# RESPONSES OF WINDHAM SOLAR, LLC TO CONNECTICUT SITING COUNCIL INTERROGATORIES - SET TWO

On November 30<sup>th</sup>, 2020, the Connecticut Siting Council ("Council") issued Interrogatories, Set Two to Windham Solar, LLC ("Petitioner" or "Windham"), relating to Petition No. 1395A. The Petitioner provides the following responses.

### **Project Development**

52. The response to interrogatory 25 states sheep would be allowed to graze within the solar field. Was the grazing of sheep recommended at the site by any state or local entity? If so, which one and when? **RE:** 

No. Solar grazing is a desire of the petitioner to perform at this facility. Solar arrays need vegetation management throughout the life of the project. This is typically performed with traditional mowing practices. There are plenty disadvantages to this type of vegetation management:

Poor Mower access under panels

Damage to panels by thrown rocks

Damage to mowers by uneven terrain and rocky sites

Minimizes value of the land use

Additional Carbon emissions from mowing equipment

Solar grazing is an element of Agrivoltaics or Agrophotovoltaics (APV), which co-develops the same area of land for both solar photovoltaic power as well as for agriculture. Solar grazing is an ecological way to maintain the facility from a vegetation standpoint. Sheep are a wonderful tool to maintain solar facilities. Sheep physically fit under the solar panels and can graze all parts of the land areas more effectively that traditional mowing and weed whacking practices. In a 2018 Atkinson Center report by Cornell University (*Exhibit A – Atkinson Center Grazing Report*) researchers summarized survey responses submitted by solar grazers, concluding that utilizing sheep for site vegetation resulted in "2.5 times fewer labor hours than mechanical and pesticide management on site."

Solar gazing is also compatible with pollinator habitats and is just one practice under the larger umbrella of "agrivoltaics": combining agricultural and renewable energy production on the same piece of land. The American solar grazing association (https://solargrazing.org/) is another wonderful resource for additional information on the benefits of solar grazing including several research documents on the subject.

- 53. Please provide the following information regarding sheep grazing:
  - a. anticipated rotational schedule and length of grazing season;

#### RE:

The grazing season is typically April through October. The sites will be grazed monthly, Sheep will not graze or have access to detention basins, swales, roadway, or steep slopes and embankments. Rotational grazing will utilize temporary fencing throughout the facility to ensure even groundcover maintenance throughout the site.

b. description and location of livestock outbuilding, if necessary;

#### RE:

No livestock outbuildings will be necessary, sheep for grazing will be transported to and from the site by trailer.

c. describe potential for damage to the panels/wiring from grazing;

#### RE:

This is not a concern, for Sheep graze grasses, legumes and forbes. Unlike goats, they do not climb on or chew on equipment. Sheep are grazing solar sites all over the world, and this is not an issue.

d. description of seed mix necessary to provide enough livestock forage;

#### RE:

Seed mix for this site will be similar to mixes applied to non-grazed solar facilities, with most of the species being, ryegrass, bluegrass, and fescue. The seed mix will also include pollinator mix for additional ecological benefits. A typical Seed mix is attached as (Exhibit B - Fuzz & Buzz Seed Mix)

e. estimated cost to the Project to allow livestock grazing; and

#### RE:

The Applicant is predicting that over the life of the project, grazing will provide an overall savings in operations and maintenance costs versus traditional mowing of the sites.

f. indicate if the grazing of livestock is allowed at the site per local zoning regulations.

#### RE:

The local zoning regulations in Ansonia, CT do not directly address the temporary use of livestock to control vegetative growth. The closest provision is section 720.1:

Farming, Truck Gardens, and Greenhouses: All structures for the keeping and feeding of livestock and the open or covered storage of manure, fertilized, lime, or herbicides and pesticides and associated equipment, shall be at least one hundred (100) feet from any property line, and one hundred (100) feet from any residential structure on the same lot.

- t. The Petitioner will comply with this provision and has attached that section of the zoning code as  $(Exhibit\ C Ansonia\ Zoning)$
- 54. Has the Petitioner had any meetings with the Department of Energy and Environmental Protection (DEEP) Stormwater Division regarding the Stormwater design?

#### RE:

No

If so, when and with whom?

#### RE:

N/A.

Were any DEEP Stormwater Division recommendations incorporated into the revised site plans?

#### RE:

N/A. The petitioner has designed the facility with documents prepared by a licensed Connecticut Professional engineer per the latest requirements of the DEEP general permit. The petitioner has successfully submitted the DEEP General permit document on 12/30/20. (Exhibit D – General Permit Registration Form)

Is there an option within the agreement to allow for changes in the total output of the facility based on unforeseen circumstances or resulting from a reduced site footprint?

#### RE:

If there are unforeseen circumstances and a slight footprint reduction would be required, the AC/DC ratio of the project would simply be reduced. The applicant is requesting approval of a 1MW AC project and 0.99MW AC project withing the solar module envelope provided in "Exhibit A – Updated Civil Documents" submitted with Interrogatory Set One, Plan sheet 3, Site Plan.

55. Revised Site Plan Sheet 10 indicates site construction would occur in 2 Phases. At what point will Phase 2 commence in relation to the Phase 1 construction schedule?

#### RE:

Phasing notes have been revised, to better represent the construction phasing and the requirements of the SWPCP.

(Exhibit E – Updated Civil Document Sheet 10)

56. Approximately what percent of the solar field area would need to be re-graded? What is the desired maximum slope in these areas?

#### RE:

Approximately 1.2 acres of the solar envelope will need to be regraded and the maximum slope in these areas will be approximately 12%.

57. Given the shallow, rocky soil at the site, was there an analysis to determine if there will be enough clean native soil from site grading activities to construct stabilized temporary and permanent stormwater basins, and for the application of enough topsoil to ensure seed has sufficient soil depth to promote stormwater infiltration? If so, provide soil information.

Within "Exhibit A – Updated Civil Documents" submitted with Interrogatory Set One, Plan sheet 4, Grading and Erosion Control Plan, includes field verified soil data for 8 test pits were dug throughout the site to ensure constructability of the stormwater basins. The test pit data indicates, test depth from existing grade, topsoil depth, subsurface soil types and groundwater water elevations. This is sufficient information for the engineer to design the stormwater basins as required by the general permit.

If not, how does the petitioner know enough clean, reusable soil is on site?

#### RE:

Topsoil depth associated with the test pits ranged between 8 and 16 inches throughout the site, and the engineer feels that is enough soil, to be reused on site to ensure appropriate topsoil coverage. It is up to the selected grading contract to handle the soil and rocks on site and ensure that the facility is constructed per the approved civil documents associated with the General Permit.

58. An eastern box turtle was recorded at the site during the 2020 wetland survey. Has the Petitioner contacted the DEEP Wildlife Division to determine if seasonal restrictions during construction are recommended to reduce potential impacts to the box turtle?

#### RE:

The 2020 Wetland Survey also outlined monitoring provisions for the site which includes measures to protect the easter box turtle. The applicant will address any additional measures as required by the DEEP Wildlife Division, upon the submission and review of the General Permit application.





Nikola Kochendoerfer – Cornell University, Animal Science Department
Lexie Hain – Agrivoltaic Solutions LLC
Michael L. Thonney – Cornell University, Animal Science Department

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This report summarizes the results of a Rapid Response Fund project "Have Your Cake and Eat It Too Can grazing sheep on solar farms evolve to a profitable and climate resilient agrivoltaic strategy?" funded by the Cornell University David R. Atkinson Center for a Sustainable Future

Large-scale solar encompasses multi-acre solar sites of ground-mounted solar panels, feeding electricity to whole-sale buyers or community-based consumers. Currently, 1,462.93 megawatts (MW) of utility scale solar is installed in NYS, equating to approximately 10,200 acres of solar sites (5 to 8 acres are required per MW) powering 260,884 homes with 1.33% of the total state's electricity demand met by solar energy. An increase of utility scale solar sites is forecasted to reach another ~3,200 MW (~22,000 acres) between 2020 and 2023.<sup>1</sup>

New York State made a commitment in 2016 to obtain 50% of the state's electricity from renewable energy by 2030. Due to the commitment of New York State government to the Clean Energy Fund in 2016, the NYS solar industry has projected steady growth for the next decade. The goal of a variety of funding opportunities is to incentivize the growth of renewable energy sources with major funding managed by NYSERDA, New York State's Energy Research and Development Authority. The funding is designed to fast-track and sustain the growing solar electric market.

Site leases for solar fields are long term (25 to 40 years). Ideal site characteristics include treeless, flat, low-value land with easy road access for construction and low lease costs. Project developers use a host of criteria to find this land, searching for land that meets the criteria of the electrical grid, proximity to transmission capacity and ease of permitting. Environmental concerns during construction, operation, and decommission include soil erosion and compaction, stormwater runoff, herbicide contamination, the introduction of invasive species, and aesthetics. Project developers must comply with a host of requirements by government authorities and the local land owners in order to successfully bring a solar project to operation.

Operation of solar sites in summer, which is the prime period for electrical generation, hinges on ensuring that the vegetation does not shade the panels. Typically, sites in warm, humid, summer continental climate zones are mowed two or three times per year and undergo one string trimming to remove the vegetation underneath the panels. To limit environmental impacts of vegetation management, a different system for solar sites was tested: grazing sheep.

The aim of this study was to compare economic and agricultural benefits and challenges of traditional land management strategies (mowing, string trimming) with rotationally grazed sheep on solar sites.

Data were collected from the Cornell University Musgrave Research Farm solar site located in Aurora, NY. Sheep were grazed between May and November 2018 to obtain agronomic and economic data, as well as to gather knowledge of the feasibility of grazing sheep on solar sites. Data for traditional management (labor and equipment running hours) were obtained from a landscaping contract for a comparable Cornell University solar site at Harford, NY.<sup>3</sup> Additionally, a survey was sent to three entities: 1) sheep farmers grazing solar sites; 2) landscapers maintaining solar sites; and 3) solar site managers. The survey collected data to assess economics of solar sites across NYS and the Eastern US and to gain a better understanding of co-located, agrivoltaic systems and the emerging solar grazing industry. The survey results were used to underpin agricultural and economic analyses of solar grazing for sheep farmers.

