

Stormwater Pollution Prevention Plan

ELLIS TRACT
SOLAR PV ARRAY SITE

Town of Dryden
Tompkins County

Prepared for:
Sun8 PDC LLC
601 13th Street NW
Suite 450 South
Washington, DC 20005

Labella Number: 2170026

Revised April 25, 2017

LABELLA
Associates, P.C.

105 North Tioga Street,
Suite 200
Ithaca, NY 14850
(607) 319-4136
www.labellapc.com

Project Name and Location:

Ellis Tract Solar PV Array
Stevenson Road
Town of Dryden, NY

Tax Map T.A. #56.0-1-1.6, 57.0-1-7.1, 67.0-1-3, 67.0-1-7.2, 67.0-1-4

Owner/Operator Name and Address:

Sun8 PDC LLC
C/O Distributed Sun LLC
601 13th Street NW
Suite 450 South
Washington, DC 20005

Contact:

Bharath Srinivasan
Bharath@distributedsun.com
978-319-0683

Introduction

Pursuant to Section 402 of the Clean Water Act (“CWA”), stormwater discharges from certain construction activities to waters of the United States are unlawful, unless authorized by a National Pollutant Discharge Elimination System (NPDES) permit or by a state permit program. New York’s State Pollutant Discharge Elimination System (SPDES) is a NPDES-approved program with permits issued in accordance with the Environmental Conservation Law (ECL). Discharges of pollutants to all “Waters of New York State,” such as ground waters, are also unlawful unless they are authorized by a SPDES permit.

Section 402 of the CWA requires permits for stormwater discharges from construction activities that will result in disturbance of one or more acres of total land. As a result, the work associated with the solar photovoltaic (PV) arrays located on the the Ellis Tract is subject to the SPDES regulations for stormwater discharges from construction activities.

Part III.C of the SPDES General Permit for Stormwater Discharge from Construction Activity, GP-0-15-002 (General Permit), states that construction activities that disturb more than one acre of land, creates minimal impervious surface and does not alter hydrology from pre- to post-development conditions, are required to prepare a Stormwater Pollution Prevention Plan (SWPPP) that only includes erosion and sediment control practices.

The proposed project primarily involves construction of a ground mount Solar Array with reestablishment of vegetative cover and minimal change in hydrology from pre- to post-development conditions. Therefore, the SWPPP for this project includes erosion and sediment control practices during construction with the intent to use pervious surface treatments for access road construction to eliminate the need for other post-construction stormwater management practices. If traditional impervious gravel access roads are required appropriate Stormwater management practices for water quality and runoff volume will be installed.

SWPPP Review

The Town of Dryden is included in a traditional MS4 and the Stormwater management plan is reviewed by the Stormwater Manager.

Project Description

The Ellis Tract Solar Photovoltaic Plants Project consists of installation of five 2MWac and one 1MWac ground-mounted solar PV plants on a site that is owned by Cornell University and includes the following components:

- Construction of construction entrances on Stevenson Road, Dodge Road and Turkey Hill Road
- Construction of porous gravel access roads for each plant
- Installation of ground-mount racking systems for solar panels and installing PV panels
- Installation of buried electrical cabling
- Installation of a power inverters on concrete base slabs
- Installation of underground conductors and overhead power lines for connection to the existing electrical grid
- Restoration of grass vegetation on the entire site

The project will result in the disturbance of approximately 37 acres of land for clearing of woods and brush, which will all be planted for establishment of a sod cover. Stormwater from the site drains to a natural storm drainage system which is a tributary to Cascadilla Creek drains to Cayuga Lake. The proposed project will create less than 0.1 acres of additional impervious surface and will not significantly change site hydrology, therefore no post-construction stormwater management practices are proposed, other than restoring adequate vegetative cover. If more than 0.1 acres of impervious surface is required during construction post construction management practices complying with NYSDEC requirements will be incorporated.

The solar panels will be installed on ground-mounted racks that will be supported by a driven steel or earth screw anchor post system. The racks are arranged in rows that will be laid out in one of two configurations. The first configuration will be the placement of five modules stacked in landscape orientation, tilted at 20 degrees, facing due south. This layout configuration will have an effective width of 15.6ft, a row spacing of 20.1ft, and a post-to-post distance of 35.7ft. The second configuration will be the placement of six modules stacked in landscape orientation, tilted at 20 degrees, facing due south. This layout configuration will have an effective width of 18.7ft, a row spacing of 24.2ft, and a post-to-post distance of 42.9ft. Both of these configurations will include one-inch spacing in between the panels to permit the passage of water through the interstices, rather than all over the lower lips. The panel configuration allows the area under the panels to have a

permanent vegetative cover. The average site gradient in the area of the panels is between 5 and 15%.

