviewed depict the southwestern adjacent properties as undeveloped in 1892, 1915, 1947, and 1953, and developed with one structure in 1970 and 1984. City directories available for the southwestern adjacent properties indicate that 407 Hartford Turnpike was occupied by Hampton Hill Garage in 2008 and 2013.

Gaps in Historical Sources

Several gaps of greater than 5 years were identified in the historical records reviewed, from 1892 to 1915, from 1915 to 1934, from 1934 to 1941, from 1941 to 1947, 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 subject property owner, Gregory J. Freiman, fiduciary for the Estate of Peter Freiman, prior to the site reconnaissance. 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.



Mr. Freiman indicated the following:

- A western adjacent property, Hampton Hill Garage, was/is used as a general motor vehicle repair facility.
- The subject property is currently open space.
- The northern adjacent properties are currently used as a residence, barn, and US Route 6.
- The southern adjacent properties are currently used as open space.
- The western adjacent properties are currently used as a general motor vehicle repair facility, and are open space.
- The eastern adjacent properties are currently used as two residences.
- The subject property was previously used as open space and for timber harvesting from October 1, 2013 to January 14, 2014.
- The northern adjacent properties were previously used for residential purposes.
- The southern adjacent properties were previously used as open space.
- He is unaware of the previous uses of the western adjacent properties.
- The eastern adjacent properties were previously used as Fisk Street and two residences.
- The current subject property owner is the Estate of Peter Freiman.
- They obtained ownership of the subject property in October 2006.
- The former owner of the subject property was the Estate of Anna Freiman.
- The subject property is not serviced by any utility providers.
- There are no site-specific geotechnical, geologic, or title reports available for the subject property.

Mr. Freiman also presented the following information regarding hazardous material and petroleum hydrocarbon storage and waste generation at the subject property.

- No damaged or discarded automotive or industrial batteries, paints, oils, solvents, motor vehicle fuel, pesticides or herbicides, or other chemicals or hazardous substances were previously or are currently stored or used onsite.
- No hazardous wastes are generated on the subject property.
- No industrial drums or sacks of chemicals have ever been located on the subject property.
- No fill dirt, pits, ponds, lagoons, sumps, clarifiers, solvent degreasers, stained soil, storage tanks, vent pipes, fill pipes, or access ways are currently or were previously located on the subject property.
- No wastewater was previously or is currently discharged on or adjacent to the property other than stormwater into a sanitary sewer system.
- No hazardous substances, petroleum products, unidentified waste materials, tires, automotive or industrial batteries, or other waste materials have ever been dumped above grade, buried, or burned on the property.
- There have never been any records indicating the presence of PCBs, pesticides, or herbicides on the subject property.
- There are no environmental liens that may have been recorded against the property or governmental notification relating to past or recurrent violations of environmental laws with respect to the property.



- There are no activity and use limitations (AULs) such as engineering controls, deed restrictions, land use restrictions, or institutional controls that may have been recorded against the property.
- He has not been informed of the past or current existence of hazardous substances, petroleum products, or environmental violations with respect to the subject property.
- He does not have any knowledge of any environmental site assessments of the subject property.
- He does not know of any pending, threatened, or past litigation or administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the 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

Rincon contacted Mr. Kevin Neary of the DEEP Remediation Division on November 10, 2015 requesting additional information on the adjacent Pym's Mill and nearby Goodwin Conservation Center sites. On November 17, 2015 Mr. Neary indicated that the Remediation Division has no information on the properties. In addition, Rincon submitted a request to the Connecticut Records Center regarding records for these sites. On November 20, 2015 the DEEP indicated that no records for the properties were available for review.

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 20, 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 adjacent roads and walking paths.

Because the subject property is currently dense woods with no trails, the subject property was observed from along Fisk Road and Hartford Turnpike.

CURRENT USE OF THE PROPERTY AND ADJACENT PROPERTIES

The subject property is currently undeveloped woodland. Adjacent properties include AmeriGas, self-storage, a conference center, single-family residences, a farm, a Frontier Communications facility, and vacant, undeveloped land.

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, commercial, and vacant 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 land. 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)

During the site reconnaissance, no indications of PCBs were identified 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

Power lines - Overhead transmission power lines were observed along the southern border of the subject property.



EVALUATION

FINDINGS

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

- The identification of the adjacent site in the Brownfields database
- The listing of the nearby Goodwin Conservation Center in the SDADB database

OPINIONS

- A. *The identification of the adjacent site in the Brownfields database* – According to the EDR report, the Pryn's Mill property located adjacent to the west-northwest of the subject property at 400 Hartford Turnpike, was listed in the Brownfields Inventory, which consists of over 200 brownfields sites identified by the Connecticut Brownfields Redevelopment Authority (CBRA) that are eligible for redevelopment. This listing indicates that the property was formerly used as a "metal shop." During the site reconnaissance, this former mill site was observed to be occupied by Amerigas. In addition, the property was not listed on the online Connecticut DEEP Brownfields Inventory⁶. Rincon contacted Mr. Kevin Neary of the DEEP Remediation Division on November 10, 2015 requesting additional information on this site. On November 17, 2015, Mr. Neary indicated that the Remediation Division has no information on the property. In addition, Rincon submitted a request to the DEEP Records Center regarding records for this property. On November 20, 2015 the DEEP indicated that no records for the property were available for review. Based on the lack of any documented releases at this adjacent site and based on the anticipated groundwater flow direction to the southwest (away from the subject property), if an undocumented release had occurred at this adjacent site, it would not be expected to be adversely impacting soil or groundwater beneath the subject property. Therefore, the identification of the adjacent site in the Brownfields database is considered a *de minimis condition*.
- B. *The listing of the nearby Goodwin Conservation Center in the SDADB database* - The Goodwin Conservation Center property is located approximately 0.25 mile to the north of the subject property at 23 Potter Road. The EDR report indicates that a spill or dump of hydrocarbons and/or fuel oil occurred on the Goodwin site between 1993 and 1995. The property was not listed on the online DEEP List of Contaminated or Potentially Contaminated Sites in Connecticut⁷. Rincon contacted Mr. Kevin Neary of the DEEP Remediation Division on November 10, 2015 requesting additional information on this site. On November 17, 2015, Mr. Neary indicated that the Remediation Division has no information on the site. In addition, Rincon submitted a request to the DEEP Records Center regarding records for this property. On November 20, 2015 the DEEP indicated that no records for the property were available for review. Based on the distance of the site from the subject property (approximately 0.25 mile), and the anticipated groundwater flow direction to the southwest (away from the subject property), the spill associated with the Goodwin site would not be expected to be adversely impacting soil or groundwater beneath the subject property. Therefore, the nearby Goodwin Conservation Center release site is considered a *de minimis condition*.

⁶ <http://www.ct.gov/deep/cwp/view.asp?a=2715&q=488996>

⁷ <http://www.ct.gov/deep/cwp/view.asp?A=2715&Q=325018>



CONCLUSIONS

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 Fisk Road, Hampton, Connecticut. This assessment has revealed no evidence of recognized environmental conditions in connection with the property.

RECOMMENDATIONS

Because we have no evidence indicating that the subject property has been impacted by hazardous materials or petroleum products, no additional assessment is recommended.

DEVIATIONS

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



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=ltm&a=1&d=1>.

Topography: USGS topographic map (1984, Hampton Quadrangle).

Oil and gas records: Drilling Maps: Map of Connecticut Oil & Gas Fracking Health & Safety Issues, <http://www.drillingmaps.com/connecticut.html#.VilePvIVhBc>; 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: Northeastern Connecticut Council of Governments online GIS Map Viewer, <http://necog.org/gis/>.



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.

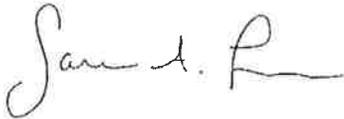
"We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in 312.10 of 40 CFR 312. We have the specific qualifications based on education, training and experience to assess a property of the nature, history, and setting of 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.

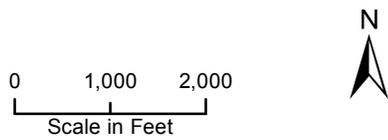


Savanna Vrevich is an Environmental Scientist with Rincon Consultants. She holds a Bachelor of Science degree in Environmental Studies with an outside concentration of Ecology, Evolution, and Marine Biology from the University of California, Santa Barbara. Ms. Vrevich's responsibilities at Rincon include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

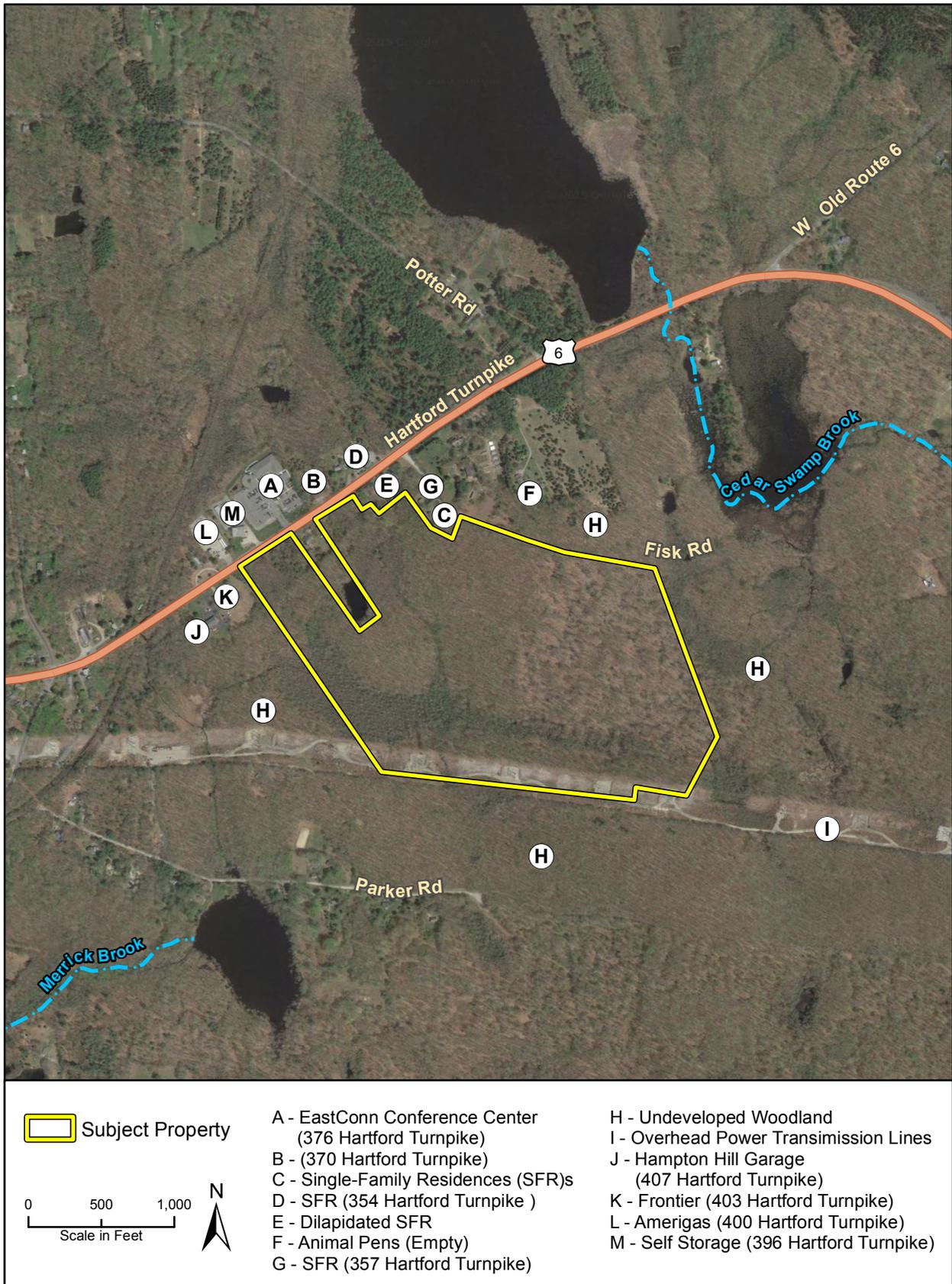




Imagery provided by Google and its licensors © 2015.

