



**Appendix 14-B: Wetlands Restoration and Mitigation Plan**



**Wetland Restoration and  
Mitigation Plan**

April 2021

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**CIDER SOLAR FARM  
WETLAND RESTORATION AND MITIGATION PLAN**

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## **1.0 INTRODUCTION**

This Wetland Restoration and Mitigation Plan (Plan) has been prepared to provide on-site, in-kind mitigation in the form of restoration and enhancement for certain permanent and temporary impacts to certain New York State Regulated Freshwater Wetlands and Regulated Adjacent Areas resulting from the construction, operation and maintenance of the Cider Solar Farm. The mitigation proposed in this Plan is prepared in accordance with the New York State Freshwater Wetlands Regulation Guidelines on Compensatory Mitigation and the Office of Renewable Energy Siting Regulations Chapter XVIII, Title 19 of NYCRR Part 900 as specified in Section 900-2.15(g) and 900-10.2(f)(2). As detailed in this Plan, the Project will result in the unavoidable direct impacts to 0.009 acres of Class 1 wetlands, 0.062 acres of Class 2 wetlands, and 0.229 acres of Class 3 and Unmapped wetlands >12.4 acres which require mitigation. This Plan provides for 0.299 acres of wetland restoration for direct impacts to regulated wetlands, and 6.856 acres of upland adjacent area enhancement for impacts to regulated adjacent areas. The mitigation would occur at on-site delineated wetland WL92, an unmapped state regulated wetland and adjacent area located in the Project Site.

### **1.1 PROJECT AND SITE DESCRIPTION**

Hecate Energy Cider Solar LLC (Hecate), is proposing to construct, operate and maintain an up to 500-megawatt (MW) alternating current (AC) photovoltaic (PV) solar energy generation facility, referred to as the Cider Solar Farm (Project). The Project will interconnect on-site to the New York Power Authority (NYPA) Dysinger – New Rochester 345-kilovolt (kV) transmission line to deliver power to the New York State (NYS) grid. It is anticipated that the Project will be constructed between 2022 and 2023, with a planned Commercial Operation Date of December 31, 2023.

The Project is situated to the north of the Village of Oakfield, Village of Elba, and approximately five miles north of the City of Batavia in Genesee County. The area is roughly bordered by County Route 9 (Albion Road) to the west, and Miller Road, State Route 98, and vacant land to the east. Lockport Road bisects the Project Area from east to west. The Project Area consists of approximately 7,518 acres of land characterized as level to rolling hills with predominantly agricultural land interspersed with forested land, and rural residential development along roadways. Low density rural residential development and farms are located within and adjacent to the Project Area. The northern portion of the Project Area is bisected by the NYPA 345 kilovolt (kV) Dysinger – New Rochester transmission line and the Empire Gas Pipeline, which are located adjacent to each other and run east-west through the Project. The proposed Project substation interconnects to the NYPA transmission line in the center of the Project Area.

Approximately 2,470 acres will be used for the Project in the final Project Footprint (Appendix A, Figure 1). The Project components will be located on approximately 70 parcels of leased private land owned by 31 private landowners (Project Site). The total Project Footprint includes both temporary and permanent disturbance to resulting from project construction and operation.

The Project will involve the construction, operation and maintenance of various project components including photovoltaic solar panels arrayed primarily in active agricultural fields on tracking structures in



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addition to buried electrical collection cables, inverters, access drives, security fencing, a substation and temporary laydown areas for equipment staging during construction.

### **1.2 ON-SITE NATURAL RESOURCE MAPPING**

Stantec Consulting Services Inc. (Stantec) performed natural resource mapping, including wetland and watercourse delineations within the proposed Project Area as described above, and within 100-feet of the proposed Project Footprint, or limits of disturbance (Study Area); totaling approximately 4,306 acres. The Study Area also included delineation of the proposed wetland mitigation site. Where the Study Area extended onto non-participating properties for which access permission was not received, aerial photograph interpretation and publicly available data was used to identify approximate wetland boundaries and watercourse locations. The results of the wetland/watercourse delineation and wetland functions and values descriptions are described in the Section 94-c Application materials: Cider Solar Farm Wetland Delineation and Function and Value Report, dated April 2021. This report is included as Appendix 13-A in the Section 94-c Application. Representative wetland determination data forms from the proposed wetland mitigation site (wetland WL92) are included in Appendix C. ORES provided a Jurisdictional Determination on April 2, 2021 and confirmed the regulatory authority over currently mapped and unmapped state regulated wetlands within the Project Site and Study Area.

The Study Area is located within the Oak Orchard-Twelve Mile watershed (HUC 04130001), which totals 661,707 acres in size. The watershed is nearly level to rolling topography on the Ontario lake Plain. The Project Site is located on the southern portion of the watershed, where the elevation is highest, relative to the rest of the watershed. The Study Area receives, on average, 34-36 inches of precipitation a year, more than half of which falls within the growing season (NRCS 2010).

The Study Area is generally characterized by active agriculture, primarily row crops such as soybean, corn, and wheat; and rural residential land interspersed with forested areas/hedgerows with level to rolling topography. Upland forests border many of the agricultural lands and are characterized by a mixture of northern hardwood forests and planted pine and spruce stands.

Wetlands, watercourses and other surface waters are common and dispersed throughout the overall Project Area. Delineated wetlands occur along riverine systems, as large wetland complexes, and as smaller depressional areas within silvicultural or agricultural areas. streams were found along the edges of agricultural fields and depressional areas in the landscape and include four primary wetland types (PEM, PSS, PFO, PUB) and a variety of stream flow regimes (e.g., perennial to ephemeral). Wetlands dominated by forest and emergent vegetation are abundant, and some of the larger contiguous wetlands contain two or more wetland types.

### **1.3 PROPOSED PROJECT WETLAND, WATERCOURSE AND BUFFER IMPACTS**

Construction, operation and maintenance of the Project will result in permanent impacts to portions of 10 State-regulated wetlands, totaling 0.134 acres of permanent fill (PEM: 0.079 acres; PSS: 0.018 acres; PFO: 0.036 acres), with 0 acres of permanent forest conversion, from the installation of buried collection



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lines, security fences, an inverter, and access roads. Temporary impacts to State-regulated wetlands will total 0.156 acres (PEM: 0.141 acres; PSS: 0.015 acres), and result from temporary workspaces for fence and collection line installation. No solar panels are located in wetlands. Permanent impacts to State-regulated adjacent areas will total 13.15 acres and will result from the clearing of forested vegetation and converting to herbaceous covertypes for the installation of solar panels and associated maintained areas, as well as the installation of security fencing. Temporary impacts to State-regulated adjacent areas will total 37.52 acres and will result from clearing of non-forested vegetation for installation of solar arrays, buried collection lines, fences, and associated maintained areas. All temporarily disturbed areas will be restored to pre-construction contours, and areas to be maintained as a part of the solar panel arrays will be vegetated with an herbaceous native seed mix. There are no impacts to state regulated/protected streams as part of the Project; therefore, no mitigation or restoration of streams has been proposed.

A tabular breakdown of impacts by wetland identification number and class is presented in Appendix D to this Plan. As described in Section 94-c 900-10.2(g)(3) (Table 1. Wetland Mitigation Requirements), all impacts to wetlands do not require mitigation. For a summary of impacts requiring mitigation, see Section 2, below, and Appendix D.

Figures depicting the results of the wetland/watercourse delineation are also in the Cider Solar Farm Wetland Report, Appendix A, and the ORES Jurisdictional Determination is provided as Exhibit 13, Appendix 14-A. Exhibit 13 and 14 of the Section 94-c Application for Hecate Cider Solar details impacts to wetlands and watercourses, and proposed avoidance and minimization. Specifically, refer to Figures 13-3 and 14-1 of the Application.

## **2.0 MITIGATION**

### **2.1 BACKGROUND**

The State of New York and the U.S. Army Corps of Engineers (Corps) recognize that wetlands provide a variety of functions and benefits important to the people and environment of New York. The Clean Water Act (CWA) is a United States federal law that regulates the discharge of pollutants into the nation's surface waters including lakes, rivers, streams, wetlands, and coastal areas. The CWA was implemented to restore and maintain the chemical, physical, and biological integrity of the Waters of the United States (WOUS). Under Sections 401 and 404 of the CWA, permits must be obtained prior to certain activities that may impact WOUS. The Corps is the federal authority that regulates and permits activities that may impact WOUS. Section 401 of the CWA requires state certification for federally permitted action that may impact WOUS. The New York State agency responsible for administering the Section 401 program is the New York State Department of Environmental Conservation (NYSDEC). The State of New York Freshwater Wetlands Act (FWA) (Article 24 and Title 23 of Article 71 of the Environmental Conservation Law) gives the NYSDEC jurisdiction over state-protected wetlands and adjacent areas (100-foot upland buffer). The FWA requires that wetlands be preserved, protected and conserved "consistent with the general welfare and beneficial economic, social and agricultural development of the state".



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This Restoration and Mitigation Plan serves to satisfy the requirements set forth by the Office of Renewable Energy Siting (ORES) in the Section 94-c permitting process for impacts to state-protected wetlands and adjacent areas. Specifically, this Plan addresses Part 900-10.2(f)(2) and 2.15(g). Hecate will consult with the Corps in regards to mitigation of permitted activities in federal wetlands, as part of the CWA Section 404 permitting process.

### **2.2 MITIGATION GOALS**

Mitigation is the restoration, establishment, enhancement, and/or preservation to counter losses and adverse effects to resources (i.e., wetlands and streams) as a result of development. The NYSDEC requires that projects must first demonstrate that the project plan, design and implementation is the least environmentally damaging practicable alternative (LEDPA). The accepted process is to first avoid impacts to wetlands and other protected natural resources; typically involving the mapping of natural resources followed by amending project plans to avoid these resources. Where avoidance cannot be achieved, the applicant must demonstrate that unavoidable losses or impacts to wetland areas and/or functions are minimized. Once avoidance and minimization efforts are demonstrated to have been met, the remaining impacts may be required to be replaced through the process of mitigation.

The Project team adhered to the LEDPA process by avoiding and then minimizing wetland, watercourse, and buffer impacts. The avoidance and minimization methods are detailed in section 3.1 of this Plan. The purpose of this Restoration and Mitigation Plan is to detail the proposed Project wetland and adjacent area functional impacts, detail the avoidance and minimization process, and describe the proposed mitigation methods. The goal of this Plan is to replace the loss of Project wetland and adjacent area areas and their corresponding functions and values. The Plan aims to do achieve this goal in a way that is mindful of adding value to the surrounding area and minimizing potential impacts to natural resources of other types. For instance, during the mitigation site desktop analysis, impacts to United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) soil map units that are rated as Prime Farmland or Farmland of Statewide Importance and appear to be highly productive agricultural sites were avoided or minimized. A site coincident with a previously disturbed state regulated wetland is selected to enhance long term success and protection of the mitigation area.

