United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
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http://www.fws.gov/northeast/nyfo/es/section7.htm

In Reply Refer To:
Consultation Code: 05E1NY00-2020-SLI-0914
Event Code: 05E1NY00-2020-E-02867
Project Name: Darrigo Solar Farm

December 10, 2019

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/

eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

Project Summary

Consultation Code: 05E1NY00-2020-SLI-0914

Event Code: 05E1NY00-2020-E-02867

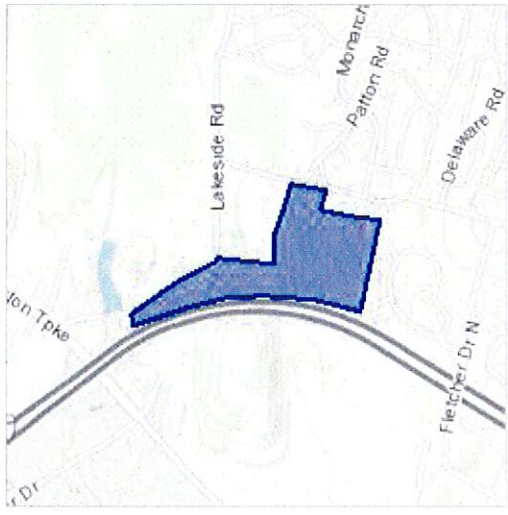
Project Name: Darrigo Solar Farm

Project Type: POWER GENERATION

Project Description: solar array

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/41.524583722003925N74.0982530469395W



Counties: Orange, NY

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Reptiles

NAME	STATUS
Bog Turtle *Clemmys muhlenbergii* Population: Wherever found, except GA, NC, SC, TN, VA No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6962 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/182/office/52410.pdf Habitat assessment guidelines: https://ecos.fws.gov/ipac/guideline/assessment/population/182/office/52410.pdf	Threatened

Flowering Plants

NAME	STATUS
Small Whorled Pogonia *Isotria medeoloides*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/1890
Species survey guidelines:
https://ecos.fws.gov/ipac/guideline/survey/population/742/office/52410.pdf

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Threatened and Endangered Species
Habitat Suitability Assessment Report

Darrigo Solar Farm Site
84 Lakeside Avenue,
Town of Newburgh, NY

December 10, 2019

Prepared by:

Michael Nowicki
Ecological Solutions, LLC
1248 Southford Road
Southbury, CT 06488
(203) 910-4716

1.0 INTRODUCTION

The Applicant is proposing the construction of a solar array on a 60 acres site located at 84 Lakeside Avenue in the Town of Newburgh (*Figure 1*). The site contains 40+ acres of upland hardwood forest and remediated area, about 15 acres of previously developed area and a small section of forested wetland on the western section of the site that is regulated by the New York State Department of Environmental Conservation (NYSDEC).

A Habitat Suitability Assessment was completed for five listed species including the small whorled pogonia (*Isotria medeoloides*), Indiana bat (*Myotis sodalis*), Northern long-eared bat (*Myotis septentrionalis*), bog turtle (*Glyptemys muhlenbergii*), and upland sandpiper (*Bartramia longicauda*) as per correspondence from the NYSDEC and Town of Newburgh (*Attachment 1*) and as per the US Fish and Wildlife Service (USFWS) species list for the site (*Attachment 2*). A field assessment was completed on December 10, 2019 to determine whether suitable habitat for these species is present on the site and in the project area.

Habitat cover types were also observed and include:

Developed Area - The site was previously a working farm and was the subject of environmental remediation of contaminants.

Upland Hardwood Forest - The bulk of the site is wooded with a dense understory and contains hickories, oaks, and maples generally in the 4-16 inch dbh range.

Wetland - The wetland on the site is a red maple swamp with red maple, American elm, green ash, pin oak, skunk cabbage, winterberry, and soft rush as the dominate species. The trees in this area are generally in the 4 to 12 inch dbh range.

TABLE 1
COVER TYPES IDENTIFIED ON THE SITE

HABITAT COVER TYPES			
NO.	DESCRIPTION	COVERAGE (ACRES)	DISTURBANCE (ACRES)
1	Developed Area	15	0
2	Upland Hardwood Forest/Remediated Area	43	22
4	Wetland	2	0

2.0 HABITAT SUITABILITY ASSESSMENT/CONCLUSION

2.1 Small whorled pogonia

The small whorled pogonia is a member of the orchid family. It usually has a single grayish-green stem that grows about 10 inches tall when in flower and about 14 inches when bearing fruit. The plant is named for the whorl of five or six leaves near the top of the stem and beneath the flower. The leaves are grayish-green, somewhat oblong and 1 to 3.5 inches long. The single or paired greenish-yellow flowers are about 0.5 to 1 inch long and appear in May or June. The fruit, an upright ellipsoid capsule, appears later in the year. This orchid grows in older hardwood stands of beech, birch, maple, oak, and hickory that have an open understory. Sometimes it grows in stands of softwoods such as hemlock. It prefers acidic soils with a thick layer of dead leaves, often on slopes near small streams.

Conclusion - There is no potential habitat for this species since the forest is densely wooded with a thick dense understory.

2.2 Indiana bats

The Indiana bat typically hibernates in caves/mines in the winter and roosts under bark or in tree crevices in the spring, summer, and fall. Suitable potential summer roosting habitat is characterized by trees (dead, dying, or alive) or snags with exfoliating or defoliating bark, or containing cracks or crevices that could potentially be used by Indiana bats as a roost. The minimum diameter of roost trees observed to date is 2.5 inches for males and 4.3 inches for females. However, maternity colonies generally use trees greater than or equal to 9 inches dbh. Overall, roost tree structure appears to be more important to Indiana bats than a particular tree species or habitat type. Females appear to be more habitat specific than males presumably because of the warmer temperature requirements associated with gestation and rearing of young. As a result, they are generally found at lower elevations than males may be found. Roosts are warmed by direct exposure to solar radiation, thus trees exposed to extended periods of direct sunlight are preferred over those in shaded areas. However, shaded roosts may be preferred in very hot conditions. As larger trees afford a greater thermal mass for heat retention, they appear to be preferred over smaller trees.

Streams associated with floodplain forests, and impounded water bodies (ponds, wetlands, reservoirs, etc.) where abundant supplies of flying insects are likely found provide preferred foraging habitat for Indiana bats, some of which may fly up to 2-5 miles from upland roosts on a regular basis. Indiana bats also forage within the canopy of upland forests, over clearings with early successional vegetation (*e.g.,* old fields), along the borders of croplands, along wooded fencerows, and over farm ponds in pastures. While Indiana bats appear to forage in a wide variety of habitats, they seem to tend to stay fairly close to tree cover.

Conclusion – The upland hardwood forest occurs around the remediated areas on the site and provides suitable foraging habitat for the Indiana bat. The proposed solar farm will impact 22 acres of the forested area.

The summer action area is defined as the project site and an area within 2.5 miles of the site to incorporate known and potential roosts and foraging areas. The site is surrounded by upland forest, wetlands, open water, and other natural habitat except immediately to the south which has Interstate 84 and Stewart Airport further south. Contiguous forested habitat exists on adjacent properties and throughout the local area, with habitat fragmentation by residential or commercial development. Development is heavy in this corridor, with large blocks of impacted area in close proximity. Forested habitat makes up about 50% of the area within 2.5 miles of the site (*Figure 2*), which is a typical travel radius for a roosting Indiana bat during the summer months. The 2.5 mile radius is equal to about 12,500 acres including about 5,000 acres of wooded habitat within the site radius. The twenty two (22) acres of tree clearing represents a decrease of 0.44 percent of the total forested habitat within the 2.5 mile site radius.

Indiana bats that may be within this action area are presumed to be part of the wintering population that hibernates in the Williams Lake Complex of hibernacula in Rosendale, Ulster County, NY. Bats typically disperse from the Williams Lake Complex and travel up to about 40 miles to their summer range. The proposed project site is about 23.5 miles due south of the Williams Lake Hibernacula Complex. The fall/winter action area is defined as the Williams Lake Hibernacula Complex with a 10-mile radius. This area includes presumptive fall swarming and spring dispersal stopover areas in the vicinity of the hibernacula.