Site Map

Figure 2



Imagery provided by Google and its licensors © 2015.

Adjacent Land Use Map

Figure 3

Fisk Road, Hampton, Connecticut
Phase I Environmental Site Assessment



Photograph 1: View of woodlands at the subject property, facing southeast.



Photograph 2: View of the woodlands at the subject property along Fisk Road, facing east.



Photograph 3: View of woodlands at the subject property, facing south.



Photograph 4: View of piles of logs at the northern portion of the subject property, facing south.



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



Photograph 6: View of a conference center adjacent to the north of the subject property (across Hartford Turnpike Road), facing north.

Figure 4



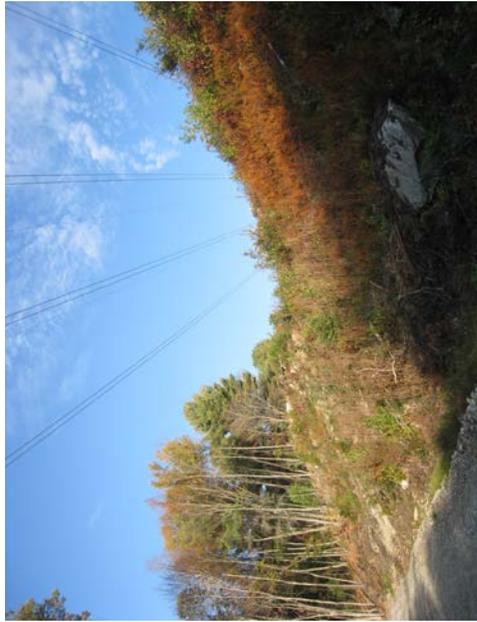
Photograph 7: View of a self storage facility adjacent to the north of the subject property (across Hartford Turnpike Road), facing north.



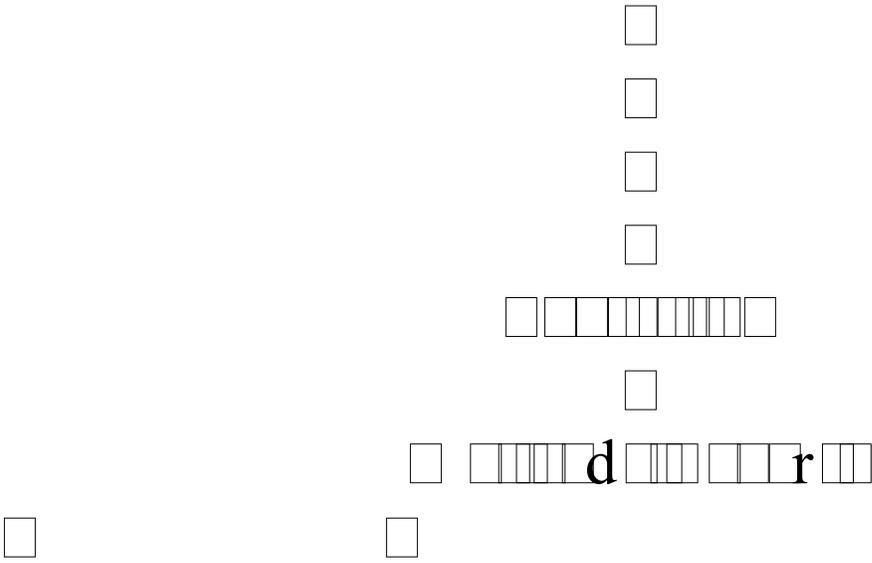
Photograph 8: View of a Frontier facility adjacent to the west of the subject property, facing southwest.



Photograph 9: View of Amerigas, formerly Pryn's Mill (a Brownfields site), located adjacent to the north-northwest of the subject property across Hartford Turnpike.



Photograph 10: View of the overhead power line easement adjacent to the south of the subject property, facing east.



HIGHLAND SOILS, LLC

February 2, 2016

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

**RE: FISK ROAD SOLAR
FISK ROAD
HAMPTON, CT**

Dear Steve:

The inland wetland boundaries on the above-referenced property were field delineated in August and September 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.

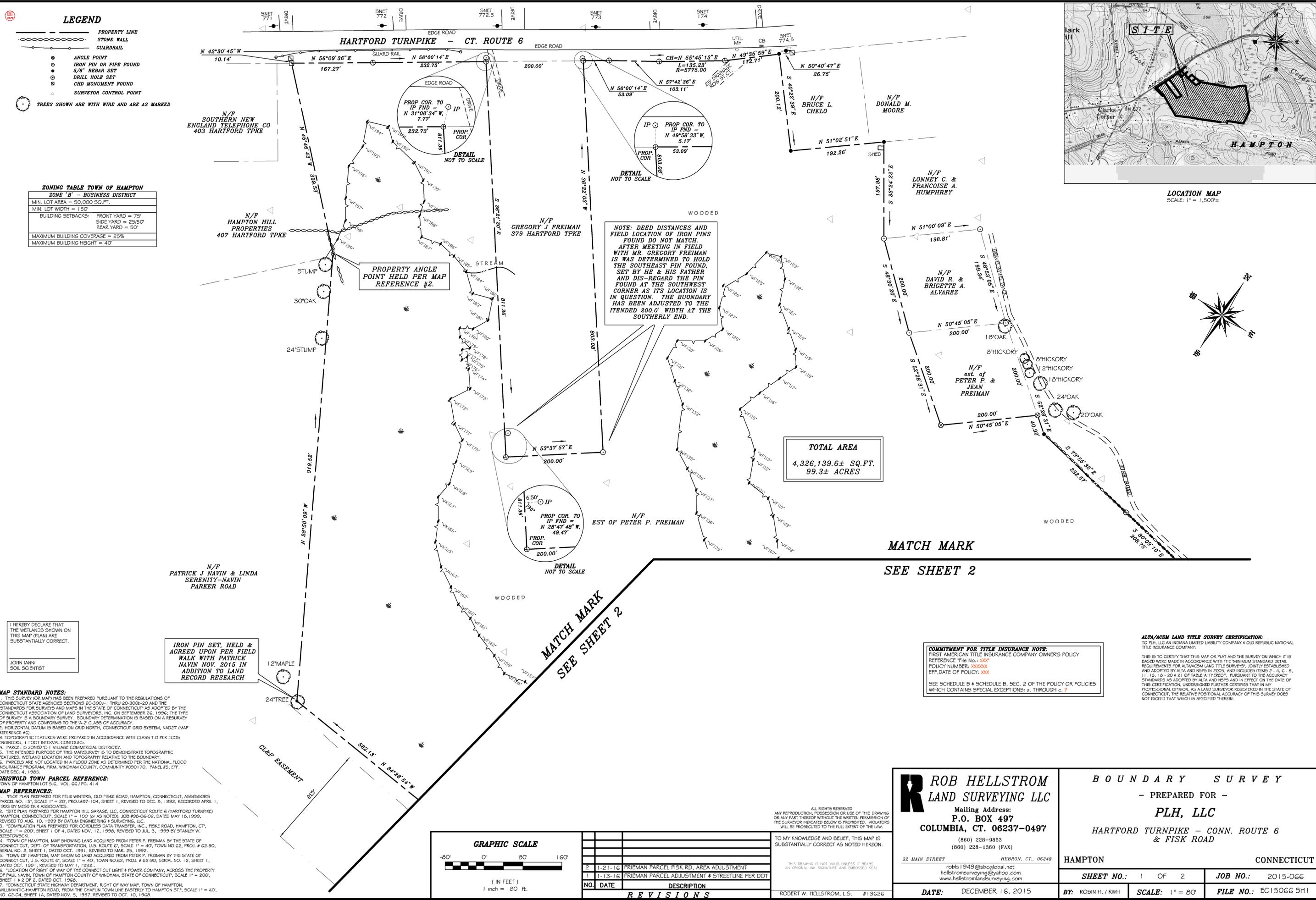
I am currently out of the State and will submit a more detailed report once I am able to revisit the site and collect more site specific detailed information.

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



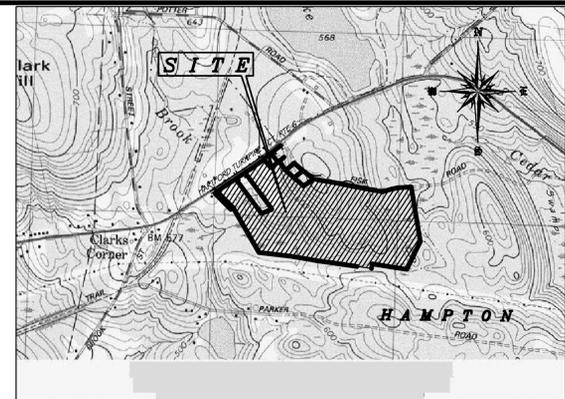
LEGEND

- PROPERTY LINE
- STONE WALL
- GUADRRAIL
- ANGLE POINT
- IRON PIN OR PIPE FOUND
- 5/8" REBAR SET
- DRILL HOLE SET
- CHD MONUMENT FOUND
- SURVEYOR CONTROL POINT
- TREES SHOWN ARE WITH WIRE AND ARE AS MARKED

ZONING TABLE TOWN OF HAMPTON

ZONE B - BUSINESS DISTRICT

MIN. LOT AREA = 50,000 SQ.FT.
MIN. LOT WIDTH = 150'
BUILDING SETBACKS: FRONT YARD = 75'
SIDE YARD = 25/50'
REAR YARD = 50'
MAXIMUM BUILDING COVERAGE = 25%
MAXIMUM BUILDING HEIGHT = 40'



LOCATION MAP
SCALE: 1" = 1,500'

NOTE: DEED DISTANCES AND FIELD LOCATION OF IRON PINS FOUND DO NOT MATCH. AFTER MEETING IN FIELD WITH MR. GREGORY FREIMAN IS WAS DETERMINED TO HOLD THE SOUTHEAST PIN FOUND, SET BY HE & HIS FATHER AND DIS-REGARD THE PIN FOUND AT THE SOUTHWEST CORNER AS ITS LOCATION IS IN QUESTION. THE BOUNDARY HAS BEEN ADJUSTED TO THE INTENDED 200.0' WIDTH AT THE SOUTHERLY END.

TOTAL AREA
4,326,139.6± SQ.FT.
99.3± ACRES

MATCH MARK
SEE SHEET 2

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

JOHN IANNI
SOIL SCIENTIST

IRON PIN SET, HELD & AGREED UPON PER FIELD WALK WITH PATRICK NAVIN NOV. 2015 IN ADDITION TO LAND RECORD RESEARCH

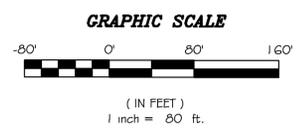
MAP STANDARD NOTES:

- THIS SURVEY (OR 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.
- HORIZONTAL DATUM IS BASED ON GRID NORTH, CONNECTICUT GRID SYSTEM, NAD27 (MAP REFERENCE #6).
- TOPOGRAPHIC FEATURES WERE PREPARED IN ACCORDANCE WITH CLASS T-D PER ECOS ENGINEERS, 1 FOOT INTERVAL CONTOURS.
- PARCEL IS ZONED C-1 VILLAGE COMMERCIAL DISTRICTS.
- THE INTENDED PURPOSE OF THIS MAP/SURVEY IS TO DEMONSTRATE TOPOGRAPHIC FEATURES, WETLAND LOCATION AND TOPOGRAPHY RELATIVE TO THE BOUNDARY.
- PARCELS ARE NOT LOCATED IN A FLOOD ZONE AS DETERMINED PER THE NATIONAL FLOOD INSURANCE PROGRAM, FIRM, WINDHAM COUNTY, COMMUNITY #090170, PANEL #5, EFF. DATE DEC. 4, 1995.

