Biodiversity Assessment Report

CVE North America

Cortlandt Mill Solar Farm
Cortlandt, Westchester County, New York

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Prepared For:

Prepared By:

TRC Companies
1430 Broadway, 10th Floor
New York, NY 10018

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1.0 INTRODUCTION

1.1 Project Description and Purpose

CVE North America (CVE) proposes to construct and operate the Cortlandt Mill Solar Farm, a 5-megawatt (MW) alternate current (AC)/4.98-MW direct current (DC) solar generating facility (SGF) and a battery energy storage system (the Project) on property located in the Town of Cortlandt, Westchester County, New York. The Project Site consists of two parcels totaling 43.12 acres: one 38.67-acre parcel west of Lexington Avenue (Parcel ID: 13.18-2-2.4) and a second 4.45-acre parcel off Red Mill Road (Parcel ID: 13.14-5-25) in the Town of Cortlandt, Westchester County, New York. Figures depicting the Project Site overlaying United States Geological Survey (USGS) maps and aerial imagery are presented as Figure 1 and Figure 2, respectively. Site plans are included as Appendix A.

The Project will produce renewable energy that will provide global, national, statewide, and local benefits. The global community's increased focus, demand, commitment, and development of clean renewable energy resources are being driven by immediate and long-term concerns for the environment, energy reliability, and security.

Clean renewable sources of energy produced domestically, such as the Project, also reduce the United States' need for oil imports, reducing its dependency on foreign nations to meet this demand, and thereby enhancing national energy security. Domestically produced energy also keeps money at home, enhancing the national economy and strengthening the dollar. As the United States' solar industry grows, so does its benefits to the national economy. There are now nearly 174,000 solar workers in the United States employed at 6,100 businesses in every state, injecting life into the United States' economy (Solar Energy Industries Association, 2021).

In June 2019, New York State passed the New York Climate Leadership and Community Protection Act, which outlines the state's clean energy goals. As stated on the New York State Energy Research and Development Authority's website, New York State has some of the most aggressive energy and climate goals in the country, including:

- The Clean Energy Standard (CES), a mandate to get 70 percent of New York's electricity from renewable sources by 2030;
- A proposed target of 100-percent carbon-free electricity by 2040;
- A 40-percent reduction in greenhouse gas emissions by 2030 (using 1990 as a baseline); and
- A proposed target of 6,000 MW in distributed solar deployment by 2025.

The Project will support the CES's goals, which aim to "fight climate change, reduce harmful air pollution, and ensure a diverse and reliable low carbon energy supply" (New York State Energy Research and Development Authority, 2021). ***Renewable energy facilities, such as the Project, will offset the need to import fossil fuels and assist the state in reaching its goal of having 70 percent of its energy production from renewable resources.***

The Hudson Valley is part of a high-demand or high "load" area in New York that does not have access to many major hydropower resources or wind energy projects. However, there is still unutilized land in the Hudson Valley, such as the Project Site, available for developing SGFs (Scenic Hudson, 2019). ***Therefore, SGFs, such as the Project, can help reach the goal "to rapidly transition the Hudson Valley to a sustainable, low-carbon region increasingly powered by renewable energy in order to mitigate climate change, while protecting and preserving the region's invaluable scenic, historic, agricultural, environmental and economic resources*** (Scenic Hudson, 2018)."

The Project will contribute electrical power from a renewable resource to the local grid, providing electricity to residences and business in Cortlandt. The Project will also provide increased tax revenue for the Town of Cortlandt.

The Project consists of arrays of solar panels separated by pervious access drives. The solar arrays will cover 9.06 acres. The arrays will consist of rows of solar panels installed aboveground on a metal framework. New pervious access drives will cover 1.88 acres. In addition, concrete pads for battery storage pack units, inverters, and transformers will be installed along the northern access drive. To the extent practicable, electrical connections within the array will be underground.

One 230-foot long pervious gravel access drive will connect the Project to Mill Court. The access drive has been designed to allow access for emergency vehicles. An 8.5-foot-tall wildlife-friendly perimeter fence will surround the solar arrays and access will be through a single security gate. Emergency access will be available through a KnoxBox. The Project also includes a 60-foot long pull-out off Red Mill Road for access to a utility meter enclosure. There will be an underground electric interconnection from the utility meter enclosure to the Project's solar array. This underground electric interconnection will have a temporary limit of disturbance (LOD) of 0.39 acre.

Areas under and between the solar panels will be seeded with low-growth plants. Other areas throughout the Project will be seeded with pollinator-friendly species of wildflowers to encourage the presence of pollinating insects and other small wildlife. To the extent practicable, the existing forested areas on the boundaries of the Project Site will be left undisturbed. This existing vegetation will provide a visual barrier that will obscure views of the Project from adjacent properties. Shrubs and trees planted around the perimeter of the solar array will increase this visual barrier.

The total LOD, including the solar arrays, access drive, electrical equipment pads, tree clearing, and construction laydown areas, is 44.8 percent (19.3 acres) of the Project Site. The Project will convert 43.1 percent (18.57 acres) of existing forest at the Project Site into meadow and the concrete equipment pads will create 0.12 acre of impervious cover. A wildlife-friendly perimeter fence will enclose 37.8 percent (16.31 acres) of the Project Site once the Project is complete.

The siting principles in *Clean Energy, Green Communities: A Guide to Siting Renewable Energy in the Hudson Valley* (Scenic Hudson, 2018) were taken into consideration during Project planning. The Project has been carefully designed to meet the following design goals:

- Avoid wetlands and 100-foot adjacent areas to wetlands;
- Minimize impacts to steep slopes;
- Maintain a 200-foot setback from residences;
- Minimize tree clearing and cut and fill; and
- Minimize demand on local services.

1.2 Biodiversity Assessment Purpose

This Biodiversity Assessment Report is being provided per the *Town of Cortlandt Planning Board's guidelines for Wildlife and Plant Biodiversity Assessments*, adopted May 7, 2002. The purpose of these biodiversity assessments is to provide the Town of Cortlandt with baseline, site-specific information to help the Town of Cortlandt with land use planning while maintaining biodiversity. The biodiversity guidelines specify target areas where biodiversity studies are required for development applications. These target areas include areas along river and stream corridors; in the vicinity of lakes, ponds, and wetlands; adjacent to areas of open space; and adjacent to corridors of open space.

On behalf of CVE, TRC Engineers, Inc. (TRC) is providing this Biodiversity Assessment Report to detail the process in the survey and characterization of existing vegetative cover and wildlife habitat, documentation of federal and state-listed species on or adjacent to the Project Site, and in the determination of the presence/absence of suitable habitat for plant and wildlife species. This report describes the actions taken to assess the Project Site with respect to the documentation of potential impacts on federal and state-listed threatened and endangered species, and other plant and wildlife species associated with the construction and operation of the Project.

This Biodiversity Assessment Report also takes into consideration the goals and objectives of *The Croton-to-Highlands Biodiversity Plan* (Miller and Klemens, 2004), *Wildlife and Habitat Conservation Framework: An Approach for Conserving Biodiversity in the Hudson River Estuary Corridor* (Penhollow et al., 2006), *The Hudson Valley Conservation Strategy* (Mudd et al., 2017), and *The Biodiversity Assessment Manual for the Hudson River Estuary Corridor* (Kiviat and Stevens, 2001).

1.2.1 Residences at Mill Court Crossing

In 2005, Kirquel Development Ltd., submitted an application for a proposed 27-lot, single-family residential subdivision located on 53 acres off of Mill Court and Lexington Avenue in the Town of Cortlandt, including the 38.67-acre parcel where part of the Project is proposed. The Residences at Mill Court Crossing went through an application process with the Town of Cortlandt Planning Board and the State Environmental Quality Review Act (SEQRA). As part of the application

process, the Town of Cortlandt's environmental consultant, Environmental Consulting, LLC; conducted a biodiversity assessment in 2005 and submitted it to the Town of Cortlandt. TRC's Biodiversity Assessment Report references and supplements Environmental Consulting, LLC's, 2005 biodiversity assessment.

2.0 METHODS

2.1 Preliminary Desktop Review

Publicly available literature and materials used in the investigation, survey, and report preparation have been derived from multiple public domains including, but not limited to:

- United States Geological Survey (USGS) Mohegan Lake, New York 7.5-minute quadrangle;
- United States Department of Agriculture (USDA) Ecoregion maps;
- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping;
- USFWS Information for Planning and Consultation (IPaC) system;
- New York State Department of Environmental Conservation (NYSDEC) Environmental Resource Mapper (ERM);
- NYSDEC Hudson Valley Natural Resource Mapper;
- NYSDEC Nature Explorer;
- NYSDEC Environmental Assessment Form (EAF) Mapper;
- NYSDEC Ecozone mapping;
- National Land Cover Database (NLCD); and
- The Nature Conservancy (TNC) Resilient Land Mapping Tool.

TRC also reviewed the *Ecological Communities of New York State* (Edinger et al., 2014), the *New York State Breeding Bird Atlas* (NYSDEC, 2008), and the *New York State Amphibian & Reptile Survey* (NYSDEC, 2007; and Cosentino and Gibbs, 2021) to determine wildlife species that may use the Project Site. A full listing of the wildlife species observed or potentially occurring at the Project Site, with scientific names, is included in Appendix B.

The New York State Breeding Bird Atlas is a comprehensive, statewide survey that indicates the distribution of breeding birds in New York State. Point counts are conducted by volunteers within 5-km by 5-km survey blocks across the state (NYSDEC, 2008). The most recently completed New York State Breeding Bird Atlas was conducted from 2000-2005. In addition, TRC reviewed Audubon's Important Bird Areas mapping (Audubon, 2021) to determine if the Project Site has been identified as an area providing essential habitat to one or more species of breeding, wintering, and/or migrating birds.

The *New York Amphibian and Reptile Survey* (Cosentio and Gibbs, 2021) represents the continuation of the *New York State Amphibian and Reptile (Herp) Atlas* (NYSDEC, n.d.). The Herp Atlas Project was a 10-year survey (1990 through 1999) designed to document the geographic distribution of the state's herpetofauna. Atlas data was collected and organized according to USGS 7.5-minute quadrangles. Today the *New York Amphibian and Reptile Survey* is an ongoing project that represents a continuation of the original *Amphibian and Reptile Atlas of New York State* and additional observations have made up to 2017.

TRC reviewed existing available information, including the USFWS IPaC System (USFWS, 2021), the NYSDEC ERM (NYSDEC, 2021d), the NYSDEC EAF Mapper (NYSDEC, 2021c), the NYSDEC Nature Explorer (NYSDEC, 2021g), and the Hudson Valley Natural Resource Mapper (NYSDEC, 2021f), to document the potential habitat of any federal or state-listed rare, threatened or endangered plant or wildlife species that may be located in the vicinity of the Project Site (see Appendix B). This information was supplemented through correspondence with the New York Natural Heritage Program (NYNHP) (Appendix C).

2.2 Site Reconnaissance

TRC scientists completed site visits on October 7 and November 1, 2019, to identify the existing vegetative cover and the type and quality of ecological habitat at the Project Site. The general characteristics of the Project Site were recorded by TRC biologists during field surveys. Resumes of the TRC scientists who completed the site visits are included in Appendix D.