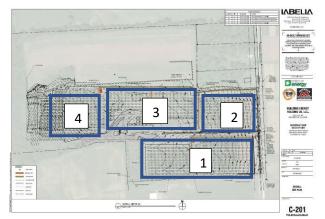
<sup>&</sup>lt;sup>1</sup> SEIA. 2018. Utility Scale Solar Power. Solar Energy Industries Assosciation, https://www.seia.org/initiatives/utility-scale-solar-power.

<sup>&</sup>lt;sup>2</sup> Ifft, J. 2017. Large-Scale Solar Information and Research Needs for NYS, Cornell University David R. Atkinson Center for a Sustainable Future, Ithaca, NY.

<sup>&</sup>lt;sup>3</sup> Scott Land & Yard Services, P.O. Box 13, Slaterville Springs, NY 14881.

#### **Agricultural results**

The 22-acre Musgrave solar site used for this study was established in 2017. It was abandoned as cropland by the research farm due to poor drainage. Three years prior to installation, the field had been used to grow wheat with legume cover crops. After installation of the panels, the site was reseeded with creeping red fescue and perennial ryegrass in areas where seeding was needed. Legume varieties like red, white, and Alsike clover, as well as alfalfa and birdsfoot trefoil volunteered throughout the site in the grazing season of 2018 and provided nutritious forage for the sheep. Honeoye-Lima silt loam is the typical soil of the area. A soil sample was collected and tested on January 20<sup>th</sup>, 2015. The sample contained low phosphorous, medium potassium, and very high calcium and magnesium levels. The soil pH was 7.5 and the organic matter content 4.5%. The soil sample drawn after a season of sheep grazing on November 16<sup>th</sup>, 2018 had pH of 7.6 and an organic matter of 6.6%. However, due to the limited duration of the grazing trial (1 grazing season), we cannot conclude that sheep grazing increased soil organic matter.



69 in  $4 = 20^{\circ}$ 137 in 120 in 137 in

Figure 1. Site plan.

Figure 2. Panel dimensions.

The site was divided by permanent and Electronet<sup>®</sup> fencing into 4 plots for the grazing trial (Figure 1). The 56 Katahdin ewes (medium sized sheep less than 3 feet high with an average weight of 120 pounds) were rotated 8



Figure 3. Water access and Electronet®.

were removed on November 5<sup>th</sup>, 2018. The *stocking rate* (total sheep on the site, per acre) was 2.5. The *stocking density* (number of sheep over a certain timeframe in subplots of the site, per acre) varied between 3 and 7 sheep per acre. The site was checked every three days. Each visit had a duration of ~45 minutes and included adding water to the water tank (Figure 3), checking animal health and welfare, and – when necessary – movement of the sheep into a new plot. All ewes were dry (non-lactating) when they were moved on site and breeding rams were introduced in September 2018 for January 2019 lambing. No health incidents were observed. No signs of internal parasites were de-

times through the plot from the first time they were put on site on May 1<sup>st</sup>, 2018 until they

tected. The sheep were FAMACHA scored (checking inner eyelids for color as an indication of anemia) on May

28<sup>th</sup>, 2018; no barber-pole worm-caused anemia was detected. Additional 5-point checks for internal parasites were conducted throughout the grazing season and did not lead to concerns about internal parasites. There was no need to conduct fecal egg counts. The ewes' body condition scores remained stable throughout the season, suggesting adequate levels of intake and nutrients. No predator issues were recorded, the chain linked fence proved to be enough protection; no guard-animals were necessary. The sheep had access to water and sheep mineral *ad libitum*. The water was provided from water tanks that flowed into troughs (Figure 3). Rest periods for the grazed forage varied between 18 and 48 days for plots 1 and 2, and between 21 and 29 days for plots 3 and 4. The rest periods were chosen to be relatively short due to fast growing vegetation and the priority of preventing panel shading. Shade prevention and vegetation management was successful; at no time throughout the grazing season did the vegetation shade the panels (Figure 4).

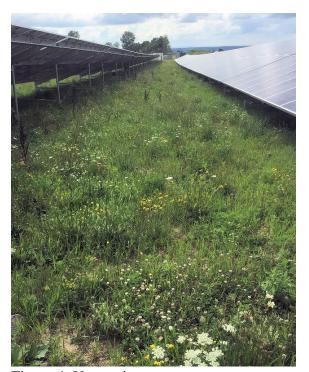


Figure 4. Vegetation management success.

Prior to each rotation, the vegetation in each plot was sampled and analyzed for the nutritive value for sheep. Throughout the grazing season the forage consisted of 39% grass (61% legumes and forbs) with more than adequate suggested levels of feed components for dry ewes (Table 1).

The sheep left the site healthy at the end of the season, with good body condition and low parasite load. The goals for both the solar company and the shepherd farmer were met in this grazing trial. Vegetation never shaded the panels, and the farmer was compensated at a profit for extra work at a remote location.

The sheep farmer, landscaper, and electrical operations contractors communicated regularly throughout the study period, resulting in full compliance with safety and profitable arrangement for all the solar site O&M providers.

Table 1. Stocking density, days grazed, dry matter consumed, and forage components compared with suggested component levels for dry ewes.

						% of dry matter							
			Time,	DDM per	DM, %								
Date	Plot	Sheep	days	head, lb	of forage	DDM	CP	NDF	Ca	P	Mg	K	S
5/24/18	2	23	25	2.54	18.4	61.0	17.8	54.0	0.67	0.34	0.31	2.53	0.23
5/24/18	4	33	29	1.92	15.2	58.7	18.1	50.5	0.89	0.33	0.34	2.20	0.24
6/18/18	1	23	25	15.35	23.3	68.3	14.6	47.2	0.96	0.32	0.28	2.06	0.19
6/22/18	3	33	71	3.38	24.3	60.0	14.1	50.8	0.90	0.22	0.23	1.71	0.28
7/16/18	2	23	18	7.40	28.3	63.3	12.8	51.2	1.08	0.27	0.31	1.73	0.21
7/16/18	4	33	65	1.45	25.1	62.0	14.3	48.4	1.17	0.27	0.25	1.86	0.23
8/2/18	1	23	48	3.46	23.5	56.3	14.1	57.8	0.60	0.38	0.27	2.13	0.19
9/19/18	2	23	49	1.77	19.9	62.3	19.9	42.5	1.23	0.34	0.35	2.35	0.27
Suggeste dry ewes		els for	150-lb	3		55.0	10.0		0.40	0.20	0.18	0.80	0.26

<sup>4</sup> https://www.wormx.info/.

#### **Economic results**

During the grazing trial at the 22-acre Musgrave site, all farm-side economic data for vegetation management (grazing) were recorded. Investment costs, income, and operating costs to establish benchmarks per head of sheep and per acre are shown in Table 2.

Investment costs included: water tanks, troughs, and a small water transfer pump water pump to fill the troughs, as well as Electronet® fencing and a charger to divide sections for rotational grazing. Mileage included depreciation and was calculated at \$0.54 per mile. The sheep were checked every three days amounting to 63 checks in the 188-day grazing season. 47 hours were spent on-site checking the sheep; 139 hours were spent including the drives to and from the site. Labor was valued at \$15 per hour. The site was subcontracted from a landscaping business, and Lexie Hain received \$250 per acre for her grazing efforts. Income statements for both scenarios (contracted directly and subcontracted) are shown in Table 2. General liability insurance was covered by the landscaping business and was subtracted as a cost only in the directly-contracted scenario. In the subcontracted scenario the insurance was covered by the landscaping business. Ideally, sheep farmers would contract directly with the site O&M contractor because, given an ideal stocking rate, sheep alone will be enough to provide vegetation management and prevent panel shading so that the tools of a landscaping company would not be needed.

Table 2. Income statement for grazing 56 sheep on 22 acres.

Item	Total	Per acre	Per head of sheep
Investment	\$1,690	\$77	\$30
Grazing income			
Directly contracted	\$11,000	\$500	\$196
Subcontracted	\$5,500	\$250	\$98
Grazing expenses			
Mileage	\$2,125	\$97	\$38
Labor	\$2,084	\$95	\$37
General liability insurance	\$1,500	\$68	\$27
Directly contracted total	\$5,709	\$260	\$102
Subcontracted total	\$4,209	\$191	\$75
Net			
Directly contracted	\$5,291	\$241	\$94
Subcontracted	\$1,291	\$59	\$23

#### Labor

Landscaping data obtained from the comparable 10-acre Harford site<sup>3</sup> were used to establish values for required labor per acre for traditional management (mowing and string trimming). The 10-acre site required 16 hours of mowing (8 hours, twice per year), as well as 140 h of string trimming underneath the solar panels (Figure 5) per year. That amounts to a total labor requirement of 156 hours per year for a 10-acre site. Extrapolating to the 22-acre Musgrave site, the traditional vegetation management requires 36 hours (18 hours twice a year) of mowing and 308 hours of string trimming per

year, amounting to 344 total labor hours on site. Mowing was conducted with equipment comparable to a 70-horsepower skid steer machine and a 72-inch mower at 3 mph speed. The ground can be uneven, especially in newly established solar sites. Depending on the design of the site, the panel rows are narrow, making it time consuming to navigate without damaging the solar panels. Five-point turns are needed at the end of panel rows to navigate to the next row for mowing. Mowing occurs two times per year. Heavy duty string trimmers are used to string trim underneath the solar panels.

Utilizing sheep for site vegetation management required a total of 139 hours including travel time, resulting in **2.5 times fewer labor hours** than traditional vegetation management (mowing and string trimming) on site.

#### **Contracts and insurance**

Solar site owners range in corporate size, hierarchy, and site management structure. Some have an internal division that manages the operations and maintenance (O&M) while others hire a specialty firm to execute these functions. The O&M managers are responsible for the year-round performance of the array, including vegetation management. During the growing season, prevention of shading will be the key focus of an O&M manager's job with respect to power production and module performance, while operating cost-consciously. Many O&M

managers have business management or electrical engineering backgrounds and operate entirely remotely – from urban offices – and may only make an annual site visit. They tend not to be familiar with farms, farmers, or vegetation, and often lean heavily on landscape subcontractors for knowledge in this area.