CRISWOLD TOWN PARCEL REFERENCE:
TOWN OF HAMPTON LOT 5.6, VOL. 66/Pg. 414

MAP REFERENCES:

- "LOT PLAN PREPARED FOR FELIX WINTERS, OLD FISKE ROAD, HAMPTON, CONNECTICUT, ASSESSORS PARCEL NO. 151, SCALE 1" = 20', PROJ.#067-104, SHEET 1, REVISED TO DEC. 6, 1992, RECORDED APRIL 1, 1993 BY MESSIER & ASSOCIATES.
- "SITE PLAN PREPARED FOR HAMPTON HILL GARAGE, LLC, CONNECTICUT ROUTE 6 (HARTFORD TURNPIKE) HAMPTON, CONNECTICUT, SCALE 1" = 100' (AS NOTED), JOB #98-06-02, DATED MAY 18, 1999, REVISED TO AUG. 10, 1999 BY DATUM ENGINEERING & SURVEYING, LLC.
- "COMPILED PLAN PREPARED FOR CORDLESS DATA TRANSFER, INC., FISKE ROAD, HAMPTON, CT, SCALE 1" = 200', SHEET 1 OF 4, DATED NOV. 12, 1998, REVISED TO JUL. 3, 1999 BY STANLEY W. SZESTOWSKI.
- "TOWN OF HAMPTON, MAP SHOWING LAND ACQUIRED FROM PETER P. FREIMAN BY THE STATE OF CONNECTICUT, DEPT. OF TRANSPORTATION, U.S. ROUTE 6, SCALE 1" = 40', TOWN NO.62, PROJ. # 62-90, SERIAL NO. 2, SHEET 1, DATED OCT. 1991, REVISED TO MAR. 25, 1992.
- "TOWN OF HAMPTON, MAP SHOWING LAND ACQUIRED FROM PETER P. FREIMAN BY THE STATE OF CONNECTICUT, U.S. ROUTE 6, SCALE 1" = 40', TOWN NO.62, PROJ. # 62-90, SERIAL NO. 12, SHEET 1, DATED OCT. 1991, REVISED TO MAY 1, 1992.
- "LOCATION OF RIGHT OF WAY OF THE CONNECTICUT LIGHT & POWER COMPANY, ACROSS THE PROPERTY OF PAUL NAVIN, TOWN OF HAMPTON COUNTY OF WINDHAM, STATE OF CONNECTICUT, SCALE 1" = 200', SHEET 1 & 2 OF 2, DATED OCT. 1966.
- "CONNECTICUT STATE HIGHWAY DEPARTMENT, RIGHT OF WAY MAP, TOWN OF HAMPTON, WILLIAMTIC-HAMPTON ROAD, FROM THE CHAPLIN TOWN LINE EASTWY TO HAMPTON ST., SCALE 1" = 40', NO. 62-04, SHEET 1A, DATED NOV. 5, 1957, REVISED TO OCT. 10, 1966.



NO.	DATE	DESCRIPTION
2	1-21-16	FREIMAN PARCEL FISKE RD, AREA ADJUSTMENT
1	1-13-16	FREIMAN PARCEL ADJUSTMENT & STREETLINE PER DOT

REVISIONS

ALL RIGHTS RESERVED
ANY REPRODUCTION, POSSESSION OR USE OF THIS DRAWING OR ANY PART THEREOF WITHOUT THE WRITTEN PERMISSION OF THE SURVEYOR INDICATED BELOW IS PROHIBITED. VIOLATORS WILL BE PROSECUTED TO THE FULL EXTENT OF THE LAW.

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

THIS DRAWING IS NOT VALID UNLESS IT BEARS AN ORIGINAL INK SIGNATURE AND EMBOSSED SEAL

ROBERT W. HELLSTROM, L.S. #13626

COMMITMENT FOR TITLE INSURANCE NOTE:
FIRST AMERICAN TITLE INSURANCE COMPANY OWNERS POLICY
REFERENCE "File No.": XXXX
POLICY NUMBER: XXXXXX
EFF. DATE OF POLICY: XXXX

SEE SCHEDULE B & SCHEDULE B, SEC. 2 OF THE POLICY OR POLICIES WHICH CONTAINS SPECIAL EXCEPTIONS: a. THROUGH c. ?

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 PLAN 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 - 4, 6 - 8, 11, 13, 18 - 20 & 21 OF TABLE "T" 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.

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
robls1949@sbcglobal.net
hellstromsurveying@yahoo.com
www.hellstromlandsurveying.com

BOUNDARY SURVEY
- PREPARED FOR -
PLH, LLC
HARTFORD TURNPIKE - CONN. ROUTE 6
& FISKE ROAD

HAMPTON CONNECTICUT

SHEET NO.: 1 OF 2
JOB NO.: 2015-066

BY: ROBIN H. / RWH
SCALE: 1" = 80'
FILE NO.: EC15066 SH1

DATE: DECEMBER 16, 2015

MAP STANDARD NOTES:

- THIS SURVEY (OR 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.
- HORIZONTAL DATUM IS BASED ON GRID NORTH, CONNECTICUT GRID SYSTEM, NAD27 (MAP REFERENCE #6).
- TOPOGRAPHIC FEATURES WERE PREPARED IN ACCORDANCE WITH CLASS T-D PER EGCS ENGINEERS, 1 FOOT INTERVAL CONTOURS.
- PARCEL IS ZONED C-1 VILLAGE COMMERCIAL DISTRICTS.
- THE INTENDED PURPOSE OF THIS MAP/SURVEY IS TO DEMONSTRATE TOPOGRAPHIC FEATURES, WETLAND LOCATION AND TOPOGRAPHY RELATIVE TO THE BOUNDARY.
- PARCELS ARE NOT LOCATED IN A FLOOD ZONE AS DETERMINED PER THE NATIONAL FLOOD INSURANCE PROGRAM, FRM, WINDHAM COUNTY, COMMUNITY #090170, PANEL #5, EFF. DATE DEC. 4, 1985.

GRISWOLD TOWN PARCEL REFERENCE:
TOWN OF HAMPTON LOT 5.6, VOL. 66 / PG. 414

MAP REFERENCES:

- PLAT PLAN PREPARED FOR FELIX WINTERS, OLD FISKE ROAD, HAMPTON, CONNECTICUT, ASSESSORS PARCEL NO. 15, SCALE 1" = 20', PROJ.#07-104, SHEET 1, REVISED TO DEC. 8, 1992, RECORDED APRIL 1, 1993 BY MESSIER & ASSOCIATES.
- SITE PLAN PREPARED FOR HAMPTON HILL GARAGE, LLC, CONNECTICUT ROUTE 6 (HARTFORD TURNPIKE) HAMPTON, CONNECTICUT, SCALE 1" = 100' (or AS NOTED), JOB #90-06-02, DATED MAY 18, 1999, REVISED TO AUG. 10, 1999 BY DATUM ENGINEERING & SURVEYING, LLC.
- COMPILED PLAN PREPARED FOR CORDELLS DATA TRANSFER, INC., FISKE ROAD, HAMPTON, CT, SCALE 1" = 200', SHEET 1 OF 4, DATED NOV. 12, 1996, REVISED TO JUL. 3, 1999 BY STANLEY W. SZESTOWSKI.
- TOWN OF HAMPTON, MAP SHOWING LAND ACQUIRED FROM PETER P. FREIMAN BY THE STATE OF CONNECTICUT, DEPT. OF TRANSPORTATION, U.S. ROUTE 6, SCALE 1" = 40', TOWN NO.62, PROJ. # 62-90, SERIAL NO. 2, SHEET 1, DATED OCT. 1991, REVISED TO MAR. 25, 1992.
- TOWN OF HAMPTON, MAP SHOWING LAND ACQUIRED FROM PETER P. FREIMAN BY THE STATE OF CONNECTICUT, U.S. ROUTE 6, SCALE 1" = 40', TOWN NO.62, PROJ. # 62-90, SERIAL NO. 12, SHEET 1, DATED OCT. 1991, REVISED TO MAY 1, 1992.
- LOCATION OF RIGHT OF WAY OF THE CONNECTICUT LIGHT & POWER COMPANY, ACROSS THE PROPERTY OF PAUL NAVIN, TOWN OF HAMPTON COUNTY OF WINDHAM, STATE OF CONNECTICUT, SCALE 1" = 200', SHEET 1 & 2 OF 2, DATED OCT. 1968.
- CONNECTICUT STATE HIGHWAY DEPARTMENT, RIGHT OF WAY MAP, TOWN OF HAMPTON, WILLAMANTIC-HAMPTON ROAD, FROM THE CHARTER TOWN LINE EASTERLY TO HAMPTON ST., SCALE 1" = 40', NO. 62-04, SHEET 1A, DATED NOV. 5, 1957, REVISED TO OCT. 10, 1968.

LEGEND

- PROPERTY LINE
- STONE WALL
- GUARDRAIL
- ANGLE POINT
- IRON PIN OR PIPE FOUND
- 5/8" REBAR SET
- DRILL HOLE SET
- △ CHD MONUMENT FOUND
- △ SURVEYOR CONTROL POINT
- △ "BOUNDARY" PLACARD PLACED ON TREES WITH WIRE HELD FOR BOUNDARY
- TREES SHOWN ARE WITH WIRE AND ARE AS MARKED

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

JOHN IANNI
SOIL SCIENTIST

SEE SHEET 1
MATCH MARK

WOODED

N/F
EST OF PETER P. FREIMAN

COMMITMENT FOR TITLE INSURANCE NOTE:
FIRST AMERICAN TITLE INSURANCE COMPANY OWNERS POLICY
REFERENCE FILE NO.: XXX
POLICY NUMBER: XXXXXX
EFF. DATE OF POLICY: XXX

SEE SCHEDULE B & SCHEDULE B, SEC. 2 OF THE POLICY OR POLICIES WHICH CONTAINS SPECIAL EXCEPTIONS: a. THROUGH c. ?

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 AND NSPS IN 2005, AND INCLUDES ITEMS 2 - 4, 6 - 8, 11, 13, 15, 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.

TOTAL AREA
4,326,139.6± SQ.FT.
99.3± ACRES

SEE SHEET 1
MATCH MARK

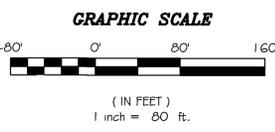
WOODED

N/F
HALMORA LLC
185 WEST FISKE ROAD

N/F
PATRICK J NAVIN & LINDA
SERENITY-NAVIN
PARKER ROAD

CL&P EASEMENT

EDGE C.L.&P. EASEMENT



NO.	DATE	DESCRIPTION
2	1-21-16	FRIEMAN PARCEL FISKE RD. AREA ADJUSTMENT
1	1-13-16	FRIEMAN PARCEL ADJUSTMENT & STREETLINE PER DOT

REVISIONS

ALL RIGHTS RESERVED
ANY REPRODUCTION, POSSESSION OR USE OF THIS DRAWING OR ANY PART THEREOF WITHOUT THE WRITTEN PERMISSION OF THE SURVEYOR INDICATED BELOW IS PROHIBITED. VIOLATORS WILL BE PROSECUTED TO THE FULL EXTENT OF THE LAW.

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

THIS DRAWING IS NOT VALID UNLESS IT BEARS AN ORIGINAL INK SIGNATURE AND EMBOSSED SEAL.