The design engineers on the project prefer a post-driven foundation solution. However, as a full geotechnical investigation has not been completed, the Project may require a series of foundation solutions based on actual ground conditions.

The Panels are impervious but the slope length of each surface is approximately 77" and the ground under each panel is to be maintained as a grassed pervious surface. The spacing of the panels rows creates a disconnected series of short impervious surface draining onto the pervious vegetated surface which is equal to or greater than the length of the impervious surface. There is no site grading proposed under the panel area. The areas of the site under panels will be cleared by conventional means and stumps will be removed and disposed of on the edges of the site. Vegetation will be established with normal tillage equipment and seeded and mulched. Panel construction will be done using low-ground-pressure equipment. Based on this we do not anticipate a need for top soil restoration. If there are areas of concentrated traffic resulting in soil compaction the vegetative restoration will include soil restoration.

Pre-Development Conditions

Natural Drainage Areas & Drainage Points

The proposed project is located in the Cascadilla Creek Watershed which drains to the Cayuga Lake. The sub water shed is composed of agricultural, residential, small commercial and educational uses.

Existing Utilities & Easements

The site is located within privately owned property. NYSEG power distribution lines run along the Stevenson Road, Dodge Road and Turkey Hill Road rights of way (ROW). The Site Plan document displays the existing NYSEG utility lines along with a Point of Common Coupling (PCC), the location where the electricity-generating project will connect with NYSEG. The PCC may be subject to change, pending NYSEG comments on the Coordinated System Interconnection Review (CESIR). The site contains additional easements as described in the title report, and those easements will be laid out by surveyors.

Soils

The site is located primarily in a Rural Agricultural District of the Town of Dryden, Tompkins County, and the soils have been mapped by the USDA NRCS Soil Survey. The soils on the site are a mix of alluvial soils including gravelly loams, silt loams and channery silt loams. The topography of the site is moderately sloped with average slopes ranging from 3 to 15 percent with a few steeper sections. The soils range from well to poorly drained. There are several wetland areas within the property, and there areas of prime farmland soils on the site. The proposed PV arrays will avoid wetland areas and minimal incursion on emergent wetlands in compliance with US Army Corps of Engineers guidelines is currently proposed.

The soils Map is included as a drawing in the Special Use Plan application documents.

Hydrologic evaluation

The project site has been evaluated for runoff potential by use of the NRCS runoff curve number analysis which uses soils data and vegetative cover information to estimate runoff potential.

The existing project site land use consists of horse pasture, small wooded areas and some cropland. The runoff curve number for the current use of the land is 78. Actual flows have not been calculated for the small watershed area as concentrated flows will not develop and the RCN of the finished site will not increase with the completed project.

Post-Development Conditions

Proposed Development and Scope of the SWPPP

The project consists of installation of eight 2MWac and two 1MWac PV arrays of solar panels each covering approximately 12 to 13 acres. Installation of the solar panels will follow the natural contour of the land and no major earth work is expected. Approximately 9,000 feet of underground electric lines will be installed by open trenching. All disturbed areas will be vegetated with a low growing grass treatment.

This Stormwater Pollution Prevention Plan (SWPPP) incorporates erosion and sediment control measures to prevent sediment-laden stormwater from leaving the project site.

The hydrology of the site is not going to be modified by significant grading or creation of new impervious surfaces, therefore, no post-construction stormwater management practices are provided. The proposed project area will be restored by seeding with a grass mixture that will provide a dense sod and the future land use will maintain the runoff curve number of 78, which is equal to the pre-development condition.

The project includes installation of 12' wide porous gravel access lanes to provide access to the inverter pad, PV panels and to maintain access to adjoining fields. The road cross section will consist of 12" of washed #2 stone placed on a geogrid. This design will allow rainfall to infiltrate in to the ground.

Ten 15' by 20' concrete inverter pads will be the only impervious surface constructed on the site. The total area of impervious surface will be 3,000 square feet and will be constructed on a crushed stone base with a 2' wide washed #2 stone infiltration border around the concrete pad.

TMDL / 303D Segment

The site does not discharge to a TMDL or 303d segment stream.