Field observations include, but are not limited to, the identification of ecological communities and vegetative species present throughout the Project Site, description of the topography and slopes within the Project Site, documentation of flora and fauna observed, and identification of typical tree species and the average diameter at breast height (DBH) for those species. These investigations allow for a review of the degree of suitability of the habitat present that may support the rare, threatened, or endangered species identified by regulatory agencies as potentially occurring within the Project Site.

Photographs obtained during the site visits are presented in Appendix E.

2.2.1 Wetland and Stream Delineation

TRC also conducted a wetland and waterbody delineation on October 7 and November 1, 2019, to identify wetlands, waterbodies, and other surface waters at the Project Site. The wetland and stream delineation was conducted in accordance with criteria set forth in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (Version 2.0) (United States Corps of Engineers [USACE], 2012) and the *New York State Freshwater Wetlands Delineation Manual* (Browne et al., 1995) concerning the delineation of all federal, state, and locally regulated wetlands and streams at the Project Site. The methods and results of the wetland and waterbody delineation are included in Appendix F.

The Town's wetland consultant, HVEA Engineers, field-verified TRC's wetland and stream delineation on October 5, 2020. HVEA Engineers also performed a wetland functions and values assessment using *The Highway Methodology Workbook Supplement* (USACE, 1999). This methodology was created by the USACE in order to collect and describe the functions and values of wetlands in a measurable and un-biased perspective. The results from HVEA Engineers' wetland functions and values assessment are included as Appendix G.

2.2.2 Preliminary Tree Survey

In order to better understand the composition of tree species within the Project Site and to begin formulating a potential mitigation plan for tree clearing, CVE commissioned a preliminary tree inventory (Appendix H). The study was conducted on May 28, 2020 and included evaluation of two random 0.25-acre plots.

Every tree within the 0.25-acre square boundary equal to or greater than 4 inches in diameter at breast height was measured and recorded, excluding dead trees. The DBH of each tree was measured with a measuring tape to record the circumference at approximately 4.5 feet above the ground and the measured circumference was converted to DBH.

2.2.3 Bartlett Tree Expert's Tree Inventory

The Town of Cortlandt's tree consultant, Bartlett Tree Experts, conducted a tree inventory in accordance with Chapter 283 of the Town Code. Bartlett Tree Expert's inventory surveyed all trees with a DBH of 4 inches or greater within 50 feet of the original proposed limits of disturbance at the Project Site (herein referred to as the Tree Inventory Area). The results of Bartlett Tree Expert's tree inventory are included in Appendix I. Estimates for quantities of trees to be removed and calculations for trees to be replanted are based off of the results of this tree inventory.

2.2.4 Phase 1 Bog Turtle Habitat Survey

CVE commissioned a Phase 1 bog turtle (*Glyptemys muhlenbergii*) habitat survey of the wetlands and streams delineated at the Project Site. The Phase 1 bog turtle habitat survey was conducted on March 22, 2021, to determine the presence/absence of potential bog turtle habitat. The Phase 1 bog turtle survey was conducted by a TRC biologist, Giovanni Pambianchi, who has extensive knowledge on bog turtle ecology and has experience working with the species within the Hudson/Housatonic Unit Hudson Recovery Subunit during his time as a Fish and Wildlife Technician 1 at the NYSDEC. The resume of the Phase 1 surveyor is provided in Appendix D. TRC followed the guidelines set forth in the USFWS's *Guidelines for Bog Turtle Surveys for the Northern Population Range Phase 1 and 2 Surveys (revised April 2020)* (2020b). The results of the Phase 1 bog turtle habitat survey are included in Appendix J.

2.2.5 2005 Biodiversity Assessment by Environmental Consulting, LLC

In 2005, the Town of Cortlandt Planning Board requested a complete biodiversity assessment with field studies at the 38.67-acre parcel comprising part of the Project Site as part of an application from Kirquel Development Ltd. for Site Development and Subdivision for Residences at Mill Court Crossing. The Town of Cortlandt's biodiversity consultant; Environmental Consulting, LLC; performed field survey work from April through October 2005 for the biodiversity assessment. Target groups surveyed included breeding birds, amphibians and reptiles, mammals, and plants.

3.0 RESULTS AND FINDINGS

3.1 Project Setting

The Project Site is located within the Hudson Highlands Physiographic Province of New York State (New York State Department of Transportation, 2013). This Physiographic Province is defined by relatively rugged topography with bedrock-controlled landforms. The dominant condition of this province is rocky upland with little to no soil cover. The landforms of the Project Site are breaks/foothills, hills, irregular plains, and drainage channels.

As shown on the USGS Mohegan Lake NY 7.5-minute quadrangle (see Figure 1), the terrain slopes downward to the northwest and east from a broad summit in the southwestern region of the Project Site. Despite the presence of sections of steeper terrain (i.e., areas exceeding 15 percent), the average slope across the entire Project Site is approximately 2 percent, and the Project Site topography as a whole would be considered gently sloping. The topography ranges from approximately 480 feet above mean sea level (AMSL) in the southwestern region of the Project Site to approximately 360 feet AMSL in the southeastern region.

The Project Site resides in the Eastern Broadleaf Forest (Oceanic) Province and Lower New England Section ecoregions of the United States as defined by the USDA Forest Service (Bailey, 1995).

Ecoregions are ecosystems of regional extent. The USDA identifies ecoregions by ecosystem characteristics into the following classifications:

- Domains: the largest ecosystem, which are groups of related climates and are differentiated based on precipitation and temperature.
- Divisions: represent the climates within domains and are differentiated based on precipitation levels and patterns, as well as temperature.
- Provinces: Subdivisions of divisions, which are differentiated based on vegetation or other natural land covers.
- Sections: Subdivisions of provinces based on terrain features, sections are the finest level of detail described for each subregion.
- Mountainous Areas: Mountainous regions that exhibit different ecological zones based on elevation.

The Eastern Broadleaf Forest (Oceanic) Province is characterized by a temperate deciduous forest dominated by tall broadleaf trees. Forest vegetation in this province is divided into three major associations: mixed mesophytic, Appalachian oak, and pine-oak (Bailey, 1995). The forest vegetation of the Lower New England Section includes oak-hickory, white-red-jack pine, maple-beech-birch, and aspen-birch cover types (McNab et al., 2007).

Similarly, the NYSDEC has divided New York State into specific ecological regions (Ecozones). Boundaries of the Ecozones of New York State were derived from Will et al. (1982) and Dickinson (1983), then further modified by the NYSDEC. The Ecozones of New York State have been classified into Major and Minor Zones. The Project Site is located within the Hudson Highlands Major Zone, which does not have any Minor Zones. The Hudson Highlands are a significant biodiversity area of the Hudson River Estuary corridor (Penhollow et al. 2006) (Figure 3) and one of the largest unfragmented landscapes in the state and a landscape corridor between the Mid-Atlantic and New England. The Hudson Highlands are a relatively undeveloped corridor of forests, wetlands and grasslands. The dominant forest communities that make up the Hudson Highlands include Appalachian oak-hickory forest, chestnut oak forest, and oak-tulip tree forest. Hemlock-northern hardwood forests are a large patch community throughout the Hudson Highlands (Penhollow et al., 2006).

3.2 Ecological Communities

Recent aerial orthoimagery of the Project Site and surrounding vicinity, obtained from Google Earth and Environmental Systems Research Institute, Inc. (see Figure 2), indicates that the Project Site is covered by temperate deciduous forest and forested wetland. The Project Site is surrounded by forested and residential land. Red Mill Road and Mill Court are north of the Project Site.

Figure 4 delineates the Project and a surrounding 2.5-mile radius into the respective NLCD classifications. The Project Site itself is primarily classified by the NLCD as deciduous forest with a minimal amount of developed, open space, and developed low intensity land. The primary land cover within the surrounding area is deciduous forest (42 percent). However, developed, open space (29 percent); developed, low-intensity (12 percent); and developed, medium intensity (6 percent) make-up approximately 47 percent of the land cover in the surrounding area.

The following ecological communities, as defined by *Ecological Communities of New York State* (Edinger et al., 2014), were identified at the Project Site at the time of the delineation:

- Shallow emergent marsh (NYNHP Rank: S5);
- Shrub swamp (NYNHP Rank S5);
- Red maple-hardwood swamp (NYNHP Rank: S4S5);
- Beech-maple mesic forest (NYNHP Rank S4); and
- Appalachian oak-hickory forest (NYNHP Rank: S4).

None of these ecological communities are considered vulnerable, imperiled, or critically imperiled in the state according to the NYNHP. Shallow emergent marshes and shrub swamps are considered secure in the state by the NYNHP. Red maple-hardwood swamps are considered secure to apparently secure in the state by the NYNHP. Beech-maple mesic forests and Appalachian oak-hickory forests are considered apparently secured in the state according to the

NYNHP. ***Based on information from the NYSDEC ERM, there are no significant natural communities at the Project Site or within its immediate vicinity*** (Figure 5).

Based on the criteria in the *Biodiversity Assessment Manual for the Hudson River Estuary Corridor* (Kiviat and Stevens, 2001), the habitats present at the Project Site can be classified as young woods, nontidal hardwood swamps, and an intermittent stream (Figure 6).

A total of 94.94 percent (40.94 acres) of the Project Site can be considered young woods. This habitat can be identified by a forest where the majority of trees are less than 12 inches DBH (Kiviat and Stevens, 2001). Bartlett Tree Experts identified 2,574 trees with a DBH less than 12 inches, which accounted for 67.6 percent of all trees identified as part of the tree inventory (see Appendix I). Bartlett Tree Experts remarked that the vast majority of trees are on "the very young side;" therefore, the upland forest habitat at the Project Site meets the definition of young woods. Refer to Table 1 below for a summary of Bartlett Tree Expert's Tree Inventory.