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)

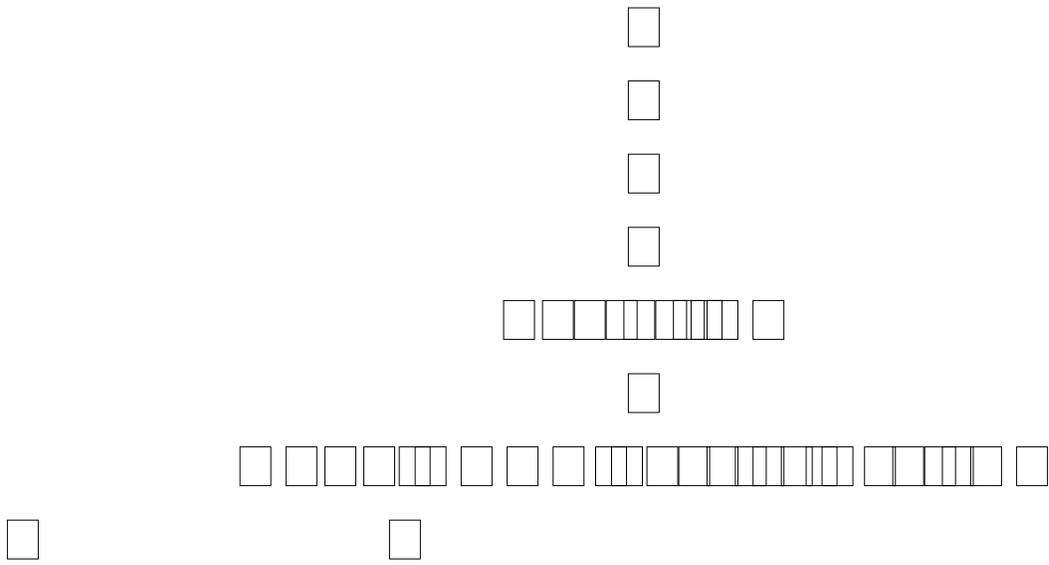
32 MAIN STREET HEBRON, CT., 06248
robs1949@sbclglobal.net
hellstromsurveying@yahoo.com
www.hellstromlandsurveying.com

DATE: DECEMBER 16, 2015

BOUNDARY SURVEY
- PREPARED FOR -
PLH, LLC
HARTFORD TURNPIKE - CONN. ROUTE 6
& FISKE ROAD

HAMPTON CONNECTICUT

SHEET NO.: 2 OF 2	JOB NO.: 2015-066
BY: ROBIN H. /RWH	SCALE: 1" = 80'
FILE NO.: EC15066 SH2	





Connecticut Department of
**ENERGY &
ENVIRONMENTAL
PROTECTION**

Bureau of Natural Resources
Wildlife Division
Natural History Survey – Natural Diversity Data Base

January 26, 2016

Mr. Blake Nicholson
Windham Solar LLC
222 South 9th Street, Suite 1600
Minneapolis, MN 55402

Regarding: Fisk Road Solar, Hampton, CT - Natural Diversity Data Base 201509305

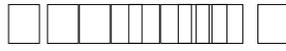
Dear Mr. Nicholson:

I have reviewed Natural Diversity Data Base (NDDB) maps and files regarding the area delineated on the map provided for the Fisk Road Solar Project in Hampton, Connecticut. I do not anticipate negative impacts to State-listed species (RCSA Sec. 26-306) resulting from your proposed activity at the site based upon the information contained within the NDDB. The result of this review does not preclude the possibility that listed species may be encountered on site and that additional action may be necessary to remain in compliance with certain state permits. This determination is good for one year. Please re-submit an NDDB Request for Review if the scope of work changes or if work has not begun on this project by January 26, 2017.

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

Thank you for consulting the Natural Diversity Data Base. If you have further questions, I can be reached by email at Elaine.hinsch@ct.gov or by phone at (860) 424-3011.

Sincerely,
/s/
Elaine Hinsch
Program Specialist II
Wildlife Division



  **r**     **r** **M**             **r**   



MEMORANDUM

Date: February 26, 2016

Re: Fisk Solar Project – Stormwater
File 0008566

To: Steve Broyer, Ecos Energy

From: Joe Fox, Water Resources Engineer

The memo summarizes stormwater modeling completed for the Fisk Solar Project. The site is located on the south side of Hartford Turnpike, two miles southwest of the City of Hampton, CT. HydroCAD modeling software was used to establish existing and proposed discharge rates from the site. Attachment 1 shows the drainage map and location. 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 trees and brush. Site soils are predominantly classified as B with smaller areas of D and C/D soils. See Attachment 2 for soil information.

Proposed Conditions

The proposed design has a total of 16.57 acres of solar panels in two areas on a 39.73 acre site. Gravel access roads (1.16 acres) are proposed to service the panels. Inverters and other associated electrical components (0.12 acres) are proposed. The proposed ground cover beneath and around the panels is native grass.

A ridge runs northwest to southeast through the site. Stormwater runs off to the south and northwest. Proposed at-grade access roads maintain the existing drainage patterns.

Modeling Results

The site was modeled in HydroCAD using the proposed fence line as the watershed boundary. Site conditions are shown in Table 1. Curve Numbers were calculated based on land cover and soil type. Attachment 3 shows the Atlas-14 precipitation report.

Table 1. Site Conditions

Project Area [ac]	28.19	Area within fence
Solar Array [ac]	12.00	
Proposed Impervious Improvements [ac]	0.89	Gravel access roads and equipment pads

The discharge rates in proposed conditions are higher than 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 decrease the discharge rates in the 2-year and 10-year storms and 100-year storm 24-hour storms (Table 2).

Table 2. Comparison of Discharge Rates **without** Pond

Event	Rainfall depth [in]	Existing [cfs]	Proposed [cfs]
2-year	3.35	4.1	6.7
10-year	5.01	21.4	28.0
100-year	7.64	61.4	72.9

A stormwater dry pond could mitigate the increased runoff in proposed conditions. A pond with surface area of roughly 13,000 square feet and a 7-foot depth will detain the runoff sufficiently to reduce proposed discharges to existing conditions rates (Attachment 4).

Table 3. Comparison of Discharge Rates **with** Pond

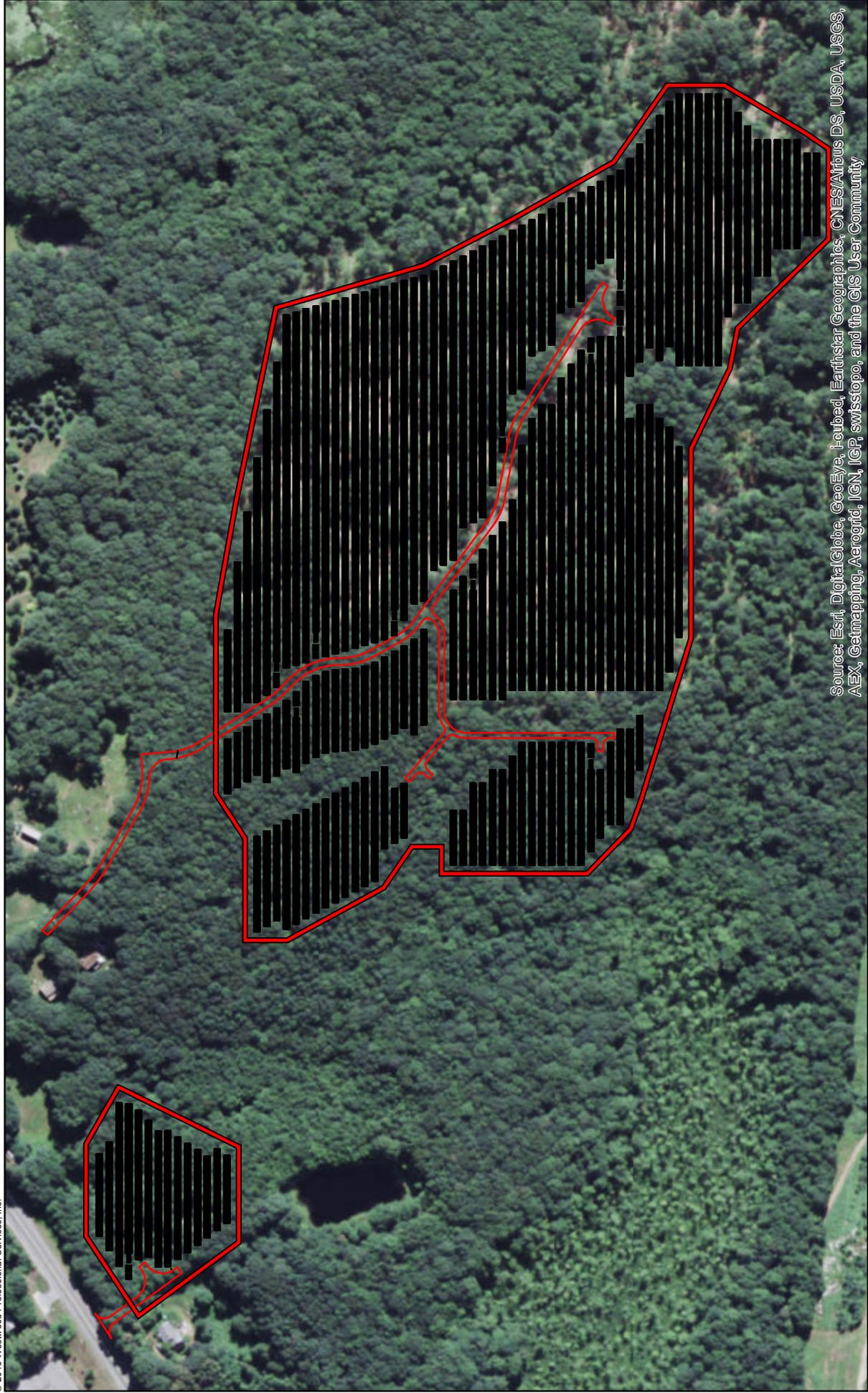
Event	Rainfall depth [in]	Existing [cfs]	Proposed [cfs]
2-year	3.35	4.1	4.1
10-year	5.01	21.4	14.5
100-year	7.64	61.4	61.2

February 26, 2016

Page 3

Attachments

1. Drainage Map
2. Soil Information
3. Atlas 14 Precipitation Report
4. HydroCAD Detention Pond Report



Source: Esri, DigitalGlobe, GeoEye, i-ubed, Earthstar Geographics, CNES/Airbus Ds, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Data Source(s):