Potential Effects of the Project

Activities during installation of the solar farm will include clearing trees and addition of some minor site lighting. These actions may result in direct and indirect effects on Indiana bats by altering the quality and quantity of their summer habitat. Such alterations include removing potential roost trees, generating noise during the installation of the solar farm, generating dust, and creating visual disturbances.

Commercial land use (operation of the solar farm) is considered a long-term activity. The outdoor use of the site is passive with no human activity required for daily operation of the solar farm. Activities outside of the solar farm will be limited to periodic maintenance activities. Anticipated effects from operation of the solar farm include some minor noise generation and increasing human activity on the site.

The effects of a proposed action are either "not likely to adversely affect" or "likely to adversely affect" a listed species. If the anticipated effects of a proposed action can be discounted because they are extremely unlikely, considered insignificant because they cannot be detected or measured to a meaningful degree, or be considered beneficial without associated adverse impacts, then "not likely to adversely affect" is the appropriate classification for the action.

The Applicant will incorporate the following conservation measures as requested by the NYSDEC in correspondence dated March 15, 2018 to ensure no impact occurs to this species. The Applicant will avoid, minimize, and mitigate impacts to this species by:

Effects from Tree Clearing

Clearing activities could have an adverse impact on active roost trees. Such impacts will be avoided by conducting all clearing during winter months when Indiana Bats will be in hibernation off site. Proposed clearing for the project will remove ±22 acres of forested habitat, which represents about 67% of forested habitat on the site. The project will avoid impacts by

• Implementing tree clearing for site activities during timeframes when bats are not resident on the site October 1 – to March 31;

• Prior to clearing, the limits of proposed clearing will be clearly demarcated on the site with orange construction fencing (or similar) to prevent inadvertent overclearing of the site.

Effects from Lighting

Site lighting is not required and security lights are not proposed so there is no affect.

Effects from Noise

There are no hibernacula (cave/s) on the site. Noise generated by construction equipment during the installation of the solar farm could disturb roosting bats during the day if this work occurs outside the tree clearing window.

It is unlikely that noise generated during construction or operation of the facility will greatly exceed ambient noise levels. While noise during tree clearing may be more severe, these activities can be scheduled to take place when the bats will not be on the site, so it will avoid exposure. Noise that is scheduled for the summer is a temporary impact and not likely to adversely effect this species.

Cumulative Effects

Construction activity and operation of the solar farm will increase general human activity on the site for a short period during installation, and increase the proximity of human activity and presence to potentially used foraging and roosting habitat for Indiana bats. Since this effect is insignificant and discountable, and cannot be meaningfully measured, it is not likely to adversely affect Indiana bats.

Additional conservation measures that will be utilized include:

• Preserving the wetlands on the site to the maximum extent possible which can potentially be used by bats as travel corridors, and;

• Implementing soil conservation and dust control best management practices, such as watering dry disturbed soil areas to keep dust down, and using staked, recessed silt fence and anti tracking pads to prevent erosion and sedimentation in surface waters on the site.

These measures will result in minimizing potential adverse effects to Indiana bats as well as Northern long-eared bats that have a similar niche as the Indiana bat.

2.3 Northern long-eared bat

Winter Habitat: Same as the Indiana bat northern long-eared bats spend winter hibernating in caves and mines, called hibernacula. They typically use large caves or mines with large passages and entrances; constant temperatures; and high humidity with no air currents. Specific areas where they hibernate have very high humidity, so much so that droplets of water are often seen on their fur. Within hibernacula, surveyors find them in small crevices or cracks, often with only the nose and ears visible.

Summer Habitat: During summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, like caves and mines. This bat seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. It has also been found, rarely, roosting in structures like barns and sheds.

Feeding Habits: Northern long-eared bats emerge at dusk to fly through the understory of forested hillsides and ridges feeding on moths, flies, leafhoppers, caddisflies, and beetles, which they catch while in flight using echolocation. This bat also feeds by gleaning motionless insects from vegetation and water surfaces.

Conclusion - The northern long eared bat requires/occupies practically the same habitat niche as the Indiana bat. Impacts to habitat and mitigation would be consistent with the recommendations for the Indiana bat.

2.4 Bog turtle

According to the U.S. Fish and Wildlife Service, in the 2001 Bog Turtle (*Clemmys muhlenbergii*), Northern Population Recovery Plan. Hadley, Massachusetts. 103 pp. last revised on April 13, 2006 bog turtle habitat is recognized by three criteria:

1. **Suitable hydrology**. Bog turtle wetlands are typically spring-fed with shallow surface water or saturated soils present year-round, although in summer the wet area(s) may be restricted to near spring head(s). Typically these wetlands are interspersed with dry and wet pockets. There is often subsurface flow. In addition, shallow rivulets (less than 4 inches deep) or pseudo-rivulets are often present.

2. **Suitable soils**. Usually a bottom substrate of permanently saturated organic or mineral soils. These are often soft, mucky-like soils (this does not refer to a technical soil type); you will usually sink to your ankles (3-5 inches) or deeper in muck, although in degraded wetlands or summers of dry years this may be limited to areas near spring heads or drainage ditches. In some portions of the species' range, the soft substrate consists of scattered pockets of peat instead of muck.

3. **Suitable vegetation**. Dominant vegetation of low grasses and sedges (in emergent wetlands), often with a scrub-shrub wetland component. Common emergent vegetation includes, but is not limited to: tussock sedge (*Carex stricta*), soft rush (*Juncus effusus*), rice cut grass (*Leersia*

oryzoides), sensitive fern (*Onoclea sensibilis*), tearthumbs (*Polygonum spp.*), jewelweeds (*Impatiens spp.*), arrowheads (*Saggitaria spp.*), skunk cabbage (*Symplocarpus foetidus*), panic grasses (*Panicum spp.*), other sedges (*Carex spp.*), spike rushes (*Eleocharis spp.*), grass-of-Parnassus (*Parnassia glauca*), shrubby cinquefoil (*Dasiphora fruticosa*), sweet-flag (*Acorus calamus*), and in disturbed sites, reed canary grass (*Phalaris arundinacea*) or purple loosestrife (*Lythrum salicaria*). Common scrub-shrub species include alder (*Alnus spp.*), red maple (*Acer rubrum*), willow (*Salix spp.*), tamarack (*Larix laricina*), and in disturbed sites, multiflora rose (*Rosa multiflora*). Some forested wetland habitats are suitable given hydrology, soils and/or historic land use. These forested wetlands include red maple, tamarack, and cedar swamps.

Conclusion - The wetland on the western section of the site is forested and does not contain any groundwater seeps, rivulets, or groundwater derived hydrology evident. Soils here are also dry with no mucky component. There is no potential bog turtle habitat on or in the vicinity of the site.

2.5 Upland Sandpiper

Upland sandpipers require large open grasslands and show a preference for nesting, feeding, and courtship in vegetation less than 60 cm in height and most commonly in areas interspersed with taller grasses which provide concealment. Typical nesting cover includes idle cropland, pasture, highway edges, hayfields, untilled crops such as clover, alfalfa or blueberries, and mowed grass at airports.

Conclusion - The site is generally wooded and previously developed. Upland Sandpipers utilize open low growing grass areas for nesting and socializing. The site contains no large open areas and cannot support this species. There is no habitat for this species on the site and no impacts will occur. Typical habitat for this species in this area of Orange County is associated with the open areas of Stewart Airport.