### **2.3 MITIGATION METHODS**

The preferred strategies for mitigation planning result replacing the wetland that is being altered with a wetland of the same type, known as "in-kind" compensation. This is typically in relation to the dominant wetland classification, and more specifically the dominant vegetative class (type). In this case the functions and benefits of the replacement wetland are assumed to be generally the same as those of the wetland impact being replaced. Compensation is also preferably located "on-site", meaning within the same wetland(s) being impacted and/or if possible, on the proposed Project site. The mitigation site search can be expanded to the Project watershed(s) when on-site mitigation is not possible.

Wetland mitigation can typically be achieved through the process of enhancement, restoration, creation (establishment), preservation, or a combination of these strategies. These activities mean the following:



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**Wetland Restoration:** Reclaiming a degraded wetland or adjacent area to bring back one or more functions that have been partially or completely lost.

**Wetland Creation (Establishment):** Wetland creation is converting an upland into a wetland at a site where a wetland did not previously exist.

**Wetland Enhancement:** Altering an existing functional wetland or adjacent area to increase selected functions and benefits that offsets losses of these functions or benefits in another wetland or adjacent area or parts of the same wetland or adjacent area.

## 2.4 MITIGATION REQUIREMENTS

As laid out in Part 900-2.15(g), ORES requires mitigation for certain wetland impacts and forested wetland conversion within NYSDEC regulated wetlands and adjacent areas. Mitigation is determined based upon the class of wetland, activity, location of activity, and underlying land use. The proposed Project will require compensatory mitigation to achieve compliance with ORES requirements. See Table 1, below for a summary of mitigation requirements for solar projects, as indicated in Part 900-2.15(g), with the categories of mitigation defined as follows:

(a) X: Not an allowable feature or activity.

(b) A: Allowed; no mitigation or enhancement required.

(c) A(M1): Allowed, mitigation required (3:1 mitigation ratio by area of impact - creation only, broken down by cover type)

(d) A(M2): Allowed, mitigation required (2:1 mitigation ratio by area of impact - creation, restoration, and enhancement)

(e) A(M3): Allowed, mitigation required (1:1 mitigation ratio by area of impact – creation, restoration and enhancement)

(f) A(E): Allowed, enhancements and/or mitigation required (e.g., planting of adjacent area, mitigating hydrological changes)

**Table 1. ORES Part 900-2.15(g) Wetland Mitigation Requirements**

Feature/Activity	Class I		Class II		Class III & IV Unmapped >12.4 acres	
	FWW	AA	FWW	AA	FWW	AA
Major Activities						
Solar Panels	X	A(E)**	A(M2)	A(E)*	A(M3)	A
Energy Storage	X	A(M3)**	X	A(E)*	A(M3)	A





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	Class I		Class II		Class III & IV Unmapped >12.4 acres	
Access Roads	A(M1)	A(E)*	A(M2)	A(E)*	A(M3)	A
Power interconnections (including clearing for interconnections)	A(M1)	A(E)*	A(M2)	A(E)*	A(M3)	A
Clearing of forest	X	A(M3)**	A(M2)	A(E)*	A(M3)	A
Other activities and structures integral to the project involving placement of fill	X	A(M3)**	A(M2)	A(E)*	A(M3)	A
Intermediate Activities						
Security fence	X	A(E)*	A(M3)	A	A	A
Clearing and manipulation of undisturbed herbaceous vegetation	X	A(E)*	A(M3)	A	A(M3)	A
Other activities integral to the project involving grading	X	A(E)*	A(M3)	A	A(M3)	A
Minor Activities						
Grading and manipulation of disturbed areas (active hay/row crops, existing commercial/industrial development)	X	A(E)*	A(M3)	A	A(E)	A
Selective cutting of trees and shrubs	A	A	A	A	A	A
*No enhancements or mitigation required with 75 foot or more setback ** 75-foot setback from wetland boundary required in undisturbed adjacent area FWW = Freshwater wetland; AA = Adjacent Area						

State regulated wetland and adjacent area impacts will be mitigated through restoration and enhancement projects. The NYSDEC wetland and adjacent area impacts and compensation amounts are summarized in Table 2, based on wetland mitigation requirements set forth in Part 900 2.15(g). A detailed breakdown is provided in Appendix D. In total, the Project will require 0.299 acre of wetland restoration for direct impacts to regulated wetlands, and 6.856 acres of upland adjacent area enhancement for impacts to regulated adjacent areas.



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**Table 2. Summary of State Wetland and Regulated Adjacent Area Mitigation Requirements**

<b>Project Component</b>	<b>Direct Impacts (acres)</b>	<b>Adjacent Area Impacts Requiring Mitigation (acres)</b>	<b>Mitigation Requirement (Per Section 900-2.15[g])</b>
<b>Class 1 Wetlands</b>			
Security Fence	0.001	0.025	<u>For Direct Impacts</u> - 3:1 Mitigation Ratio - <i>Restoration</i> = 0.003 acre; <u>For AA Impacts</u> - <i>Enhancement</i> = 0.025 acre
Solar Panels		0.531	<u>For AA Impacts</u> - <i>Enhancement</i> (assume 1:1) = 0.531 acre
Grading and manipulation of disturbed areas		2.184	<u>For AA Impacts</u> - <i>Enhancement</i> (assume 1:1) = 2.184 acres
<b>Class 2 Wetlands</b>			
Security Fence (Permanent)	0.005	No mitigation required for AA impacts	<u>For Direct Impacts</u> - 1:1 Mitigation Ratio - <i>Restoration</i> = 0.005 acre
Collection Line	0.001	0.286	<u>For Direct Impacts</u> - 2:1 Mitigation Ratio - <i>Restoration</i> = 0.002 acre; <u>For AA Impacts</u> - <i>Enhancement</i> = 0.286 acre
Solar Panels		1.522	<u>For AA Impacts</u> - <i>Enhancement</i> (assume 1:1) = 1.522 acre
Access Road	0.006	0.373	<u>For Direct Impacts</u> - 2:1 Mitigation Ratio - <i>Restoration</i> = 0.012 acre; <u>For AA Impacts</u> - <i>Enhancement</i> (assume 1:1) = 0.373 acre
Clearing of Non-forested, Disturbed Areas	0.050		<u>For Direct Impacts</u> - 1:1 Mitigation Ratio - <i>Restoration</i> = 0.050 acre
Clearing of forest		1.935	<u>For AA Impacts</u> - <i>Enhancement</i> (assume 1:1) = 1.935 acre
<b>Class 3, Class 4, Unmapped &gt;12.4</b>			
Collection Line	0.091	No mitigation required for AA impacts	<u>For Direct Impacts</u> - 1:1 Mitigation Ratio - <i>Restoration</i> = 0.091 acre
Access Road	0.121	No mitigation required for AA impacts	<u>For Direct Impacts</u> - 1:1 Mitigation Ratio - <i>Restoration</i> = 0.121 acre



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<b>Project Component</b>	<b>Direct Impacts (acres)</b>	<b>Adjacent Area Impacts Requiring Mitigation (acres)</b>	<b>Mitigation Requirement (Per Section 900-2.15[g])</b>
Clearing of Undisturbed vegetation	0.015	No mitigation required for AA impacts	<u>For Direct Impacts</u> - 1:1 Mitigation Ratio - <i>Restoration</i> = 0.015 acre

## 3.0 RESTORATION AND MITIGATION PLAN DEVELOPMENT

### 3.1 AVOIDANCE AND MINIMIZATION

Throughout an iterative process, project engineers worked with project scientists to modify project plans to avoid wetlands, watercourses and regulated adjacent areas. When natural resource mapping was complete, project engineers further micro-sited project components to avoid wetlands, watercourses, and activities within 100-feet of NYSDEC regulated features. Where direct wetland, watercourse and adjacent area impact avoidance was not achievable, the impacts were minimized for both amount of wetland area and wetland functionality.

The current Project layout has avoided and minimized wetland and watercourse impacts by locating solar panels outside of wetlands and by routing access roads and collection lines around wetlands and streams where practicable. Specifics are as follows:

- All solar panels have been sited outside of all delineated wetland boundaries;
- To avoid temporary impacts due to collection line installation and permanent impacts due to PFO conversion, HDD construction method would be used at the following seven proposed wetland crossings for collection lines: WL20, WL22, WL52, WL56, WL58, WL73, and WL117.
- Access road and collection line crossings have been collocated to the extent feasible to reduce impacts at the following resources: WL05, WL11, WL20, WL103, WL105, WL115;
- Temporary impacts to wetlands and adjacent areas are avoided with placement of construction laydown yards;
- The substation and associated infrastructure has been sited outside of any wetland or associated regulated adjacent area; and
- Vegetation clearing and grading was minimized where wetlands occur within the proposed fenceline.

The Applicant is committed to implementing best management plans (BMPs) during construction minimize impacts to wetlands from sedimentation, erosion, and pollution. These are industry standard practices that are employed judiciously when working proximal to sensitive resources, and may include:



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No Equipment Access Areas: To prohibit motorized equipment, streams and wetlands will be designated as “No Equipment Access” areas except where crossed by permitted access roads or through non-jurisdictional use of temporary matting.

Restricted Activities Area: A buffer zone of 100 feet, referred to as “Restricted Activities Area,” will be established where Project construction traverse wetlands and other bodies of water.

Restrictions will include:

- No deposition of slash within or adjacent to a waterbody; No accumulation of construction debris within the area;
- Herbicide restrictions within 100 feet of a wetland (or as required per manufacturer’s instructions);
- No equipment washing or refueling within the area;
- No storage of any petroleum or chemical material.

Sedimentation and Erosion Control: The construction contractor will implement a SWPPP as part of the SPDES General Permit for the Project. Silt fences, hay bales, and temporary siltation basins will be installed and maintained throughout Project construction. Exposed soil will be seeded and/or mulched to assure that erosion is minimized along wetland boundaries. Specific control measures are identified in the SWPPP. The contractor and other appropriate parties will review the location of wetlands and waterbodies on construction drawings prior to construction. Wetlands and waterbodies will be inspected on a regular basis through construction and restoration.

Environmental Compliance Monitoring: Environmental compliance monitoring will be implemented during project construction in adherence to permit conditions to protect wetlands and streams. An Environmental Monitor will be present during construction to monitor application of BMPs, inspect erosion and sediment control measures and promote avoidance of unpermitted wetland impacts.

Where such avoidance is not practicable, narrow and/or previously disturbed portions of the wetlands were chosen for crossing locations. Direct impacts to surface waters have been avoided to the extent practicable. Unavoidable impacts were minimized by placing crossings at the narrowest point and utilizing open-bottom or other appropriate culverts to maintain the natural watercourse substrate and hydrologic connectivity. To the extent practicable, clearing of vegetation adjacent to surface waters, including crossings was minimized, and erosion control devices will be installed and appropriately maintained throughout the construction process until the site is stabilized or restored.