-  Fence Line - Watershed Boundary
-  Solar Array
-  Access Road

Fisk Solar Project - ECOS Energy

Hampton, Connecticut

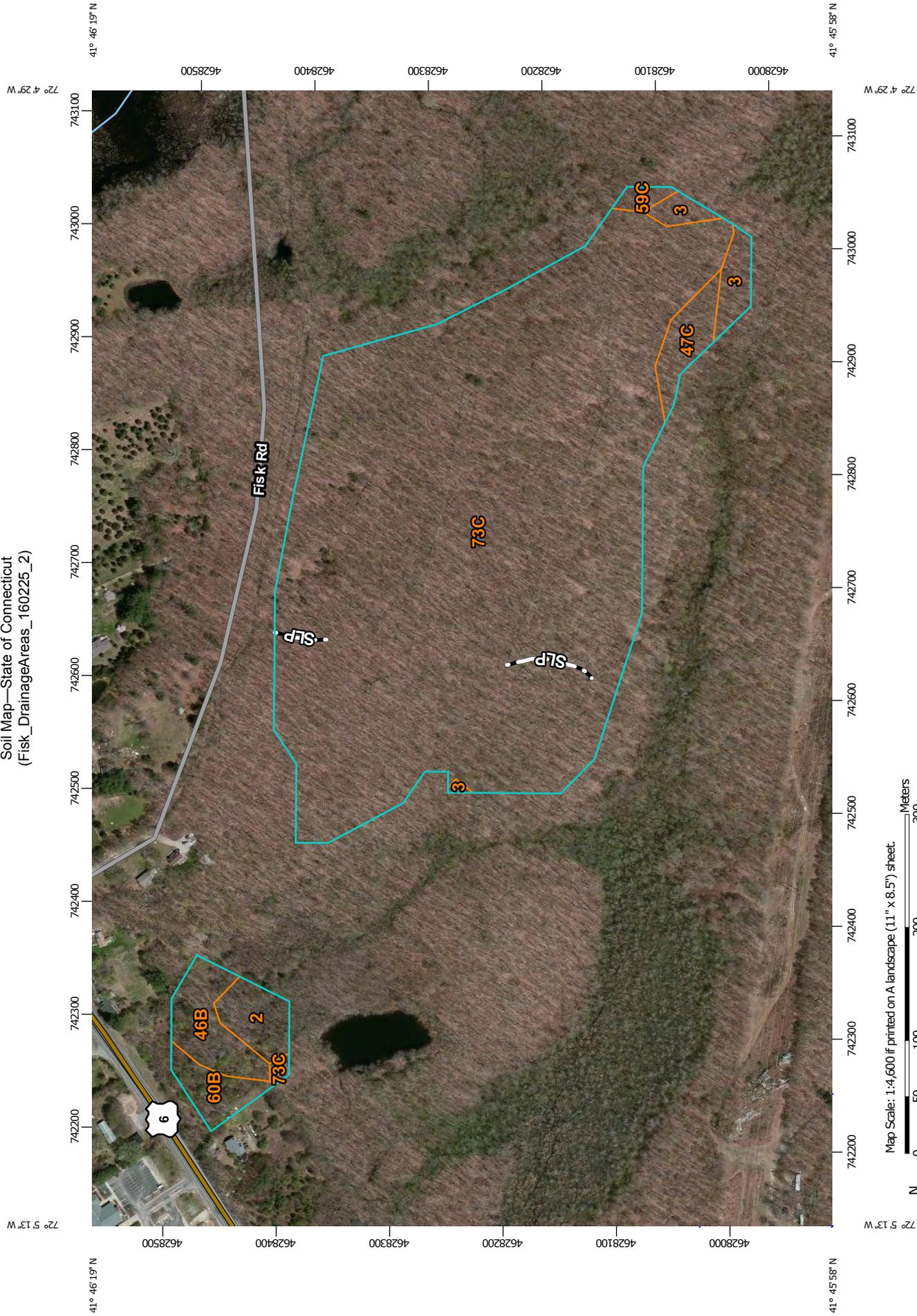
Westwood
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.



0 100 Feet

Drainage Map

Soil Map—State of Connecticut
(Fisk_DrainageAreas_160225_2)



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 14, Sep 22, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 28, 2011—May 12, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
2	Ridgebury fine sandy loam	0.8	2.0%
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	0.8	2.1%
46B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	1.2	3.1%
47C	Woodbridge fine sandy loam, 3 to 15 percent slopes, extremely stony	0.8	2.0%
59C	Gloucester gravelly sandy loam, 3 to 15 percent slopes, extremely stony	0.2	0.5%
60B	Canton and Charlton soils, 3 to 8 percent slopes	0.7	1.8%
73C	Charlton-Chatfield complex, 3 to 15 percent slopes, very rocky	35.1	88.5%
Totals for Area of Interest		39.7	100.0%



NOAA Atlas 14, Volume 10, Version 2
Location name: Hampton, Connecticut, US*
Latitude: 41.7746°, Longitude: -72.0739°
Elevation: 544 ft*
 * source: Google Maps



POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

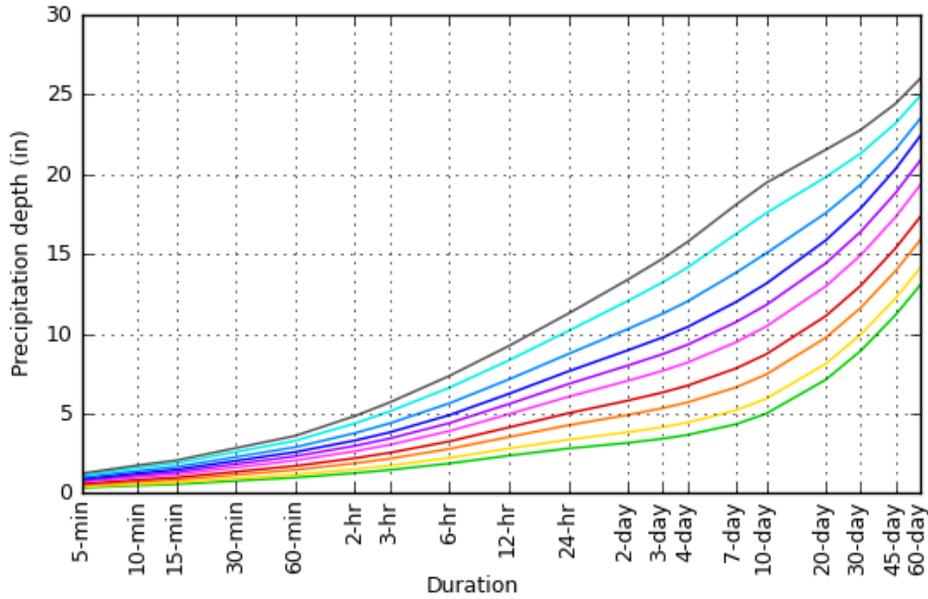
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.336 (0.258-0.438)	0.399 (0.306-0.520)	0.501 (0.383-0.656)	0.586 (0.446-0.771)	0.704 (0.519-0.959)	0.794 (0.574-1.10)	0.884 (0.621-1.26)	0.989 (0.664-1.45)	1.13 (0.730-1.70)	1.23 (0.780-1.89)
10-min	0.476 (0.365-0.620)	0.565 (0.433-0.737)	0.710 (0.543-0.929)	0.831 (0.631-1.09)	0.997 (0.735-1.36)	1.13 (0.813-1.56)	1.25 (0.880-1.79)	1.40 (0.940-2.05)	1.60 (1.03-2.41)	1.75 (1.10-2.68)
15-min	0.560 (0.430-0.730)	0.664 (0.509-0.867)	0.835 (0.638-1.09)	0.977 (0.743-1.28)	1.17 (0.865-1.60)	1.32 (0.956-1.84)	1.47 (1.03-2.11)	1.65 (1.11-2.41)	1.88 (1.22-2.83)	2.05 (1.30-3.15)
30-min	0.768 (0.589-1.00)	0.912 (0.699-1.19)	1.15 (0.877-1.50)	1.34 (1.02-1.76)	1.61 (1.19-2.20)	1.82 (1.31-2.52)	2.03 (1.42-2.90)	2.27 (1.52-3.31)	2.58 (1.67-3.89)	2.82 (1.79-4.33)
60-min	0.976 (0.749-1.27)	1.16 (0.889-1.51)	1.46 (1.11-1.91)	1.71 (1.30-2.25)	2.05 (1.51-2.79)	2.31 (1.67-3.21)	2.58 (1.81-3.69)	2.88 (1.94-4.22)	3.29 (2.13-4.96)	3.59 (2.27-5.51)
2-hr	1.25 (0.968-1.63)	1.49 (1.15-1.93)	1.87 (1.44-2.44)	2.19 (1.67-2.86)	2.63 (1.95-3.57)	2.96 (2.16-4.11)	3.30 (2.35-4.74)	3.76 (2.53-5.47)	4.37 (2.84-6.55)	4.83 (3.07-7.37)
3-hr	1.45 (1.12-1.88)	1.72 (1.33-2.23)	2.16 (1.67-2.81)	2.53 (1.94-3.30)	3.03 (2.26-4.12)	3.42 (2.51-4.75)	3.81 (2.73-5.48)	4.38 (2.95-6.34)	5.12 (3.33-7.65)	5.69 (3.62-8.64)
6-hr	1.86 (1.45-2.39)	2.21 (1.71-2.84)	2.77 (2.15-3.58)	3.24 (2.50-4.21)	3.89 (2.92-5.26)	4.39 (3.23-6.06)	4.89 (3.52-7.00)	5.63 (3.81-8.11)	6.61 (4.31-9.80)	7.35 (4.69-11.1)
12-hr	2.35 (1.83-3.00)	2.79 (2.18-3.58)	3.52 (2.74-4.51)	4.12 (3.19-5.31)	4.95 (3.72-6.64)	5.59 (4.13-7.65)	6.23 (4.49-8.83)	7.13 (4.84-10.2)	8.33 (5.45-12.3)	9.23 (5.91-13.8)
24-hr	2.80 (2.20-3.56)	3.35 (2.63-4.27)	4.26 (3.33-5.43)	5.01 (3.89-6.42)	6.04 (4.56-8.06)	6.84 (5.07-9.30)	7.64 (5.52-10.7)	8.73 (5.95-12.4)	10.2 (6.68-14.9)	11.3 (7.23-16.8)
2-day	3.15 (2.48-3.98)	3.82 (3.00-4.83)	4.90 (3.85-6.22)	5.81 (4.53-7.40)	7.05 (5.34-9.35)	8.01 (5.96-10.8)	8.96 (6.51-12.6)	10.3 (7.04-14.5)	12.1 (7.94-17.5)	13.4 (8.62-19.8)
3-day	3.41 (2.70-4.30)	4.14 (3.27-5.22)	5.33 (4.19-6.74)	6.32 (4.94-8.02)	7.68 (5.84-10.2)	8.72 (6.51-11.8)	9.77 (7.12-13.7)	11.3 (7.71-15.8)	13.2 (8.72-19.2)	14.7 (9.49-21.7)
4-day	3.65 (2.89-4.59)	4.43 (3.50-5.57)	5.69 (4.49-7.18)	6.75 (5.29-8.54)	8.19 (6.24-10.8)	9.31 (6.96-12.5)	10.4 (7.61-14.5)	12.0 (8.24-16.9)	14.2 (9.34-20.4)	15.8 (10.2-23.1)
7-day	4.32 (3.43-5.39)	5.19 (4.12-6.50)	6.63 (5.24-8.31)	7.81 (6.15-9.85)	9.45 (7.23-12.4)	10.7 (8.04-14.3)	12.0 (8.78-16.6)	13.8 (9.49-19.3)	16.2 (10.8-23.3)	18.1 (11.7-26.4)
10-day	4.99 (3.97-6.21)	5.92 (4.71-7.38)	7.45 (5.91-9.31)	8.71 (6.87-10.9)	10.5 (8.01-13.7)	11.8 (8.87-15.7)	13.1 (9.63-18.1)	15.0 (10.4-20.9)	17.6 (11.7-25.1)	19.5 (12.6-28.3)
20-day	7.12 (5.70-8.82)	8.12 (6.49-10.1)	9.75 (7.77-12.1)	11.1 (8.80-13.9)	13.0 (9.96-16.8)	14.4 (10.8-18.9)	15.9 (11.5-21.4)	17.6 (12.2-24.2)	19.8 (13.2-28.2)	21.5 (14.0-31.1)
30-day	8.92 (7.16-11.0)	9.95 (7.98-12.3)	11.6 (9.29-14.4)	13.0 (10.3-16.2)	14.9 (11.5-19.1)	16.4 (12.3-21.3)	17.9 (13.0-23.8)	19.4 (13.5-26.6)	21.3 (14.2-30.1)	22.8 (14.8-32.8)
45-day	11.2 (9.00-13.8)	12.2 (9.83-15.1)	13.9 (11.2-17.2)	15.4 (12.2-19.1)	17.3 (13.3-22.0)	18.8 (14.1-24.3)	20.3 (14.7-26.8)	21.6 (15.0-29.5)	23.2 (15.6-32.6)	24.4 (15.9-35.0)
60-day	13.1 (10.5-16.0)	14.1 (11.4-17.4)	15.9 (12.7-19.6)	17.3 (13.8-21.4)	19.3 (14.9-24.5)	20.9 (15.7-26.8)	22.4 (16.2-29.3)	23.5 (16.4-32.0)	24.9 (16.8-34.9)	26.0 (17.0-37.2)

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 low er and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) w ill be greater than the upper bound (or less than the low er 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.