Contracts for the vegetation maintenance may be expressly for single passes of a mower or may be comprehensive multiyear agreements. Where solar sites are dispersed geographically, regional solar O&M managers may contract for the vegetation management with local firms, typically landscape contractors or sheep farmers in each region. A formal legal contract is typically required by the solar operator. The legal departments at O&M firms that review outside contracts can insist on a lengthy review process. As the solar asset itself is quite valuable once operational, this sometimes-meticulous review process is justified in the eyes of the operator. The downside for a sheep farmer or small landscaping business is that they are entirely at the mercy of these contracts and may not be able to afford legal support of their own. This risk of liability is why emerging industry associations such as the *American Solar Grazing Association* now offers free contract examples to sheep farmers who wish to become solar graziers. This legal support should prevent farmers from unnecessary exposure to liability and potential expense. The best contracts for sheep farmers will offer a regular payment schedule for their services at the site and automatic renewal for multiyear contract extensions.

Solar O&M firms typically require any contractors on their sites to carry insurance. They may have a suite of requirements that more closely resemble the liability needed for a construction firm than for small farm or local landscaper. Farmers may be able to negotiate different aspects of the coverage, using these added fees as leverage in negotiating their payments. Solar graziers typically find that, after a season or more, O&M managers gain trust in their performance and see that the liability is quite low from grazing sheep, waiving the more stringent insurance requirements and/or easing up on the stricter contract requirements as everyone gains familiarity with the arrangement.

#### Solar grazing in the Eastern United States and New York State

In a survey of sheep farmers grazing solar sites, 14 total sheep farms responded, and of that 4 were in New York State. Survey respondents reported a total of 3,503 acres of utility solar grazed in the eastern US, with 79 acres in NYS. All grazed sites were established between 2012 and 2018. The grazing season was March to December, but in NYS it was April to November due to more extended grazing periods farther south. Average stocking rates were lower in the US average east of the Mississippi (3 sheep per acre) compared with NYS (4 sheep per acre). A variety of sheep were used for solar grazing; hair sheep like the Katahdin and Dorper breeds were most prevalent. On average, sheep farmers drove 42 miles (US) and 27 miles (NYS) from their home farms to the solar site grazed with sheep. The grazing contracts were mostly directly between the solar site O&M contractors and the sheep farmer. Less often, but also prevalent, the contracts were bid upon and obtained by landscaping contractors and then subcontracted to a sheep farmer. This system has the advantage of no additional insurance needs for the farmer, as well as the security of a landscaping company being available to remove invasive plant species. These contracts are renewed through a bidding process. With a few multi-year exceptions, sheep farmers obtained yearly contracts. From the survey, the O&M managers reported budgets of \$868 per acre per year for vegetation management in 2018. Per acre income and expenses for sheep farmers under direct or subcontracts in New York State and the Eastern United States are summarized in Table 3.

Table 3. Per acre income and expense of solar grazing in New York and across the Eastern United States.

	New York	State	Eastern United States				
	Directly contracted	Subcontracted	Directly contracted	Subcontracted			
Income	\$555	\$320	\$326	\$308			
Expenses	\$46	\$46	\$64	\$64			
Net	\$509	\$274	\$262	\$244			

#### **Conclusions**

Grazing sheep on solar sites is a cost-effective method to control on-site vegetation and prevent panel shading (Figures 5 and 6). At no time in the growing season did vegetation shade the panels. It was less labor-intensive than traditional landscaping services and, thus, less expensive. The grazing trial at the Musgrave solar site was a full success for the site owners and operators, as well as the sheep farmer.



Figure 5. After mowing, prior to string trimming.



Figure 6. Rotationally grazed with sheep.

New marketing strategies could emerge for solar farm-raised, grass-fed lamb that can also be a direct benefit for small-scale sheep farmers from co-locating sheep grazing with renewable energy.

More thorough research is needed to investigate the environmental impact of traditional landscaping vs grazing to control vegetation on solar sites. Future studies are needed to assess long term impacts like soil response and pasture quality, and the effects of grazing on pollinator plants or invasive species. A broad variety of soil quality indicators should be measured, such as soil organic carbon sequestration and the possibility of creating carbon sinks through grazing, soil nitrogen responses, and changes in bulk densities. Herbicide use and run-off in traditional vegetation management systems on solar sites should be investigated. The suitability for co-locating grazing with pollinators by the enhancement of pollinator plant species, effective grazing management, and control of

invasive species should be explored. An important question for the successful management of solar sites with sheep will be determining what stocking rates and densities should be chosen. Future research is needed to establish sound recommendations.

Solar site developers should include amenities like on-site wells and power outlets as well as high quality, predator-proof fencing to reduce investment costs for sheep farmers. Multi-year contracts should be used to encourage more sheep farmers to become interested in grazing solar sites and to ensure that agricultural land will remain in production.





# Fuzz & Buzz™ Seed Mix for Solar Arrays

Ernst Conservation Seeds, the largest producer of native grass and wildflower seeds in the eastern United States, has partnered with Ernst Pollinator Service, a leader in pollinator establishment in all types of habitats, and the American Solar Grazing Association (ASGA), a non-profit trade organization devoted to promoting the grazing of sheep on solar installations, to develop the new Fuzz & Buzz™ Seed Mix

The Fuzz & Buzz™ seed mix was developed to address the unique nutritional needs of sheep, while providing a low-growing, easily maintained and sustainable vegetation solution for solar installations. The plant species chosen for the mix were vetted by experts at the Cornell University Sheep Program for their palatability to sheep.

The diversity of grass and flowering species in the mix adds the ecological benefit of providing pollen and nectar sources for honeybees, native pollinator species, birds and other wildlife.





Robin Ernst, president of Ernst Pollinator Service, said, "We embrace new and inventive ways for America's farmers to make their land productive and profitable, sometimes in ways they might not have previously considered. Solar sites offer many landowners just such an opportunity on their property. The addition of grazing potential for sheep on these sites can multiply that profitability even further. And when those sites bring with them habitat for pollinators, it's a winning proposition on many fronts."

"What could be better than a seed mix designed for solar sites that is durable, intended for grazing and biodiverse enough to support a range of pollinator species," said **Lexie Hain, executive director of the ASGA**. She continued, "This is the launch of the newest in solar: solar pastures.

"Our mission is to provide seeds that solve problems ecologically," said Calvin Ernst, president of Ernst Conservation Seeds. "With the Fuzz & Buzz™ seed mix, we're able to offer a three-part solution that minimizes maintenance for solar operators, provides an opportunity for sheep graziers who need additional pasture, and improves soil health and biodiversity for the benefit of pollinators and wildlife."

A portion of the proceeds from the sale of the mix will be donated to the ASGA in support of its mission.



Contact customer service at **Ernst Conservation Seeds** for current pricing and formulation.

Phone: 800-873-3321

Email: sales@ernstseed.com or Fax: 814-336-5191



# Fuzz & Buzz™ Mix — Premium (ERNMX-147)

Lolium perenne, Tetraploid (Perennial Ryegrass, Tetraploid)

Dactylis glomerata'(Orchardgrass)

Festuca elatior (Meadow Fescue)

Poa pratensis (Kentucky Bluegrass (pasture type))

Trifolium hybridum (Alsike Clover)

Trifolium pratense, Medium (Red Clover, Medium)

Trifolium incarnatum (Crimson Clover)

Chrysanthemum leucanthemum (Oxeye Daisy)

Cichorium intybus (Blue Chicory)

Lotus corniculatus (Bird's Foot Trefoil)

Aster prenanthoides (Zigzag Aster)

Coreopsis lanceolata (Lanceleaf Coreopsis)

Solidago juncea (Early Goldenrod)

Tradescantia ohiensis (Ohio Spiderwort)

Zizia aurea (Golden Alexanders)

Seeding Rate: Expect to apply about 28 lbs per acre.

# Fuzz & Buzz™ Mix — Standard (ERNMX-146)

Lolium perenne, Tetraploid (Perennial Ryegrass, Tetraploid)

Dactylis glomerata (Orchardgrass)

Festuca elatior (Meadow Fescue)

Poa pratensis (Kentucky Bluegrass (pasture type))

Trifolium hybridum (Alsike Clover)

Trifolium pratense, Medium (Red Clover, Medium)

Chrysanthemum leucanthemum (Oxeye Daisy)

Cichorium intybus (Blue Chicory)

Lotus corniculatus (Bird's Foot Trefoil)

Coreopsis lanceolata (Lanceleaf Coreopsis)

Solidago juncea (Early Goldenrod)

**Seeding Rate:** Expect to apply about 26.5 lbs per acre.



<u>Note</u>: Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

Dwelling-two family: A building containing two dwelling units.

Dwelling-multi-family: A building containing three or more dwelling units which may or may not share a common hall or entry.

Dwelling Unit: A self-contained building or portion of a building containing complete house-keeping facilities for one "family" only, including any domestic servants on the premises.

Districts: The term "Residence District" or "Residential District" shall mean any zoning district with the following prefixes: "AA," "A," "B," "GA," "MM," or "BB;" the term "commercial district" or "business district" shall mean any zoning districts with the prefix "NR," "RR," "C," or SC;" the term industrial district" shall mean any district with the prefix "LI" or "HI." A "non-residential district" shall mean any commercial or industrial district as defined in these Regulations.

Dumpsters: Storage container unit designed for waste materials of a size greater than 100 gallons, not including any of the containers provided by or approved for use by any waste disposal company hired by the City for garbage, yard waste or recycling.

Family: A "family" is a person or a group of related persons, plus guests and domestic servants thereof, or a group of not more than five (5) persons who need not be so related, who are living as a single housekeeping unit maintaining a common household. A roomer or boarder to whom rooms are let and/or board is furnished as permitted by these Regulations shall not be considered a member of a "family" for the purpose of this definition.