Appropriate best management practices will be implemented to prevent impacts to wetlands and watercourses from sedimentation, erosion, and pollution. Project construction will adhere to best management practices to further minimize impacts to wetlands and watercourses.

Following disturbance of wetland soils, temporary fill will be removed at the completion of construction and the stockpiled wetland soils will be redistributed and restored to their original grade and profile.



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Wetland and adjacent areas will be restored using native seed mixes, such as Ernst Wetland Mix (OBL-FACW Perennial Wetland Mix, OBL Wetland Mix, Specialized Wetland Mix for Shaded OBL-FACW, or similar). Additionally, the Project will comply with issued permit conditions regarding wetland/watercourse protection/restoration.

### **3.2 MITIGATION SITE DESKTOP ANALYSIS**

To identify potential mitigation sites, a desktop analysis was initially performed on parcels with Hecate land control/willing landowners in the Cider Solar Farm Project Site. The search consisted of a review of Project Site options. Desktop analysis included review of NYSDEC published Freshwater Wetland mapping, USFWS NWI mapping, National Hydrography Dataset (NHD) data including watercourses, waterbodies, FEMA 100-year floodplain, and HUC8 watershed boundaries, U.S. Geological Survey (USGS) topographical mapping, NRCS soil survey mapping, State of New York conservation land data, and the on-site wetland and watercourse mapping data collected by Stantec (where applicable).

### **3.3 MITIGATION PLAN SITE – EXISTING CONDITIONS**

This 376-acre parcel (parcel number 16.-1-19.113, owned by Offhaus Farms, Inc.) is privately owned and located in the Town of Elba (Genesee County). The parcel is bound by Snyder Road to the west and Lockport road to the north. This parcel is in the Oak Orchard-Twelvemile watershed (HUC 04130001) and was also within the Study Area for wetland and stream surveys. Observations of this area were made by a qualified wetland biologist in the growing season of 2020. The landcover on the parcel includes a mix of row crop agriculture, grazing land, forest, and scrub-shrub habitat. Wetlands and watercourses were identified and delineated on this parcel and primarily consisted of forested and emergent wetland types three ephemeral streams (Figure 2). Wetland WL92 in the northern part of the parcel has been previously heavily disturbed due to land management activities, including agricultural practices, logging, and slash disposal. Approximately two acres consists of land planted as row crops at the time of surveys. In addition, approximately two acres of what was previously completely forested on the western end of the wetland has impacted by land been impacted by recent tree cutting.

Outside of this wetland, Project components proposed for this parcel includes solar panels, electrical collection lines, security fencing, and associated access roads. The Owner has consented to lease and use of the wetland and adjacent area for use as a mitigation site.

Wetland and watercourse delineations were conducted within the Study Area, which included the Offhaus Farms parcel, during the months of July and September 2020, and January 2021. Wetland boundaries regulated by state and/or federal jurisdiction were determined using the technical criteria described in the Corps Wetland Delineation Manual (Environmental Laboratory 1987) (1987 Manual) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Regional Supplement (USACE 2012). In addition, boundaries of freshwater wetlands regulated under Article 24 of the New York Environmental Conservation Law were delineated according to methods described in the New York State Freshwater Wetlands Delineation Manual (NYSDEC 1995). Data collected for each of the wetlands included the dominant vegetation, hydric soil indicators, and wetland hydrology indicators. Watercourses and other potential WOUS were delineated based on NYSDEC technical criteria and the



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Navigable Waters Protection Rule (June 22, 2020). Data collected on watercourses included flow type, channel width (Bank-full width and Ordinary High-Water Mark [OHWM]), and channel substrate.

An analysis consisting of desktop data in conjunction with the on-site wetland and watercourse delineation was conducted to collect and review relevant background information to create a conceptual level mitigation plan on the Offhaus Farms parcel. Initial investigations included: land use characterization, general soil characterization, rare, threatened and/or endangered species desktop review, watershed research, and limited baseline mapping. Further baseline assessments will need to be conducted to develop a Final Mitigation Plan. These investigations will include, but may not be limited to, the following:

- General site condition documentation,
- Additional flora community composition data,
- Additional soil data,
- Hydrologic investigations,
- Additional photographic and field note documentation and may include land-owner interviews relative to historical and present site conditions including land use practices.

Hecate is proposing to implement required mitigation in the form of wetland restoration and adjacent area enhancement within, and adjacent to, wetland WL92. WL92 is 13.5 acres in size and consists of both palustrine forested and palustrine emergent covert types. While unmapped, WL92 would meet to the size criteria of an Article 24 freshwater wetland, and this is confirmed by the Jurisdictional Determination provided by ORES.

### Vegetation

The forested wetland portion is dominated by green ash (*Fraxinus pennsylvanica*), eastern cottonwood (*Populus deltoides*), poison ivy (*Toxicodendron radicans*), slender toothwort (*Cardamine angustata*), crested sedge (*Carex cristatella*). The scrub-shrub and emergent portion of the wetland is dominated by eastern cottonwood (saplings), green ash, silky dogwood (*Cornus amomum*), black willow (*Salix nigra*), purplestem aster (*Symphyotrichum puniceum*), and common beggarticks (*Bidens frondosa*).

Dominant species observed at two upland data points adjacent to the wetland included eastern cottonwood, poison ivy, lance-leaved aster (*Symphyotrichum lanceolatum*), virginia creeper (*Parthenocissus quinquefolia*) Garlic mustard (*Alliaria petiolata*), reed canary grass (*Phalaris arundinacea*).

Several invasive species are prevalent throughout the wetland and in adjacent areas, including Canada thistle (*Cirsium arvense*), reed canary grass (*Phalaris arundinacea*), and garlic mustard (*Alliaria petiolata*).



## CIDER SOLAR FARM WETLAND RESTORATION AND MITIGATION PLAN

### Soils

The NRCS county soil mapping of the parcel is summarized in Table 3. Generally speaking, these are silt loam to loam textured soils, are very deep to bedrock, and range from very poorly to well drained (Appendix A: Figure 3). Portions of the property contain soils mapped as “farmland of statewide importance” and “all areas are prime farmland”.

During the on-site wetland delineation mapping, soil data was collected at representative upland and wetland sites as part of the Corps paired plot evaluation. The soil textural classes in these on-site wetlands were dominantly loam over silt loam, with poorly drained drainage classes in the wetlands and various drainage classes across the uplands. These soil textures and drainage classifications are consistent with the NRCS mapped soils.

**Table 3. NRCS Soils on the Offhaus Farms Parcel**

Map Unit Symbol	Map Unit Name
ApA	Appleton silt loam, 0 to 3 percent slopes
CaA	Canandaigua silt loam, 0 to 2 percent slopes
HIA	Hilton loam, 0 to 3 percent slopes
HIB	Hilton loam, 3 to 8 percent slopes
Ld	Lamson very fine sandy loam
LmA	Lima silt loam, 0 to 3 percent slopes
LoA	Lyons soils, 0 to 3 percent slopes
NgA	Niagara silt loam, 0 to 2 percent slopes
OnA	Ontario loam, 0 to 3 percent slopes
OnB	Ontario loam, 3 to 8 percent slopes
OnC	Ontario loam, 8 to 15 percent slopes
OnD	Ontario loam, 15 to 25 percent slopes
OvB	Ovid silt loam, 3 to 8 percent slopes
PsB	Phelps gravelly loam, 3 to 8 percent slopes
RsA	Romulus silt loam, 0 to 3 percent slopes

### Hydrology

This parcel is located in the Oak Orchard-Twelvemile watershed (HUC 04130001). Within the parcel, wetlands with saturated soils and other hydrologic conditions were observed. Wetland hydrology likely results from a combination of adjacent upland surface run off and groundwater discharge. A review of historical aerial imagery shows a well-defined stream channel traversing the middle portion of WL92, that has since been degraded due to land management activities. A small portion of this channel, that has not been filled or significantly disturbed, remains on the western end of WL92, and collects water from WL92 and runs west under Snyder Road. WL92 appears to drain the surrounding agricultural and grazing land, as well as adjacent road runoff.



## **4.0 MITIGATION PLAN DETAILS**

This Restoration and Mitigation Plan is intended to fully compensate for the unavoidable impacts to wetland and watercourse acreage and function. Mitigation sites are identified and selected based on review of wetland and watercourse mapping, aerial photographs, topographic maps, soil maps, and general observations during the on-site wetland delineation. Please note that the proposed narrative and maps are considered preliminary. The Plan will be finalized upon further consultation with ORES and NYSDEC. The attached plans are for conceptual planning purposes only (Appendix A).

The Applicant proposes to compensate for permanent wetland fill impacts and forested wetland conversion through the combination of wetland restoration by tree and shrub plantings on approximately 0.299 acre of wetland on the Offhaus Farms parcel. These mitigation efforts will also include enhancement of approximately 6.856 acres of shrub and forest woody vegetated upland buffers surrounding portions of these created and enhanced wetlands.





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WETLAND RESTORATION AND MITIGATION PLAN**

**Table 4. Mitigation Area Planting Standards**

Mitigation Approach	Concept	Specifications					
		Earthwork	Woody Plantings	Stems/Acre	Tree/Shrub (%)	Herbaceous Seeding	Lbs/Acre
Wetland Restoration	Wetland restoration will return the natural or historic functions to a former or degraded wetland. The wetland may exhibit NNIS, or low woody vegetative diversity/cover. Restoration efforts will focus on herbaceous seeding, NNIS control, and/or native tree/shrub plantings to improve biodiversity, habitat, and water quality.	No	Yes	270	60/40	Potentially	Ernst FACW Wetland Meadow Mix – 20lbs/acre
Upland Buffer Enhancement	An upland resource that exists as a pasture or early to mid-successional state. Enhancement activities will focus on supplemental tree/shrub plantings to improve wetland water quality, biodiversity and buffering capabilities and will include NNIS control.	No	Yes	250	70/30	Potentially	Ernst Mesic to Dry Native Pollinator Mix – 20lbs/acre



## **CIDER SOLAR FARM WETLAND RESTORATION AND MITIGATION PLAN**

Lost functions of wetlands that will be cleared and permanently converted due to road construction and project fencing will be replaced by planting portions of WL92 with shrubs and trees to transition and restore this wetland to scrub shrub and forested wetland. The perimeter of WL92, including the proposed wetland restoration area, will also be planted with trees to create and maintain an upland woody buffer.

The proposed wetland restoration will plant approximately 0.299 acres of wetland WL92 and enhance 6.856 acres of upland buffer (Appendix A: Figure 4). Shrubs will be planted on approximately 8-foot on center spacing and trees on approximately 16-foot on center spacing. To be consistent with surrounding scrub shrub and forested wetlands, plantings may be a combination of willows, cottonwood, pin oak, silky dogwood, and viburnums in the wetland restoration area, resulting in approximately 55 trees and 40 shrubs being planted. The proposed upland buffer plantings, which may be a combination of typical woody species found around the Project Site, including cottonwood, hickory, walnut, gray dogwood, and viburnums, resulting in approximately 1200 trees and 400 shrubs planted. The upland buffer will be a variable width, typically at least 25 feet, which is designed to help protect the wetlands from sedimentation and replace some functions of project buffer impacts while minimizing the area of productive agricultural soil converted to upland woody buffer. The exact number of shrubs and trees will be determined after additional on-site data is collected that will help design the desired amounts of proposed wetland cover types.