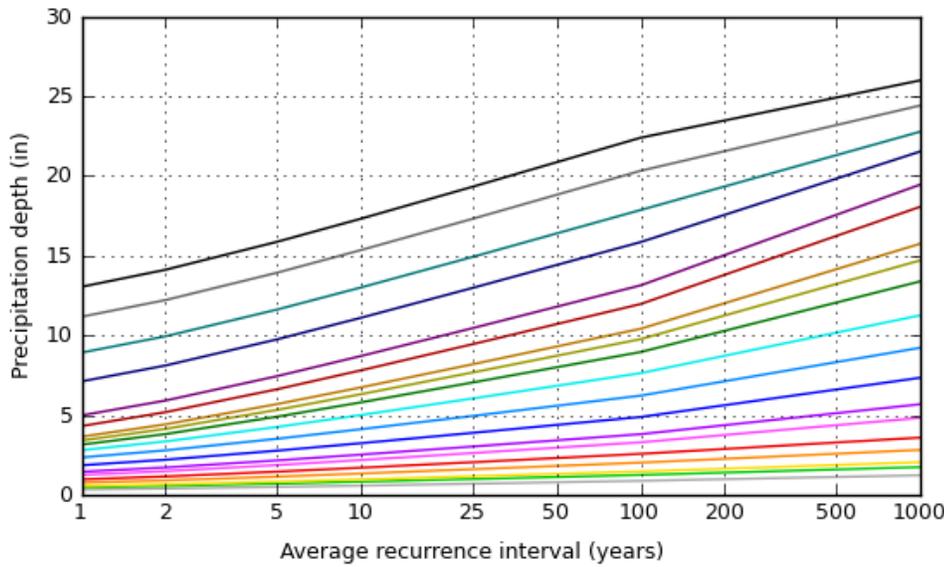
[Back to Top](#)

PF graphical

PDS-based depth-duration-frequency (DDF) curves
 Latitude: 41.7746°, Longitude: -72.0739°



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



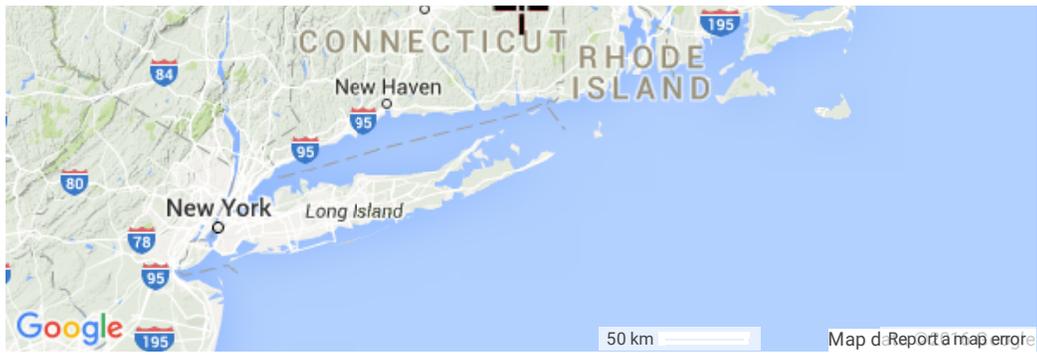
Duration
5-min
10-min
15-min
30-min
60-min
2-hr
3-hr
6-hr
12-hr
24-hr
2-day
3-day
4-day
7-day
10-day
20-day
30-day
45-day
60-day

[Back to Top](#)

Maps & aerials

Small scale terrain





Large scale terrain



Large scale map



Large scale aerial

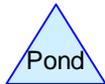
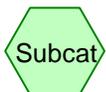
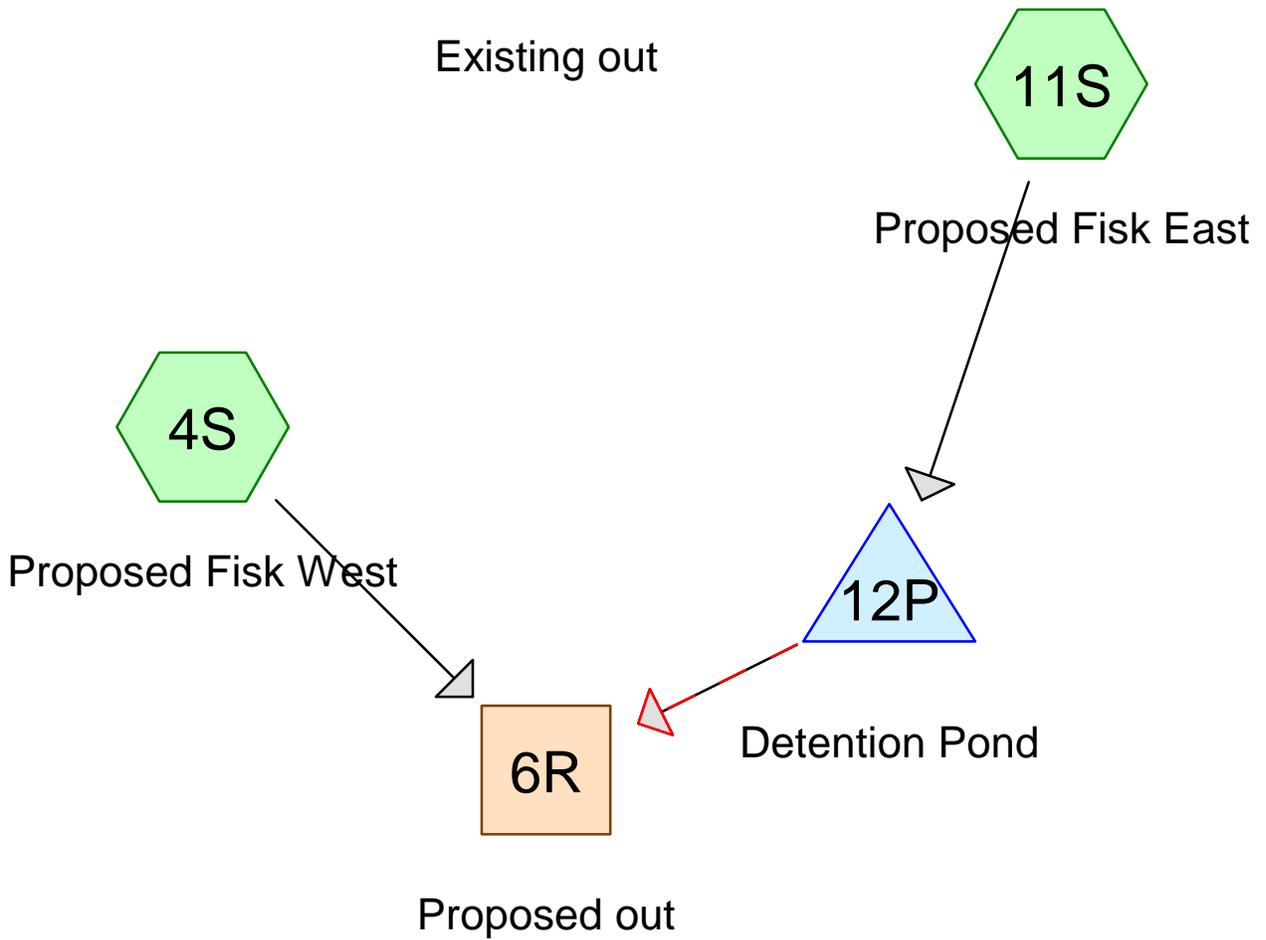
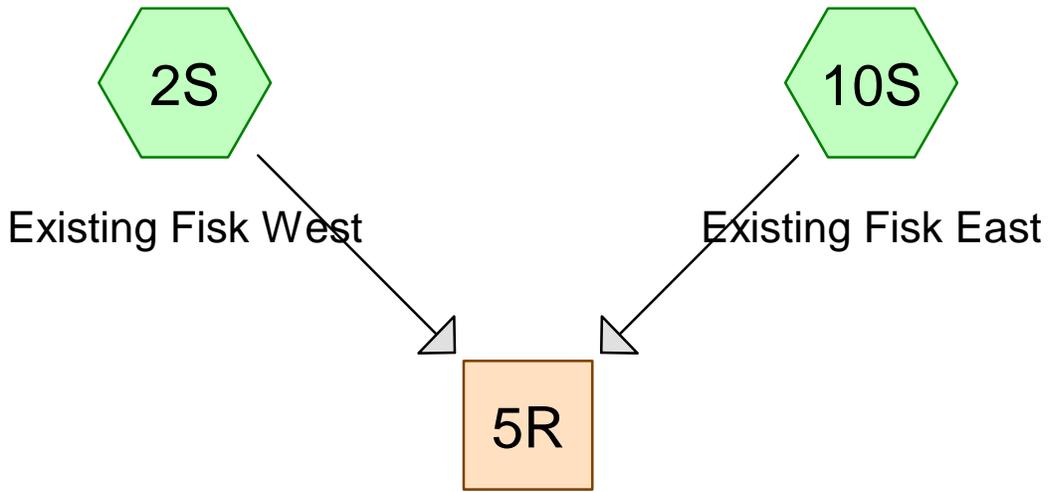




[Back to Top](#)

[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](#)



Summary for Subcatchment 2S: Existing Fisk West

Runoff = 3.62 cfs @ 12.07 hrs, Volume= 0.282 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 2-yr Rainfall=3.35"

Area (ac)	CN	Description
* 2.832	75	Weighted CN
2.832		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	406	0.0443	0.79		Lag/CN Method,

Summary for Subcatchment 4S: Proposed Fisk West

Runoff = 2.85 cfs @ 12.09 hrs, Volume= 0.242 af, Depth= 1.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 2-yr Rainfall=3.35"

Area (ac)	CN	Description
2.709	71	Meadow, non-grazed, HSG C
* 0.088	98	Internal Access Road
* 0.035	98	Outside Access Road
2.832	72	Weighted Average
2.709		95.66% Pervious Area
0.123		4.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	406	0.0443	0.73		Lag/CN Method,

Summary for Subcatchment 10S: Existing Fisk East

Runoff = 3.20 cfs @ 12.54 hrs, Volume= 1.009 af, Depth= 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 2-yr Rainfall=3.35"

Area (ac)	CN	Description
* 36.900	56	Weighted CN
36.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.1	1,200	0.0675	0.74		Lag/CN Method,

Summary for Subcatchment 11S: Proposed Fisk East

Runoff = 5.73 cfs @ 12.41 hrs, Volume= 1.326 af, Depth= 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 2-yr Rainfall=3.35"

Area (ac)	CN	Description
35.949	58	Meadow, non-grazed, HSG B
* 0.798	98	Internal Road
* 0.153	98	External Road
36.900	59	Weighted Average
35.949		97.42% Pervious Area
0.951		2.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	1,200	0.0675	0.80		Lag/CN Method,

Summary for Reach 5R: Existing out

Inflow Area = 39.732 ac, 0.00% Impervious, Inflow Depth = 0.39" for 2-yr event
 Inflow = 4.06 cfs @ 12.49 hrs, Volume= 1.292 af
 Outflow = 4.06 cfs @ 12.49 hrs, Volume= 1.292 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 6R: Proposed out

Inflow Area = 39.732 ac, 2.70% Impervious, Inflow Depth > 0.47" for 2-yr event
 Inflow = 4.06 cfs @ 12.84 hrs, Volume= 1.567 af
 Outflow = 4.06 cfs @ 12.84 hrs, Volume= 1.567 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 12P: Detention Pond

Inflow Area = 36.900 ac, 2.58% Impervious, Inflow Depth = 0.43" for 2-yr event
 Inflow = 5.73 cfs @ 12.41 hrs, Volume= 1.326 af
 Outflow = 3.63 cfs @ 12.85 hrs, Volume= 1.326 af, Atten= 37%, Lag= 26.8 min
 Primary = 3.63 cfs @ 12.85 hrs, Volume= 1.326 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 585.56' @ 12.85 hrs Surf.Area= 6,290 sf Storage= 8,621 cf

Plug-Flow detention time= 94.1 min calculated for 1.324 af (100% of inflow)
 Center-of-Mass det. time= 95.0 min (1,076.3 - 981.3)

0008566_Fisk

CT-Fisk 24-hr S1 2-yr Rainfall=3.35"

Prepared by Westwood Professional Services, Inc.