3.0 PHOTOGRAPHS

Wooded area

Wooded area

Wetland area

Figure 1 Location Map

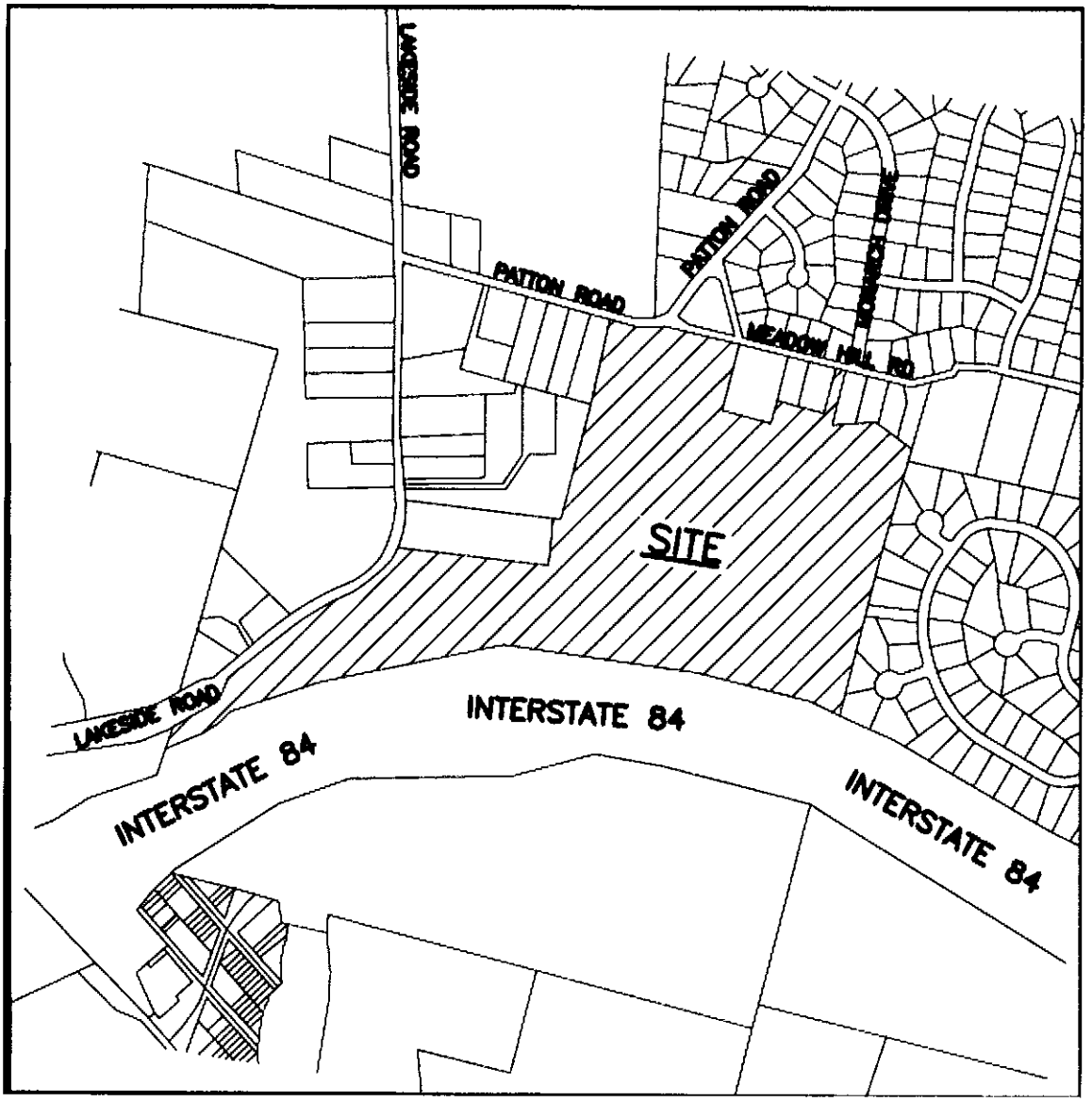
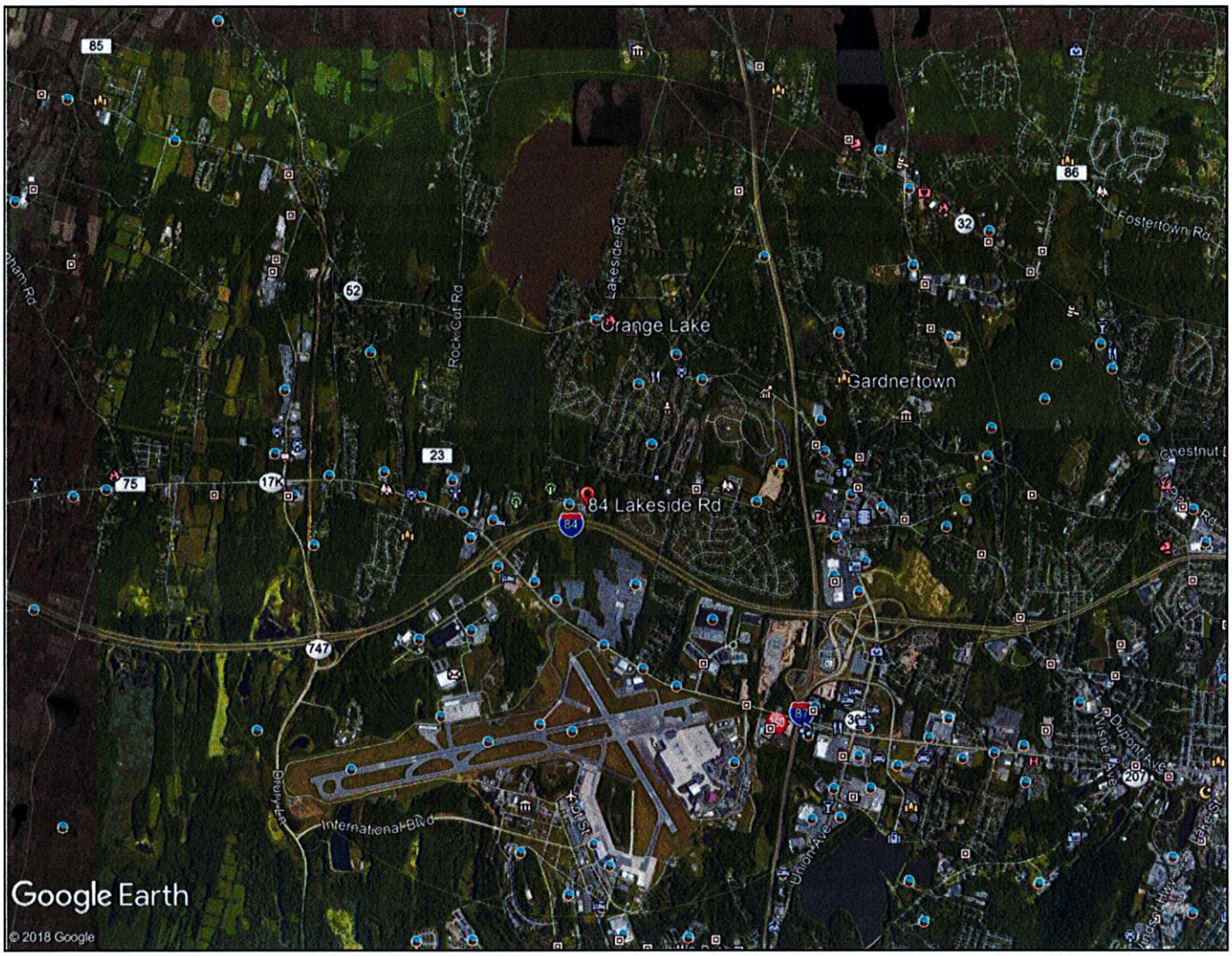


Figure 2 Radius Map



Attachment 1 - NYSDEC/Town of Newburgh Correspondence

Attachment 2 - USFWS List

FORGESOLAR GLARE ANALYSIS

Project: **Darrigo - Newburgh, NY**
Ground mount near Stewart Airport.