Table 1. Summary of Bartlett Tree Experts' Tree Inventory

Common Name	Scientific Name	Count	Percent of Total	Average DBH (in.)	Condition (Percent of Species Count)			
					Good	Fair	Poor	Dead
Norway Maple	*Acer platanoides*	127	3.34	5.9	93.70	5.51	0.79	0.00
Red Maple	*Acer rubrum*	423	11.11	8.4	50.83	31.91	10.40	6.86
Sugar Maple	*Acer sacharrum*	638	16.75	7.0	80.41	14.58	3.29	1.72
Tree of Heaven	*Ailianthus altissima*	29	0.76	11.2	13.79	44.83	34.48	6.90
Serviceberry	*Amelanchier* sp.	3	0.08	4.7	66.67	0.00	0.00	33.33
Sweet Birch	*Betula lenta*	775	20.35	8.8	69.81	21.03	3.61	5.55
American Hornbeam	*Carpinus caroliniana*	1	0.03	4.0	100.00	0.00	0.00	0.00
Pignut Hickory	*Carya glabra*	250	6.57	9.2	88.40	7.60	3.20	0.80
Shagbark Hickory	*Carya ovata*	88	2.31	8.3	76.14	15.91	6.82	1.14
Flowering Dogwood	*Cornus florida*	1	0.03	4.0	0.00	100.00	0.00	0.00
American Beech	*Fagus grandifolia*	199	5.23	6.5	88.44	7.54	2.51	1.51
White Ash	*Fraxinus americana*	8	0.21	13.4	0.00	0.00	37.50	62.50
Eastern Redcedar	*Juniperus virginiana*	37	0.97	6.9	0.00	5.41	24.32	70.27
Tuliptree	*Liriodendron tulipifera*	68	1.79	15.1	75.00	13.24	4.41	7.35

Table 1. Summary of Bartlett Tree Experts' Tree Inventory

Common Name	Scientific Name	Count	Percent of Total	Average DBH (in.)	Condition (Percent of Species Count)			
					Good	Fair	Poor	Dead
Black Tupelo	*Nyssa sylvatica*	14	0.37	8.4	92.86	0.00	7.14	0.00
Eastern White Pine	*Pinus strobus*	2	0.05	24.5	50.00	50.00	0.00	0.00
London Planetree	*Platanus x acerifolia*	1	0.03	18.0	100.00	0.00	0.00	0.00
Eastern Cottonwood	*Populus deltoides*	14	0.37	14.5	71.43	14.29	0.00	14.29
Bigtooth Aspen	*Populus grandidentata*	1	0.03	16.0	100.00	0.00	0.00	0.00
Cherry	*Prunus* sp.	78	2.05	10.3	26.92	25.64	25.64	21.79
White Oak	*Quercus alba*	63	1.65	15.3	84.13	7.94	0.00	7.94
Swamp White Oak	*Quercus bicolor*	2	0.05	15.0	100.00	0.00	0.00	0.00
Northern Red Oak	*Quercus rubra*	872	22.90	15.4	72.59	14.91	2.52	9.98
Black Locust	*Robinia pseudoacacia*	54	1.42	10.2	22.22	40.74	22.22	14.81
Sassafras	*Sassafras albidum*	39	1.02	10.3	58.97	23.08	2.56	15.38
Eastern Hemlock	*Tsuga canadensis*	1	0.03	6.0	0.00	0.00	100.00	0.00
American Elm	*Ulmus americana*	20	0.53	6.6	20.00	45.00	20.00	15.00
TOTAL		**3,808**	**100.00**	**10.1**	**70.48**	**17.57**	**5.23**	**0.07**

The tree inventory identified 3,808 trees with a DBH of 4 inches or greater in the Tree Inventory Area at the Project Site. Twenty-seven different tree species were identified during the tree inventory. Dominant trees observed included northern red oak (*Quercus rubra*), sweet birch (*Betula lenta*), sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), pignut hickory (*Carya glabra*), and American beech (*Fagus grandifolia*). The average DBH of the trees inventoried ranged from 4 to 24 inches with only 27 individuals attaining measurements of over 30 inches. One state-listed protected tree under 6 CRR-NY 193.3 was observed: flowering dogwood (*Cornus florida)*; however, it was not in good condition. It should be noted that flowering dogwood is listed as an exploitably vulnerable native plant, and not rare, threatened, or endangered. Three tree species observed in the Tree Inventory Area were on the list of *New York State Prohibited and Regulated Invasive Plants* (NYSDEC, 2014): Norway maple (*Acer platanoides*), black locust (*Robinia pseudoacacia*), and tree of heaven (*Ailianthus altissima*). A total of 5.51 percent of the

individual trees inventoried in the Tree Inventory Area were invasive plant species. According to Bartlett Tree Experts, a majority of trees identified in the Tree Inventory Area are in good condition (70.48 percent) (see Table 1 and Appendix I).

Dominant vegetation in the shrub/sapling strata at the Project Site included saplings of the aforementioned trees, as well as spicebush (*Lindera benzoin*), Japanese barberry (*Berberis thunbergii*), and winterberry (*Ilex verticillata*). Dominant vegetation in the herb layer included Christmas fern (*Polystichum acrostichoides*), cinnamon fern (*Osmundastrum cinnamomeum*), and Japanese stiltgrass (*Microstegium vimineum*). A full listing of the plant species observed at the Project Site, with scientific names, is included in Appendix B.

In the eastern portion of the Project Site are two delineated wetlands: one 1.86-acre palustrine forested (PFO)/palustrine emergent (PEM) wetland (Wetland W-1) and a 0.32-acre palustrine scrub-shrub (PSS) wetland (Wetland W-2) (Figure 7). Both wetlands can be classified as nontidal hardwood swamps. Dominant vegetation includes red maple, American sycamore (*Platanus occidentalis*), spicebush, American beech, Japanese barberry, Japanese stilt grass, and cinnamon fern. Further details on these wetlands are provided in Appendix F.

Both wetlands extend off-site to the south and correspond to NYSDEC-mapped freshwater wetland A-50 (see Figure 5), which is 63.80 acres according to the NYSDEC (of which 4.48 acres are mapped within the Project Site). This NYSDEC-mapped freshwater wetland is a Class II wetland. The NYSDEC classification system of freshwater wetlands designates wetlands into four class ratings (I–IV): with Class I being the highest or best quality wetland and Class IV being the lowest quality. ***Therefore, the wetlands at the Project Site represent the second highest quality according to the NYSDEC's classification system.***

HVEA Engineers performed a wetland functions and values assessment and determined that the wetlands at the Project Site provide the following functions: flood-flow alteration, nutrient removal, product export, and wildlife habitat. Details on HVEA's wetland functions and values assessment can be found in Appendix G.

During the wetland and stream delineation, one intermittent stream with approximately 306 linear was delineated within the Project Site (see Figure 7). This stream originates in the southeastern part of the Project Site and flows off site to the southwest. This stream flows through Wetland W-2. This stream corresponds to a NYSDEC-mapped Class C stream: a tributary to the middle portion of Peekskill Hollow Creek (see Figure 5). Class C streams are capable of supporting fisheries and are suitable for non-contact activities. Further details of this stream can be found in Appendix F.

Approximately 49 percent (21.02 acres) of the Project Site is part of a 57.97-acre core forest (Figure 8). Core forests are defined as interior forest areas at least 100 meters from the edge of an unfragmented forest patch that is at least 100 acres. A forest condition index was developed by the Hudson River Estuary Program to assess the condition, connectivity, stress, and ecosystem value of forest patches at least 100 acres (Conley et al., 2019). The forest condition index of the Project Site is within the bottom 20th percentile of forest patches within the Hudson

River Estuary (see Figure 8). ***This low forest condition index indicates that while the Project Site is part of a larger forest patch with a core forest, it has limited connectivity with other large forest patches and has experienced environmental stressors from surrounding development, as demonstrated by the developed land uses in its immediate vicinity*** (Figure 4).

The forest at the Project Site is representative of forests in the area. The Project Site likely has a history of human disturbance. Rock walls were observed at the Project Site and Bartlett Tree Experts remarked that the Project Site was cleared in the "not too distant past" (see Appendix I). ***Overall, the habitats found at the Project Site are entirely consistent with the surrounding landscape.***

3.3 Wildlife Species

The distribution and abundance of wildlife species is directly dependent upon the type, quantity, and quality of available habitat. As described in Sections 3.2, the Project Site is predominantly forested land with some wetland communities. Additional wildlife species that may use the Project Site were determined based on *Ecological Communities of New York State* (2nd Edition) (Edinger et al., 2014), the *Biodiversity Assessment Manual for the Hudson River Estuary* (Kiviat and Stephens, 2001), and information included in the *New York State Breeding Bird Atlas* (NYSDEC, 2008) the *New York Amphibian and Reptile Survey* (Cosentino and Gibbs, 2021) and the *Checklist of Amphibians, Reptiles, Birds, and Mammals of NYS* (NYSDEC, 2010). This information was supplemented through correspondence with the NYNHP and review of the USFWS IPaC to determine the potential presence of state or federally listed endangered, threatened, or state-designated species of special concern on or near the Project Site (see Appendix C).

Actual wildlife occurrence and potential wildlife habitat were observed and documented during field observation and assessment of existing habitat during the October and November 2019 site visits conducted by TRC, the Phase 1 Bog Turtle Habitat Survey in March 2021 conducted by TRC, the wetland peer review conducted by HVEA Engineers in 2020, and the 2005 field surveys conducted by Environmental Consulting, LLC. A full listing of the wildlife species observed or potentially occurring at the Project Site, with scientific names, is included in Appendix B.

3.3.1 Birds

The Project Site is located within New York State Breeding Bird Atlas blocks 5957A, 5957B, 5957C, and 5957D. A total of 74 bird species were recorded between the four New York State Breeding Bird Atlas blocks (see Appendix B). The majority of the species identified in the four New York State Breeding Bird Atlas blocks are typical of the deciduous forest, wetland, and successional habitats that dominate the area surrounding the Project Site. ***These species are consistent with regularly occurring nesting species for the region.***

There are five bird species listed within the New York State Breeding Bird Atlas blocks that are species of greatest conservation need (NYSDEC, 2021g):

- American woodcock (*Scolopax minor*);
- blue-winged warbler (*Vermivora pinus*);
- scarlet tanager (*Piranga olivacea*);
- worm-eating warbler (*Helmitheros vermivorum*); and,
- wood thrush (*Hylocichla mustelina*).

The USFWS Resource List listed five bird species that had the potential to be in the vicinity of the Project Site or because they are listed on the USFWS Birds of Conservation Concern list and are protected under the Migratory Bird Treaty Act (MBTA) and/or the Bald and Golden Eagle Protection Act (BGEPA) (see Appendix C):

- Bald eagle (*Haliaeetus leucocephalus*);
- Black-capped chickadee (*Poecile atricapillus practicus*);
- Rusty blackbird (*Euphagus carolinus*);
- Wood thrush (*Hylocichla mustelina*); and
- Yellow-bellied sapsucker (*Sphyrapicus varius*)

Out of these five species, three are listed as species of greatest conservation need: bald eagle, rusty blackbird, and wood thrush.

There are no designated Audubon Important Bird Areas in proximity of the Project Site. The nearest Audubon Important Bird Area is the Lower Hudson River, located 3.9 miles southwest of the Project Site (Audubon, 2021). The nearest New York State Bird Conservation Areas are Iona Island, located 5.5 miles west; and Constitution March, located 6.8 miles northwest of the Project Site (NYSDEC, 2021a).

Environmental Consulting, LLC conducted a breeding bird study in 2005 for the biodiversity assessment for the proposed Residences at Mill Court Crossing. The breeding bird study conducted in 2005 identified a total of 44 different bird species, 10 of which were forest interior species, and approximately 35 of which were summer resident breeding bird species (Appendix B). ***The biodiversity assessment in 2005 concluded that the Project Site's ability to support populations of rare and environmentally sensitive forest interior species had been compromised due to surrounding land use. The total bird species count was considered slightly below average for the area.***

3.3.2 Mammals

The occurrence of mammalian species at the Project Site was documented through a field survey conducted by Environmental Consulting, LLC in 2005 and evaluation of available habitat. This effort suggests that up to 49 different mammal species could occur in this area (Appendix B). Eleven different animal species, or signs of these species, were observed on the Project Site during the 2005 biodiversity assessment surveys conducted by Environmental Consulting, LLC

(Appendix B). The most commonly observed species during the 2005 biodiversity assessment survey were:

- white-tailed deer (*Odocoileus virginianus*);
- eastern chipmunk (*Tamias striatus*);
- eastern gray squirrel (*Sciurus caroliniensis*);
- racoon (*Procyon lotor*); and
- White-footed deer mouse (*Peromyscus leucopus*).