Printed 2/26/2016

HydroCAD® 10.00-14 s/n 03363 © 2015 HydroCAD Software Solutions LLC

Page 4

Volume	Invert	Avail.Storage	Storage Description
#1	584.00'	59,388 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
584.00	4,803	0	0
585.00	5,735	5,269	5,269
586.00	6,731	6,233	11,502
587.00	7,792	7,262	18,764
588.00	8,918	8,355	27,119
589.00	10,108	9,513	36,632
590.00	11,362	10,735	47,367
591.00	12,681	12,022	59,388

Device	Routing	Invert	Outlet Devices
#1	Primary	584.00'	18.0" Round RCP_Round 18" L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 584.00' / 583.50' S= 0.0100 '/ Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	589.25'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Device 1	585.30'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	584.00'	6.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=3.62 cfs @ 12.85 hrs HW=585.56' (Free Discharge)

- ↑ 1=RCP_Round 18" (Passes 3.62 cfs of 6.75 cfs potential flow)
- ↑ 3=Sharp-Crested Rectangular Weir (Weir Controls 2.54 cfs @ 1.66 fps)
- ↑ 4=Orifice/Grate (Orifice Controls 1.08 cfs @ 5.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=584.00' (Free Discharge)

- ↑ 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Subcatchment 2S: Existing Fisk West

Runoff = 7.69 cfs @ 12.07 hrs, Volume= 0.580 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 10-yr Rainfall=5.01"

Area (ac)	CN	Description
* 2.832	75	Weighted CN
2.832		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	406	0.0443	0.79		Lag/CN Method,

Summary for Subcatchment 4S: Proposed Fisk West

Runoff = 6.49 cfs @ 12.09 hrs, Volume= 0.521 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 10-yr Rainfall=5.01"

Area (ac)	CN	Description
2.709	71	Meadow, non-grazed, HSG C
* 0.088	98	Internal Access Road
* 0.035	98	Outside Access Road
2.832	72	Weighted Average
2.709		95.66% Pervious Area
0.123		4.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	406	0.0443	0.73		Lag/CN Method,

Summary for Subcatchment 10S: Existing Fisk East

Runoff = 19.15 cfs @ 12.37 hrs, Volume= 3.219 af, Depth= 1.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 10-yr Rainfall=5.01"

Area (ac)	CN	Description
* 36.900	56	Weighted CN
36.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.1	1,200	0.0675	0.74		Lag/CN Method,

Summary for Subcatchment 11S: Proposed Fisk East

Runoff = 25.59 cfs @ 12.32 hrs, Volume= 3.813 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 10-yr Rainfall=5.01"

Area (ac)	CN	Description
35.949	58	Meadow, non-grazed, HSG B
* 0.798	98	Internal Road
* 0.153	98	External Road
36.900	59	Weighted Average
35.949		97.42% Pervious Area
0.951		2.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	1,200	0.0675	0.80		Lag/CN Method,

Summary for Reach 5R: Existing out

Inflow Area = 39.732 ac, 0.00% Impervious, Inflow Depth = 1.15" for 10-yr event
 Inflow = 21.36 cfs @ 12.35 hrs, Volume= 3.799 af
 Outflow = 21.36 cfs @ 12.35 hrs, Volume= 3.799 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 6R: Proposed out

Inflow Area = 39.732 ac, 2.70% Impervious, Inflow Depth = 1.31" for 10-yr event
 Inflow = 14.54 cfs @ 12.60 hrs, Volume= 4.333 af
 Outflow = 14.54 cfs @ 12.60 hrs, Volume= 4.333 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 12P: Detention Pond

Inflow Area = 36.900 ac, 2.58% Impervious, Inflow Depth = 1.24" for 10-yr event
 Inflow = 25.59 cfs @ 12.32 hrs, Volume= 3.813 af
 Outflow = 13.43 cfs @ 12.73 hrs, Volume= 3.812 af, Atten= 48%, Lag= 24.3 min
 Primary = 13.43 cfs @ 12.73 hrs, Volume= 3.812 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 587.95' @ 12.73 hrs Surf.Area= 8,862 sf Storage= 26,675 cf

Plug-Flow detention time= 48.5 min calculated for 3.812 af (100% of inflow)
 Center-of-Mass det. time= 48.3 min (981.3 - 933.0)

0008566_Fisk

CT-Fisk 24-hr S1 10-yr Rainfall=5.01"

Prepared by Westwood Professional Services, Inc.

Printed 2/26/2016

HydroCAD® 10.00-14 s/n 03363 © 2015 HydroCAD Software Solutions LLC

Page 7

Volume	Invert	Avail.Storage	Storage Description
#1	584.00'	59,388 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
584.00	4,803	0	0
585.00	5,735	5,269	5,269
586.00	6,731	6,233	11,502
587.00	7,792	7,262	18,764
588.00	8,918	8,355	27,119
589.00	10,108	9,513	36,632
590.00	11,362	10,735	47,367
591.00	12,681	12,022	59,388

Device	Routing	Invert	Outlet Devices
#1	Primary	584.00'	18.0" Round RCP_Round 18" L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 584.00' / 583.50' S= 0.0100 '/ Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	589.25'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Device 1	585.30'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	584.00'	6.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=13.42 cfs @ 12.73 hrs HW=587.95' (Free Discharge)

↑ **1=RCP_Round 18"** (Inlet Controls 13.42 cfs @ 7.60 fps)

↑ **3=Sharp-Crested Rectangular Weir** (Passes < 77.05 cfs potential flow)

↑ **4=Orifice/Grate** (Passes < 1.82 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=584.00' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Subcatchment 2S: Existing Fisk West

Runoff = 14.61 cfs @ 12.07 hrs, Volume= 1.113 af, Depth= 4.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 100-yr Rainfall=7.64"

Area (ac)	CN	Description
* 2.832	75	Weighted CN
2.832		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	406	0.0443	0.79		Lag/CN Method,

Summary for Subcatchment 4S: Proposed Fisk West

Runoff = 12.87 cfs @ 12.08 hrs, Volume= 1.034 af, Depth= 4.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 100-yr Rainfall=7.64"

Area (ac)	CN	Description
2.709	71	Meadow, non-grazed, HSG C
* 0.088	98	Internal Access Road
* 0.035	98	Outside Access Road
2.832	72	Weighted Average
2.709		95.66% Pervious Area
0.123		4.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	406	0.0443	0.73		Lag/CN Method,

Summary for Subcatchment 10S: Existing Fisk East

Runoff = 56.97 cfs @ 12.34 hrs, Volume= 8.132 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 100-yr Rainfall=7.64"

Area (ac)	CN	Description
* 36.900	56	Weighted CN
36.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.1	1,200	0.0675	0.74		Lag/CN Method,

Summary for Subcatchment 11S: Proposed Fisk East

Runoff = 68.04 cfs @ 12.31 hrs, Volume= 9.101 af, Depth= 2.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 100-yr Rainfall=7.64"

Area (ac)	CN	Description
35.949	58	Meadow, non-grazed, HSG B
* 0.798	98	Internal Road
* 0.153	98	External Road
36.900	59	Weighted Average
35.949		97.42% Pervious Area
0.951		2.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	1,200	0.0675	0.80		Lag/CN Method,

Summary for Reach 5R: Existing out

Inflow Area = 39.732 ac, 0.00% Impervious, Inflow Depth = 2.79" for 100-yr event
 Inflow = 61.40 cfs @ 12.32 hrs, Volume= 9.246 af
 Outflow = 61.40 cfs @ 12.32 hrs, Volume= 9.246 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 6R: Proposed out

Inflow Area = 39.732 ac, 2.70% Impervious, Inflow Depth = 3.06" for 100-yr event
 Inflow = 61.24 cfs @ 12.43 hrs, Volume= 10.134 af
 Outflow = 61.24 cfs @ 12.43 hrs, Volume= 10.134 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 12P: Detention Pond

Inflow Area = 36.900 ac, 2.58% Impervious, Inflow Depth = 2.96" for 100-yr event
 Inflow = 68.04 cfs @ 12.31 hrs, Volume= 9.101 af
 Outflow = 57.93 cfs @ 12.44 hrs, Volume= 9.100 af, Atten= 15%, Lag= 8.0 min
 Primary = 18.10 cfs @ 12.44 hrs, Volume= 7.610 af
 Secondary = 39.84 cfs @ 12.44 hrs, Volume= 1.490 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 590.56' @ 12.44 hrs Surf.Area= 12,101 sf Storage= 53,944 cf

Plug-Flow detention time= 31.8 min calculated for 9.091 af (100% of inflow)
 Center-of-Mass det. time= 32.4 min (931.8 - 899.4)

Volume	Invert	Avail.Storage	Storage Description
#1	584.00'	59,388 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
584.00	4,803	0	0
585.00	5,735	5,269	5,269
586.00	6,731	6,233	11,502
587.00	7,792	7,262	18,764
588.00	8,918	8,355	27,119
589.00	10,108	9,513	36,632
590.00	11,362	10,735	47,367
591.00	12,681	12,022	59,388

Device	Routing	Invert	Outlet Devices
#1	Primary	584.00'	18.0" Round RCP_Round 18" L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 584.00' / 583.50' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	589.25'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Device 1	585.30'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	584.00'	6.0" Vert. Orifice/Gate C= 0.600

Primary OutFlow Max=18.09 cfs @ 12.44 hrs HW=590.55' (Free Discharge)

↑ **1=RCP_Round 18"** (Inlet Controls 18.09 cfs @ 10.24 fps)

↑ **3=Sharp-Crested Rectangular Weir** (Passes < 194.89 cfs potential flow)

↑ **4=Orifice/Gate** (Passes < 2.37 cfs potential flow)

Secondary OutFlow Max=39.52 cfs @ 12.44 hrs HW=590.55' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 39.52 cfs @ 3.03 fps)

Summary for Subcatchment 2S: Existing Fisk West

Runoff = 17.33 cfs @ 12.07 hrs, Volume= 1.346 af, Depth= 5.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 200-yr Rainfall=8.73"

Area (ac)	CN	Description
* 2.832	75	Weighted CN
2.832		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	406	0.0443	0.79		Lag/CN Method,

Summary for Subcatchment 4S: Proposed Fisk West

Runoff = 15.42 cfs @ 12.08 hrs, Volume= 1.260 af, Depth= 5.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 200-yr Rainfall=8.73"

Area (ac)	CN	Description
2.709	71	Meadow, non-grazed, HSG C
* 0.088	98	Internal Access Road
* 0.035	98	Outside Access Road
2.832	72	Weighted Average
2.709		95.66% Pervious Area
0.123		4.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	406	0.0443	0.73		Lag/CN Method,

Summary for Subcatchment 10S: Existing Fisk East

Runoff = 73.78 cfs @ 12.33 hrs, Volume= 10.494 af, Depth= 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 200-yr Rainfall=8.73"

Area (ac)	CN	Description
* 36.900	56	Weighted CN
36.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.1	1,200	0.0675	0.74		Lag/CN Method,

Summary for Subcatchment 11S: Proposed Fisk East

Runoff = 86.42 cfs @ 12.30 hrs, Volume= 11.594 af, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 200-yr Rainfall=8.73"

Area (ac)	CN	Description
35.949	58	Meadow, non-grazed, HSG B
* 0.798	98	Internal Road
* 0.153	98	External Road
36.900	59	Weighted Average
35.949		97.42% Pervious Area
0.951		2.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	1,200	0.0675	0.80		Lag/CN Method,