SWPPP Implementation Responsibility

Sun8 PDC, LLC., as the owner/operator will be responsible for ensuring implementation of this plan by their selected subcontractor. A contractor certification statement is located in **Attachment D** Each contractor and subcontractor must sign and complete the contractor certification for each phase of the project. Each contractor must sign The Certification Statement(s) prior to commencement of construction activity. Signed certifications must be kept onsite with the SWPPP.

The owner/operator must have the contractor and subcontractor identify at least one person from their company that will be responsible for implementation of the SWPPP. This person will be known as the *trained contractor*. The owner/operator must ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

Each trained contractor must provide a photocopy of their Stormwater Training Card. The copy must kept with the SWPPP onsite.

The operator must carry out all erosion and sedimentation control measure in accordance with this SWPPP, the Contract Drawings & Specifications and the SPDES General Permit.

SWPPP Modifications

The SWPPP is a living document and may be updated as the construction process proceeds. Any changes or updates to the SWPPP must be noted in **Attachment F**.

If any of the following substantive revisions to the SWPPP occur during construction, the NYSDEC must be made aware of the changes:

- the scope of the project changes significantly, or
- there is an increase in the disturbance area or impervious area.

Notice of Termination (NOT)

The owner or operator must have the qualified inspector perform a final site inspection prior to submitting the NOT. The qualified inspector must complete the blank Notice of Termination located in **Attachment G**, and certify that all previously disturbed areas are stabilized, and all temporary, structural erosion control measures have been removed.

Erosion and Sediment Control Plan

Scope

Erosion and sediment control measures to be employed by the project have been prepared in accordance with the current version of the *New York State Standards and Specifications for Erosion and Sediment Control (NYSSSESC)*. All contractors and subcontractors shall

comply with all applicable requirements and conditions of the SPDES General Permit, NYSSDESC and this SWPPP.

Temporary Erosion Control Measures

The following temporary erosion and sedimentation control measures will be used on this project during construction (location, material specifications, dimensions and installation details are provided in the contract documents):

- **Stabilized Construction Entrances:** Will be installed to minimize the tracking of debris and mud off the project site. Location of entrance(s) shall be where shown on the plans or approved in the field by the Qualified Inspector.
- **Silt Fence:** Will be installed at the down gradient site perimeter where shown on plans (or approved in the field by the qualified inspector) to intercept sediment-laden runoff from disturbed soil.
- **Temporary Stabilization:** Disturbed portions of the site not shown to receive other surface treatments, where construction activities have temporarily ceased, must be stabilized with temporary seed or mulch no later than 14 days from the last construction activity. Areas of the site that are to be paved will be temporarily stabilized by applying stone sub-base until final surface treatments can be applied.

Permanent Erosion Control Measures

The following permanent erosion and sedimentation control measures will be used to minimize erosion and scour after construction is complete (location, material specifications, dimensions and installation details are provided in the contract documents):

- **Permanent Seeding and Mulching:** Placed to establish a uniform erosion-resistant perennial vegetative cover where the surface soil is capable of resisting erosion during runoff events. All areas disturbed during construction not shown to receive other surface treatments will be restored with topsoil and seeded to provide a stabilized vegetative cover.

Maintenance and Inspection

All erosion and sediment control practice must be maintained in accordance with the Contract Drawings and Specifications. The Contractor is responsible for providing post-rainfall-event inspections of erosion and sediment control practices. The Qualified Inspector will perform weekly inspections, on behalf of the Owner, of all installed practices and examine:

- Silt fences for depth of sediment, tears, and to ensure fabric is securely attached to construction fence
- Temporary and permanent seeding for bare spots and unhealthy growth.
- Stabilized construction entrances for tracking of sediment off the project site.

The Qualified Inspector will prepare an inspection report subsequent to every inspection and note whether any additional practices are required, and note any corrective actions

required (refer to Part IV. C of the SPDES General Permit for all Qualified Inspector Inspection Requirements).

The qualified inspector will notify the owner or operator and appropriate contractor or subcontractor of any corrective actions, within 24 hours of the completed inspection. The contractor or subcontractor must complete the corrective actions within 24 hours of this notification.

Diverting of Flows

There are no planned flow diversions from up gradient areas.

Industrial and Non-Stormwater Discharges

There are no industrial discharges at the site.

Litter Prevention & Material Storage

The Contractor and subcontractors must implement management practices to reduce the risk of contaminated storm runoff. The Contractor must provide training regarding waste management practices and procedures to all onsite employees and subcontractors.