As indicated in Appendix B, other species not directly observed, but likely to occur in the area, include Virginia opossum (*Didephis virginiana*) and various small mammals such as mice, moles, voles, and shrews.

Other mammals potentially on site include the Indiana bat (*Myotis sodalis*), based on the USFWS IPaC unofficial species list (see Appendix C), which is a federal and state-listed endangered species, and potentially other bat species found in New York, including the eastern small-footed bat (*Myotis leibii*), a species of Special Concern. Of the 49 mammal species potentially on site (see Appendix B), 7 are species of greatest conservation need and include:

- Indiana bat;
- eastern-small footed bat;
- little brown bat (*Myotis lucifugus*);
- tri-colored bat (*Perimyotis subflavus*);
- hoary bat (*Lasiurus cinereus*);
- eastern red bat (*Lasiurus borealis*); and
- silver haired bat (*Lasionycteris noctivagans*).

3.3.3 Amphibians and Reptiles

Based on review of the New York State Amphibian and Reptile Atlas (Survey Block – Mohegan Lake) along with observations of species in the field by Environmental Consulting, LLC in 2005, it is estimated that 18 reptile and amphibian species could occur in the vicinity of the Project Site, including:

- Eastern American toad (*Bufo americanus americanus*);
- green frog (*Lithobates clamitans*);
- wood frog (*Rana sylvatica*);
- northern red backed salamander (*Plethodon cinereus cinereus*); and,
- eastern garter snake (*Thamnophis sirtalis sirtalis*)

A full listing of the reptile and amphibian species potentially occurring at the Project Site, with scientific names, is included in Appendix B. Based on the IPaC unofficial species list, the federally listed threatened and state-listed endangered bog turtle may occur within the vicinity of the Project

Site (see Appendix C). Species of concern that may occur at the Project Site include the spotted turtle (*Clemmys guttata*), marbled salamander (*Ambystoma opacum*), and Jefferson salamander (*Amybstoma jeffersonianum*). The spotted turtle, marbled salamander, and bog turtle are also three of six reptile/amphibian species potentially at the Project Site that are also species of greatest conservation need. The other three species of greatest conservation need are snapping turtle (*Chelydra serpentine*), box turtle (*Terrapene carolina carolina*), and ratsnake (*Pantherophis alleghaniensis*).

3.4 Rare, Threatened, and Endangered Species

3.4.1 Database Review and Agency Consultations

3.4.1.1 Federally Listed Species

The USFWS IPaC system provides a list of federally listed species that may be present in the vicinity of the Project (USFWS, 2021). An unofficial species list was obtained on February 1, 2021 (see Appendix C). The USFWS identified the following two species as potentially occurring in the vicinity of the Project:

- Indiana Bat – Federally and state-listed endangered species
- Bog turtle – Federally listed threatened and state-listed endangered species

Per the USFWS, there are no designated critical habitat for the Indiana bat or bog turtle in the vicinity of the Project Site. Both are also listed as species of greatest conservation need. Additional habitat information is provided below.

Indiana bat

During the winter, Indiana bats hibernate in caves and occasionally abandoned mines. These bats need cool, humid caves with stable temperatures, under 50° F, but above freezing, for hibernation (USFWS, 2006). After the spring emergence, females group to form small maternity colonies, where they give birth to their young. These colonies are located in the crevices or under loose bark in large dead or living trees. Suitable summer habitat includes forests and woodlots containing live trees and/or snags greater than 5 inches DBH that have exfoliating bark, cracks, crevices, and/or hollows that may provide roosts. Roost trees may be located in upland areas or floodplain forests (USFWS, 2018b).

Bog Turtle

Bog turtles overwinter in densely vegetated areas often with tree roots and other submerged structures along streams or underground springs. When air and water temperatures reach above 50° F, bog turtles become active emerge from overwintering (NYSDEC, 2021b). During summer months, bog turtles inhabit open-canopy wetlands characterized by muck; shallow, slow-moving water; and tussock vegetation. A mosaic of wet and dry pockets is necessary for bog turtles to forage, bask, hibernate, and nest (USFWS, 2020).

3.4.1.2 Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act

Migratory birds are defined as species which nest in the United States and Canada during summer months, and migrate south to the tropical regions of Mexico, Central or South America, and the Caribbean for the non-breeding season. As previously mentioned in Section 3.3, the USFWS Resource list included five bird species that had potential to be in the Project vicinity and are birds of conservation concern, including the following: bald eagle, black-capped chickadee, rusty blackbird, wood thrush, and yellow-bellied sapsucker (Appendix C). These migratory birds are protected under the MBTA under 16 U.S. Code 703-711. Additionally, bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are protected under the BGEPA under 16 U.S. Code 668-668d. These acts promote conservation of migratory birds through enhanced collaboration with the USFWS. Suitable migratory bird habitat includes forested and open areas, as well as edge habitats. Additional habitat information for the bald eagle is provided below.

Bald eagle

Bald eagles build large nests typically on the tops of tall large trees, often adjacent to open bodies of water, and occasionally on cliffs or the ground in treeless regions (USFWS, 2007). Bald eagles generally avoid areas with human activities and perch in either tall deciduous or coniferous trees that provide good visibility (The Cornell Lab of Ornithology, 2021). Bald eagles primarily eat fish, so they are found near lakes, swamps, reservoirs and rivers. They are found throughout North America (NYNHP, 2021).

It is unlikely the Project Site has suitable habitat for golden eagles. They commonly build nests on cliffs or in large, tall trees, in area that provide good visibility of the surrounding area. Golden eagles tend to avoid nesting in densely forested habitat and in urban areas. No active golden eagle nests are currently known in New York, although there are occasional sightings of these birds during migration (NYSDEC, 2019c).

3.4.1.3 State-Listed Species

In conjunction with the NYNHP, the NYSDEC ERM and Hudson Valley Natural Resource Mapper displays significant natural communities, rare plants, and rare animals, among other environmental resources. The results of the NYSDEC ERM search did not indicate the potential presence of “Rare Plants and Animals” in the vicinity of the Project Site (see Figure 5). The Hudson Valley Natural Resource Mapper indicated a “Known Important Area for Rare Terrestrial Animals” south of the Project Site.

Consultation with the NYNHP on January 28, 2020, indicated no records of state-listed animals or plants within the vicinity of the Project Site (see Appendix C).

3.4.2 Habitat Evaluation

Based on information gathered during the desktop and field review, TRC biologists assessed the presence/absence of suitable habitat for the Indiana bat, bog turtle, and bald eagle, as explained below.

Indiana Bat

During the site visits, no potential hibernacula were observed; however, potential bat roosting habitat was identified within the Project Site. Based on the tree inventory, there were 88 shagbark hickories and 54 black locusts (see Table 1 and Appendix I). These tree species have exfoliating bark and deep furrows capable of supporting potential Indiana bat roosting habitat (USFWS, 2018a). The DBH of trees throughout the site averaged between 4 to 24 inches with a few individuals attaining DBH measurements of over 30 inches. There are various trees on the Project Site that contain exfoliating bark, hollows, or deep furrows and crevices, which could be suitable for summer roosting habitats for bat species, including Indiana bat. The forest on the Project Site is part of a larger forest patch (see Figure 4), providing connectivity to more foraging and roosting habitat. ***However, it should be noted that according to the Hudson Valley Natural Resource Mapper, the Project Site is not part of an important bat foraging area.***

Bog Turtle

During the Phase 1 Bog Turtle Survey conducted on March 22, 2021, no bog turtles were observed; however, potential bog turtle habitat was identified (see Appendix J). A 0.28-acre portion of Wetland W-1, or 0.65 percent of the Project Site, provided low to very low quality potential bog turtle habitat (Figure 9). Wetland W-2 did not provide adequate habitat for the species. The one potential bog turtle habitat area within Wetland W-1 is a localized area with adequate hydrology, vegetation, and more importantly, soils for potential bog turtle habitat. Furthermore, hibernation areas are easily accessed in the multiple root systems near observed springs and seepages within Wetland W-1. ***However, this potential bog turtle habitat area has low to very low quality potential habitat based on the surrounding dense canopy cover.***

Bald Eagle

During the field survey, no bald eagles or nests were observed. Bald eagle nests are easy to spot as they are approximately 5 feet in diameter and can be up to 8 feet deep. Their large nests may be observed even if no eagles are present during a survey. Bald eagles in New York show a preference for nesting in super-canopies, trees taller than the rest in a surrounding area, of eastern white pine (*Pinus strobus*), spruce (*Picea* spp.), fir (*Abies* spp.), eastern cottonwood (*Populus deltoides*), oak (*Quercus* spp.), poplar (*Populus* spp.), or American beech (*Fagus grandifolia*). Bald eagles prefer nesting near undisturbed areas with large waterbodies that can support many fish. TRC identified one intermittent waterbody within the Project Site (see Figure 7 and Appendix F); however, this waterbody does not appear to support fish habitat suitable for the bald eagle.

While bald eagles may pass through the Project Site, it is unlikely that they would be nesting on the Project Site itself. Bald eagles prefer nesting in tall old growth trees. The entire

Project Site is forested; however, based on the limited number of trees greater than 30 inches in DBH (see Appendix I), it is unlikely there is suitable nesting habitat. There are also no large open waterbodies on the Project Site that would provide preferred nesting habitat. There is residential development surrounding the Project Site with patches of forested land (Figure 4). If present, bald eagles are more likely to be transient, preferring the larger open water areas in the region, such as the Hudson River and Mohegan Lake, which provide greater amounts of primary nesting, roosting, and foraging habitats.

4.0 POTENTIAL ECOLOGICAL IMPACTS

4.1 Habitat

The proposed solar array will be located within the existing upland forested land at the Project Site. Clearing of the upland forest at the Project Site will be required for the solar array and associated facilities (see Appendix A). Areas outside the fence surrounding the solar array will be replanted with wildlife-friendly native trees, shrubs, and pollinator-friendly wildflowers.

Based on Bartlett Tree Expert's tree inventory (see Appendix I) and the Project's revised LOD, it is estimated that 3,396 trees will be removed from the Project Site. It is estimated that 165 trees on slopes greater than 25 percent will be removed. Tree clearing for the solar array will convert 8.50 acres of the core forest at the Project Site to meadow. Edge forest is defined as forested land within 100 meters of the edge of a forest (Conlely et al., 2019). Tree clearing will convert a portion of core forest to edge forest. ***As mentioned in Section 3.2, the core forest at the Project Site is already in the bottom 20th percentile in terms for forest condition; therefore, it is not a high-quality core forest.***

Following construction, the solar array field will be seeded with a mix of grasses and clovers (*Trifolium* spp.). The vegetation will be mowed as needed to keep the vegetation below the solar panels. A pollinator-friendly seed mix of grasses and native wildflowers will be used wherever mowing is not necessary.

All wetland and stream resources will be avoided, and therefore no impacts to these communities are anticipated. A Stormwater Pollution Prevention Plan (SWPPP) will be developed incorporating NYSDEC's Best Management Practices (BMPs) as identified in the most current version of the *New York State Standards and Specifications for Erosion and Sediment Control* (NYSDEC, 2016b), in order to mitigate for potential pollutants from construction related erosion and sedimentation.