Farm: Three acres or more used for the raising of crops or pasture or both. Stock raising, dairying, poultry raising and kindred activities are to be considered as a part of and included within farming only when carried on in connection with the incidental and subordinate to, the tillage of the soil. (Note Paragraph 720.1)

Fancy Pigeon-means a pigeon which, through past breeding, has developed certain distinctive physical and performing characteristics as to be clearly identified and accepted as such by the National Pigeon Association, the American Pigeon Club, or the Rare Breeds Pigeon Club. Examples: Fantails, Pouters, Trumpeters.

### Section 720 – Special Requirements and Prohibitions

720.1 Farming, Truck Gardens, and Greenhouses: All structures for the keeping and feeding of livestock and the open or covered storage of manure, fertilized, lime, or herbicides and pesticides and associated equipment, shall be at least one hundred (100) feet from any property line, and one hundred (100) feet from any residential structure on the same lot.

#### 720.1.1 Keeping of fancy pigeons and doves, subject to:

- (a) Any person seeking to keep doves or pigeons must obtain the approval of Zoning Enforcement Officer, after submission of an application and payment of a fee to the Zoning Department. The Zoning Enforcement Officer, or his/her designee, shall accept an application which shall include minimally the number of birds, the name of the organization in which they are registered, proof of registration of each bird, the name and address of the owner of the birds, the name and address of the applicant if different from the owner, a scaled map of the property indicating where the housing for the birds and the feed containers for the birds will be kept, and documentation from a recognized organization indicating the type of bird, i.e. racing, homing, fancy, competition. The applicant will be required to pay a fee according to the fee schedule at the time the application is submitted. If approved by the ZEO the applicant approval will be good for one year. The applicant shall be required to update the application annually, and pay any renewal cost.
- (b) Only Fancy Pigeons may be permitted by this regulation.
- (c) No lot of one (1) acre or less, shall exceed 30 birds (of breeding age). An additional 30 birds may be permitted for each additional acre. No lot of any size shall exceed 60 birds.
- (d) Fancy pigeons shall be housed in a structure meeting the setback requirements of the principal building in the district in which it is located.
  - ii. No structure for housing fancy pigeons shall be located in any front yard
  - iii. No structure for housing fancy pigeons or doves shall be visible from the street
  - iv. The loft shall be of such sufficient size and design, and constructed of such material, that it can be maintained in a clean and sanitary condition.
  - v. For every bird housed in a structure approved under these regulations, there shall be a minimum of one (1) square foot of floor space per bird, in any such housing structure.
  - vi. in additional to yard and setback requirements above, no structure shall be located closer than 25' (feet) from any residential dwelling or less than 10' (feet) from the property line.
- (e) All fancy pigeons shall be registered with a national pigeon organization and each bird shall be tagged by use of a seamless numbered leg band.

P= Permitted, S=Site Plan Application, SP=Spe	cial Perm	it App	licat	ion,	T=Te	mpor	ary Spe	ecial E	xcept	ion				
Schedule B - Permitted Uses	AAA	AA	Α	В	GA	ВВ	ММ	NR	RR	С	sc	LI	н	СР
Depository institutions, non-depository credit institutions, insurance carriers, holding or other investment offices, business management and related services or miscellaneous business services, provided that such uses do not regularly involve direct business with or service to the general public on the premises.														S
Dwelling, One-Family	P	Р	Р	Р					S	S				
Dwelling, Two-Family				Р		S			S	S				
Dwelling, Multi-Family										S				
Dwelling, Multi-Family, GA					S						S			
BB						S								
MM							S				S			
RR									S					
Earth Removal, Filling and Excavation.	Т	Т												
Farming (min. 3 acres)	Р	Р												
Farm Equipment Sales and Service										S			S	
Funeral Home.				S						S				
Financial Institutions.									S	S				
Foundries and the use of drop forges and metal stamping machines													S	
Gasoline Stations (See Sec. 720.8)										S	S	S		
Grooming Facility/Canine.										S				
Golf Courses	S	S	S											
Horses and other equines (See Sec. 720.6).	Р	Р	Р	Р	Р									
Hotels, Motels.										S	S			
Hospital Veterinary  a. cats and dogs  b. All other animals (min. size tract of land of 5 acres)										S S				
Kennel - Home.	S	S	S											
Kennel - Commercial.							_			S				
Laundry and dry-cleaning operations.										S			S	
Landscape Nursery (on a tract of land at least three acres in extent).	S	S	S	S										

P= Permitted, S=Site Plan Application, SP=Spec	cial Pern	P= Permitted, S=Site Plan Application, SP=Special Permit Application, T=Temporary Special Exception												
Schedule B - Permitted Uses	AAA	AA	A	В	GA	ВВ	MM	NR	RR	С	SC	LI	н	СР
Restaurants, with or without liquor.									S	S				
Retail sales (including the manufacture of food products for direct retail sale to consumers on the premises).									S	S				
Retail sales of goods that are manufactured, processed or assembled on the premises when such sales are located within an enclosed building and occupy a floor area equal to 10% or less of the manufacture, processing or assembly use.												S	S	
Sale of new and used automobiles.										S	S			
Scientific and engineering research and testing laboratories.										S	S	S	S	S
Sheet metal, blacksmith, and welding shops												S	S	
Scrap metal processor.													S	
Stables for the boarding and rental of horses, including blacksmithing (on a minimum size tract of 20 acres).	S	S												
Storage of house trailers.										S			S	
Storage in bulk for other than retail sale (use of required yards is prohibited).													S	
Storage of fuel oil for retail delivery and sale.	1												S	
Swimming pools, as accessory uses to residential uses subject to site plan approval by the Building Inspector	Р	Р	Р	Р	Р	Р	Р							
Sports Stadium, civic center, dog racing track, any gambling or betting facilities and recreational facility.											S			
Tailor shop.								S	S	S				
Taverns.									S	S				
Tennis courts - Commercial										S				
Tennis courts - as accessory use to residential uses subject to site plan approval by the Building Inspector.	S	S	S	S	S	S	S							
Trucking and Freight Terminal.													S	
Truck gardens (on a tract of land at least 3 acres in extent).	S	S	S	S										
Warehouse and distribution facilities, provided that such uses do not regularly involve direct business with or service to the general public on the premises.														S
Wholesaling - including the maintenance of an inventory and distribution of the goods to retail establishments.												S	S	

P= Permitted, S=Site Plan Application, SP=Spe	P= Permitted, S=Site Plan Application, SP=Special Permit Application, T=Temporary Special Exception													
Schedule B - Permitted Uses	AAA	AA	A	В	GA	ВВ	MM	NR	RR	С	SC	LI	н	СР
Wholesaling - in conjunction with retailing on premises.										S				
Signs as provided in Section 420.	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	
Off-street parking and loading facilities as provided in Section 410.								S	S	S	S	S	S	S
Off-street parking spaces and private garages shall be permitted as accessory to a permitted use, except that no unregistered motor vehicle or parts of motor vehicles shall be														
maintained on any lot unless located in an enclosed building.	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	
Except as accessory to a permitted farm, truck garden or commercial nursery, there shall be no more than one commercial vehicle parked or stored on any lot in a.  Residence District, when used in connection with a permitted  use. Such vehicle shall not exceed 1-1/2 tons capacity and														
shall be stored in a garage.	Р	Р	Р	Р										<u> </u>
Customary home occupations and professional offices, as accessory to a dwelling, and as provided in Sections 430 and 410.	P	P	Р	Р		P			P					
Greenhouses on a tract of land of 40,000 square feet.	S	S	S	S										
Riding academies.	S	S												





General Permit Registration Form for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, effective 10/1/13 (electronic form)

Prior to completing this form, you **must** read the instructions for the subject general permit at <u>DEEP-WPED-INST-015</u>. This form must be filled out electronically before being printed. You must submit the registration fee along with this form.

The <u>status of your registration</u> can be checked on the DEEP's ezFile. Portal. Please note that DEEP will no longer mail certificates of registration.

CF	PPU USE ONLY
App #:	
Doc #:	
Check #:	
Program:	Stormwater

#### Part I: Registration Type

Select the appropriate boxes identifying the registration type and registration deadline.

	Registr	ation Type		Registration Timeline							
	Re-re	gistration	*N	On or before February 1, 2014*  *Note: Failure to renew a permit by this date will require submission							
		ermit No. GSN	of Re	of new registration.  Re-registrants must only complete Parts I, II, III, IV - Question 1, VII and submit Attachment A.							
	New Registration	☐ Locally Approvable Size of soil disturbance:	1	New registration - Sixty (60) days prior to the initiation of the construction activity for:  For sites with a total soil disturbance area of 5 or more acres							
✓	(Refer to Section 2 of the permit for definitions of Locally	✓ Locally	<b>✓</b>	New registration - Sixty (60) days prior to the initiation of the construction activity for:  Sites with a total disturbance area of one (1) to twenty (20) acres except those with discharges to impaired waters or tidal wetlands							
	Exempt and Locally Approvable Projects)	Exempt Size of soil disturbance: 9.97		New registration - Ninety (90) days prior to the initiation of the construction activity for:  (i) Sites with a total soil disturbance area greater than twenty (20) acres, or  (ii) Sites discharging to a tidal wetland (that is not fresh-tidal and is located within 500 feet), or  (iii) Sites discharging to the impaired water listed in the "Impaired Waters Table for Construction Stormwater Discharges"							

#### Part II: Fee Information

New Registrations
a. Locally approvable projects (registration only):
□ \$625             □ \$625
b. Locally exempt projects (registration and Plan):
$\checkmark$ \$3,000 total soil disturbance area $\ge$ one (1) and < twenty (20) acres.
$\square$ \$4,000 total soil disturbance $\ge$ twenty (20) acres and $<$ fifty (50) acres.
\$5,000 total soil disturbance ≥ fifty (50) acres.
2. Re-Registrations
\$625 (sites previously registered prior to September 1, 2012)
so (sites previously registered between to September 1, 2012 and effective date of this permit)
Total Fee: \$3,000.00
The fees for municipalities shall be half of those indicated in subsections (a), (b) and (c) above
pursuant to Section 22a-6(b) of the Connecticut General Statutes. State and Federal agencies shall pay the full fees specified in this subsection. The registration will not be processed without the fee.
The fee shall be non-refundable and shall be paid by certified check or money order payable to the
Department of Energy and Environmental Protection.