Site configuration: **PV Layout with Flight Paths**
Analysis conducted by Luke Nichols (lnichols@entersolar.com) at 13:33 on 22 Oct, 2019.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
Flight path(s)	PASS	Flight path receptor(s) do not receive yellow glare
ATCT(s)	PASS	Receptor(s) marked as ATCT do not receive glare

Default glare analysis parameters and observer eye characteristics (for reference only):

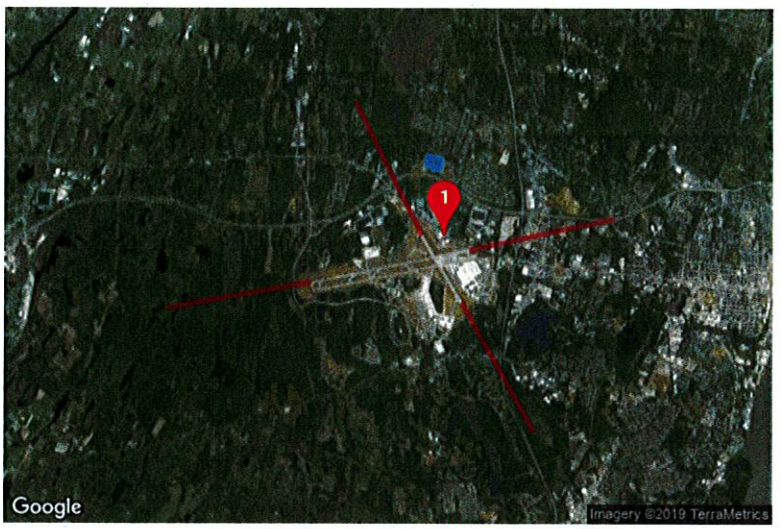
- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

SITE CONFIGURATION

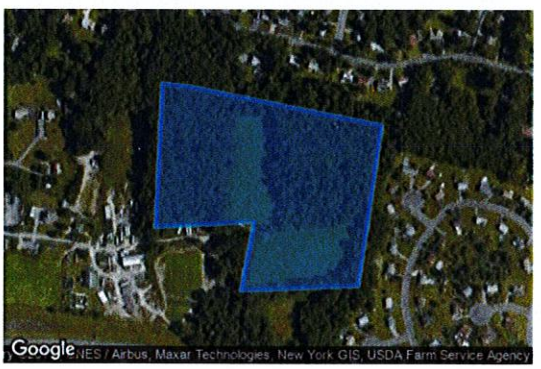
Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 32141.5887



PV Array(s)

Name: PV array 1
Axis tracking: Fixed (no rotation)
Tilt: 25.0°
Orientation: 180.0°
Rated power: -
Panel material: Light textured glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	41.526355	-74.098939	555.03	0.00	555.03
2	41.525825	-74.095398	555.03	0.00	555.03
3	41.523640	-74.095827	555.03	0.00	555.03
4	41.523576	-74.097962	555.03	0.00	555.03
5	41.524508	-74.097726	555.03	0.00	555.03
6	41.524435	-74.099529	555.03	0.00	555.03
7	41.526387	-74.099411	555.03	0.00	555.03

Flight Path Receptor(s)

Name: FP 1
Description:
Threshold height: 50 ft
Direction: 330.7°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	41.496832	-74.089886	433.79	50.00	483.79
Two-mile	41.471613	-74.070984	271.72	765.53	1037.25

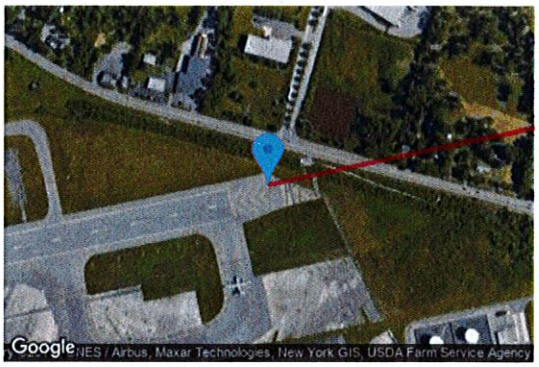
Name: FP 2
Description:
Threshold height: 50 ft
Direction: 153.4°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	41.510871	-74.101091	463.86	50.00	513.86
Two-mile	41.536730	-74.118381	514.39	552.92	1067.32

Name: FP 3
Description:
Threshold height: 50 ft
Direction: 79.8°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	41.501070	-74.131132	488.97	50.00	538.98
Two-mile	41.495955	-74.169172	433.60	658.83	1092.43

Name: FP 4
Description:
Threshold height: 50 ft
Direction: 257.9°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

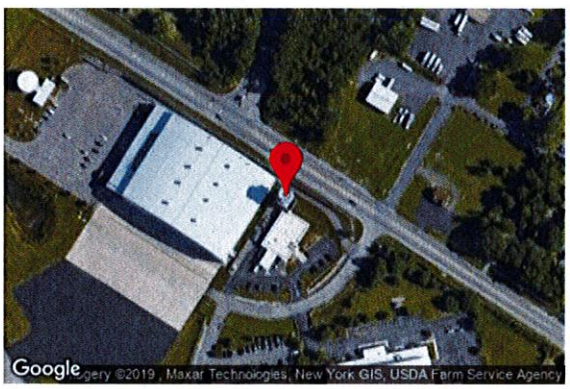


Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	41.507641	-74.087616	462.41	50.00	512.41
Two-mile	41.513722	-74.049827	255.08	810.79	1065.87

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	41.510494	-74.094802	484.17	50.00

Map image of 1-ATCT



GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt	Orient	"Green" Glare	"Yellow" Glare	Energy
	(°)	(°)	min	min	kWh
PV array 1	25.0	180.0	433	0	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
FP 1	0	0
FP 2	0	0
FP 3	184	0
FP 4	249	0
1-ATCT	0	0

Results for: PV array 1

Receptor	Green Glare (min)	Yellow Glare (min)
FP 1	0	0
FP 2	0	0
FP 3	184	0
FP 4	249	0
1-ATCT	0	0

Flight Path: FP 1

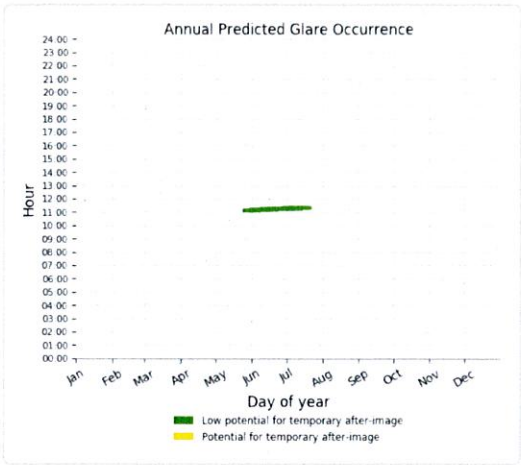
0 minutes of yellow glare
0 minutes of green glare

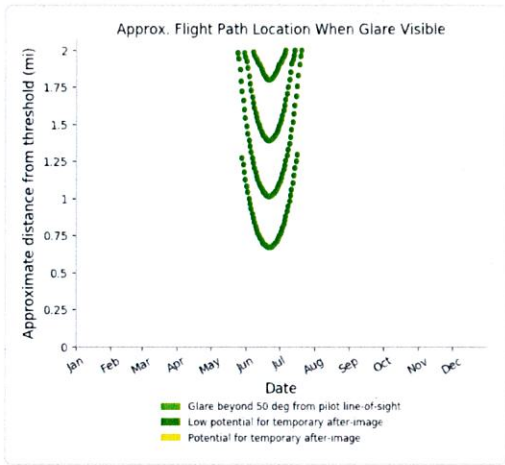
Flight Path: FP 2

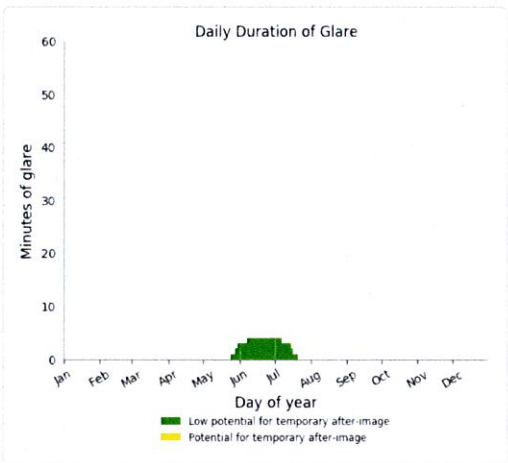
0 minutes of yellow glare
0 minutes of green glare