The pervious access drives will allow rainfall to percolate through the road to recharge ground water, sheet flow will pass through to maintain natural water flow, and sediment and nutrient removal capacity will be maintained, allowing suspended sediment to settle out of the water column.

An herbaceous layer of vegetation will remain underneath the panels, in between the panel rows, and the general surrounding area. Therefore, solar projects do not create the same impervious cover that other types of development do, such as parking lots and buildings. The minimal impervious features associated with solar projects are mitigated with post-construction stormwater design features such as infiltration trenches. The impervious features, such as equipment pads, are considered when designing the project and stormwater control as to avoid altering surrounding wetland hydrology.

Native plant species will be used for planting under and around the arrays, which will prevent the introduction of exotic/invasive species. BMPs from the SWPPP will also limit the spread of invasive species. ***The Project will not result in a major increase in impervious features and these features are considered when modeling the water runoff and designing the SWPPP. Stormwater will flow off panels and drain to the ground as normal.***

4.2 Wildlife

Construction and occasional maintenance (e.g., mowing) of the proposed Project may result in some limited unavoidable impacts to wildlife. Direct impacts of the proposed Project on wildlife resources could include the following:

- Incidental injury and mortality due to construction activity and vehicle movements,
- Minor temporary habitat disturbance during construction, and
- Temporary disturbance of wildlife due to increased noise and human activity during construction.

Incidental injury and mortality should be limited to sedentary and slow-moving species that are unable to relocate from disturbed areas during construction/maintenance. More mobile species should be able to vacate the areas that will be disturbed. Direct loss of reptiles and amphibians will also be minimized by avoiding impacts to streams and wetlands. ***It is likely that upland species using the area, such as forest mammals and forest birds, have the greatest potential to be impacted.***

Impacts to wildlife habitat will include the establishment of a 9.06-acre solar array within a 16.31-acre fenced area; the conversion of 18.57 acres of forest, including 8.50 acres of core forest, to a meadow; and the establishment of 0.12 acre of impervious surfaces from the equipment pads. ***Native grasses and wildflowers within the array field will provide habitat for pollinators such as bees, butterflies, and hummingbirds. The array field may also provide habitat for grassland birds and small mammals. Pesticides and herbicides will not be used on the Project.***

No operation impacts on wildlife are expected. Although the glass surfaces of solar photovoltaic (PV) systems can produce glint and glare, the panels are designed for light absorption, rather than reflection. Modern PV panels reflect as little as 2 percent of incoming sunlight, about the same as water and less than soil or wood shingles (Meister Consultants Group, 2014). Therefore, glare is not expected to adversely impact wildlife. The noise-producing elements for the Project are inverters, transformers, and battery storage units. The inverters will only produce noise during daily hours when the panels are generating electricity. The transformers and battery storage units may continue to produce sound during nighttime hours. Based on the assumed background sound level of 45 A-weighted decibels (dBA), estimated Project noise levels will not increase background sound levels at nearby residential receivers more than 4 dBA. These noise impacts follow the NYSDEC's guidance in Assessing and

Mitigation Noise Impacts (NYSDEC, 2001), and therefore, noise is not expected to adversely impact wildlife.

This Project will include a perimeter chain link fence to discourage trespassing and access of large animals onto the Project. The perimeter fence will have a 6-inch gap off the ground to allow smaller animals to pass through the Project and inhabit the facility following construction. ***Large animals will still have access to the remaining portion of the Project Site not enclosed by the perimeter fence (Figure 10).***

4.3 Rare, Threatened, and Endangered Species

Indiana bat

Threats to the Indiana bat include white-nose syndrome, changes to the entrance of caves that result in a change in cave microclimate, and loss or degradation of summer habitat (USFWS, 2018a, 2018b). The Project will convert 18.57 acres of forested land to meadow for the solar arrays and associated facilities; however, there will be remaining forested habitat at the Project Site and within the surrounding vicinity. The USWFS recommends maintaining at least 35 percent of forest habitat within the maternity colony home range as a conservation measure for Indiana bats (USFWS, 2018). The Project will maintain 48 percent of potential Indiana bat habitat within a 2.5-mile radius of the Project Site, as indicated by Figure 4. Tree clearing will be performed during the winter, between October 1 and March 31, in order to avoid impacts to potentially roosting bats. No hibernacula were identified within the vicinity of the Project Site and therefore, no impacts to Indiana bat wintering habitat are anticipated due to the Project. ***Based on the factors considered herein, no "take" of Indiana bat is anticipated at the Project Site. Consultation with USFWS will confirm no "take" of Indiana bat is anticipated.***

No effect of the operation of the solar array on bat species is expected. As bats are nocturnal, glare is not expected to have an effect. Bats will also be able to forage along the forest edge habitat and above the solar panels.

Bog Turtle

Habitat loss and fragmentation are the main threats to bog turtles. Altering wetland hydrology also affects the mosaic of wet and dry areas necessary for bog turtle habitat (USFWS, 2010). The Project has been designed to avoid impacts to delineated wetlands at the Project Site. The USFWS notes that even if wetland impacts are completely avoided, activities in adjacent upland areas can adversely affect bog turtles. Activities in upland areas adjacent to bog turtle habitat can compromise wetland habitat quality, fragment travel corridors, and alter wetland hydrology (USFWS, 2001).

Installation of solar panels could potentially impact bog turtles during the construction phase of the Project. Impacts to the species would only be during construction, as afterwards the solar array will remain pervious and planted with a wildlife-friendly mix of herbaceous vegetation.

The USFWS designated three bog turtle conservation zones to protect and help recovering bog turtle populations within their northern range. Conservation Zone 1 includes the entire wetland

and not just the portion of the wetland identified as ideal for nesting, basking, or hibernating bog turtles. Bog turtles are most vulnerable in Conservation Zone 1, and therefore, this zone requires the highest degree of protection. Conservation Zone 2 is the area within at least 300 feet of the boundary of Conservation Zone 1 and this zone includes upland areas adjacent to Conservation Zone 1. Certain activities in Conservation Zone 2 could indirectly impact wetland habitat, thus adversely affecting bog turtles. Conservation Zone 3 is the area within 0.5-mile from the boundary of Conservation Zone 2. Activities in Conservation Zone 3 have the potential to adversely affect bog turtles by affecting wetlands or stream complexes connected to Conservation Zone 1. The purpose of Conservation Zone 3 is to protect ground and surface water recharge zones for wetlands occupied by bog turtles (USFWS, 2001).

Although Wetland W-2 did not have suitable bog turtle habitat, both Wetlands W-1 and W-2 are part of a larger wetland complex that connects off site and therefore are both subject to conservation measures. ***No direct impacts to Wetland W-1 and W-2 are anticipated; therefore, there will be no activities in Conservation Zone 1 at the Project Site (Figure 9).***

The area within a 300-foot adjacent buffer from the limits of wetlands W-1 and W-2 is Conservation Zone 1 (Figure 9). Since a portion of the Project's LOD will be within Conservation Zone 2 (Figure 9), BMPs will be followed to avoid indirect impacts that may adversely affect the species. ***These bog turtle conservation measures include a double silt fence barrier, a qualified bog turtle monitor on site, and educating the construction crews about bog turtles (Appendix J).***

The area within a 0.5-mile buffer of the 300-foot adjacent buffer from the limits of wetlands W-1 and W-2 is Conservation Zone 3 (USFWS, 2020b). The Project will not impact ground and surface water recharge zones within Conservation Zone 3.

Through CVE and TRC's proposed conservation measures, no "take" of bog turtles is anticipated at the Project Site. The Phase 1 Bog Turtle Habitat Survey Report (Appendix J) will be submitted to the USFWS for their concurrence that no "take" of bog turtles is anticipated.

<u>Bald eagle</u>

Habitat loss and alteration, along with human disturbance of breeding or wintering sites, constitute the main threats to bald eagles in New York State (NYSDEC, 2016a). Removal of mature forest along shorelines is of concern due to the potential loss of preferred nesting, foraging, and roosting sites (NYSDEC, 2016a). The sensitivity of bald eagles to human activities is variable, with some eagles being highly sensitive and others much more tolerant. This variation can be due to a number of factors including visibility, duration, noise levels, extent of the area affected, prior experiences with humans, and tolerance of the eagles (USFWS, 2007).

USFWS and NYSDEC have developed guidelines for activities near bald eagle nests, foraging sites, and communal roosts. For temporary activities, such as construction, USFWS recommends these activities take place 660 feet from any eagle nests. No specific buffers are recommended

for foraging and communal roost sites, but minimizing these activities within the flight path between nests and roost sites and important foraging areas is recommended (USFWS, 2007). NYSDEC also recommends a buffer of 660 feet between nests and construction activities for nests with a visual buffer (NYSDEC, 2016a).

Based on correspondence with the NYNHP, there are no known eagle nests within 660 feet of the Project Site. Additionally, no nests were observed on the Project Site during the October and November 2019 site visits. Eagles in the region would be supported by the Hudson River, Mohegan Lake, and other large waterbodies, as opposed to the resources present at the Project Site. Eagles may avoid transient use of the Project Site during construction; however, it is expected eagles will be displaced to preferable habitat in the area. ***Therefore, the Project will comply with the MBTA and BGEPA, specifically that no "takes" of bald eagles, nests, or eggs are anticipated to occur.***

5.0 MITIGATION

5.1 Tree Reforestation Plan

The Project has prepared a tree reforestation plan in accordance with Chapter 283 of the Town Code of Cortlandt. Tree reforestation must satisfy a minimum ratio of 1 tree per 1,000 square feet of disturbance or 2 trees planted for every tree removed on a steep slope regulated under Chapter 283 of the Town Code (i.e., greater than 25 percent). The Town of Cortlandt Planning Board shall determine the minimum number of trees to be replanted and the total quantity of trees to be replanted shall be set at the more stringent of the two ratios between the total number of trees proposed for removal adjusted for steep slopes and the ratio of 1 tree per 1,000 square feet of disturbance. ***It was concluded that 841 trees will need to be replanted using the more stringent ratio of 1 tree per 1,000 square feet of disturbance, based on calculations (see Appendix A).***

The proposed trees shall be planted during appropriate timeframes and stages throughout the construction of the Project so that the reforestation efforts are completed simultaneously with the installation of the solar panels to the best extent possible.

The proposed landscaping plan includes planting of 515 new native and pollinator-friendly evergreen and deciduous trees and shrubs. The requirements put forth allow for credit to be taken for plantings of certain heights and sizes that are proposed to be planted within the Project Site. In this instance, a total tree credit of 304 trees was calculated using the formulas allotted (see Appendix A). Once the tree credit is applied, the remaining 537 trees will be compensated by CVE's contribution to the Town of Cortlandt's Tree Fund.

Additionally, the remaining 537 trees will be planted at the Project Site after decommissioning in the area where the solar array system was sited and removed. The tree species to be planted after decommissioning will be similar to the original species at the Project Site prior to construction. The tree inventory prepared by Bartlett Tree Experts (see Appendix I) will be referenced to ensure that the proper tree species are procured and installed, to the best extent possible, in the same locations as that of the original tree species that existed at the Project Site prior to construction. Any remaining trees that cannot be planted due to spacing, availability, layout limitations, or any other reasonable restrictions will be accounted for via an in-lieu fee payment to compensate for any remaining deficiencies in tree quantity totals required.