Shrubs and trees will be nursery stock in 2- to 5-gallon containers or an equivalent size with burlap-wrapped root balls and will be between 3 and 8 feet in height when planted. Planting sites will be prepared by excavating a hole for each tree that is up to 50% wider than, and as deep as, the root mass. Individual trees will be spaced to allow for future growth and to mimic the existing spacing in adjacent undisturbed forest areas. Loam will be used as back fill material and erosion control material (ECM) will be placed around the planting to control erosion, reduce weeds, and hold in moisture. Plantings will be watered thoroughly at the time of planting and on an as needed basis thereafter until they become established. Predator controls, such as fencing and trunk collars, will be installed as necessary based on observance of animal damage.

## **5.0 MONITORING AND PERFORMANCE STANDARDS**

### **5.1 IMPLEMENTATION MONITORING**

A wetland scientist and/or qualified professional experienced with wetland and upland creation, restoration, and enhancement will be on-site to monitor the mitigation implementation activities and to help achieve the specifications of this Plan. The on-site monitor will be primarily responsible for providing the site contractor with recommendations and guidance on re-soiling, planting/seeding, erosion and sediment control (if required), and final site stabilization.

Following completion of all the work required to construct and stabilize the mitigation sites, as-built reports will be submitted to the Agency(s). The as-built report will describe in detail the work performed and provide a depiction of finished grades, a list of species planted and quantities of each species, significant deviations from the permitted plans, and the proposed monitoring locations.

## **5.2 POST-CONSTRUCTION PERFORMANCE MONITORING, ANNUAL MAINTENANCE AND SCHEDULE**

Post-construction monitoring is necessary to determine whether the Plan goals are achieving/approaching the desired/expected growth and condition. The Plan site(s) will be monitored as described in the final mitigation plan. Post-construction monitoring will begin in the first full growing season after the completion of site work and planting and is anticipated that monitoring will occur for five years.

It is anticipated that on-going maintenance will be required for the first several years to ensure plan success. Maintenance can range in tasks from implementation of signage or barriers to reduce the potential for disturbance, repair disturbance, removal of invasive species, and/or additional plantings to achieve revegetation success. Typically, maintenance activities during the first three years after construction require the most effort; particularly for invasive species control. Yearly maintenance will be documented in the annual monitoring report along with a discussion of anticipated maintenance events that will be required the following year.

### **5.2.1 Performance Standards**

Best professional judgment, visual observations, and monitoring reports will be used to evaluate attainment of performance standards and to determine whether part or all the mitigation sites have successfully met the conditions of the permit. The criteria outlined in Table 5 will be used to assess project success.

Wetland restoration efforts will be determined to be successful if at the end of the monitoring period, the following conditions are met. Actual target shrub and tree numbers will be determined before and included in the Final Mitigation Plan. The numbers will be based on target trees per acre and the ascribed % survival rate described below.

- In the Offhaus Farms Parcel wetland restoration planting area, there shall be a combination of at least 215 trees and shrubs per acre (80% survival) that are native, non-invasive, healthy, vigorous, and in a well distributed layout.
- In the Offhaus Farms upland buffer planting areas, there shall be at least 200 trees and shrubs per acre (80% survival), and the trees and shrubs should be distributed in patches or rows.

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WETLAND RESTORATION AND MITIGATION PLAN**

**Table 5. Performance Standards**

<b>Performance Standards</b>	<b>Wetland Restoration</b>	<b>Upland Buffer Enhancement</b>
Invasive plant coverage will not exceed 20 percent during Year 1 monitoring and 10 percent each year thereafter.	Yes	Yes
Native herbaceous plant coverage will be at least 60 percent by the end of the first growing season, 80 percent by the end of the second growing season, and at least 85 percent each monitoring year thereafter.	Yes	No
Planted woody plant survivorship should be 80 percent following Year 1 monitoring.	Yes	Yes
During the duration of the monitoring period, planted woody vegetation shall exhibit an average increase in height from the previous year or exhibit health above a poor condition ranking.	Yes	No

## 5.2.2 Monitoring Methods

The mitigation sites will be monitored annually to inspect the conditions at the sites to assess yearly progress, issues, and general compliance with the Performance Standards detailed in Section 5.2.1. Monitoring will follow the specifications outlined in Table 6.

**Table 6. Monitoring Specifications**

<b>Monitoring Specifications</b>	<b>Wetland Restoration</b>	<b>Upland Buffer Creation/Enhancement</b>
Visual Description	Overall Summary	Overall Summary
Estimated Invasive Species Coverage (%)	Overall Summary	Overall Summary

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Monitoring Plot (5 x 5 Foot Herbaceous Plot and 20 Foot Radius Woody Plot)	1-2 per enhancement Site	1 per enhancement site
Photos (North, South, East, West)	1 per monitoring plot	1 per monitoring plot
<p>Notes:</p> <ol style="list-style-type: none"> <li>1. An overall visual description will be provided for the Offhaus Farms mitigation site. Visual observations will also be used to evaluate the percentage of invasive species present in Buffer Enhancement Areas.</li> <li>2. Photos will be taken at each wetland monitoring plot from ground level.</li> <li>3. Immediately following initial plantings, Stantec will establish permanent monitoring stations for wetlands within the mitigation areas. Stations will be marked using 8-foot PVC pipe anchored with a metal T-post at plot center and GPS coordinates will be recorded.</li> <li>4. Permanent monitoring stations will provide data to evaluate the survival and growth rates and overall condition of planted woody vegetation including number, species, height, survivorship, and condition (Good, Fair, Poor). Reports will also reflect information regarding herbaceous plant species including the facultative wetland plant status [obligate (OBL) to upland (UPL)] per the USACE regional plant list (Lichvar 2016) of each plant, the percent of each species, and whether the species is native, introduced, or invasive; to evaluate invasive species coverage and prevalence index within monitoring plots.</li> </ol>		

A qualified wetland scientist will conduct the annual monitoring once a year for each of the monitoring years and invasive species inspections will also be conducted during three of the first five years. The monitoring events will be scheduled to occur near the end of the growing season (i.e., between mid-July and the end of September). Monitoring will include assessments of indicators of wetland hydrology, indicators of the formation of hydric soil and soil stability, hydrophytic woody stock survivorship, hydrophytic herbaceous plant cover, and the presence of invasive species. The inspections will also include the evaluation of the need for corrective measures.

The conditions will be assessed using a combination of meander surveys and pre-determined plot data collection locations. During the meander surveys, the wetland scientist will count and assess the health of the planted woody stock within the enhancement area. Native woody volunteer species within the wetland restoration area will also be counted. In addition to counting woody species, general signs of herbaceous plant cover, the presence of non-native invasive plants, and soil erosion will be documented. At the plot locations data will be collected that is consistent with a Corps paired data plot to collect data for vegetation, soil, and hydrology. The monitoring will also include observation and reporting of the monitoring wells data. Each year, representative photographs will be taken from similar locations within the meander survey areas, and from the plot locations. Photographs will also be taken as needed to document success, issues (such as erosion or damage), and invasive species.

### 5.2.3 Performance Monitoring Schedule and Reporting

Monitoring activities will occur after the first full year of growth following completion of mitigation site construction during up to five growing seasons. Monitoring will adhere to the following schedules:

- For any year in which planting was conducted, monitoring of vegetation will take place no earlier than September or at least six months following planting;
- The monitoring of vegetation (herbaceous and woody species) will be conducted once a year; and

## **CIDER SOLAR FARM WETLAND RESTORATION AND MITIGATION PLAN**

- Monitoring will occur up to a maximum of five years.

A monitoring report will be submitted to ORES by December 31<sup>st</sup> of the year monitoring occurs. The monitoring reports will include a general site description and include the data collected during the meander surveys and plot collection efforts. The data collected will be compared to the performance standards for plant health and survivorship, soil characteristics, and evidence of hydrology. The vegetation description will include a description of vegetative communities developing at each monitoring station and the general condition of the seedlings, including survival and mortality, and if applicable, a discussion of likely causes for mortality. A description of the generalized degree and distribution of exotic/invasive species will also be included.

Additionally, reports will include a detailed discussion of maintenance and management activities conducted during that year, along with a proposed maintenance schedule for the following year based upon the results of the yearly monitoring. The report will detail a corrective action plan or explanation to address any Performance Standards that have not been achieved, including measures to eradicate exotic/invasive, species if applicable. Associated documentation submitted with the narrative report are representative photographs, plot forms, and site maps.

If the wetland performance standards are not achieved after the year five post-construction monitoring event and if the Agencies do not determine the goals of the Mitigation Plan are satisfied, then a "Wetland Mitigation Remedial Plan" will be developed to address the goals, corrective actions, assessment of risks, and schedule for conducting the remedial work. Once approved, the "Wetland Mitigation Remedial Plan" will be implemented according to the approved schedule.

**CIDER SOLAR FARM  
WETLAND RESTORATION AND MITIGATION PLAN**

## **6.0 REFERENCES**

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- Federal Geographic Data Committee. 2013. *Classification of wetlands and deepwater habitats of the United States*. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC.
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- US Fish and Wildlife Service (USFWS). National Wetlands Inventory Wetland Mapper. Last Modified May 2020. Accessed July 2020, from <https://www.fws.gov/wetlands/data/Mapper.html>.