Flight Path: FP 3

0 minutes of yellow glare
184 minutes of green glare



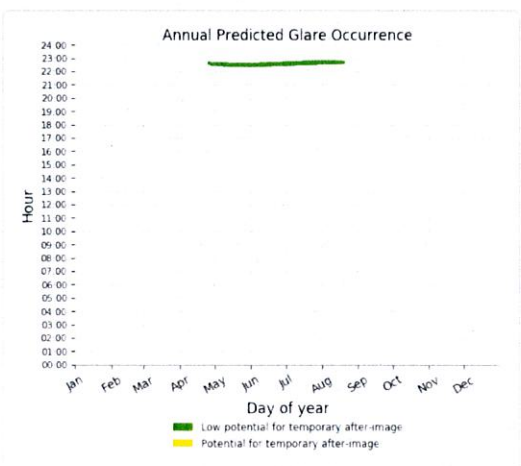


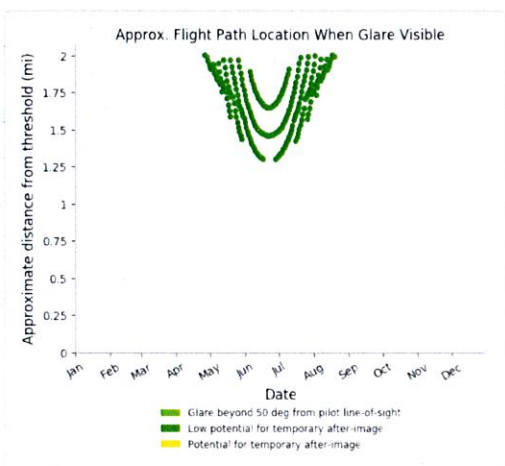


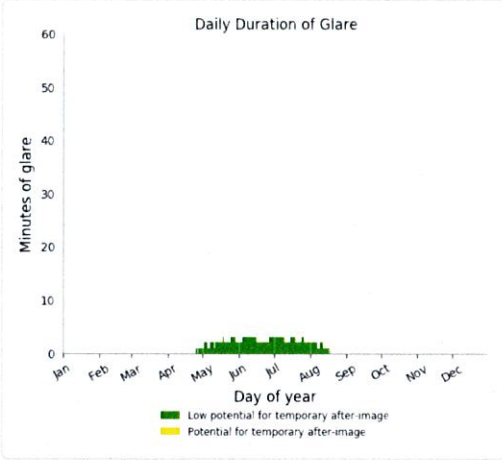
Flight Path: FP 4

0 minutes of yellow glare

249 minutes of green glare







Point Receptor: 1-ATCT

0 minutes of yellow glare
0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

GLARE STUDY SUMMARY

DARRIGO SOLAR FARM SITE PLAN & SPECIAL PERMIT (SOLAR FARM)

"DARRIGO"

Located off Lakeside Avenue, Newburgh, NY

A two-part glare study was performed at the behest of the landowner, Darrigo, by the landowner's EPC representative, EnterSolar. One study was performed to determine the effects of reflectivity created by the Solar Farm on the nearby Stewart Airport. Another study was performed to determine the effects of reflectivity created by the Solar Farm on the adjacent personal properties.

It's important to notice that the Federal Aviation Administration (FAA) does not mandate a solar glare hazard analysis unless the solar facilities are located on airport owned property. Additionally, Stewart Airport has solar arrays installed on the roof of several hangars.

Scope:

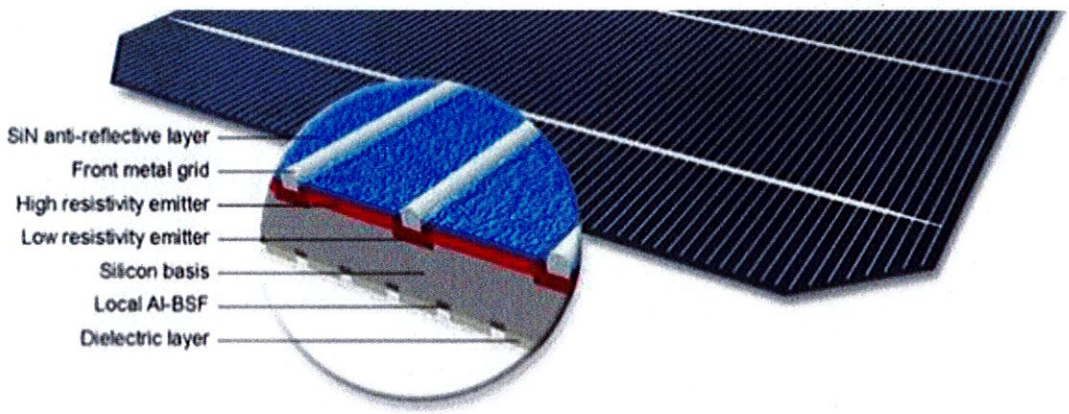
1) Solar glare hazard analysis.
    a. Software tool offered by Sandia National Laboratories for FAA compliance
    b. Requires numerous inputs for the PV Array design
    c. Requires locating the Solar Farm as it relates to the Airport in question
    d. Requires locating the Air Traffic Control Tower (ATCT) and Flight Paths (runways)
2) Solar glare effects on adjacent neighbors
    a. Studied the reflectivity of a typical mono-crystalline photovoltaic solar panel
    b. Compared reflectivity to other widely known objects.
    c. Studied location of Solar Farm with respect to neighboring properties
    d. Studied orientation of solar panels with respect to neighboring properties

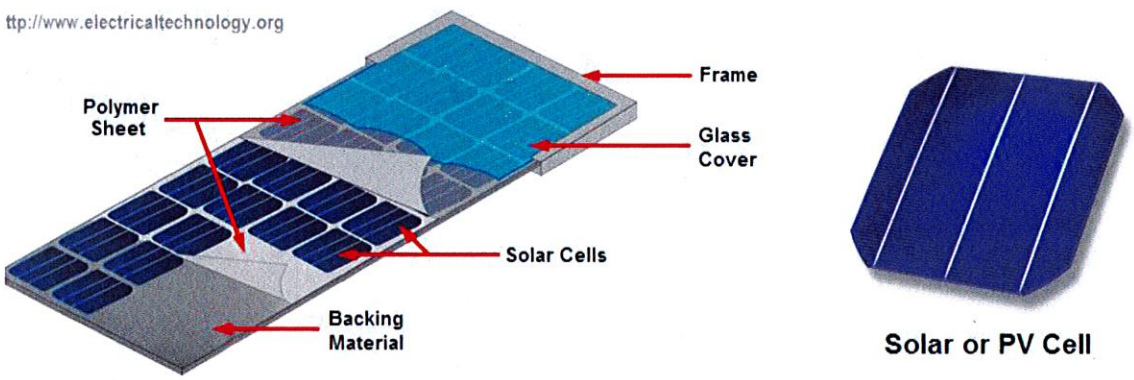
Results:

1) Solar glare hazard analysis.
    a. ATCT - No glare created by Solar Farm
    b. Flight Path 1 – No glare created by Solar Farm
    c. Flight Path 2 – No glare created by Solar Farm
    d. Flight Path 3 – Little but acceptable glare created by Solar Farm
    e. Flight Path 4 – Little but acceptable glare created by Solar Farm
2) Solar glare effects on adjacent neighbors
    a. Prior research found that the reflectivity of a typical mono-crystalline photovoltaic solar panel is approximately 5.7%, which is the percentage of sunlight reflectance. The test was performed by TUV Rheinland using a specific international testing procedure, ISO 9050 External Light Reflectance, to calculate diffuse and specular reflectance. Refer to the attached Test Report titled "PV Module Light Reflectance". See Figure 2.
    b. The calculated reflectance proved that PV Solar Panels rank low in the sunlight reflectance scale (below water, snow, and residential windows). To limit reflection, solar