#### Part III: Registrant Information

- If a registrant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of the State. If applicable, the registrant's name shall be stated **exactly** as it is registered with the Secretary of the State. This information can be accessed at **CONCORD**
- If a registrant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

1.	Registrant /Client Name: JEFFERSON	SOLAR LLC		
	Registrant Type: Business Entity			
	Secretary of the State business ID #	:		
	Mailing Address: 222 S 9th St			
	City/Town: Minneapolis		State: MN	Zip Code: 55402
	Business Phone: (612) 326-1500	ext.:		
	Example:(xxx) xxx-xxxx			
	Contact Person: Steven Broyer		Title : Sr. Project	Manager
	E-Mail: steve.broyer@ecosrenewable.com			
2.	List billing contact:			
	Name: JEFFERSON SOLAR LLC			
	Mailing Address: 222 S 9th St			
	City/Town: Minneapolis		State: MN	Zip Code: 55402
	Business Phone: (612) 326-1500	ext.:		
	Contact Person: Steven Broyer		Title : Sr. Project	Manager

3.	List primary contact for departmental correspon	ndence and inc	quiries:	
	Name: JEFFERSON SOLAR LLC			
	Mailing Address: 222 S 9th St			
	City/Town: Minneapolis	State:	MN	Zip Code: 55402
	Business Phone (612) 326-1500	ext.		
	Contact Person: Steven Broyer	Title: S	Sr. Projec	t Manager
4.	List owner of the property on which the activity	will take place:		
	Name: JEFFERSON SOLAR LLC			
	Mailing Address: 222 S 9th St			
	City/Town: Minneapolis	State:	MN	Zip Code: 55402
	Business Phone: (612) 326-1500	ext.		<u></u>
	Contact Person: Steven Broyer			
5.	List preparer:			
	Name: ELLEN BARTLETT			
	Mailing Address: 317 MAIN ST			
	City/Town: NORWICH	State:	СТ	Zip Code: 06360
	Business Phone: (860) 886-1966	ext.		<u></u>
	Contact Person:	Title:		
6.	List design professional:			
	Name: Kyle Haubert			
	Mailing Address: 317 Main Street			
	City/Town: Norwich	State:	СТ	Zip Code: 06360
	Business Phone: (860)886-1966	ext.		<u></u>
	Contact Person: Kyle Haubert	Title: _C	Civil Engir	neer
7.	List Reviewing Qualified Professional (for locally	y approvable p	rojects	only):
	Name:			
	Mailing Address:			
	City/Town:	State:		Zip Code:
	Business Phone:	ext.		<u></u>
	Contact Person:	Title:		
P	art IV: Site Information			
	artiv. One information			
	1. Site Name:	Benz Street S	Solar	
	Street Address or Description of Location:			31 Benz St
	City/Town: Ansonia	State:	CT	Zip Code:
	Brief Description of construction activity:			
	1.99 MW Ground Mount Solar Facility			
	Project Start Date: 5 Apr 2021	Anticipated C	ompleti	on Date: 1 Sep 2021
	Normal working hours: 7 to 6	patou o	p.ou	

2.	MINING: Is the activity on the site in question part of mining operations (i.e. sand and gravel)?	□Yes	√No
	If yes, mining is not authorized by this general permit. You must submit the Registration Form for the General Permit for the Discharge of Stormwater Associated with Industrial Activity.		
3.	<b>COMBINED OR SANITARY SEWER:</b> Does all of the stormwater from the proposed activity discharge to a combined or sanitary sewer (i.e. a sewage treatment plant)?	☐ Yes	√No
	If yes, this activity is not regulated by this permit. Contact the Water Permitting & Enforcement Division at 860-424-3018.		
4.	INDIAN LANDS: Is or will the facility be located on federally recognized Indian lands?	Yes	√No
5.	COASTAL BOUNDARY: Is the activity which is the subject of this registration located		
	within the coastal boundary as delineated on DEEP approved coastal boundary maps?	☐ Yes	✓No
	The coastal boundaries fall within the following towns: Branford, Bridgeport, Chester, Clinton, Dat East Haven, East Lyme, Essex, Fairfield, Greenwich, Groton (City and Town), Old Lyme, Guilford Ledyard, Lyme, Madison, Milford, Montville, New London, New Haven, North Haven, Norwalk, Nor Old Saybrook, Orange, Preston, Shelton, Stamford, Stonington (Borough and Town), Stratford, West Haven, Westbrook and Westport.	l, Hamde wich,	en,
	If "yes", and this registration is for a new authorization or a modification of an existing authorization physical footprint of the subject activity is modified, you must provide documentation to the DEEF Island Sound Programs or the local governing authority has issued a coastal site plan approval or project is exempt from coastal site plan review. Provide this documentation with your registration See guidance in Appendix D of the general permit. Information on the coastal boundary is availated town hall or on the Connecticut Coastal Resources Map. Additional DEEP Maps and Public available by contacting DEEP Staff at 860-424-3555.	Office of determines Attached	of Long ned the hment B. e local
6.	ENDANGERED OR THREATENED SPECIES:		
	In order to be eligible to register for this General permit, each registrant must either perform a sel obtain a limited one-year determination, or obtain a safe-harbor determination regarding threaten endangered species. This may include the need to develop and implement a mitigation plan. Whalternative has different limitations, the alternatives are not mutually exclusive; a registrant may regeneral Permit using more than one alternative, See Appendix A of the general Permit. Each recomplete this AND Attachment C to this Registration form and a registrant who does not or cannot eligible to register under this General Permit.	ed and nile each gister fo gistrant	r this must
	Each registration must perform a review of the Department's Natural Diversity Database maps to site of the construction activity is located within or in proximity (within ¼ mile) to a shaded area.	determin	e if the
	a. Provide the date of the NDDB maps were reviewed: 29 Dec 2020 (Print a copy of the NDDB since it must be submitted with this registration as part of Attachment C.)	map you	viewed

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b.	For a registrant using a limited one-year determination or safe harbor determination to register for this General Permit, provide the Department's Wildlife Division NDDB identification number for any such determination:				
	(The number is on the determination issued by the Department's Wildlife Divisio				
sec	r more information on threatened and endangered species requirements, refer to Append ction 3(b)(2) of this General Permit, Visit the DEEP website at <u>Natural Diversity Data E</u> DB at 860-424-3011.				
c.	I verify that I have completed Attachment C to this Registration Form.	Yes	;		
7.	WILD AND SCENIC RIVERS: Is the proposed project within the watershed of a designated				
	Wild and Scenic River? ( See Appendix H for guidance)	☐ Yes	✓ No		
8.	AQUIFER PROTECTION AREAS: Is the site located within a mapped				
	Aquifer Protection Area , as defined in Section 22a-354h of the CT General Statutes?				
	(For additional guidance, please refer to Appendix C of the General Permit)	Yes	✓ No		
9.	Connecticut Guidelines for Soil Erosion and Sediment Control Guidelines: Is the	e activity in			
ac	cordance with Connecticut Guidelines for Soil Erosion and Sediment Control Guidelines	and local erosic	on		
& 9	& sediment control ordinances, where applicable?				
10	HISTORIC AND/OR ARCHAEOLOGICAL RESOURCES:				
На	s the site of the proposed activity been reviewed (using the process outlined in Appendix	G of this permit	<b>(</b> 1		
for	historic and/or archaeological resources?	✓ Yes	□No		
	a. The review indicates the proposed site does not have the potential for				
	historic/ archaeological resources, OR	✓ Yes	□No		
	b. The review indicated historic and/ or archaeological resource potential exists				
	and the proposed activity is being or has been reviewed by the Offices of				
	Culture and Tourism, OR	☐ NA ☐ Yes	<b>√</b> No		
	c. The proposed activity has been reviewed and authorized under an				
	Army Corps of Engineers Section 404 wetland permit.	☐ NA ☐ Yes [	<b>√</b> No		
11. CONSERVATION OR PRESERVATION RESTRICTION:					
ls t	he property subject to a conservation or preservation restriction?	Yes	✓No		
suc	If Yes, proof of written notice of this registration to the holder of such restriction or a letter from the holder of such restriction verifying this registration is in compliance with the terms of the restriction, must be submitted as Attachment D.				

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#### Table 1

Outfall #	a) Type	Type b) Pipe Material c) Pipe Size		d) Note: To find lat/long, go to:  CT ECO. A decimal format is require here. Directions on how to use CT ECO to find lat. /long. and conversions can be found in in Part V, section d of the DEEP-WPED-INST-015.		format is required how to use CT ECO d conversions can /, section d of the	e) What method was used to obtain your latitude/longitude information?	
				Longitude (Format: -xx.xxxxx)	Latitude (Format: xx.xxxxx)	om		
sin #2 Ou	Other(Please fill in below)  Level Spreader			-73.060910	41.342449	ezFile Portal Map		
sin #1 Ou	Other(Please fill in below)  Level Spreader			-73.061232	41.344012	ezFile Portal Map		