The Contractor must arrange for appropriate waste management services. Trash disposal and recycling, proper material handling, and daily cleanup at the site will reduce the potential for contaminated stormwater runoff.

Toilet facilities must be well maintained with regular inspections, service, and disposal. Facilities must be located away from storm drain inlets and waterways.

The Contractor must establish material storage and staging areas with cover and containment as necessary. Building materials such as paint, solvents, pesticides, fuels, and oils must be stored indoors or under cover when possible. Regular inspection of the storage containers is the responsibility of the Contractor.

Concrete washout areas must be located as far from storm drains and watercourses as possible. Contractor must inspect washout areas daily during use to detect leaks or tears. Materials from the washout area must be disposed of properly.

Contractors must totally consume paints and coating materials or return unused portions back to their facilities. Equipment contaminated with water-based paints/coating may be washed/rinsed with water and soap (if necessary) with the rinse and wash water released, with copious amounts of water, to an approved sanitary sewer access location. Contractor must containerize solvents or other residues from cleaning of equipment contaminated with solvent-based paint/coatings for proper recycling or disposal to an authorized/regulatory permitted off-site facility.

Contractor must ensure no tracking of sediment, soil, mud or other materials onto roadways/paved surfaces. Contractor must sweep surfaces promptly, no later than the end of the workday, when such occurrences occur.

The Contractor must provide a site-specific spill prevention and response plan, which addresses the following:

- Reducing chance of spills
- Stopping the source of spills
- Containing and cleaning up spills
- Disposing of materials contaminated by spills
- Training personnel responsible for spill prevention/response
- Material handling procedures
- Material storage requirements

Potential sources of sediment to stormwater runoff include:

- Clearing and grubbing operations
- Grading and site excavation operations
- Vehicle tracking
- Topsoil stripping and stockpiling
- Landscaping operations

Potential pollutants and sources, other than sediment, to stormwater runoff include:

- Combined Staging Area—small fueling activities, minor equipment maintenance, sanitary facilities, and hazardous waste storage.
- Materials Storage Area—general building materials, solvents, adhesives, paving materials, paints, aggregates, trash, etc.
- Construction Activity—paving, curb/gutter installation, utility trenching, concrete pouring, and building construction
- Concrete Washout Area

For all potential construction site pollutants, see the table of following page:

Material/Chemical	Physical Description	Stormwater Pollutants	Location*
Fertilizer	Liquid or solid grains	Nitrogen, phosphorous	Newly seeded areas
Cleaning solvents	Colorless, blue, or yellow-green liquid	Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillates	No equipment cleaning allowed in project limits
Concrete	White solid/grey liquid	Limestone, sand, pH, chromium	Curb and gutter, building construction
Curing compounds	Creamy white liquid	Naphtha	Curb and gutter
Hydraulic oil/fluids	Brown oily petroleum hydrocarbon	Mineral oil	Leaks or broken hoses from equipment
Gasoline	Colorless, pale brown or pink petroleum hydrocarbon	Benzene, ethyl benzene, toluene, xylene, MTBE	Secondary containment / staging area
Diesel Fuel	Clear, blue-green to yellow liquid	Petroleum distillate, oil & grease, naphthalene, xylenes	Secondary containment / staging area
Kerosene	Pale yellow liquid petroleum hydrocarbon	Coal oil, petroleum distillates	Secondary containment / staging area
Antifreeze/coolant	Clear green/yellow liquid	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)	Leaks or broken hoses from equipment
Sanitary toilets	Various colored liquid	Bacteria, parasites, and viruses	Staging area
Construction materials			
Granular fill	Various colored solids	Sediment	Stockpile / fill areas
Subbase course	Gray/brown solid	Sediment, dust	Stockpile
Topsoil	Brown solid	Sediment	Stockpile
Mulch	Various colored solid	Sediment, debris	Staging area
Seed	Brown/yellow solid	Nutrients, debris	Staging area
HDPE Storm Pipe	Black solid		Staging area
Metal Frames	Gray solid		Staging area
Joint Sealant	Light gray viscous solid	Polyurethane	Staging area

Construction Sequence Scheduling

Type	Activities	Quantity	Schedule	Location	Maintenance Actions	
Preconstruction	Install silt fence	6000 lf	First week of const	On down slope of site	Inspect weekly and repair as needed	
Clearing and grub areas	Clear brush	33 ac	First two weeks of const	Panel areas		
Condition Surface	Prepare seed bed	33 ac	Third week	Panel area		
Seed and Mulch				Site	Maintain throughout project	
Install Panels						