5.2 Biodiversity Enhancement Plan

The overall reforestation and biodiversity enhancement plan is to provide a planting scheme throughout the Project Site using plant species that are native or indigenous to the area, pollinator-friendly, and wildlife-friendly. The landscaping plan proposes pollinator-friendly tree and shrub plantings that will benefit wildlife and increase biodiversity at the Project Site. See Appendix A for the specifications of the tree and shrub plantings. Additional BMPs will be implemented to supplement and enhance the existing vegetation and landscape elements at the Project Site.

A low-growing perennial seed mix comprised of native/indigenous warm and cool season grasses, red and white clover (*Trifolium repens* and *Trifolium pratense*), and other pollinator-friendly plant species, will be sown throughout most of the solar array. See Appendix A for the specification of this solar farm grass seed mix. ***This solar farm grass seed mix will minimize shading, erosion concerns, and the need for frequent mowing.***

Additionally, a native pollinator-friendly seed mix ground cover is intended to be sown wherever possible in areas where mowing is not of concern in selected locations that will allow pollinator-friendly flower species to develop to the best extent possible. ***When planted together, these seed mixes, shrubs, and trees can benefit wildlife by providing wildlife habitat, shelter, and food for a variety of wildlife species, thereby increasing and enhancing biodiversity.***

In addition to the items cited above, some other BMPs to be implemented include:

- wildlife-friendly chain-link fencing with a 6-inch gap off the ground to allow small wildlife species to pass through the solar array;
- using felled trees to construct wildlife habitat piles strategically located in designated areas;
- a variety of pollinator-friendly (woody-type and perennial) plantings in the laydown area after construction of the Project is complete;
- bird boxes and nest boxes throughout the Project Site; and
- allowing early succession to occur wherever possible throughout the Project Site.

The implementation of these BMPs can increase the diversity of wildlife and plant species, resulting in an increase of biodiversity at the Project Site and beyond.

After landscaping, the majority of the Project Site, 62.2 percent (26.82 acres), will be outside of the wildlife-friendly perimeter fence at the Project Site (see Figure 10). This area outside of the perimeter fence will remain wildlife habitat with corridors available for larger species at the Project Site.

6.0 CONCLUSION

The Project Site's biodiversity has been limited due to development in the surrounding vicinity. The Project Site is forested and part of a core forest; however, this forest is young and overall has a low forest condition index.

Federal and state-listed rare, threatened, and endangered species that may occur within the vicinity of the Project Site include Indiana bat, bog turtle, and bald eagle. The Project Site has suitable Indiana bat summer roosting habitat. Tree clearing will be conducted during the winter; therefore, the Project is unlikely to adversely affect Indiana bat. A Phase 1 bog turtle survey identified potential bog turtle habitat at the Project Site, although it was low to very low quality habitat. Conservation measures; including a double row of silt fence, a qualified bog turtle monitor on site, and educating construction crews; have been developed; therefore, no "take" is anticipated for bog turtles at the Project Site. It is unlikely the Project Site has suitable nesting habitat for bald eagle.

The tree reforestation plan and wildlife enhancement plan will benefit biodiversity at the Project Site and in the surrounding vicinity. When the landscaping has been completed, larger and smaller wildlife will have access to 62.2 percent (26.82 acres) of the Project Site that will be outside of the perimeter fence. Smaller wildlife will also have access to 100 percent of the Project site inside and outside the wildlife-friendly perimeter fence (Figure 10).

Project has been carefully designed to minimize ecological impacts:

- The delineated wetlands, stream, and the wetlands' 100-foot adjacent area will not be impacted;
- Only 43.1 percent (18.57 acres) of the forested area at the Project Site will be converted to pollinator-enhanced meadow habitat benefiting various wildlife species;
- Compared to the previously proposed and approved residential development at Mill Court Crossing (see Section 1.2.1.), this Project will have less impervious cover and provide more wildlife habitat;
- CVE will contribute to the Town of Cortlandt's Tree Fund to mitigate for tree removal for the Project as required by the Planning Board;
- CVE will also provide reforestation of the Project Site after the Project has been decommissioned as outlined in the Decommissioning Plan;
- Prior to and during construction, the Project will implement BMPs in accordance with the SWPPP to avoid impacting wetlands; water bodies; and rare, threatened, and endangered species;

- Impacts to wildlife are expected to consist of temporary displacement during construction and maintenance and incidental injury and mortality of sedentary and slow-moving species. The Project will follow BMPs, along with following the required permits in order to avoid, minimize, and/or mitigate impacts;

- The Project will include significant biodiversity enhancement features including ***over 500*** new native and pollinator-friendly evergreen and deciduous trees and shrub plantings; pollinator-friendly wildflowers; a wildlife-friendly fence; wildlife habitat piles; and bird boxes throughout the outside edges of the array area.

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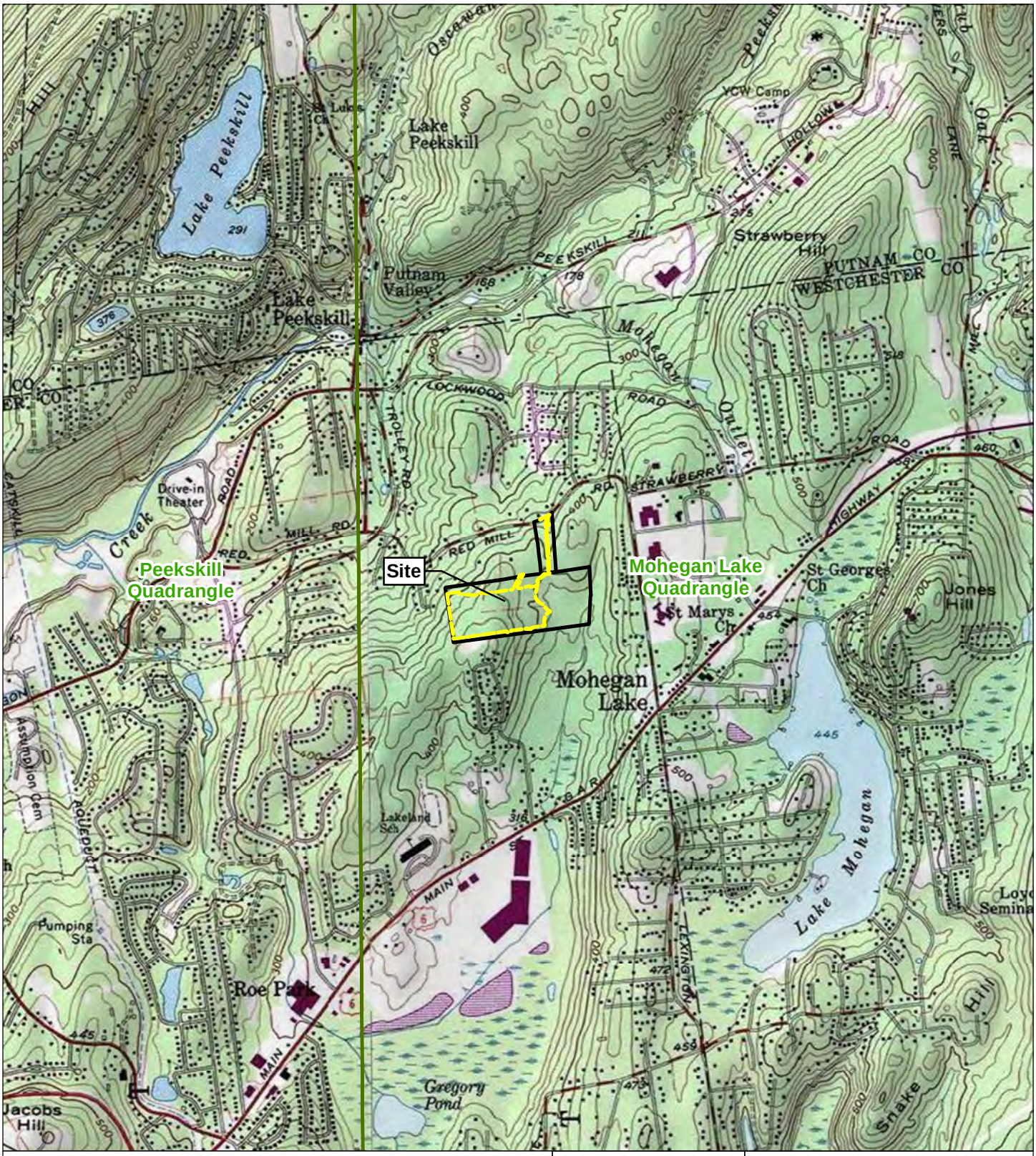
FIGURES



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PROJECT LOCATION

CVE NORTH AMERICA
CORTLANDT MILL SOLAR FARM

CORTLANDT, WESTCHESTER COUNTY
NEW YORK

FIGURE 1 | MARCH 2021

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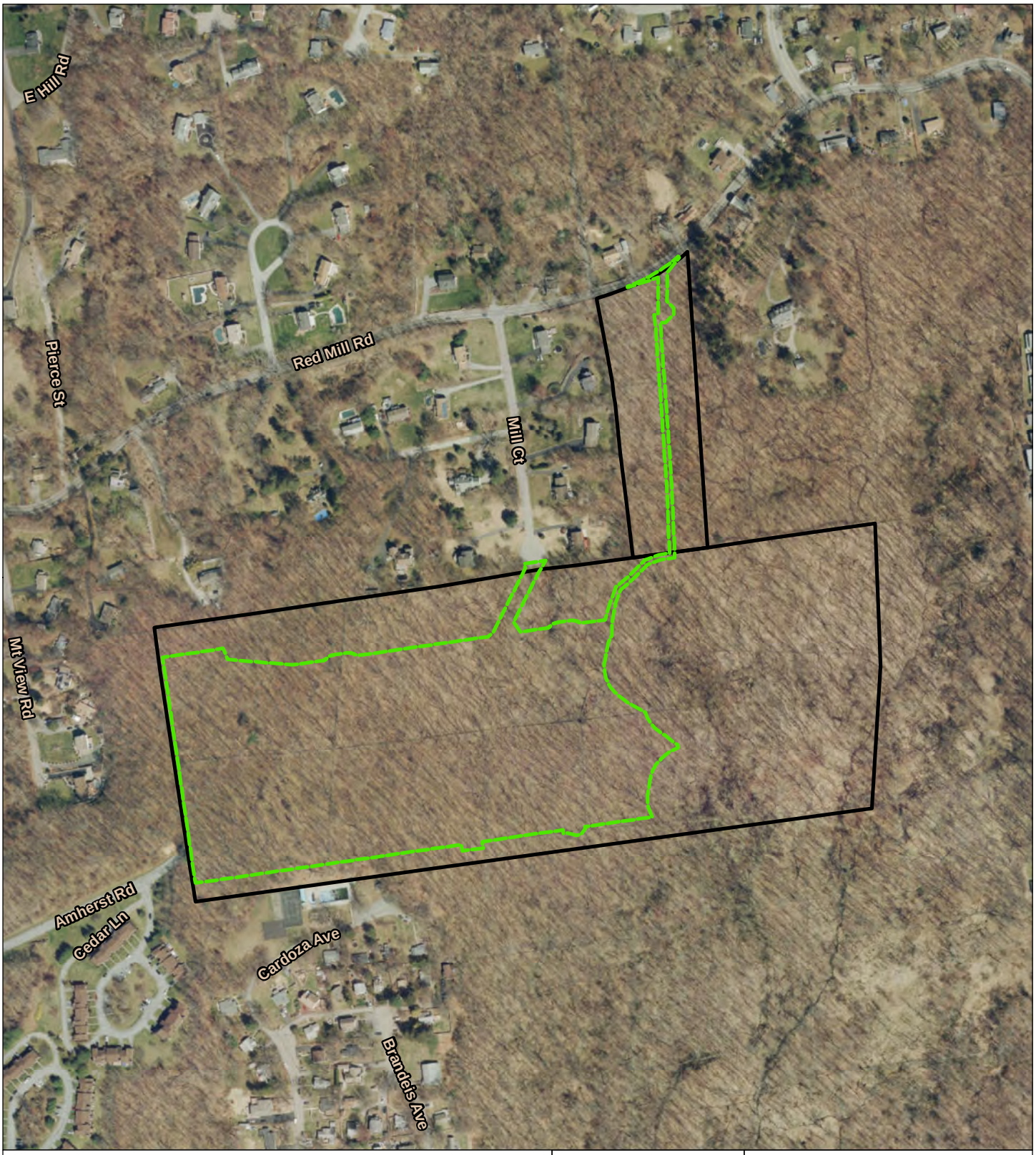
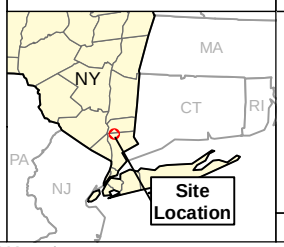