#### Table 2

2. Pro	2. Provide the following information about the receiving water(s)/wetland(s) that receive stormwater runoff from your site, either directly or through the storm sewer system:						
Outfall #	Dates when this outfall will be active:	a) To what system or receiving water does your stormwater runoff discharge? either "storm sewer or wetlands" or "waterbody" (If you select storm sewer or wetlands, columns c.1&2 of this table are not required to be completed)	b) What is your watershed ID (freshwater) or 305b ID (estuary)? (Section 3.b, of the DEP-GP-INST-015 explains how to find this information)	c.1) Is your receiving water identified as an impaired water in the "Impaired Waters Table for Construction Stormwater Discharges"?	If you answered yes to question c.1, then answer the question below  c.2) Has any Total Maximum Daily Load (TMDL) been approved for your receiving waterbody?	For the drainage area associated with each outfall:  Effective Impervious Area Before Construction (sq ft)	For the drainage area associated with each outfall:  Effective Impervious Area After Construction (sq ft)
2in #2 Ou	Start: 19 Apr 2021 End:	Storm Sewer or Wetlands		□ Y □ N ☑ NA	□Y□N☑NA	7600	7600
sin #1 Ou	Start: 5 Apr 2021 End:	Storm Sewer or Wetlands		□ Y □ N ☑ NA	Y N ✓ NA	0	0
	Start:End:	Select One		□ Y □ N □ NA	□ Y □ N □ NA		
	Start:End:	Select One		□ Y □ N □ NA	□ Y □ N □ NA		
	Start: End:	Select One		□ Y □ N □ NA	□ Y □ N □ NA		
Provide the total effective impervious area for the entire site(sq ft):					7600	7600	

### Part V: Stormwater Discharge Information (continued)

Impaired waters: If you answered "yes" to Table 2, question 2.c.1, verify that the project's Pollution Control Plan (Plan) addresses the control measures below in Question 1 or 2, as appropriate.					
1. If the impaired water does not have a TMDL, confirm compliance by selecting 1.a. or 2.b. bel	low:				
a. No more than 3 acres is disturbed at any time;					
<ul><li>OR</li><li>b. Stormwater runoff from a 2 yr, 24 rain event is retained.</li></ul>	☐ Yes				
2. <b>If the impaired water has a TMDL,</b> confirm compliance by selecting 2.a. and 2.b. below and either question 2.c.1. or 2.c.2. below:					
The Plan documents there is sufficient remaining Waste Load Allocations (WLA) in the  TMDL for the proposed discharge,  TMDL for the proposed discharge,	☐ Yes				
AND					
<ul> <li>b. Control measures shall be implemented to assure the WLA will not be exceeded,</li> <li>AND</li> </ul>	Yes				
c. 1. Stormwater discharges will be monitored for the indicator pollutant identified in the TMDL,	Yes				
OR					
2. The Plan documents specific requirements for stormwater discharges specified in the TMD	L. 🗌 Yes				

#### Part VI: Pollution Control Plan Availability (check one of the following four categories)

<b>✓</b>	I am registering a Locally Exempt project and submitting the required electronic Plan (in Adobe <sup>™</sup> PDF or similarly publically available format) pursuant to Section 3(c)(2)(E) of this permit.
	Plan is attached to this registration form  Plan is available at the following Internet Address (URL):
	I am registering a Locally Approvable project and have chosen not to submit the Plan with this registration pursuant to Section 3(c)(1) of this permit.
	I am registering a Locally Approvable project and have chosen to make my Plan electronically available pursuant to Section $4(c)(2)(N)$ of this permit.
	Plan is attached to this registration form Plan is available at the following Internet Address (URL):
	I am registering a Locally exempt project and do not have the capability to submit the Plan electronically. Therefore, I am submitting a paper copy with this registration as Attachment E.

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#### Part VII: Registrant Certification

The registrant *and* the individual(s) responsible for actually preparing the registration must sign this part. A registration will be considered incomplete unless all required signatures are provided.

For New Registrants:							
"I hereby certify that I am making this certification in connect	ion with a registration under such gen	eral					
permit, submitted to the commissioner by		an activity					
and that all terms and conditions of the general permit are be							
initiated and such activity is eligible for authorization under s							
place to ensure that all terms and conditions of this general permit will continue to be met for all discharges							
	authorized by this general permit at the site. I certify that the registration filed pursuant to this general permit						
is on complete and accurate forms as prescribed by the com		ct. I certify					
that I have personally examined and am familiar with the infor	•						
certification, including but not limited to all information descri							
and I certify, based on reasonable investigation, including my obtaining such information, that the information upon which t							
complete to the best of my knowledge and belief. I certify tha	· · · · · · · · · · · · · · · · · · ·						
accordance with Section 3(b) (8) (B) of this general permit. I							
with such general permit is submitted in accordance with and							
Section 22a-430b of Connecticut General Statutes, as amen							
that knowingly making any false statement made in the subm							
punishable as a criminal offense, including the possibility of f		•					
of the Connecticut General Statutes and any other applicable	law."						
For Do registrants.							
For Re-registrants:							
"I hereby certify that I am making this certification in connect							
for the Discharge of Stormwater and Dewatering Wastewater							
commissioner by	for an activity loca	ieu ai					
and that all terms and conditions of the general permit are be	ing met for all discharges which have I	<del>oeen</del>					
initiated and such activity is eligible for authorization under such permit. I further certify that all designs							
and plans for such activity meet the current terms and condit		-					
with Section 5(b)(5)(C) of such general permit and that a sys	em is in place to ensure that all terms	and					
conditions of this general permit will continue to be met for al	discharges authorized by this general	permit					
at the site. I verify that the registration filed pursuant to this							
·	forms as prescribed by the commissioner without alteration of their text. I certify that I have personally						
examined and am familiar with the information that provides t	_						
limited to all information described in Section 3(b)(8)(A) of si							
reasonable investigation, including my inquiry of those individ							
that the information upon which this verification is based is to knowledge and belief. I also understand that knowingly makin		-					
information and in this certification may be punishable as a criminal offense, including the possibility of fine and imprisonment, under Section 53a-157b of the Connecticut General Statutes and an other applicable law."							
Signature of Registrant	Sr. Draiget Manager						
Steven Broyer	Sr. Project Manager						
Name of Registrant (print or type)	Title (if applicable)						
Signature of Preparer and Date (if different than above)							
Name of Preparer (print or type)	Title (if applicable)						

# Part VIII: Professional Engineer (or Landscape Architect, where appropriate) Design Certification (for publically approvable and exempt projects)

The following certification must be signed by a Professional Engineer, or Landscape Architect where appropriate.

I hereby certify that I am a licensed in the State of Connecticut.						
am making this certification in connection with a registration under such general permit, submitted to the ommissioner by  JEFFERSON SOLAR LLC for an activity located at						
31 Benz St, Ansonia, C						
I certify that I have thoroughly and completely reviewed the	Stormwater Pollution Control Plan for the					
project or activity covered by this certification. I further cert	ify, based on such review and on the standard					
of care for such projects, that the Stormwater Pollution Con						
the Connecticut Guidelines for Soil Erosion and Sediment C	Control, as amended, the Stormwater Quality					
Manual, as amended, and the conditions of the general per						
Plan are appropriate for the site. I further certify, based on						
of those individuals responsible for obtaining such informati						
certification is based is true, accurate and complete to the b	•					
understand that knowingly making any false statement in th						
Department and/or be punishable as a criminal offense, inc under Section 53a-157b of the Connecticut General Statute	•					
under Section 33a-137b of the Connecticut General Statute	s and any other applicable law.					
Signature of Design Professional and Date						
Kyle Haubert	24329					
Name of Professional (print or type)	License Number					
Affix P.E/L.A Stamp Here						

Part IX: Reviewing Qualified Professional Certification
The following certification must be signed by a) a Conservation District reviewer OR, b) a qualified soil erosion and sediment control and/ or professional engineer

Review Certification by Conservation Distric	:				
1.) District:					
Date of Affirmative Determination:					
" I am making this certification in connection with a registration under General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, submitted to the commissioner by					
located at					
I have personally examined and am familiar with the information that provides the basis for this certification, and I affirm, based on the review described in Section 3(b)(11)(C) of this general permit and on the standard of care for such projects, that the Stormwater Pollution Control Plan is adequate to assure that the activity authorized under this general permit will comply with the terms and conditions of such general permit and that all stormwater management systems: (i) have been designed to control pollution to the maximum extent achievable using measures that are technologically available and economically practicable and that conform to those in the Guidelines and the Stormwater Quality Manual; (ii) will function properly as designed; (iii) are adequate to ensure compliance with the terms and conditions of this general permit; and (iv) will protect the waters of the state from pollution."					
Signature of District Professional and Date					
Name of District Professional	License Number (if applicable)				
Or					
Review Certification by Qualified Professional					
Company Name:					
Name:					
License #:					
Level of independency of professional:					
Required for all projects disturbing over 1 acr	e:				
1. I verify I am not an employee of the registrant.	☐ Yes				
I verify I have no ownership interest of any kin registration is being submitted.	d in the project for which the				
Required for projects with 15 or more acres o	f site disturbance (in addition to questions 1&2):				
<ol><li>I verify I did not engage in any activities assoc engineering of the soil erosion and sediment co for this registrant.</li></ol>	iated with the preparation, planning, designing or ontrol plan or stormwater management systems plan				
	☐ Yes				
4. I verify I am not under the same employ as any person associated with the preparation, planning, designing or engineering of the soil erosion and sediment control plan or stormwater management					
systems plan for this registrant.	☐ Yes				

#### Part IX: Reviewing Qualified Professional Certification (continued)

professional, or both, as defined in the General Per Wastewaters from Construction Activities and as fugeneral permit. I am making this certification in consubmitted to the commissioner by located at I have personally examined and am familiar with the certification, including but not limited to all informat permit, and I certify, based on reasonable investigates responsible for obtaining such information, that the true, accurate and complete to the best of my known information described in Section 3(b)(11)(C) of such projects, that I have made an affirmative determination of this general permit. I understand that this certific with Section 22a-430b of Connecticut General States.	rither specified in Sections 3(b)(11)(A) and (B) of such innection with a registration under such general permit, for an activity  e information that provides the basis for this ion described in Section 3(b)(11)(C) of such general action, including my inquiry of those individuals information upon which this certification is based is pledge and belief. I certify, based on my review of all the general permit and on the standard of care for such tion in accordance with Sections 3(b)(11)(D)(i) and (ii) action is part of a registration submitted in accordance utes, as amended by Public Act 12-172, and is subject ed professional in such statute. I also understand that cation may be punishable as a criminal offense,
Signature of Reviewing Qualified Professional	
Name of Reviewing Qualified Professional	License No.
Affix P.E./ L.A. Stamp Here	