PV panels are constructed of dark silicon wafers/cells with light-absorbing materials and the glass is textured and covered with an anti-reflective coating (ARC). See Figure 1 below for a visual representation of a deconstructed typical PV solar panel.

c. Location:
   i. Solar Farm panels are facing southwest, facing away from residential areas to the north and east, therefore no glare is directed towards the adjacent properties.
   ii. Tree buffer between homes to the east and Solar Farm will create a natural no glare opaque wall (even for the little glare that may exist)
   iii. Trees can be erected to the south of the array to obscure visibility of the Solar Farm from the I-84 highway (even for the little glare that may exist)





Solar Cell Construction

Figure 1: Solar Cell Construction
(electricaltechnology.org, cleanenergyreviews.com)

Figure 16: Reflectivity Produced by Different Surfaces[21]

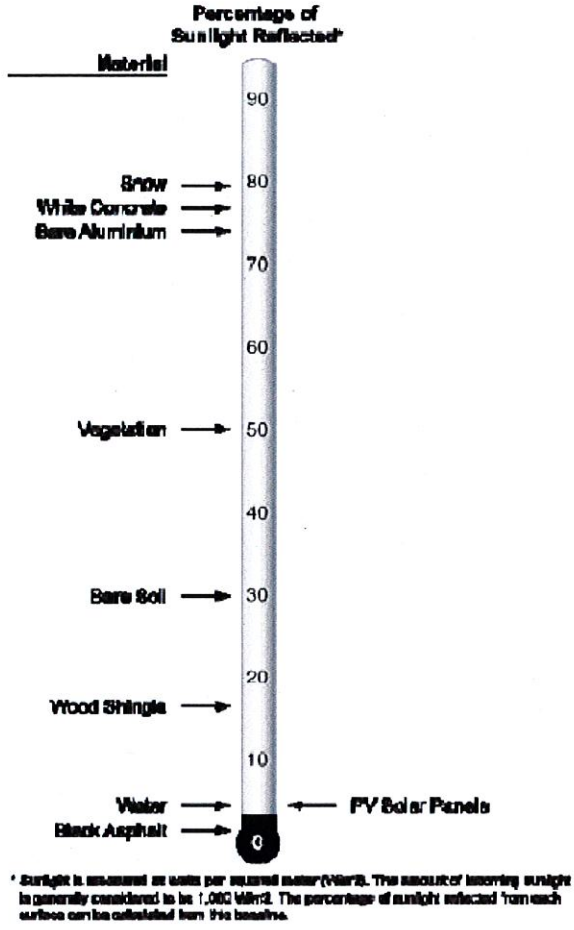


Figure 2: Reflectivity Scale (provided by Hanwha-Solarone)

If additional information is needed, contact EnterSolar at (215) 873-1501 or lsanchez@entersolar.com

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Frank Darrigo Revocable Trust, Daniel Darrigo Managing Trustee, Darrigo Solar Farm, 86 Lakeside Road, Newburgh, NY 12550		
Project Location (describe, and attach a general location map): 5 MW AC Solar Farm Site Plan for Darrigo, 86 Lakeside Road, Newburgh, New York 12550		
Brief Description of Proposed Action (include purpose or need): Site Plan for a 5 MW ground mounted Solar Farm. Access Roads, level spreaders, flow diffusers and deep ripping are proposed as part of a NYSDEC SWPPP. A Land & Clearing Permit is also being requested during the planning process in order to cut trees prior to April 1, 2020. The Solar Farm will be located on 40 acres of a 60 acre parcel.		
Name of Applicant/Sponsor: Jeffrey Lease	Telephone: 845-542-0345 E-Mail: jefflease@johnjleaserealtors.com	
Address: 597 Grand Avenue		
City/PO: Newburgh	State: NY	Zip Code: 12550
Project Contact (if not same as sponsor; give name and title/role): Same	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Frank Darrigo Revocable Trust	Telephone: E-Mail:	
Address: c/o Daniel Darrigo, Trustee		
City/PO: 86 Lakeside Road Newburgh, NY 12550	State: NY	Zip Code: 12550

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☐Yes☑No		
b. City, Town or Village Planning Board or Commission ☑Yes☐No	Planning Board Site Plan Approval	November 12, 2019
c. City, Town or Village Zoning Board of Appeals ☑Yes☐No	Zoning Board of Appeals Using Variance	October 2019
d. Other local agencies ☐Yes☑No		
e. County agencies ☐Yes☑No		
f. Regional agencies ☐Yes☑No		
g. State agencies ☑Yes☐No	NYSDEC	TBD
h. Federal agencies ☐Yes☑No		

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes☐No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☑Yes☐No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☐Yes☑No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☑Yes☐No

If Yes, identify the plan(s):

Remediaton Sites:336002

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes☑No

If Yes, identify the plan(s):

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
R-1 With a variance request for a solar farm

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site?

C.4. Existing community services.

a. In what school district is the project site located? Valley Central

b. What police or other public protection forces serve the project site?
Town of Newburgh

c. Which fire protection and emergency medical services serve the project site?
Orange Lake Fire District

d. What parks serve the project site?
N/A

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?
Industrial/ Farm

b. a. Total acreage of the site of the proposed action? 60 acres
b. Total acreage to be physically disturbed? 33 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the ~~applicant or project sponsor~~? trustee 65 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % Units:

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☑ No
iii. Number of lots proposed?
iv. Minimum and maximum proposed lot sizes? Minimum Maximum

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: 6 months
ii. If Yes:
- Total number of phases anticipated 1
- Anticipated commencement date of phase 1 (including demolition) 01 month 20 year
- Anticipated completion date of final phase 06 month 20 year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: Clearing before 31 March 2020 Central Hudson testing and grid connection upon substantial completion.

f. Does the project include new residential uses? ☐Yes ☑No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☑Yes ☐No

If Yes,

i. Total number of structures 2

ii. Dimensions (in feet) of largest proposed structure: 5'0" height; _____ width; and 1000' length

iii. Approximate extent of building space to be heated or cooled: 0 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☐Yes ☑No

If Yes,

i. Purpose of the impoundment: N/A

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐ Other specify: N/A

iii. If other than water, identify the type of impounded/contained liquids and their source. N/A

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres

v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐Yes ☑No

If Yes:

i. What is the purpose of the excavation or dredging? N/A

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): N/A
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them. N/A

iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☑No

If yes, describe. _____

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐Yes ☑No

ix. Summarize site reclamation goals and plan: _____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐Yes ☑No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:
N/A

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☑No
If Yes, describe:

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☑No
If Yes:

- acres of aquatic vegetation proposed to be removed: N/A
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☐Yes ☑No
If Yes:

i. Total anticipated water usage/demand per day: 0 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☐Yes ☑No
If Yes:

- Name of district or service area: N/A
- Does the existing public water supply have capacity to serve the proposal? ☐Yes ☐No
- Is the project site in the existing district? ☐Yes ☐No
- Is expansion of the district needed? ☐Yes ☐No
- Do existing lines serve the project site? ☐Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☐No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project: N/A
- Source(s) of supply for the district:

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐ Yes ☑No
If, Yes:

- Applicant/sponsor for new district: N/A
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district:

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☐Yes ☑No
If Yes:

i. Total anticipated liquid waste generation per day: 0 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): N/A

iii. Will the proposed action use any existing public wastewater treatment facilities? ☐Yes ☑No
If Yes:

- Name of wastewater treatment plant to be used: N/A
- Name of district:
- Does the existing wastewater treatment plant have capacity to serve the project? ☐Yes ☐No
- Is the project site in the existing district? ☐Yes ☐No
- Is expansion of the district needed? ☐Yes ☐No

- Do existing sewer lines serve the project site? ☐Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☐No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: N/A

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☐No

If Yes:

- Applicant/sponsor for new district: N/A
- Date application submitted or anticipated:
- What is the receiving water for the wastewater discharge?