# **APPENDICES**



**CIDER SOLAR FARM  
WETLAND RESTORATION AND MITIGATION PLAN**

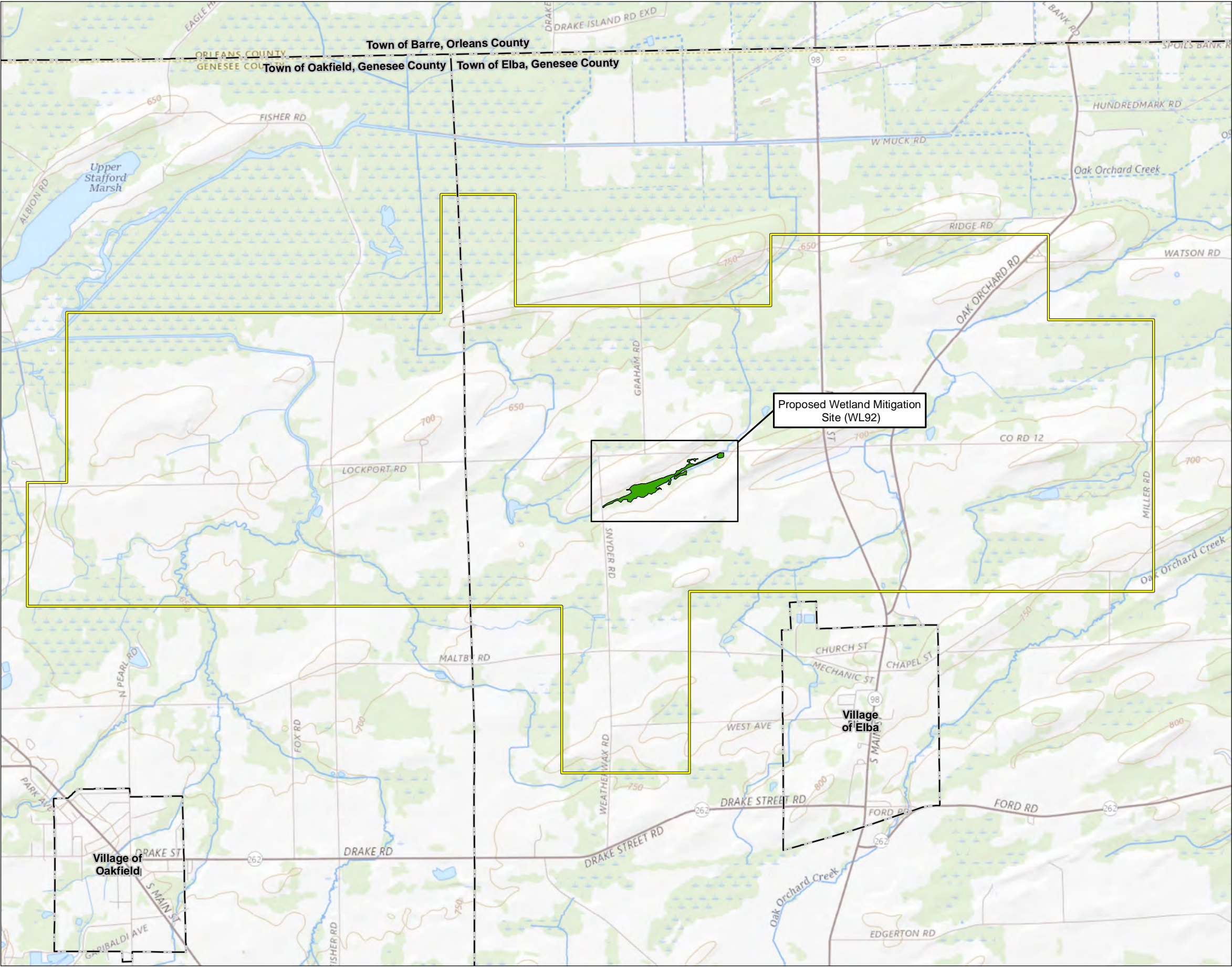
Appendix A Figures

## Appendix A FIGURES

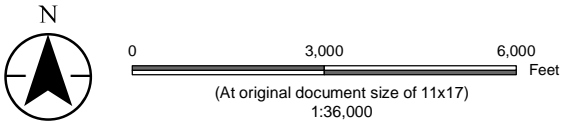




U:\190502038\03\_data\gis\mxd\Wetland\_Mitigation\Fig1\_Project\_Location.mxd Revised: 2021-05-26 By: asapleton



- Legend
- Project Area
  - Wetland Mitigation Site
  - Municipal Boundary



- Notes
- Coordinate System: NAD 1983 StatePlane New York West FIPS 3103 Feet
  - Data Sources: NYS Office of ITS GPO, NYS Civil Boundaries, 2018
  - Background: USGS Topo Basemap - The National Map (Web Map Service); Data refreshed May, 2020.



Project Location  
Towns of Elba and Oakfield  
Genesee County, NY

Prepared by AS on 2021-04-08  
TR by AS on 2021-04-16  
IR by AS on 2021-04-16

Client/Project  
Hecate Energy Cider Solar LLC  
Cider Solar Farm

190502038 REVA

Figure No.  
**1**

Title  
**Project Location**

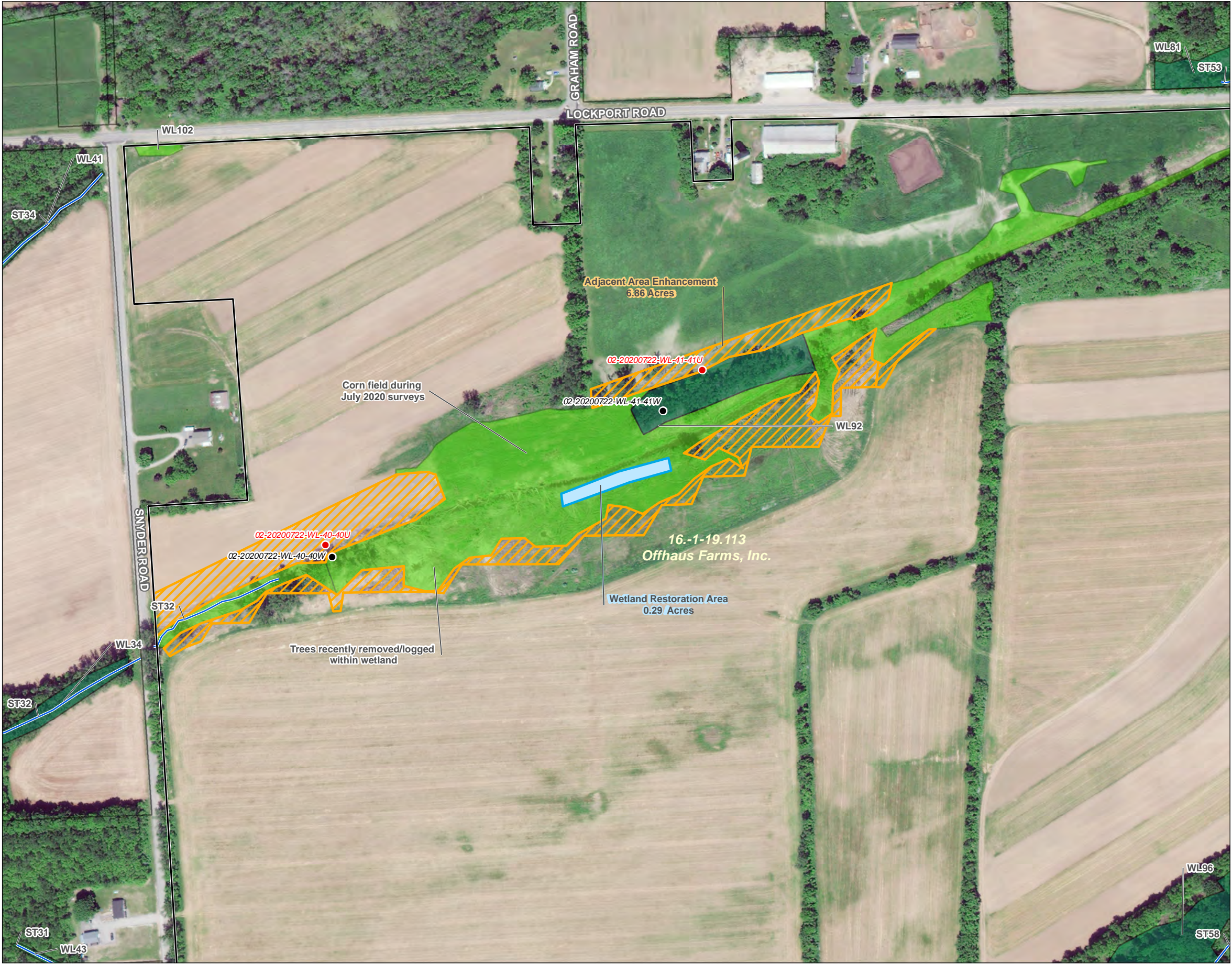




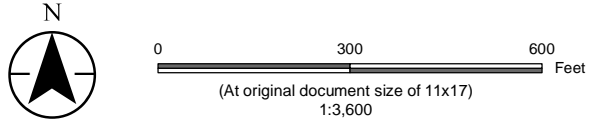








- Legend
- Offhaus Farms, Inc. Parcel Boundary
  - Adjacent Parcel Boundary
  - Soil Boundary
  - Delineated Resources
    - Upland Data Point
    - Wetland Data Point
    - Stream - Linear
    - Stream - Area
    - Wetland - PFO
    - Wetland - PEM
    - Wetland - PSS
    - Wetland - PUB
  - Wetland Mitigation Areas
    - WL92 Adjacent Area Enhancement
    - WL92 Wetland Restoration Area



**Notes**  
1. Coordinate System: NAD 1983 StatePlane New York West FIPS 3103 Feet  
2. Data Sources: NYS GIS Clearinghouse (<https://gis.ny.gov>), USDA NRCS (<http://www.nrcs.usda.gov>)  
3. Background: WorldView-3 satellite imagery purchased on June 6, 2020



Project Location: Towns of Elba and Oakfield, Genesee County, NY  
Prepared by AS on 2021-04-08  
TR by AS on 2021-04-16  
IR by AS on 2021-04-16

Client/Project: Hecate Energy Cider Solar LLC, Cider Solar Farm  
190502038 REV B

Figure No.: 4  
Title: Proposed Mitigation Area



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Appendix B Representative Photos

## Appendix B REPRESENTATIVE PHOTOS





Photo 1. Representative Photo of PFO portion of WL92, from data point 02-20200722-WL-41-41W. Looking southwest. Taken 7/22/2020.



Photo 2. Representative photo of upland adjacent area of WL92, taken from data point 02-20200722-WL-41-41U. Looking northeast. Taken 7/22/2020.





Photo 3. Representative Photo of PEM portion of WL92, from data point 02-20200722-WL-40-40W. Looking northeast. Taken 7/22/2020.



Photo 4. Representative photo of upland adjacent area of WL92, taken from data point 02-20200722-WL-40-40U. Looking northeast. Taken 7/22/2020.



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WETLAND RESTORATION AND MITIGATION PLAN**

Appendix C Wetland Determination Data Forms

## **Appendix C WETLAND DETERMINATION DATA FORMS**



**WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region**

Project/Site: Cider Solar Project City/County: Elba/Genesee Sampling Date: 7/22/2020  
Applicant/Owner: Hecate State: NY Sampling Point: \_\_\_\_\_  
Investigator(s): Justin Ahn Section, Township, Range: \_\_\_\_\_ 02-20200722-WL-41-41U  
Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Linear Slope (%) 1 - 5  
Subregion (LRR or MLRA): LRR L Lat: 43.095459 Long: -78.215298 Datum: NAD83  
Soil Map Unit Name: CaA Canandaigua silt loam, 0 to 2 percent slopes NWI Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (if no, explain in Remarks.)  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (if needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u> if yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: (Explain alternative procedures here or in a separate report.)