Project Parcel
Limits of Disturbance

N

0 200 400
Feet



Data Sources: CVEGroup, TRC
Base Map: Esri/NAIP, "World Imagery", 2018

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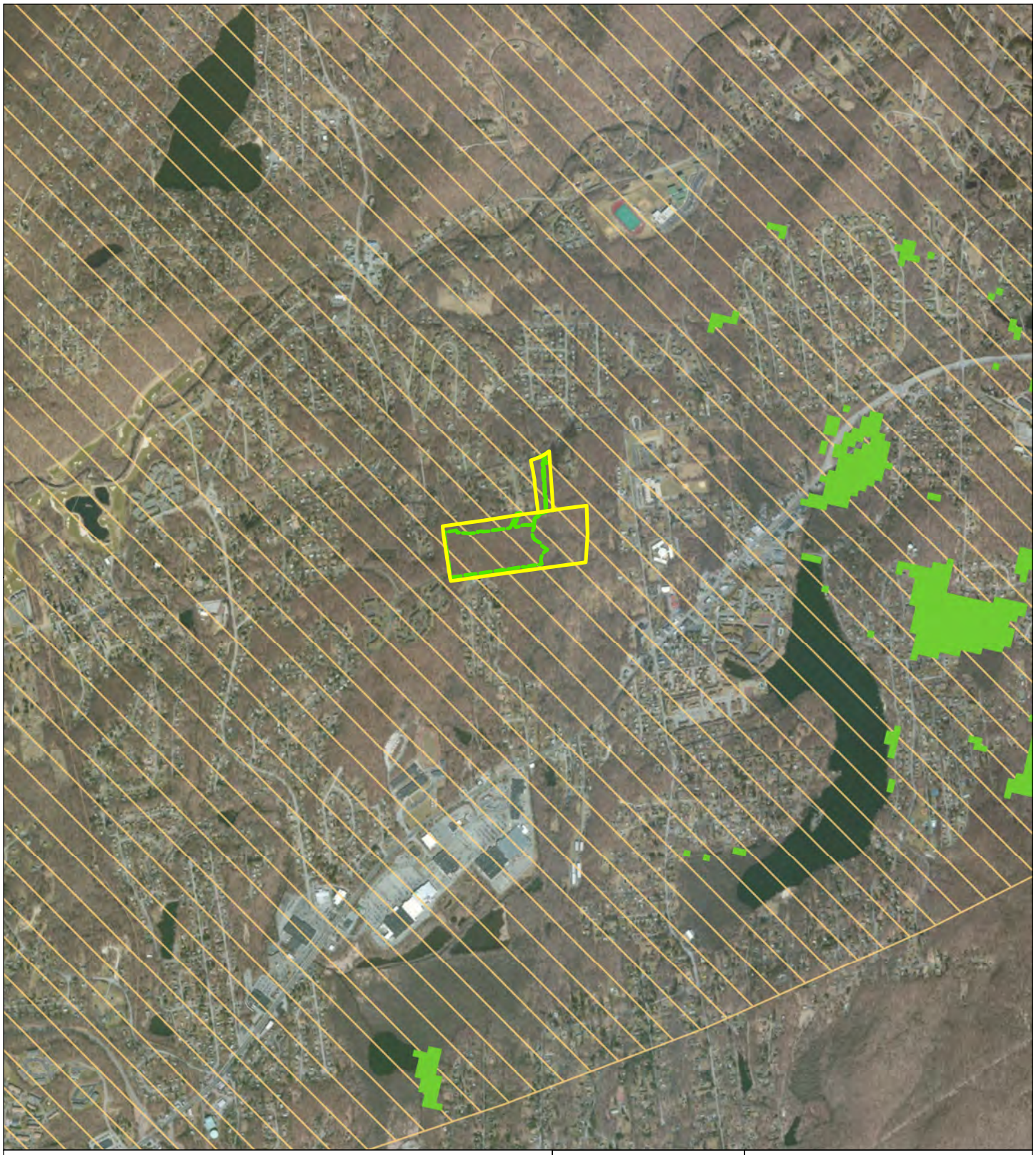
AERIAL MAP

CVE NORTH AMERICA
CORTLANDT MILL SOLAR FARM

**CORTLANDT, WESTCHESTER COUNTY
NEW YORK**

FIGURE 2 | MARCH 2021

S:\1-PROJECTS\CVE_NA\360551_Mill_Court_Cortland\5-MXD\SEQR\Fig2_Cortlandt_Aerial_8x11_20210308.mxd



Project Parcel

Limits of Disturbance

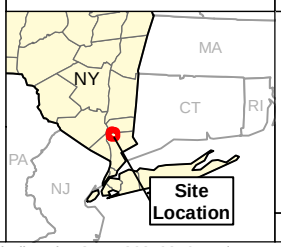
Recognized Biodiversity Value:
Additional Habitat and Species (TNC)

Significant Biodiversity Area in the
Hudson River Valley (NYDEC)

N

0 1,000 2,000

Feet



Data Sources: CVEGroup, TRC, The Nature Conservancy, NYSDEC
Base Map: Esri/NAIP, "World Imagery", 2018

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BIODIVERSITY

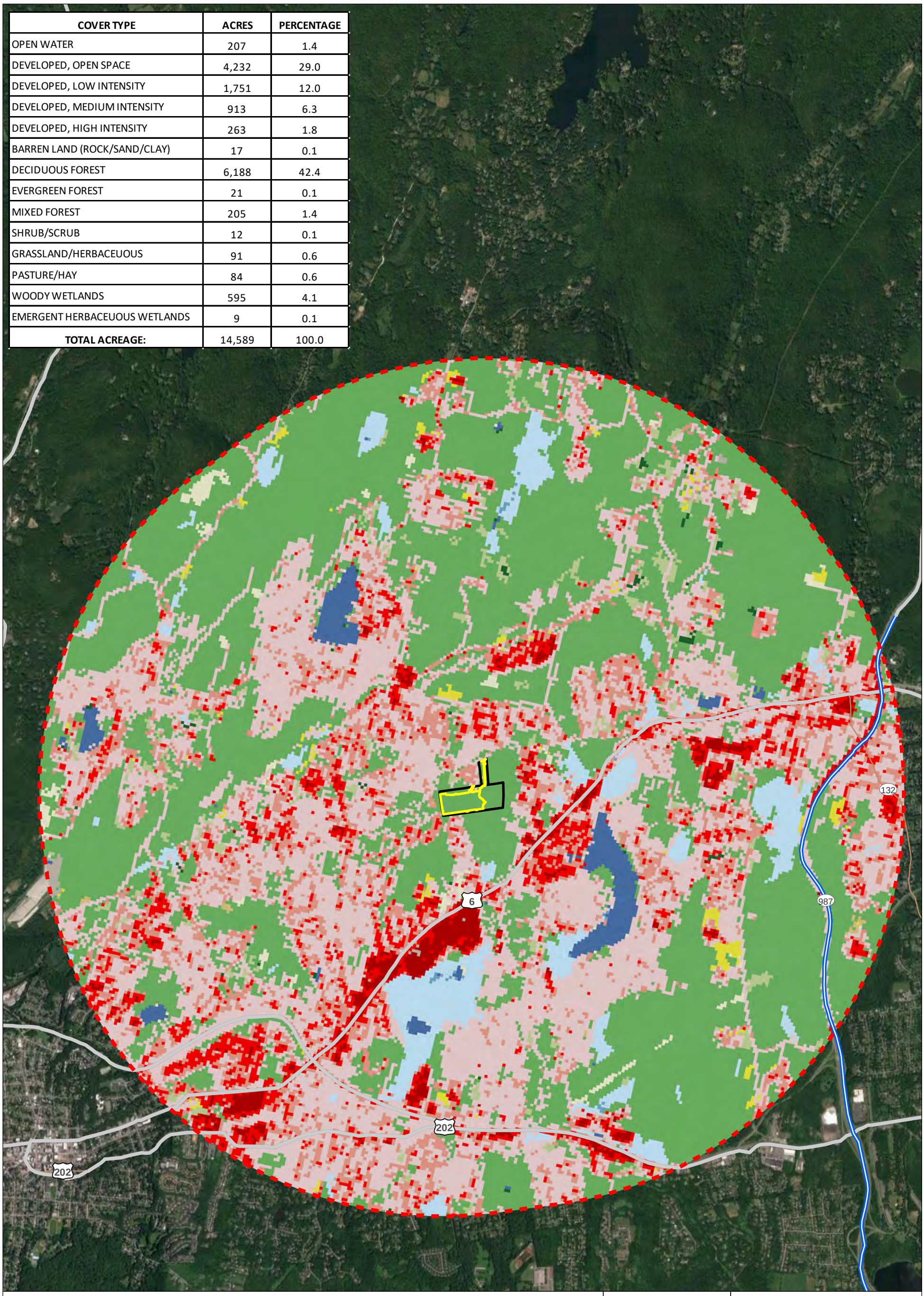
CVE NORTH AMERICA
CORTLANDT MILL SOLAR FARM

CORTLANDT, WESTCHESTER COUNTY
NEW YORK

FIGURE 3	MARCH 2021

S:\1-PROJECTS\CVE_NA\360551_Mill_Court_Cortland\5-MXD\Biodiversity_Assessment\Fig3_Cortlandt_Biodiversity_8x11_20210316.mxd