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: N/A

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

1000 Square feet or 0.02 acres (impervious surface)

_____ Square feet or _____ acres (parcel size)

ii. Describe types of new point sources. N/A

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

On-site stormwater management facility

- If to surface waters, identify receiving water bodies or wetlands:

- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☑Yes ☐No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

Heavy equipment during construction and delivery of construction materials.

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☑No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): N/A

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): N/A

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

N/A

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☑No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

N/A

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☑No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☑No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☑No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☐Yes ☑No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: N/A

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

The project will generate renewable electric/day

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☐No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7 am to 7 pm
- Saturday: 7 am to 7 pm
- Sunday: _____
- Holidays: _____

ii. During Operations:

- Monday - Friday: 24 hrs per day
- Saturday: 24 hrs per day
- Sunday: 24 hrs per day
- Holidays: 24 hrs per day

m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

Construction vehicles and labor during construction only.

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☑ No

Describe: A 50' wide strip of existing vegetation around the perimeter of the property will remain.

n. Will the proposed action have outdoor lighting? ☐ Yes ☑ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: A 50' wide of existing vegetation around the perimeter of the property will remain.

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: N/A

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored N/A

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☑ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☑ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: Wood from land clearing will be capped and spread across the site
- Operation: Farming operation may continue below the solar array as a method of maintaining grass height.

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: N/A
- Operation:

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): N/A

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: N/A

ii. Generally describe processes or activities involving hazardous wastes or constituents: N/A

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: N/a

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☑ No

If Yes: provide name and location of facility: N/A

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility: N/A

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☐ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____

ii. If mix of uses, generally describe:

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0.35	0.35	0
• Forested	35	13	-22
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	25	47	+22
• Agricultural (includes active orchards, field, greenhouse etc.)	12	12	0
• Surface water features (lakes, ponds, streams, rivers, etc.)	N/A	N/A	N/A
• Wetlands (freshwater or tidal)	1	1	0
• Non-vegetated (bare rock, earth or fill)	N/A	N/A	N/A
• Other Describe: _____			

c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐ Yes ☑ No
If Yes,
i. Identify Facilities:

e. Does the project site contain an existing dam? ☐ Yes ☑ No
If Yes:
i. Dimensions of the dam and impoundment:
- Dam height: N/A feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:
N/A

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☑ Yes ☐ No
If Yes:
i. Has the facility been formally closed? ☑ Yes ☐ No
- If yes, cite sources/documentation: DEC Project

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:
On top of

iii. Describe any development constraints due to the prior solid waste activities: Solar array in area on top of former hazardous waste site to be ballasted.

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☑ Yes ☐ No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred: 1940-1972
Farm deprise septic waste and reclassified hazardous waste all mitigated by 19__.

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☑ Yes ☐ No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☑ Yes ☐ No

☐ Yes – Spills Incidents database — Provide DEC ID number(s): _____
☑ Yes – Environmental Site Remediation database — Provide DEC ID number(s): 336002
☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures:
Remediation at the site is complete. Contaminants of concern were chromium, copper, lead, nickel, and zinc in soil. Remedial actions here successfully achieved soil cleanup for commercial use. Remaining contamination at the site is being managed under a Site Management Plan.

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☑ Yes ☐ No
If yes, provide DEC ID number(s): 336057, 336002

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

v. Is the project site subject to an institutional control limiting property uses? ☑ Yes ☐ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): easement + deed restric
- Describe any use limitations: non-residential use in remediation area
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☑ Yes ☐ No
- Explain: coordination with DEC will be required for solar array placement and ballasting as well as ongoing monitoring wells

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? 25 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

Swartswood	26.4 %
Mardin	43 %
Erie	16 %

d. What is the average depth to the water table on the project site? Average: _____ feet

e. Drainage status of project site soils:

☐ Well Drained:	% of site
☑ Moderately Well Drained:	75 % of site
☑ Poorly Drained	25 % of site

f. Approximate proportion of proposed action site with slopes:

☑ 0-10%:	25 % of site
☑ 10-15%:	65 % of site
☑ 15% or greater:	10 % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name 862-136 Classification C
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters, NYS Wetland, Federal Waters, Fe... Approximate Size NYS Wetland (in a...
- Wetland No. (if regulated by DEC) NB-21

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☑ Yes ☐ No

k. Is the project site in the 500-year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

m. Identify the predominant wildlife species that occupy or use the project site:
Deer
Indiana Bat
Squiirel

n. Does the project site contain a designated significant natural community? ☑ Yes ☐ No
If Yes:
i. Describe the habitat/community (composition, function, and basis for designation): NYSDEC EAF Mapper Red Maple-Hardwood Swamp
ii. Source(s) of description or evaluation:
iii. Extent of community/habitat:
- Currently: 0.0 acres
- Following completion of project as proposed: acres
- Gain or loss (indicate + or -): acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☑ Yes ☐ No
If Yes:
i. Species and listing (endangered or threatened):
Upland Sandpiper, Indiana Bat

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐ Yes ☑ No
If Yes:
i. Species and listing:

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐ Yes ☑ No
If yes, give a brief description of how the proposed action may affect that use:

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☑ Yes ☐ No
If Yes, provide county plus district name/number: ORAN001

b. Are agricultural lands consisting of highly productive soils present? ☑ Yes ☐ No
i. If Yes: acreage(s) on project site? 5 acres
ii. Source(s) of soil rating(s):

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐ Yes ☑ No
If Yes:
i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature
ii. Provide brief description of landmark, including values behind designation and approximate size/extent: N/A

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐ Yes ☑ No
If Yes:
i. CEA name:
ii. Basis for designation:
iii. Designating agency and date:

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: N/A

iii. Brief description of attributes on which listing is based:

N/A

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☐ Yes ☑ No

If Yes:

i. Identify resource: _____

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____

iii. Distance between project and resource: _____ miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: N/A

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

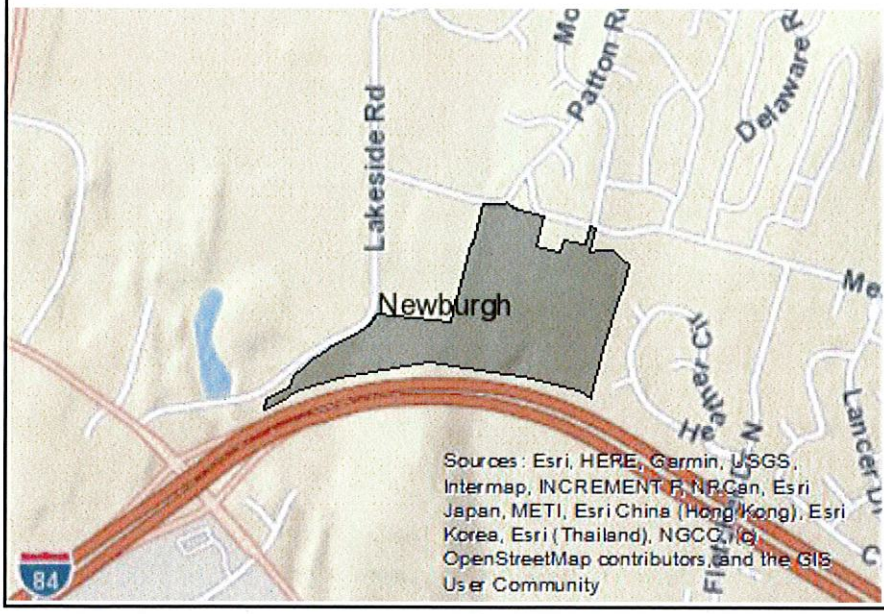
Applicant/Sponsor Name Jeffrey Lease Date _____