**HYDROLOGY**

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible in Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	
<input type="checkbox"/> Aquatic Fauna (B13)	
<input type="checkbox"/> Marl Deposits (B15)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches) \_\_\_\_\_  
Water Table Present? Yes \_\_\_\_\_ No X Depth (inches) \_\_\_\_\_  
Saturation Present? Yes \_\_\_\_\_ No X Depth (inches) \_\_\_\_\_

Wetland Hydrology Present? Yes \_\_\_\_\_ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION - Use scientific names of plants**

Sampling Point: 02-20200722-WL-41-41U

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Remarks: (Include photo numbers here or on a separate sheet.)

## SOIL

Sampling Point: 02-20200722-WL-41-41U

Depth (inches)	Matrix		Redox Features					Remarks
	Color	%	Color	%	Type	Loc	Texture	
0-20	10YR 4/3	100					Silt Loam	
<div> <div> <b>Hydric Soil Indicators:</b> <div> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) </div> <div> <input type="checkbox"/> Polyvalue Below Surface (B15) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) </div> </div> <div> <b>Indicators for Problematic Soils:</b> <div> <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) <input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Piedmont Floodplain Soils (F19) <input type="checkbox"/> Mesic Spodic (TA6) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) </div> </div> </div>								
<b>Restrictive Layer (if observed):</b>  Type: _____ Depth (inches): _____							Hydric Soil Present?    Yes _____ No <u>  X  </u>	
Remarks:								

# WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Cider Solar Project City/County: Elba/Genesee Sampling Date: 7/22/2020  
 Applicant/Owner: Hecate State: NY Sampling Point: \_\_\_\_\_  
 Investigator(s): Justin Ahn Section, Township, Range: \_\_\_\_\_ 02-20200722-WL-41-41W  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%) 0 - 1  
 Subregion (LRR or MLRA): LRR L Lat: 43.096544 Long: -78.211522 Datum: NAD83  
 Soil Map Unit Name: CaA NWI Classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (if no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (if needed, explain any answers in Remarks.)

## SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____ if yes, optional Wetland Site ID: <u>WL92</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

## HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)		Surface Soil Cracks (B6)
<u>      </u> Surface Water (A1)	<u>X</u> Water-Stained Leaves (B9)	<u>      </u> Drainage Patterns (B10)
<u>      </u> High Water Table (A2)	<u>      </u> Aquatic Fauna (B13)	<u>X</u> Moss Trim Lines (B16)
<u>      </u> Saturation (A3)	<u>      </u> Marl Deposits (B15)	<u>      </u> Dry-Season Water Table (C2)
<u>      </u> Water Marks (B1)	<u>      </u> Hydrogen Sulfide Odor (C1)	<u>      </u> Crayfish Burrows (C8)
<u>      </u> Sediment Deposits (B2)	<u>      </u> Oxidized Rhizospheres on Living Roots (C3)	<u>      </u> Saturation Visible in Aerial Imagery (C9)
<u>      </u> Drift Deposits (B3)	<u>      </u> Presence of Reduced Iron (C4)	<u>      </u> Stunted or Stressed Plants (D1)
<u>      </u> Algal Mat or Crust (B4)	<u>      </u> Recent Iron Reduction in Tilled Soils (C6)	<u>      </u> Geomorphic Position (D2)
<u>      </u> Iron Deposits (B5)	<u>      </u> Thin Muck Surface (C7)	<u>      </u> Shallow Aquitard (D3)
<u>      </u> Inundation Visible on Aerial Imagery (B7)	<u>      </u> Other (Explain in Remarks)	<u>      </u> Microtopographic Relief (D4)
<u>      </u> Sparsley Vegetated Concave Surface (B8)		<u>      </u> FAC-Neutral Test (D5)

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches) \_\_\_\_\_  
 Water Table Present? Yes \_\_\_\_\_ No X Depth (inches) \_\_\_\_\_  
 Saturation Present? Yes \_\_\_\_\_ No X Depth (inches) \_\_\_\_\_

Wetland Hydrology Present? Yes X No \_\_\_\_\_

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION - Use scientific names of plants**

Sampling Point: 02-20200722-WL-41-41W

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UPL species	<u>0</u>	x 5	<u>0</u>																																																																																														
Column Totals	<u>147</u> (A)		<u>376</u> (B)																																																																																														
Prevalence Index = B/A =			<u>2.56</u>																																																																																														
Remarks: (Include photo numbers here or on a separate sheet.)																																																																																																	

## SOIL

Sampling Point: 02-20200722-WL-41-41W

Depth (inches)	Matrix		Redox Features						Remarks
	Color	%	Color	%	Type	Loc	Texture		
0-6	10YR 2/2	90	7.5YR 4/6	10	C	PL	Silty Clay Loam		
6-20	7.5YR 6/4	80	7.5YR 4/6	20	C	M	Clay Loam		
<div> <div> <b>Hydric Soil Indicators:</b> <div> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) </div> <div> <input type="checkbox"/> Polyvalue Below Surface (B15) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) </div> </div> <div> <b>Indicators for Problematic Soils:</b> <div> <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) <input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Piedmont Floodplain Soils (F19) <input type="checkbox"/> Mesic Spodic (TA6) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) </div> </div> </div>									
<b>Restrictive Layer (if observed):</b>  Type: _____ Depth (inches): _____							Hydric Soil Present?    Yes <input checked="" type="checkbox"/> No _____		
Remarks:									

**WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region**

Project/Site: Cider Solar Project City/County: Elba/Genesee Sampling Date: 7/21/2020  
Applicant/Owner: Hecate State: NY Sampling Point: \_\_\_\_\_  
Investigator(s): Justin Ahn Section, Township, Range: \_\_\_\_\_ 02-20200721-WL-40-40W  
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%) 0 - 1  
Subregion (LRR or MLRA): LRR L Lat: 43.095326 Long: -78.215260 Datum: NAD83  
Soil Map Unit Name: HIA: Hilton loam, 0 to 3 percent slopes NWI Classification: PEM  
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (if no, explain in Remarks.)  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (if needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____ if yes, optional Wetland Site ID: <u>WL92</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: (Explain alternative procedures here or in a separate report.)	

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)		Surface Soil Cracks (B6)
<u>X</u> Surface Water (A1)	<u>X</u> Water-Stained Leaves (B9)	Drainage Patterns (B10)
_____ High Water Table (A2)	_____ Aquatic Fauna (B13)	Moss Trim Lines (B16)
<u>X</u> Saturation (A3)	_____ Marl Deposits (B15)	Dry-Season Water Table (C2)
_____ Water Marks (B1)	_____ Hydrogen Sulfide Odor (C1)	Crayfish Burrows (C8)
_____ Sediment Deposits (B2)	_____ Oxidized Rhizospheres on Living Roots (C3)	Saturation Visible in Aerial Imagery (C9)
_____ Drift Deposits (B3)	_____ Presence of Reduced Iron (C4)	Stunted or Stressed Plants (D1)
_____ Algal Mat or Crust (B4)	_____ Recent Iron Reduction in Tilled Soils (C6)	Geomorphic Position (D2)
_____ Iron Deposits (B5)	_____ Thin Muck Surface (C7)	Shallow Aquitard (D3)
_____ Inundation Visible on Aerial Imagery (B7)	_____ Other (Explain in Remarks)	Microtopographic Relief (D4)
_____ Sparsely Vegetated Concave Surface (B8)		FAC-Neutral Test (D5)
Surface Water Present? Yes <u>X</u> No _____	Depth (inches) <u>2</u>	Wetland Hydrology Present? Yes <u>X</u> No _____
Water Table Present? Yes _____ No <u>X</u>	Depth (inches) _____	
Saturation Present? Yes <u>X</u> No _____	Depth (inches) <u>0</u>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		