Note: Please submit the fee along with a completed, printed and signed Registration Form and all additional supporting documents to:

CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD, CT 06106-5127

## 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.

### 1. CLEARING AND GRUBBING

- A. THE CONTRACTOR SHALL BE REQUIRED TO REMOVE ALL TREES, STUMPS, BRUSH, AND DEBRIS WITHIN THE GRADING LIMITS SHOWN ON THE PLANS. THE CONTRACTOR IS TO REMOVE ONLY THOSE TREES WHICH ARE DESIGNATED BY THE OWNER'S REPRESENTATIVE FOR REMOVAL, AND SHALL EXERCISE EXTREME CARE AROUND EXISTING TREES TO BE SAVED.
- 2. TOPSOIL STRIPPING
- A. TOPSOIL SHALL BE STRIPPED FROM ALL ROADWAY AREAS THROUGH THE ROOT ZONE. TOPSOIL SHALL NOT BE STRIPPED OUTSIDE OF THE DESIGNATED DISTURBANCE AREAS. B. ANY TOPSOIL, THAT HAS BEEN STRIPPED, SHALL BE RE-SPREAD OR STOCKPILED WITHIN
- GRADING AREAS AND/OR USED AS FILL OUTSIDE OF THE DISTURBANCE AREAS, AS DIRECTED BY THE ENGINEER.
- 3. EMBANKMENT CONSTRUCTION.
- A. EMBANKMENT CONSTRUCTION SHALL CONSIST OF THE PLACING OF SUITABLE FILL MATERIAL, AFTER TOPSOIL STRIPPING, ABOVE THE EXISTING GRADE. GENERALLY, EMBANKMENTS SHALL HAVE 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".
- B. SIDE SLOPES GREATER THAN 2.5:1 WILL NOT BE PERMITTED, UNLESS OTHERWISE NOTED ON THE PLAN.

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

MATERIAL'S MODIFIED PROCTOR MAXIMUM DRY DENSITY.

- A. ATTERBERG LIMITS SHALL BE DETERMINED IN ACCORDANCE WITH AASHTO T89 AND T90
- 7. MOISTURE DENSITY (NUCLEAR DENSITY):
- A. MOISTURE DENSITY TESTING SHALL BE DONE IN ACCORDANCE WITH AASHTO T310

# SUBGRADE COMPACTION, TEST ROLLING AND AGGREGATE BASE COMPACTION:

- A. SOILS USED AS FILL MATERIAL SHALL BE TESTED FOR GRAIN SIZE ANALYSIS, MOISTURE CONTENT, ATTERBERG LIMITS ON FINES CONTENT, AND PROCTOR TESTS (MODIFIED DRY
- a. 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. B. IN ROADWAY CUT AREAS, OR WHERE EMBANKMENT CONSTRUCTION REQUIRES LESS THAN 12 INCHES OF FILL PLACEMENT, COMPACT TO A MINIMUM OF 95 PERCENT OF THE
- COMPACTED SUBGRADE: A. THE ENTIRE SUBGRADE SHALL BE PROOF-ROLLED PRIOR TO THE PLACEMENT OF THE
  - AGGREGATE BASE TO IDENTIFY AREAS OF UNSTABLE SUBGRADE.
- B. IF PROOF ROLLING DETERMINES THAT THE SUBGRADE STABILIZATION CANNOT BE ACHIEVED, THE FOLLOWING ALTERNATIVES WILL BE IMPLEMENTED:
- REMOVE UNSUITABLE MATERIAL AND REPLACE WITH SUITABLE EMBANKMENT
- b. SCARIFY, DRY, AND RECOMPACT SUBGRADE AND PERFORM ADDITIONAL PROOF ROLL. INCREASE ROAD BASE THICKNESS.
- C. 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.
- 3. AGGREGATE BASE:
- A. AGGREGATE BASE SHALL BE PROOF-ROLLED OVER THE ENTIRE LENGTH. PROVIDE 1 SIEVE ANALYSIS PER 2500 CY OF ROAD BASE PLACED.
  - a. IF PROOF ROLLING DETERMINES THAT THE ROAD IS UNSTABLE, ADDITIONAL AGGREGATE SHALL BE ADDED UNTIL THE UNSTABLE SECTION IS ABLE TO PASS A PROOF ROLL.

	TABLE 1: TESTING SCHEDULE SUMMARY			
	LOCATION	TEST	FREQUENCY	
	STRUCTURAL FILL	GRAIN SIZE ANALYSIS, MOISTURE CONTENT, ATTERBERG LIMITS ON FINES CONTENT, AND PROCTOR	1 PER MAJOR SOIL TYPE	
		MOISTURE DENSITY	1 PER 2,000 CY OR MIN. 1 PER LIFT	
	COMPACTED	PROOF-ROLL	ENTIRE LENGTH	
	SUBGRADE	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	

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

### STORMWATER POLLUTION PREVENTION PLAN (SWPCP):

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

## 1) HAND-PLACED RIPRAP

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.

2. STABILIZATION WITH EROSION CONTROL AND REVEGITATION MAT (ECRM) 1) AREA MUST BE GRADED SMOOTH AND CLEAN TO FINISH GRADES, AND COMPACTED,

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

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

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

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

C) INSTALL MAT BY ROLLING UPHILL PARALLEL TO WATER FLOW, STARTING AT TRENCH. OVERLAP ROLLS BY MINIMUM OF 3". FASTEN TO GROUND WITH 18" PINS AND 1 1/2" WASHERS, OR EQUIVALENT. PIN MAT AT ENDS, AND EVERY 3' TO 5' ALONG OVERLAPS. DO 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 TM8 OR EQUIVALENT.

# **INVASIVE SPECIES:**

- 1. ALL EQUIPMENT SHALL BE INSPECTED UPON ARRIVAL. EQUIPMENT ARRIVING WITH OBSERVABLE SOIL OR PLANT FRAGMENTS WILL BE REMOVED AND CLEANED.
- 2. STRAW BALES ARE NOT BE USED ON SITE; ONLY WEED-FREE STRAW BALES ARE
- APPROVED. 3. OFF-SITE TOPSOIL MUST BE FREE OF INVASIVE SPECIES. THE ENGINEER SHALL BE

NOTIFIED OF THE TOPSOIL SOURCE 6 WEEKS BEFORE DELIVERY.

## SEDIMENTATION AND EROSION CONTROL PLAN

CONTACT: STEVE BROYER **ECOS ENERGY** 222 SOUTH 9TH STREET **SUITE 1600** MINNEAPOLIS MN 55402

THE PURPOSE OF THIS PROJECT IS TO INSTALL APPROXIMATELY 6136 SOLAR MODULES AND ASSCOCIATED ELECTICAL EQUIPMENT FOR POWER GENERATION.

THE TOTAL AREA OF THE PROJECT SITE IS APPROXIMATELY 12.7 ACRES AND THE TOTAL AREA OF THE SITE THAT IS EXPECTED TO BE DISTURBED BY CONSTRUCTION ACTIVITIES IS 10.7 ACRES.

THE EROSION & SEDIMENTATION CONTROL PLAN AND DETAILS HAVE BEEN DEVELOPED AS A STRATEGY TO CONTROL SOIL EROSION AND SEDIMENTATION DURING AND AFTER CONSTRUCTION. THIS PLAN IS BASED ON THE "2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL" BY THE CONNECTICUT COUNCIL ON SOIL AND WATER CONSERVATION IN COOPERATION WITH THE CONNECTICUT DEEP.

IN THE AREAS OF SOLAR PANEL INSTALLATION, THERE ARE SEVERAL ACTIVITIES (SITE GRADING, FOOTING INSTALLATION, PANEL INSTALLATION, AND ELECTRICAL TRENCH WORK) THAT WILL DISTURB SOIL. SOIL MUST BE PROMPTLY STABILIZED AFTER EACH ACTIVITY.

THIS PROJECT WILL NOT BE PHASED. THE DEVELOPMENT WILL FOLLOW THE CONSTRUCTION SEQUENCE PROVIDED ON THIS PLAN.

THE PROPOSED LOCATIONS OF SILTATION AND EROSION CONTROL MEASURES ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL PROVIDE SILT FENCE, HAY BALES, EROSION MAT, STONE CHECK DAMS, A CONSTRUCTION ENTRANCE, AND/OR OTHER EROSION CONTROL MEASURES AS NEEDED OR DIRECTED BY THE ENGINEER OR TOWN STAFF TO ADEQUATELY PREVENT SEDIMENT TRANSPORT.

EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO SITE

THE CONTRACTOR SHALL INSPECT, REPAIR AND/OR REPLACE EROSION CONTROL MEASURES EVERY 7 DAYS AND IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT. SEDIMENT DEPOSITS MUST BE REMOVED BEFORE DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE PERMANENTLY STABILIZED.

STAKED HAY BALE SILT BARRIERS OR SILT FENCE SHALL BE INSTALLED AROUND ANY TEMPORARYSTOCKPILE AREAS. TEMPORARY VEGETATIVE COVER MAY BE REQUIRED (SEE NOTE).

CONTINUOUS DUST CONTROL USING WATER OR APPROVED EQUAL SHALL BE PROVIDED FOR ALL EARTH STOCKPILES, EARTH PILED ALONG EXCAVATIONS, SURFACES OF BACKFILLED TRENCHES AND GRAVELED ROADWAY SURFACES. THE USE OF CALCIUM CHLORIDE FOR DUST CONTROL SHALL NOT BE ALLOWED.