Signature _____ Title _____

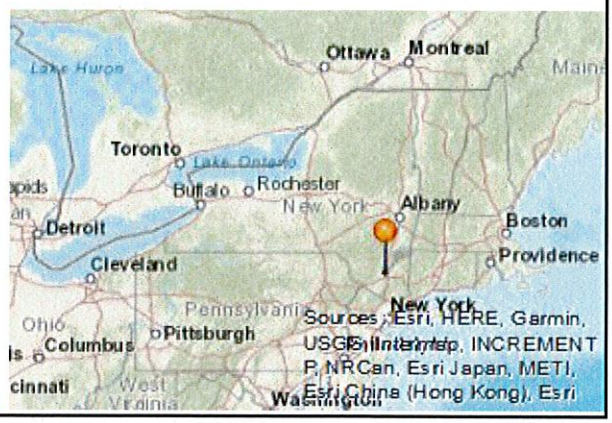
PRINT FORM

EAF Mapper Summary Report

Saturday, November 09, 2019 11:40 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Yes - Digital mapping data are not available for all Special Planning Districts. Refer to EAF Workbook.
C.2.b. [Special Planning District - Name]	Remediaton Sites:336002
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Yes - Digital mapping data for Spills Incidents are not available for this location. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Yes
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Yes
E.1.h.i [DEC Spills or Remediation Site - DEC ID Number]	336002
E.1.h.iii [Within 2,000' of DEC Remediation Site]	Yes
E.1.h.iii [Within 2,000' of DEC Remediation Site - DEC ID]	336057, 336002
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Stream Name]	862-136
E.2.h.iv [Surface Water Features - Stream Classification]	C
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters, NYS Wetland

E.2.h.iv [Surface Water Features - Wetlands Size]	NYS Wetland (in acres):294.0
E.2.h.iv [Surface Water Features - DEC Wetlands Number]	NB-21
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	Yes
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	Yes
E.2.n.i [Natural Communities - Name]	Red Maple-Hardwood Swamp
E.2.n.i [Natural Communities - Acres]	0.0
E.2.o. [Endangered or Threatened Species]	Yes
E.2.o. [Endangered or Threatened Species - Name]	Upland Sandpiper, Indiana Bat
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	Yes
E.3.a. [Agricultural District]	ORAN001
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No


A5
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A11
A12
Google Earth
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SCALE

120 0 60 120 240

SCALE FEET

REV.	BY	DATE	DESCRIPTION

THIS SHEET IS NOT VALID WITHOUT ALL OF THE SHEETS THAT COMPRISE THE SET

ARDEN CONSULTING ENGINEERS, PLLC
P.O. BOX 340 MONROE, N.Y.
TEL: (845) 782-8114
WWW.ARDENCONSULTING.NET

5 MW AC SOLAR FARM SITE PLAN FOR
DARRIGO
84 LAKESIDE AVENUE
TOWN OF NEWBURGH – ORANGE COUNTY, N.Y.

PRE DEVELOPMENT ANALYSIS

STATE OF NEW YORK · MICHAEL A. MORGANTE · 078577 · LICENSED PROFESSIONAL ENGINEER

MICHAEL A. MORGANTE, P.E.
LIC. NO. 78577

JOB#: 18-014
SCALE: AS NOTED
DATE: 12-10-19
DRAWN: MM
CHECKED: MM
SHEET NO. 01 of 02

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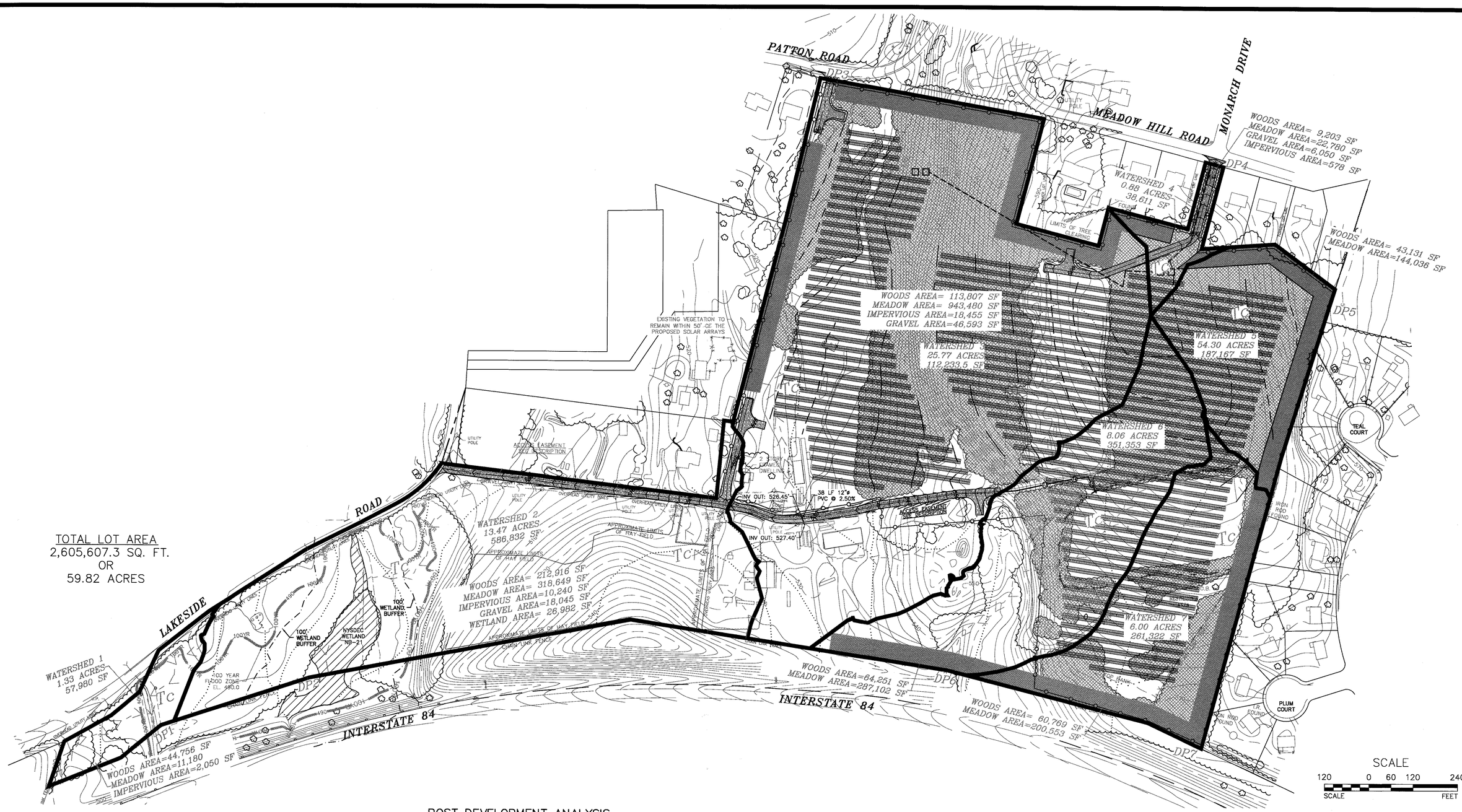
NAD83



SCALE
120 0 60 120 240
SCALE FEET

TOTAL LOT AREA
2,605,607.3 SQ. FT.
OR
59.82 ACRES

POST DEVELOPMENT ANALYSIS
SCALE: 1"=120'

EXISTING VEGETATION TO REMAIN
PROPOSED TREE CLEARING
600 PROPOSED MAJOR CONTOUR
602 PROPOSED MINOR CONTOUR
PROPOSED SOLAR
PROPOSED GRAVEL ACCESS ROAD
PROPOSED ZONING SETBACKS
PROPOSED FENCE
LIMIT OF DISTURBANCE
PROPOSED SILT FENCE

LEGEND:

590 EXISTING MAJOR CONTOUR
EXISTING MINOR CONTOUR
EXISTING EDGE OF PAVEMENT
EXISTING PROPERTY LINE
EXISTING ADJACENT PROPERTY LINE
EXISTING BUILDING LINE
EXISTING IRON ROD FOUND
EXISTING LIGHT POLE
EXISTING STONE WALL
EXISTING TREELINE
EXISTING GRAVEL DRIVEWAY
EXISTING GUARDRAIL
EXISTING TREES
S EXISTING SEWER MANHOLE
EXISTING WETLAND

REV.	BY	DATE	DESCRIPTION

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