**VEGETATION - Use scientific names of plants**

Sampling Point: 02-20200721-WL-40-40W

<div style="margin-bottom: 20px;"> <b>Tree Stratum</b> (Plot Size: <u>30'</u>radius )                 <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 40%;"></th> <th style="width: 15%;">Absolute % Cover</th> <th style="width: 15%;">Dominant Species?</th> <th style="width: 10%;">Indicator Status</th> </tr> <tr> <td style="border-bottom: 1px solid black; height: 40px;"></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3" style="text-align: right;">= Total Cover</td> </tr> </table> </div> <div style="margin-bottom: 20px;"> <b>Shrub Stratum</b> (Plot Size: <u>15'</u>radius )                 <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 40%;"></th> <th style="width: 15%;">Absolute % Cover</th> <th style="width: 15%;">Dominant Species?</th> <th style="width: 10%;">Indicator Status</th> </tr> <tr> <td style="border-bottom: 1px solid black; height: 40px;"></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="3" style="text-align: right;">= Total Cover</td> </tr> </table> </div> <div style="margin-bottom: 20px;"> <b>Herb Stratum</b> (Plot Size: <u>5'</u>radius )                 <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 40%;"></th> <th style="width: 15%;">Absolute % Cover</th> <th style="width: 15%;">Dominant Species?</th> <th style="width: 10%;">Indicator Status</th> </tr> <tr> <td><u>Bidens frondosa</u></td> <td style="text-align: center;">30</td> <td style="text-align: center;">X</td> <td style="text-align: center;">FACW</td> </tr> <tr> <td><u>Populus deltoides</u></td> <td style="text-align: center;">30</td> <td style="text-align: center;">X</td> <td style="text-align: center;">FAC</td> </tr> <tr> <td><u>Sparganium americanum</u></td> <td style="text-align: center;">15</td> <td></td> <td style="text-align: center;">OBL</td> </tr> <tr> <td><u>Alisma subcordatum</u></td> <td style="text-align: center;">10</td> <td></td> <td style="text-align: center;">OBL</td> </tr> <tr> <td><u>Ranunculus abortivus</u></td> <td style="text-align: center;">5</td> <td></td> <td style="text-align: center;">FAC</td> </tr> <tr> <td><u>Asclepias incarnata</u></td> <td style="text-align: center;">5</td> <td></td> <td style="text-align: center;">OBL</td> </tr> <tr> <td><u>Abutilon theophrasti</u></td> <td style="text-align: center;">2</td> <td></td> <td style="text-align: center;">FACU</td> </tr> <tr> <td></td> <td style="text-align: center;">97</td> <td colspan="2" style="text-align: right;">= Total Cover</td> </tr> </table> </div> <div> <b>Woody Vine Stratum</b> (Plot Size: <u>30'</u>radius )                 <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 40%;"></th> <th style="width: 15%;">Absolute % Cover</th> <th style="width: 15%;">Dominant Species?</th> <th style="width: 10%;">Indicator Status</th> </tr> <tr> <td><u>Echinocystis lobata</u></td> <td style="text-align: center;">2</td> <td></td> <td style="text-align: center;">FACW</td> </tr> <tr> <td></td> <td style="text-align: center;">2</td> <td colspan="2" style="text-align: right;">= Total Cover</td> </tr> </table> </div>		Absolute % Cover	Dominant Species?	Indicator Status						= Total Cover				Absolute % Cover	Dominant Species?	Indicator Status						= Total Cover				Absolute % Cover	Dominant Species?	Indicator Status	<u>Bidens frondosa</u>	30	X	FACW	<u>Populus deltoides</u>	30	X	FAC	<u>Sparganium americanum</u>	15		OBL	<u>Alisma subcordatum</u>	10		OBL	<u>Ranunculus abortivus</u>	5		FAC	<u>Asclepias incarnata</u>	5		OBL	<u>Abutilon theophrasti</u>	2		FACU		97	= Total Cover			Absolute % Cover	Dominant Species?	Indicator Status	<u>Echinocystis lobata</u>	2		FACW		2	= Total Cover		<div style="margin-bottom: 20px;"> <b>Dominance Test Worksheet:</b> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>2</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)</p> </div> <div style="margin-bottom: 20px;"> <b>Prevalence Index Worksheet:</b> <table style="width: 100%; border-collapse: collapse;"> <tr> <td>OBL species</td> <td style="text-align: center;"><u>30</u></td> <td style="text-align: center;">x 1</td> <td style="text-align: center;"><u>30</u></td> </tr> <tr> <td>FACW species</td> <td style="text-align: center;"><u>32</u></td> <td style="text-align: center;">x 2</td> <td style="text-align: center;"><u>64</u></td> </tr> <tr> <td>FAC species</td> <td style="text-align: center;"><u>35</u></td> <td style="text-align: center;">x 3</td> <td style="text-align: center;"><u>105</u></td> </tr> <tr> <td>FACU species</td> <td style="text-align: center;"><u>2</u></td> <td style="text-align: center;">x 4</td> <td style="text-align: center;"><u>8</u></td> </tr> <tr> <td>UPL species</td> <td style="text-align: center;"><u>0</u></td> <td style="text-align: center;">x 5</td> <td style="text-align: center;"><u>0</u></td> </tr> <tr> <td>Column Totals</td> <td style="text-align: center;"><u>99</u> (A)</td> <td></td> <td style="text-align: center;"><u>207</u> (B)</td> </tr> <tr> <td colspan="3" style="text-align: right;">Prevalence Index = B/A =</td> <td style="text-align: center;"><u>2.09</u></td> </tr> </table> </div> <div style="margin-bottom: 20px;"> <b>Hydrophytic Vegetation Indicators:</b> <p><u>      </u> 1- Rapid Test For Hydrophytic Vegetation</p> <p><u>X</u> 2- Dominance Test is &gt; 50%</p> <p><u>X</u> 3- Prevalence Index is =&lt; 3.0</p> <p><u>      </u> 4- Morphological Adaptations</p> <p><u>      </u> 5- Problematic Hydrophytic Vegetation</p> </div> <div> <b>Definitions of Vegetation Strata:</b> <p>Tree- Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.</p> <p>Sapling/Shrub- Woody plants less than 3 in. DBH and greater than or equal to 3.28ft (1m) tall.</p> <p>Herb- All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28ft tall.</p> <p>Woody Vines- All woody vines greater than 3.28ft in height.</p> </div> <div style="text-align: center; margin-top: 20px;">                 Hydrophytic Vegetation Present? Yes <u>X</u> No <u>      </u> </div>	OBL species	<u>30</u>	x 1	<u>30</u>	FACW species	<u>32</u>	x 2	<u>64</u>	FAC species	<u>35</u>	x 3	<u>105</u>	FACU species	<u>2</u>	x 4	<u>8</u>	UPL species	<u>0</u>	x 5	<u>0</u>	Column Totals	<u>99</u> (A)		<u>207</u> (B)	Prevalence Index = B/A =			<u>2.09</u>
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Remarks: (Include photo numbers here or on a separate sheet.)

## SOIL

Sampling Point: 02-20200721-WL-40-40W

Depth (inches)	Matrix		Redox Features						Remarks
	Color	%	Color	%	Type	Loc	Texture		
0-4	10YR 2/2	95	5Y 2.5/1	5	C	PL	Silt Loam		
4-18	10YR 5/2	95	5Y 2.5/1	5	C	PL	Sandy Loam		
18-24	10YR 5/2	60	10YR 6/8	40	C	PL	Sandy Loam		

**Hydric Soil Indicators:**

<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (B15)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Thin Dark Surface (S9)
<input type="checkbox"/> Black Histic (A3)	<input checked="" type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input checked="" type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Dark Surface (S7)	

**Indicators for Problematic Soils:**

<input type="checkbox"/> 2 cm Muck (A10)
<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)
<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Polyvalue Below Surface (S8)
<input type="checkbox"/> Thin Dark Surface (S9)
<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Piedmont Floodplain Soils (F19)
<input type="checkbox"/> Mesic Spodic (TA6)
<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks)

**Restrictive Layer (if observed):**

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:

**WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region**

Project/Site: Cider Solar Project City/County: Elba/Genesee Sampling Date: 7/21/2020  
Applicant/Owner: Hecate State: NY Sampling Point: \_\_\_\_\_  
Investigator(s): Justin Ahn Section, Township, Range: \_\_\_\_\_ 02-20200721-WL-40-40U  
Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Linear Slope (%) 1 - 5  
Subregion (LRR or MLRA): LRR L Lat: 43.096881 Long: -78.211085 Datum: NAD83  
Soil Map Unit Name: CaA: Canandaigua silt loam, 0 to 2 percent slopes NWI Classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (if no, explain in Remarks.)  
Are Vegetation X, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (if needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes _____ No <u>X</u> if yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: (Explain alternative procedures here or in a separate report.)

**HYDROLOGY**

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)	Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible in Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	
<input type="checkbox"/> Aquatic Fauna (B13)	
<input type="checkbox"/> Marl Deposits (B15)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches) \_\_\_\_\_  
Water Table Present? Yes \_\_\_\_\_ No X Depth (inches) \_\_\_\_\_  
Saturation Present? Yes \_\_\_\_\_ No X Depth (inches) \_\_\_\_\_

Wetland Hydrology Present? Yes \_\_\_\_\_ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION - Use scientific names of plants**

Sampling Point: 02-20200721-WL-40-40U

<div style="margin-bottom: 20px;"> <b>Tree Stratum</b> (Plot Size: <u>30'</u>radius )                 <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 15%;">Absolute % Cover</th> <th style="width: 15%;">Dominant Species?</th> <th style="width: 10%;">Indicator Status</th> </tr> </thead> <tbody> <tr> <td><u>Populus deltoides</u></td> <td style="text-align: center;">20</td> <td style="text-align: center;">X</td> <td style="text-align: center;">FAC</td> </tr> <tr> <td></td> <td style="text-align: center;">20</td> <td colspan="2" style="text-align: right;">= Total Cover</td> </tr> </tbody> </table> </div> <div style="margin-bottom: 20px;"> <b>Shrub Stratum</b> (Plot Size: <u>15'</u>radius )                 <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 15%;">Absolute % Cover</th> <th style="width: 15%;">Dominant Species?</th> <th style="width: 10%;">Indicator Status</th> </tr> </thead> <tbody> <tr> <td> </td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td colspan="2" style="text-align: right;">= Total Cover</td> </tr> </tbody> </table> </div> <div style="margin-bottom: 20px;"> <b>Herb Stratum</b> (Plot Size: <u>5'</u>radius )                 <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 15%;">Absolute % Cover</th> <th style="width: 15%;">Dominant Species?</th> <th style="width: 10%;">Indicator Status</th> </tr> </thead> <tbody> <tr> <td><u>Toxicodendron radicans</u></td> <td style="text-align: center;">30</td> <td style="text-align: center;">X</td> <td style="text-align: center;">FAC</td> </tr> <tr> <td><u>Symphytotrichum lanceolatum</u></td> <td style="text-align: center;">30</td> <td style="text-align: center;">X</td> <td style="text-align: center;">FACW</td> </tr> <tr> <td><u>Juncus tenuis</u></td> <td style="text-align: center;">20</td> <td></td> <td style="text-align: center;">FAC</td> </tr> <tr> <td><u>Populus deltoides</u></td> <td style="text-align: center;">15</td> <td></td> <td style="text-align: center;">FAC</td> </tr> <tr> <td><u>Alisma subcordatum</u></td> <td style="text-align: center;">5</td> <td></td> <td style="text-align: center;">OBL</td> </tr> <tr> <td><u>Ranunculus sceleratus</u></td> <td style="text-align: center;">5</td> <td></td> <td style="text-align: center;">OBL</td> </tr> <tr> <td></td> <td style="text-align: center;">105</td> <td colspan="2" style="text-align: right;">= Total Cover</td> </tr> </tbody> </table> </div> <div> <b>Woody Vine Stratum</b> (Plot Size: <u>30'</u>radius )                 <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 15%;">Absolute % Cover</th> <th style="width: 15%;">Dominant Species?</th> <th style="width: 10%;">Indicator Status</th> </tr> </thead> <tbody> <tr> <td><u>Parthenocissus quinquefolia</u></td> <td style="text-align: center;">20</td> <td style="text-align: center;">X</td> <td style="text-align: center;">FACU</td> </tr> <tr> <td></td> <td style="text-align: center;">20</td> <td colspan="2" style="text-align: right;">= Total Cover</td> </tr> </tbody> </table> </div>		Absolute % Cover	Dominant Species?	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 Remarks: (Include photo numbers here or on a separate sheet.)  
 disturbed, tire tracks, wet plants in low areas

## SOIL

Sampling Point: 02-20200721-WL-40-40U

Depth (inches)	Matrix		Redox Features						Remarks
	Color	%	Color	%	Type	Loc	Texture		
0-18	10YR 3/4	95	10YR 6/8	5	C	PL	Silt Loam		
<div> <div> <b>Hydric Soil Indicators:</b> <div> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) </div> <div> <input type="checkbox"/> Polyvalue Below Surface (B15) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) </div> </div> <div> <b>Indicators for Problematic Soils:</b> <div> <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) <input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Piedmont Floodplain Soils (F19) <input type="checkbox"/> Mesic Spodic (TA6) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) </div> </div> </div>									
<b>Restrictive Layer (if observed):</b>  Type: _____ Depth (inches): _____							Hydric Soil Present?    Yes _____ No <u>  X  </u>		
Remarks:									

**WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region**

Project/Site: Cider Solar Project City/County: Oakfield/Genesee Sampling Date: 9/29/2020  
 Applicant/Owner: Hecate State: NY Sampling Point: \_\_\_\_\_  
 Investigator(s): Andrew Sorci Section, Township, Range: \_\_\_\_\_ 02-20200721\_WL40\_W2  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%) 0 - 5  
 Subregion (LRR or MLRA): LRR L Lat: 43.098734 Long: -78.204117 Datum: NAD83  
 Soil Map Unit Name: Ld: Lamson very fine sandy loam NWI Classification: PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No \_\_\_\_\_ (if no, explain in Remarks.)  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ significantly disturbed? Are "Normal Circumstances" present? Yes X No \_\_\_\_\_  
 Are Vegetation \_\_\_\_\_, Soil \_\_\_\_\_, or Hydrology \_\_\_\_\_ naturally problematic? (if needed, explain any answers in Remarks.)

**SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.**

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	<b>Is the Sampled Area within a Wetland?</b> Yes <u>X</u> No _____ if yes, optional Wetland Site ID: <u>WL92</u>
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

**HYDROLOGY**

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required: check all that apply)		Surface Soil Cracks (B6)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Moss Trim Lines (B16)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Saturation Visible in Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Microtopographic Relief (D4)
<input type="checkbox"/> Sparsley Vegetated Concave Surface (B8)		<input checked="" type="checkbox"/> FAC-Neutral Test (D5)

Surface Water Present? Yes \_\_\_\_\_ No X Depth (inches) \_\_\_\_\_  
 Water Table Present? Yes \_\_\_\_\_ No X Depth (inches) \_\_\_\_\_  
 Saturation Present? Yes \_\_\_\_\_ No X Depth (inches) \_\_\_\_\_

Wetland Hydrology Present? Yes X No \_\_\_\_\_

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**VEGETATION - Use scientific names of plants**

Sampling Point: 02-20200721\_WL40\_W2

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FACU species	<u>10</u>	x 4	<u>40</u>																																																																																										
UPL species	<u>0</u>	x 5	<u>0</u>																																																																																										
Column Totals	<u>140</u>	(A)	<u>240</u> (B)																																																																																										
Prevalence Index = B/A =			<u>1.71</u>																																																																																										

 Remarks: (Include photo numbers here or on a separate sheet.)  
 unknown grass species

## SOIL

Sampling Point: 02-20200721\_WL40\_W2

Depth (inches)	Matrix		Redox Features						Remarks
	Color	%	Color	%	Type	Loc	Texture		
0-20	10YR 3/1	90	10YR 4/6	10	C	M	Sandy Loam		
<div> <div> <b>Hydric Soil Indicators:</b> <div> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4) <input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Dark Surface (S7) </div> <div> <input type="checkbox"/> Polyvalue Below Surface (B15) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input checked="" type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) </div> </div> <div> <b>Indicators for Problematic Soils:</b> <div> <input type="checkbox"/> 2 cm Muck (A10) <input type="checkbox"/> Coast Prairie Redox (A16) <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) <input type="checkbox"/> Dark Surface (S7) <input type="checkbox"/> Polyvalue Below Surface (S8) <input type="checkbox"/> Thin Dark Surface (S9) <input type="checkbox"/> Iron-Manganese Masses (F12) <input type="checkbox"/> Piedmont Floodplain Soils (F19) <input type="checkbox"/> Mesic Spodic (TA6) <input type="checkbox"/> Red Parent Material (F21) <input type="checkbox"/> Very Shallow Dark Surface (TF12) <input type="checkbox"/> Other (Explain in Remarks) </div> </div> </div>									
<b>Restrictive Layer (if observed):</b>  Type: _____ Depth (inches): _____							Hydric Soil Present?    Yes <input checked="" type="checkbox"/> No _____		
Remarks:									



**CIDER SOLAR FARM  
WETLAND RESTORATION AND MITIGATION PLAN**

0 Appendix D Detailed Impacts and Mitigation

## **APPENDIX D DETAILED IMPACTS AND MITIGATION**





Table 1. Direct Impacts to State Regulated Wetlands for Hecate Cider Solar Project

Wetland ID	Dominant Wetland Type Impacted	DEC Wetland Class	Impacts by Project Component (acres)				Temporary Impact Total		Permanent Impact Total		Acreage Requiring Mitigation (Per Section 900-2.15[g])
			Collection Lines	Roads	Fences						
			Temporary	Permanent	Permanent	Temporary	Square feet	Acres	Square feet	Acres	
WL01	PFO	1			0.0009				39.20	0.0009	0.0009 - Security Fence
WL20	PFO	Unmapped		0.0342					1488.91	0.0342	0.0342 - Access Road
	PEM	Unmapped		0.0618					2690.74	0.0618	0.0618 - Access Road
WL22	PFO	Unmapped			0.0012				52.32	0.0012	0.0012 - Security Fencing
WL29	PFO	2			0.0018				76.65	0.0018	0.0018 - Security Fencing
	PEM	2			0.0008	0.0187	813.71	0.0187	35.32	0.0008	0.0008 - Security Fencing; 0.0187 - Clearing and manipulation of undisturbed vegetation
WL33	PEM	3		0.0077					335.05	0.0077	0.0077 - Access Road
WL45	PEM	2			0.0019	0.0271	1181.17	0.0271	82.12	0.0019	0.0019 - Security Fence; 0.0271 - Clearing and manipulation of undisturbed vegetation
WL53	PSS	3		0.0172	0.0010	0.0152	661.06	0.0152	789.08	0.0181	0.0172 - Access Road; 0.0010 Security Fencing; 0.0152 - Clearing and manipulation of undisturbed vegetation
WL54	PEM	3	0.0032				140.66	0.0032			0.0032 - Collection Line
WL92	PEM	Unmapped	0.0877				3819.95	0.0877			0.0877 - Collection Line
WL103	PEM	2	0.0008	0.0064	0.0003	0.0038	198.60	0.0046	290.78	0.0067	0.0008 - Collection Line; 0.0064 Access Road; 0.0003 Security Fencing; 0.0038 Clearing and manipulation of undisturbed vegetation
Totals			0.0917	0.1272	0.0078	0.0648	6,815.17	0.1565	5,880.17	0.1350	



Appendix D. Detailed Impacts and Mitigation

Table 2. Impacts to State Regulated Adjacent Areas for Hecate Cider Solar Project

Wetland ID	DEC Wetland Class	Impacts by Project Component (acres)									Temporary Impact Total		Permanent Impact Total		Acreage Requiring Mitigation per Table 1
		Solar Panels		Collection Lines	Roads	Fences		Inverter	Maintained Area						
		Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Permanent	Temporary	Permanent	Square feet	Acres	Square feet	Acres	
WL01	1	0.5308				0.3706	0.0253		1.8133		118248.30	2.7146	1102.86	0.0253	<b>0.5308</b> - Solar Panels; <b>0.0253</b> - Security Fencing; <b>2.1838</b> - Grading and manipulation of disturbed areas (ag fields)
WL20	Unmapped	0.8247	0.4504	0.0409	0.3541	1.4075	0.0972		1.5852	0.8248	168068.56	3.8583	75207.86	1.7265	Mitigation not required for impacts to Unmapped Wetland AA
WL22	Unmapped	0.6884	0.0452	0.0611		0.2645	0.0182		3.8893	0.7092	213589.22	4.9033	33654.95	0.7726	Mitigation not required for impacts to Unmapped Wetland AA
WL24	Unmapped	1.0566	0.6534	0.0180	0.0189				3.4964	4.7027	199112.08	4.5710	234137.51	5.3751	Mitigation not required for impacts to Unmapped Wetland AA
WL29	2	1.1690	0.0393			0.1375	0.0095		4.8679	1.3247	268954.50	6.1743	59827.84	1.3735	<b>1.2083</b> - Solar Panels; <b>1.3247</b> Forest Clearing (permanent 'maintained area'); Mitigation not required for security fencing in AA; temporary workspace for fence, and grading/manipulation of "maintained areas" occur in active agricultural fields, therefore, no mitigation required.
WL33	3				0.0905	0.0212	0.0062				924.91	0.0212	4213.04	0.0967	Mitigation not required for impacts to Class 3 Wetland AA
WL45	2					0.1654	0.0113		2.0266		95479.78	2.1919	492.70	0.0113	Mitigation not required for security fencing in AA; Temporary workspace for fence installation, and clearing for "maintained area" is entirely within active agricultural fields, therefore, do not require mitigation
WL51	3			0.1114							4853.79	0.1114	0.00	0.0000	Mitigation not required for impacts to Class 3 Wetland AA
WL53	3	0.4704	0.0854	0.0233	0.2358	0.4352	0.0305	0.0054	1.9415	1.2144	125029.08	2.8703	68448.22	1.5714	Mitigation not required for impacts to Class 3 Wetland AA
WL54	3	0.0892		0.0457		0.1127	0.0084		0.1771		18502.97	0.4248	365.08	0.0084	Mitigation not required for impacts to Class 3 Wetland AA
WL57	2	0.0593		0.0086	0.1518	0.0696	0.0050		0.1404		12101.38	0.2778	6829.63	0.1568	<b>0.0593</b> - Solar Panels; <b>0.0086</b> - Collection Line; 0.1518 - Access Road; Mitigation not required for security fencing; temporary workspace for fence, and grading/manipulation of "maintained areas" occur in active agricultural fields, therefore, no mitigation required.
WL58	2	0.2247		0.2553	0.0536	0.3036	0.0271		0.9718		76462.13	1.7553	3515.31	0.0807	<b>0.2247</b> - Solar Panels; <b>0.2553</b> - Collection Line; <b>0.0536</b> Access Road; Mitigation not required for fencing in AA; temporary workspace for fence, and grading/manipulation of "maintained areas" occur in active agricultural fields, therefore, no mitigation required.



Appendix D. Detailed Impacts and Mitigation

Wetland ID	DEC Wetland Class	Impacts by Project Component (acres)									Temporary Impact Total		Permanent Impact Total		Acreage Requiring Mitigation per Table 1
		Solar Panels		Collection Lines	Roads	Fences		Inverter	Maintained Area						
		Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Permanent	Temporary	Permanent	Square feet	Acres	Square feet	Acres	
WL87	2					0.0009	0.0003				39.68	0.0009	13.25	0.0003	Mitigation not required for security fencing in AA; Mitigation for clearing of trees in AA is not required with a setback of 75' from the wetland; therefore, no mitigation required
WL92	Unmapped	1.0038	0.1930	2.0099		1.3958	0.0969		2.2166	0.8128	288631.41	6.6261	48035.22	1.1027	Mitigation not required for impacts to Unmapped Wetland Adjacent Areas
WL100	Unmapped		0.0077			0.0912	0.0075		0.0781	0.0244	7371.61	0.1692	1725.75	0.0396	Mitigation not required for impacts to Unmapped Wetland AA
WL103	2		0.0299	0.0223	0.1672	0.0812	0.0056		0.7436	0.6100	36898.41	0.8471	35395.88	0.8126	<b>0.0299</b> - Solar Panels; <b>0.0223</b> - Collection Line; <b>0.1672</b> - Access Road; <b>0.6100</b> - Forest Clearing (permanent 'maintained area'); Mitigation not required for security fence in AA; Temporary workspace for fence installation, and clearing for "maintained area" is entirely within active agricultural fields and disturbed areas, therefore, do not require mitigation
Total		6.12	1.50	2.60	1.07	4.86	0.35	0.01	23.95	10.22	1,634,267.81	37.52	572,965.09	13.15	