Summary for Reach 5R: Existing out

Inflow Area = 39.732 ac, 0.00% Impervious, Inflow Depth = 3.58" for 200-yr event
 Inflow = 79.03 cfs @ 12.32 hrs, Volume= 11.841 af
 Outflow = 79.03 cfs @ 12.32 hrs, Volume= 11.841 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 6R: Proposed out

Inflow Area = 39.732 ac, 2.70% Impervious, Inflow Depth = 3.88" for 200-yr event
 Inflow = 82.89 cfs @ 12.39 hrs, Volume= 12.854 af
 Outflow = 82.89 cfs @ 12.39 hrs, Volume= 12.854 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 12P: Detention Pond

Inflow Area = 36.900 ac, 2.58% Impervious, Inflow Depth = 3.77" for 200-yr event
 Inflow = 86.42 cfs @ 12.30 hrs, Volume= 11.594 af
 Outflow = 78.69 cfs @ 12.40 hrs, Volume= 11.594 af, Atten= 9%, Lag= 5.9 min
 Primary = 18.73 cfs @ 12.40 hrs, Volume= 9.105 af
 Secondary = 59.96 cfs @ 12.40 hrs, Volume= 2.489 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 590.97' @ 12.40 hrs Surf.Area= 12,646 sf Storage= 59,050 cf

Plug-Flow detention time= 28.5 min calculated for 11.582 af (100% of inflow)
 Center-of-Mass det. time= 29.1 min (921.2 - 892.2)

Volume	Invert	Avail.Storage	Storage Description
#1	584.00'	59,388 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
584.00	4,803	0	0
585.00	5,735	5,269	5,269
586.00	6,731	6,233	11,502
587.00	7,792	7,262	18,764
588.00	8,918	8,355	27,119
589.00	10,108	9,513	36,632
590.00	11,362	10,735	47,367
591.00	12,681	12,022	59,388

Device	Routing	Invert	Outlet Devices
#1	Primary	584.00'	18.0" Round RCP_Round 18" L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 584.00' / 583.50' S= 0.0100 '/ Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	589.25'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Device 1	585.30'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	584.00'	6.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=18.73 cfs @ 12.40 hrs HW=590.97' (Free Discharge)

↑ **1=RCP_Round 18"** (Inlet Controls 18.73 cfs @ 10.60 fps)

↑ **3=Sharp-Crested Rectangular Weir** (Passes < 214.95 cfs potential flow)

↑ **4=Orifice/Grate** (Passes < 2.45 cfs potential flow)

Secondary OutFlow Max=59.91 cfs @ 12.40 hrs HW=590.97' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 59.91 cfs @ 3.48 fps)

Summary for Subcatchment 2S: Existing Fisk West

Runoff = 20.85 cfs @ 12.07 hrs, Volume= 1.660 af, Depth= 7.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 500-yr Rainfall=10.17"

Area (ac)	CN	Description
* 2.832	75	Weighted CN
2.832		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	406	0.0443	0.79		Lag/CN Method,

Summary for Subcatchment 4S: Proposed Fisk West

Runoff = 18.74 cfs @ 12.08 hrs, Volume= 1.568 af, Depth= 6.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 500-yr Rainfall=10.17"

Area (ac)	CN	Description
2.709	71	Meadow, non-grazed, HSG C
* 0.088	98	Internal Access Road
* 0.035	98	Outside Access Road
2.832	72	Weighted Average
2.709		95.66% Pervious Area
0.123		4.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	406	0.0443	0.73		Lag/CN Method,

Summary for Subcatchment 10S: Existing Fisk East

Runoff = 96.98 cfs @ 12.33 hrs, Volume= 13.816 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 500-yr Rainfall=10.17"

Area (ac)	CN	Description
* 36.900	56	Weighted CN
36.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.1	1,200	0.0675	0.74		Lag/CN Method,

Summary for Subcatchment 11S: Proposed Fisk East

Runoff = 111.51 cfs @ 12.30 hrs, Volume= 15.071 af, Depth= 4.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 500-yr Rainfall=10.17"

Area (ac)	CN	Description
35.949	58	Meadow, non-grazed, HSG B
* 0.798	98	Internal Road
* 0.153	98	External Road
36.900	59	Weighted Average
35.949		97.42% Pervious Area
0.951		2.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	1,200	0.0675	0.80		Lag/CN Method,

Summary for Reach 5R: Existing out

Inflow Area = 39.732 ac, 0.00% Impervious, Inflow Depth = 4.67" for 500-yr event
 Inflow = 103.32 cfs @ 12.32 hrs, Volume= 15.476 af
 Outflow = 103.32 cfs @ 12.32 hrs, Volume= 15.476 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 6R: Proposed out

Inflow Area = 39.732 ac, 2.70% Impervious, Inflow Depth = 5.03" for 500-yr event
 Inflow = 138.56 cfs @ 12.30 hrs, Volume= 16.638 af
 Outflow = 138.56 cfs @ 12.30 hrs, Volume= 16.638 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 12P: Detention Pond

Inflow Area = 36.900 ac, 2.58% Impervious, Inflow Depth = 4.90" for 500-yr event
 Inflow = 111.51 cfs @ 12.30 hrs, Volume= 15.071 af
 Outflow = 131.73 cfs @ 12.30 hrs, Volume= 15.070 af, Atten= 0%, Lag= 0.1 min
 Primary = 20.00 cfs @ 12.30 hrs, Volume= 11.037 af
 Secondary = 111.72 cfs @ 12.30 hrs, Volume= 4.034 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 591.85' @ 12.30 hrs Surf.Area= 12,681 sf Storage= 59,388 cf

Plug-Flow detention time= 26.6 min calculated for 15.070 af (100% of inflow)
 Center-of-Mass det. time= 26.3 min (909.8 - 883.5)

0008566_Fisk

CT-Fisk 24-hr S1 500-yr Rainfall=10.17"

Prepared by Westwood Professional Services, Inc.

Printed 2/26/2016

HydroCAD® 10.00-14 s/n 03363 © 2015 HydroCAD Software Solutions LLC

Page 16

Volume	Invert	Avail.Storage	Storage Description
#1	584.00'	59,388 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
584.00	4,803	0	0
585.00	5,735	5,269	5,269
586.00	6,731	6,233	11,502
587.00	7,792	7,262	18,764
588.00	8,918	8,355	27,119
589.00	10,108	9,513	36,632
590.00	11,362	10,735	47,367
591.00	12,681	12,022	59,388

Device	Routing	Invert	Outlet Devices
#1	Primary	584.00'	18.0" Round RCP_Round 18" L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 584.00' / 583.50' S= 0.0100 '/ Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	589.25'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Device 1	585.30'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	584.00'	6.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=20.00 cfs @ 12.30 hrs HW=591.84' (Free Discharge)

↑ **1=RCP_Round 18"** (Inlet Controls 20.00 cfs @ 11.32 fps)

↑ **3=Sharp-Crested Rectangular Weir** (Passes < 256.84 cfs potential flow)

↑ **4=Orifice/Grate** (Passes < 2.61 cfs potential flow)

Secondary OutFlow Max=111.55 cfs @ 12.30 hrs HW=591.85' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 111.55 cfs @ 4.30 fps)

Summary for Subcatchment 2S: Existing Fisk West

Runoff = 23.40 cfs @ 12.07 hrs, Volume= 1.904 af, Depth= 8.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 1000-yr Rainfall=11.27"

Area (ac)	CN	Description
* 2.832	75	Weighted CN
2.832		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	406	0.0443	0.79		Lag/CN Method,

Summary for Subcatchment 4S: Proposed Fisk West

Runoff = 21.16 cfs @ 12.08 hrs, Volume= 1.807 af, Depth= 7.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 1000-yr Rainfall=11.27"

Area (ac)	CN	Description
2.709	71	Meadow, non-grazed, HSG C
* 0.088	98	Internal Access Road
* 0.035	98	Outside Access Road
2.832	72	Weighted Average
2.709		95.66% Pervious Area
0.123		4.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	406	0.0443	0.73		Lag/CN Method,

Summary for Subcatchment 10S: Existing Fisk East

Runoff = 114.92 cfs @ 12.32 hrs, Volume= 16.476 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 1000-yr Rainfall=11.27"

Area (ac)	CN	Description
* 36.900	56	Weighted CN
36.900		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.1	1,200	0.0675	0.74		Lag/CN Method,

Summary for Subcatchment 11S: Proposed Fisk East

Runoff = 130.52 cfs @ 12.30 hrs, Volume= 17.836 af, Depth= 5.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 CT-Fisk 24-hr S1 1000-yr Rainfall=11.27"

Area (ac)	CN	Description
35.949	58	Meadow, non-grazed, HSG B
* 0.798	98	Internal Road
* 0.153	98	External Road
36.900	59	Weighted Average
35.949		97.42% Pervious Area
0.951		2.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.1	1,200	0.0675	0.80		Lag/CN Method,

Summary for Reach 5R: Existing out

Inflow Area = 39.732 ac, 0.00% Impervious, Inflow Depth = 5.55" for 1000-yr event
 Inflow = 121.88 cfs @ 12.31 hrs, Volume= 18.380 af
 Outflow = 121.88 cfs @ 12.31 hrs, Volume= 18.380 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Reach 6R: Proposed out

Inflow Area = 39.732 ac, 2.70% Impervious, Inflow Depth = 5.93" for 1000-yr event
 Inflow = 162.71 cfs @ 12.25 hrs, Volume= 19.642 af
 Outflow = 162.71 cfs @ 12.25 hrs, Volume= 19.642 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Summary for Pond 12P: Detention Pond

Inflow Area = 36.900 ac, 2.58% Impervious, Inflow Depth = 5.80" for 1000-yr event
 Inflow = 130.52 cfs @ 12.30 hrs, Volume= 17.836 af
 Outflow = 153.04 cfs @ 12.25 hrs, Volume= 17.836 af, Atten= 0%, Lag= 0.0 min
 Primary = 20.45 cfs @ 12.25 hrs, Volume= 12.493 af
 Secondary = 132.59 cfs @ 12.25 hrs, Volume= 5.343 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 592.17' @ 12.25 hrs Surf.Area= 12,681 sf Storage= 59,388 cf

Plug-Flow detention time= 24.5 min calculated for 17.817 af (100% of inflow)
 Center-of-Mass det. time= 25.0 min (902.9 - 878.0)

Volume	Invert	Avail.Storage	Storage Description
#1	584.00'	59,388 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
584.00	4,803	0	0
585.00	5,735	5,269	5,269
586.00	6,731	6,233	11,502
587.00	7,792	7,262	18,764
588.00	8,918	8,355	27,119
589.00	10,108	9,513	36,632
590.00	11,362	10,735	47,367
591.00	12,681	12,022	59,388

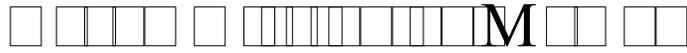
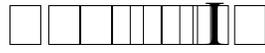
Device	Routing	Invert	Outlet Devices
#1	Primary	584.00'	18.0" Round RCP_Round 18" L= 50.0' RCP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 584.00' / 583.50' S= 0.0100 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.77 sf
#2	Secondary	589.25'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88
#3	Device 1	585.30'	6.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Device 1	584.00'	6.0" Vert. Orifice/Gate C= 0.600

Primary OutFlow Max=20.45 cfs @ 12.25 hrs HW=592.17' (Free Discharge)

- ↑ 1=RCP_Round 18" (Inlet Controls 20.45 cfs @ 11.57 fps)
- ↑ 3=Sharp-Crested Rectangular Weir (Passes < 272.23 cfs potential flow)
- ↑ 4=Orifice/Gate (Passes < 2.66 cfs potential flow)

Secondary OutFlow Max=132.58 cfs @ 12.25 hrs HW=592.17' (Free Discharge)

- ↑ 2=Broad-Crested Rectangular Weir (Weir Controls 132.58 cfs @ 4.55 fps)



Fisk Road 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.