IF DEWATERING IS NECESSARY DURING ANY TIME OF CONSTRUCTION A CLEAR WATER DISCHARGE SHALL BE PROVIDED AS SHOWN IN THE HAY-BALE BARRIER DEWATERING DETAIL OR ALTERNATE METHOD PROPOSED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

ALL DISTURBED AREAS SHALL BE RESTORED PER THE SLOPE STABILIZATION AND PERMANENT VEGETATION DETAILS. ALL DISTURBED AREAS THAT ARE SLOPED LESS THAN THREE HORIZONTAL TO ONE VERTICAL (3:1) SLOPE SHALL BE LOAMED, SEEDED, FERTILIZED AND MULCHED PER THE PERMANENT VEGETATIVE COVER SPECIFICATIONS. EROSION CONTROL MATTING SHALL BE PROVIDED ON ALL DISTURBED AREAS THAT ARE SLOPED MORE THAN THREE HORIZONTAL TO ONE

IF FINAL SEEDING OF DISTURBED AREAS IS NOT TO BE COMPLETED BEFORE OCTOBER 15. THE CONTRACTOR SHALL PROVIDE TEMPORARY MULCHING (DORMANT SEEDING MAY BE ATTEMPTED AS WELL) TO PROTECT THE SITE AND DELAY PERMANENT SEEDING.

WHEN FEASIBLE, TEMPORARY SEEDING OF DISTURBED AREAS THAT HAVE NOT BEEN FINISHED GRADED SHALL BE COMPLETED PRIOR TO OCTOBER 15.

ON EACH FRIDAY AND ALSO ON THE DAY BEFORE ANY RAIN FORECAST OF 0.5 INCHES OR MORE. THE CONTRACTOR SHALL HAY MULCH ALL EXPOSED SOIL.

ANY EROSION WHICH OCCURS WITHIN THE DISTURBED AREAS SHALL BE IMMEDIATELY REPAIRED AND STABILIZED. DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT SHALL BE RETURNED TO THE SITE. POST SEEDING, INTERCEPTED SEDIMENT, IF ANY, SHALL BE DISPOSED OF IN A MANNER APPROVED BY THE TOWN AND ENGINEER.

EROSION AND SEDIMENTATION CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL VEGETATION IS RE-ESTABLISHED OR SLOPES ARE STABILIZED AND REMOVAL IS APPROVED BY THE ENGINEER.

UNFORESEEN PROBLEMS WHICH ARE ENCOUNTERED IN THE FIELD SHALL BE SOLVED ACCORDING TO THE "2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL" BY THE CONNECTICUT COUNCIL ON SOIL AND WATER CONSERVATION IN COOPERATION WITH THE CONNECTICUT DEEP.

THE CONTRACTOR SHALL PROVIDE THE NAME AND EMERGENCY CONTACT INFORMATION FOR THE PROJECT PERSONNEL RESPONSIBLE FOR EROSION AND SEDIMENTATION CONTROLS PRIOR TO THE START OF CONSTRUCTION.

THE OWNER WILL EMPLOY A CERTIFIED SOIL SCIENTIST TO PERFORM WEEKLY EROSION & SEDIMENTATION CONTROL INSPECTION.

ROUTINE REPAIRS OR MODIFICATIONS SHALL BE COMPLETED BY THE CONTRACTOR WITHIN 48 HOURS AFTER DIRECTION BY THE INSPECTOR.

EMERGENCY REPAIRS SHALL BE COMPLETED IMMEDIATELY UPON DIRECTION BY THE INSPECTOR.

THE WETLANDS ENFORCEMENT OFFICER SHALL BE NOTIFIED AT LEAST 2 BUSINESS DAYS PRIOR TO CONSTRUCTION TO INSPECT EROSION CONTROLS.

STATE AND FEDERAL PERMITS REQUIRED: THIS PROJECT REQUIRES A PERMIT FROM THE STATE OF CONNECTICUT SITING COUNCIL.

THE FOLLOWING DOCUMENTS ARE CONSIDERED TO BE PART OF THIS EROSION AND SEDIMENTATION CONTROL PLAN: THE COMPLETE SITE PLANS, THE DRAINAGE NARRATIVE PREPARED BY CLA ENGINEERS, AND THE CTDEEP 2002 MANUAL

## **GENERAL PHASING NOTES:**

THE CONTRACTOR SHALL HAVE CLEARING AND GRADING LIMITS, SENSITIVE AREAS, AND WETLANDS IDENTIFIED PRIOR TO CONSTRUCTION.

THROUGHOUT THE DURATION OF CONSTRUCTION, THE PROJECT OWNER SHALL PROVIDE INSPECTION REPORTS TO TOWN AND CTDEEP.

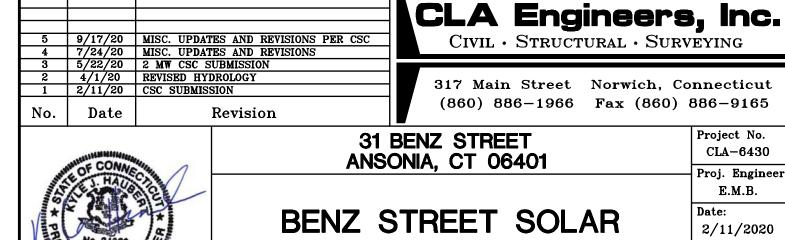
EXHIBIT E

ANY DEWATERING THROUGHOUT THE DURATION OF CONSTRUCTION SHALL BE MONITORED BY A QUALIFIED ENVIRONMENTAL PROFESSIONAL TO MAINTAIN SUITABLE QUALITY OF DISCHARGE FROM THE DEWATERING AND TO ENSURE REMOVAL OF ACCUMULATED SEDIMENTS AT APPROPRIATE INTERVALS. SEDIMENTS WILL BE DISPOSED OF AT AN APPROPRIATE ON-SITE LOCATION.

THROUGHOUT THE GRADING OPERATION, ANY DISTURBED AREA LEFT IDLE FOR MORE THAN 14 DAYS SHALL BE STABILIZED.

#### **CONSTRUCTION SEQUENCE:**

- 1. BEFORE ANY WORK TAKES PLACE CONTACT CALL BEFORE YOU DIG (811 OR 1-800-922-4455) TO MARK UTILITIES.
- NOTIFY THE TOWN OF ANSONIA ZONING AND INLAND WETLANDS AGENTS OF START OF CONSTRUCTION A MINIMUM OF 48 HOURS IN ADVANCE.
- 3. HAVE CT LICENSED LAND SURVEYOR STAKE OUT THE CLEARING LIMITS AND PERIMETER EROSION CONTROL.
- CUT TREES BUT DO NOT GRUB.
- 5. INSTALL CONSTRUCTION ENTRANCE.
- 6. INSTALL PERIMETER EROSION AND SEDIMENTATION CONTROLS (HAY BALES AND WOODCHIP MULCH) AND HAVE INSPECTED BY SITE INSPECTOR PRIOR TO GRUBBING OR GRADING ACTIVITIES.
- 7. EXCAVATE AND STABILIZE BASIN #1, IF DEWATERING IS NECESSARY FOR EXCAVATION PLEASE COORDINATE DEWATERING PLAN WITH QUALIFIED ENVIRONMENTAL PROFESSIONAL. BASIN #1 SHALL BE USED AS A TEMPORARY SEDIMENTATION BASIN DURING CONSTRUCTION. UPON COMPLETION OF THE BASIN #1 GRADING THE CONTRACTOR SHALL HAVE THE STABILIZED BASIN INSPECTED BY SITE INSPECTOR.
- 8. GRUB WATERSHED 1 SITE AREA AND PREFORM SITE GRADING WITHIN WATERSHED 1 WORK AREA AS IDENTIFIED ON THE PLANS.
- 9. GRADE AND STABILIZE WESTERN SWALE TO BASIN #1.
- 10. PRIOR TO THE CONSTRUCTION TRANSITION TO WATERSHED #2, THE CONTRACTOR SHALL HAVE THE WATERSHED #1 GRADING AND STABILIZATION REVIEWED BY THE SITE INSPECTOR TO ENSURE APPROPRIATE STABILIZATION.
- 11. EXCAVATE AND STABILIZE BASIN #2, IF DEWATERING IS NECESSARY FOR EXCAVATION PLEASE COORDINATE DEWATERING PLAN WITH QUALIFIED ENVIRONMENTAL PROFESSIONAL. BASIN #2 SHALL BE USED AS A TEMPORARY SEDIMENTATION BASIN DURING CONSTRUCTION. UPON COMPLETION OF THE BASIN #2 GRADING THE CONTRACTOR SHALL HAVE THE STABILIZED BASIN INSPECTED BY SITE INSPECTOR.
- 12. GRADE AND STABILIZE EASTERN SWALE TO BASIN #2 AND INSTALL CULVERT.
- 13. GRUB WATERSHED 2 SITE AREA AND PREFORM ADDITIONAL SITE GRADING WITHIN WATERSHED 2 WORK AREA AS IDENTIFIED ON THE PLANS.
- 14. INSTALL ACCESS DRIVEWAY
- 15. INSTALL PERIMETER CHAIN LINK FENCE AROUND ENTIRE SITE.
- 16. INSTALL SOLAR RACKING FOUNDATIONS, AND RACKING, AND SOLAR MODULES. HYDROSEED OR SEED AND MULCH ANY EXPOSED SOIL AT THE END OF EACH WEEK AND BEFORE EVERY RAINFALL PREDICTED FOR 0.5 INCHES OR MORE.
- 17. TRENCH FOR AND INSTALL ELECTRIC LINES AND AT THE END OF EACH WEEK HYDROSEED OR MULCH AND SEED ANY EXPOSED SOIL AT THE END OF EACH WEEK AND BEFORE EVERY RAINFALL PREDICTED FOR 0.5 INCHES OR MORE.
- 18. INSTALL REMAINING ELECTRIC INFRASTRUCTURE AND AT THE END OF EACH WEEK HYDROSEED OR MULCH AND SEED ANY EXPOSED SOIL AT THE END OF EACH WEEK AND BEFORE EVERY RAINFALL PREDICTED FOR 0.5 INCHES OR MORE.
- 19. OVERSEED DISTURBED SOILS WHEN ALL SOLAR PANEL INSTALLATION AND ELECTRICAL TRENCHING IS COMPLETE.
- 20. CLEAN SEDIMENTS BASINS AND GRADE AND RE-SEED FOR USE AS STORMWATER BASINS WHEN SITE INSPECTOR DEEMS SOILS ARE STABILIZED.
- 21. INSTALL PERIMETER FENCING PLANTINGS.



CIVIL NOTES

Sheet No.