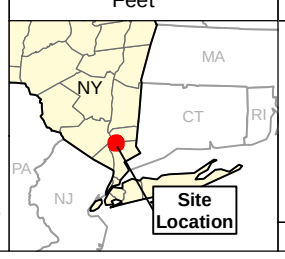
COVER TYPE	ACRES	PERCENTAGE
OPEN WATER	207	1.4
DEVELOPED, OPEN SPACE	4,232	29.0
DEVELOPED, LOW INTENSITY	1,751	12.0
DEVELOPED, MEDIUM INTENSITY	913	6.3
DEVELOPED, HIGH INTENSITY	263	1.8
BARREN LAND (ROCK/SAND/CLAY)	17	0.1
DECIDUOUS FOREST	6,188	42.4
EVERGREEN FOREST	21	0.1
MIXED FOREST	205	1.4
SHRUB/SCRUB	12	0.1
GRASSLAND/HERBACEUOUS	91	0.6
PASTURE/HAY	84	0.6
WOODY WETLANDS	595	4.1
EMERGENT HERBACEUOUS WETLANDS	9	0.1
TOTAL ACREAGE:	14,589	100.0



Project Parcel
Limits of Disturbance
2.5 Mile Buffer of Project Parcel
Open Water
Developed, Open Space
Developed, Low Intensity
Developed, Medium Intensity
Developed, High Intensity
Barren Land (Rock/Sand/Clay)
Deciduous Forest
Evergreen Forest
Mixed Forest
Shrub/Scrub
Grassland/Herbaceuous
Pasture/Hay
Cultivated Crops
Woody Wetlands
Emergent Herbaceuous Wetlands

N

0 1,500 3,000
Feet



Data Sources: MRLC CONUS Land Cover, 2016
Bae Map: Google Satellite

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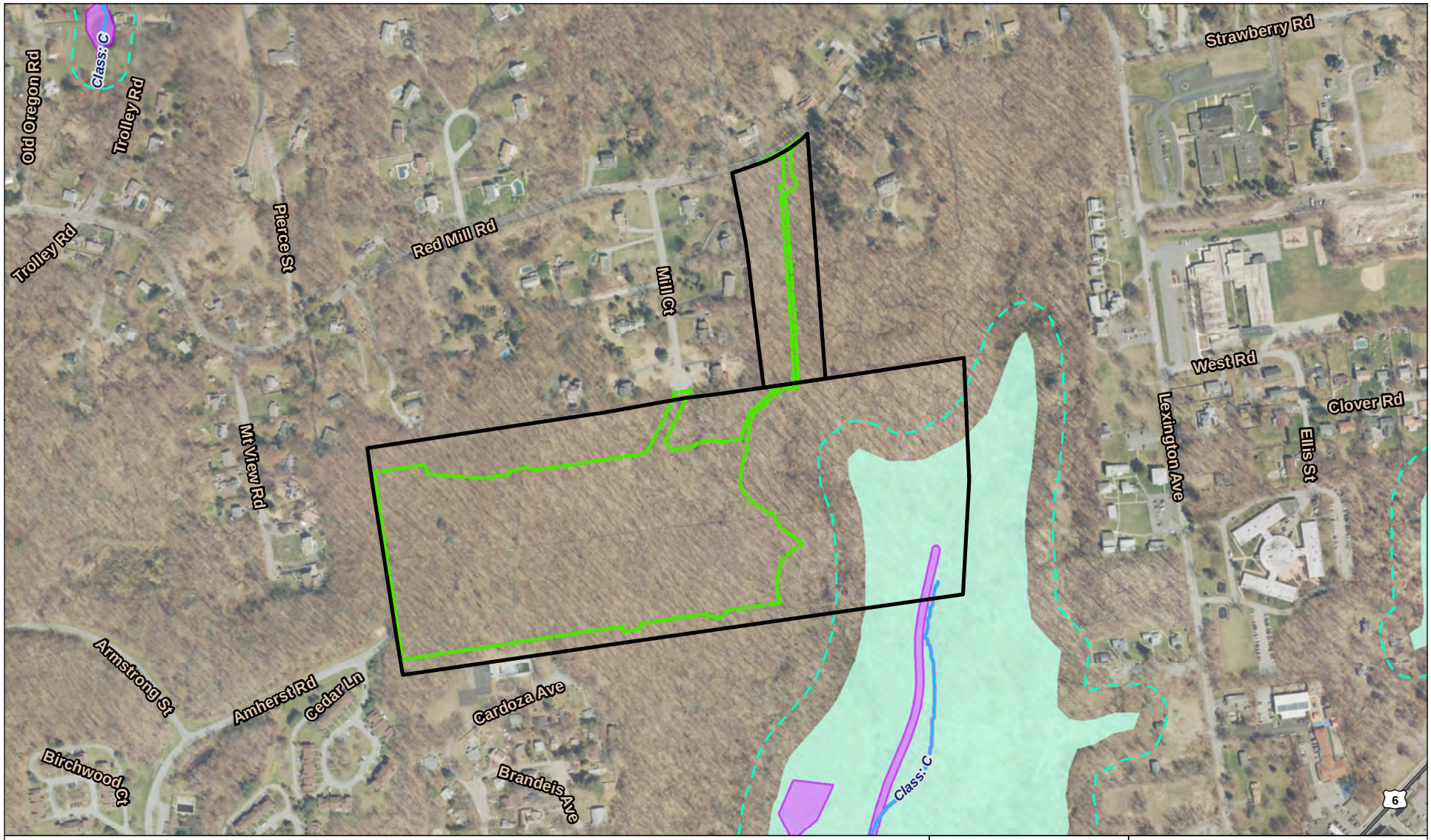
NLCD 2016 LAND COVER MAP

CVE NORTH AMERICA
CORTLANDT MILL SOLAR FARM

CORTLANDT, WESTCHESTER COUNTY
NEW YORK

FIGURE 4 | MARCH 2021

S:\1-PROJECTS\CVE_NA\360551_Mill_Court_Cortland\5-MXD\SEQR\Fig4_Courtlandt_2016NLCD_8x11_20210316.mxd



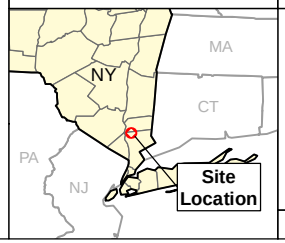
Project Parcel
Limits of Disturbance
Streams (NHD)
Unprotected Stream (NYSDEC)
Wetland (NYSDEC)
Wetland (NWI)
100-ft Buffer from DEC Wetland/Stream

Note:
1. The whole map extent is within 500-Year Floodplain (FEMA).

Data: NYS Geographic Information Gateway, FEMA, TRC, 2019
Base Map: Esri/NAIP, "World Imagery", 2018, Esri & Contributors

N

0 250 500
Feet



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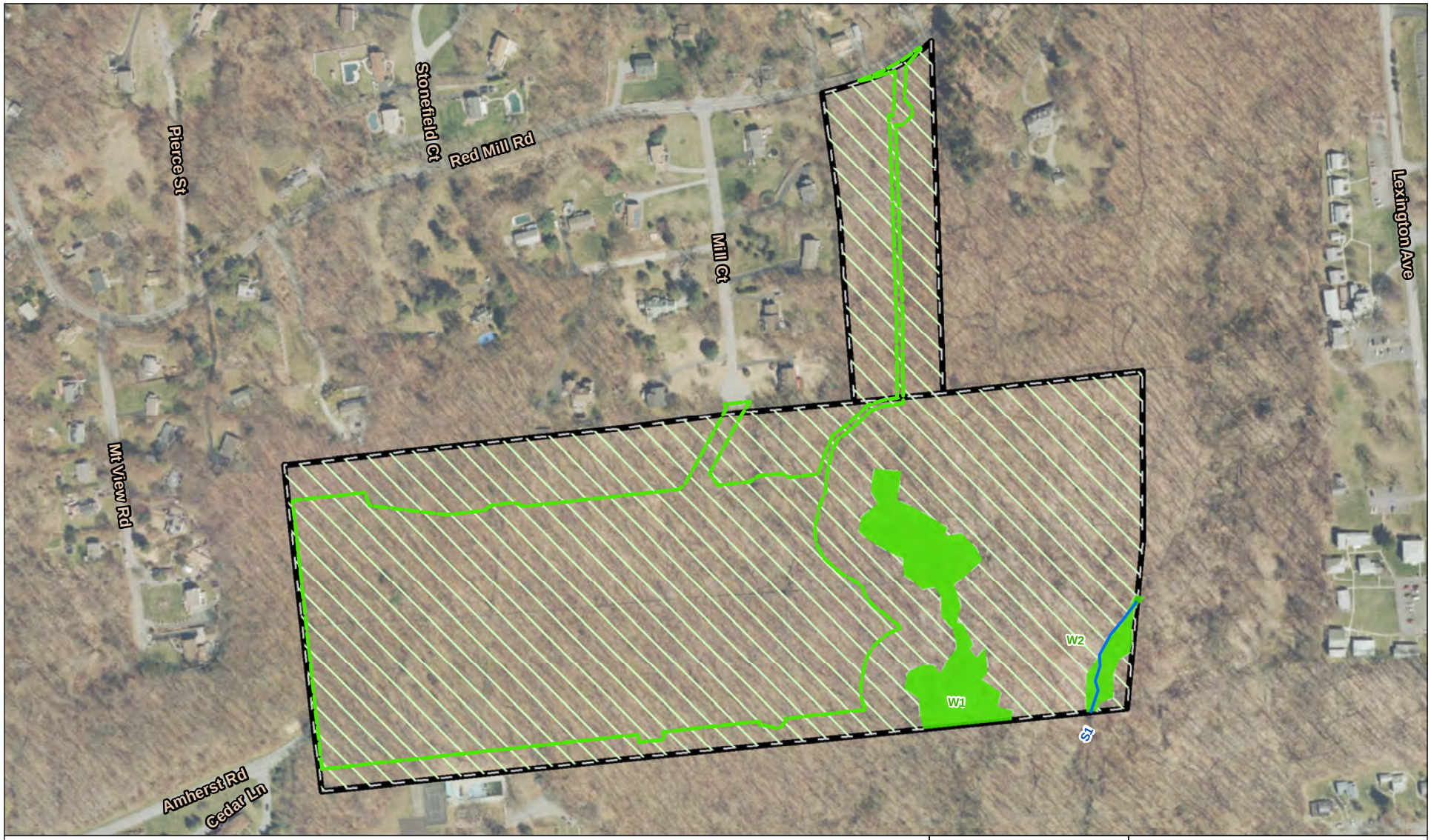
FEDERAL AND STATE MAPPED WATER RESOURCE AND FLOODPLAIN MAPPING

CVE NORTH AMERICA
CORTLANDT MILL SOLAR FARM

CORTLANDT, WESTCHESTER COUNTY
NEW YORK

FIGURE 5 | MARCH 2021

S:\1-PROJECTS\CVE_NA\360551_Mill_Court_Cortland\5-MXD\Biodiversity_Assessment\Fig5_Cortlandt_Env_Resources_8x11L_20210316.mxd



Project Parcel
Limits of Disturbance
Nontidal Hardwood Swamp
Young Woods
Intermittent Stream

N

0 175 350
Feet

Data: CVEGroup,TRC, 2019/2020
Base Map: Esri/NAIP, "World Imagery", 2018, Esri & Contributors

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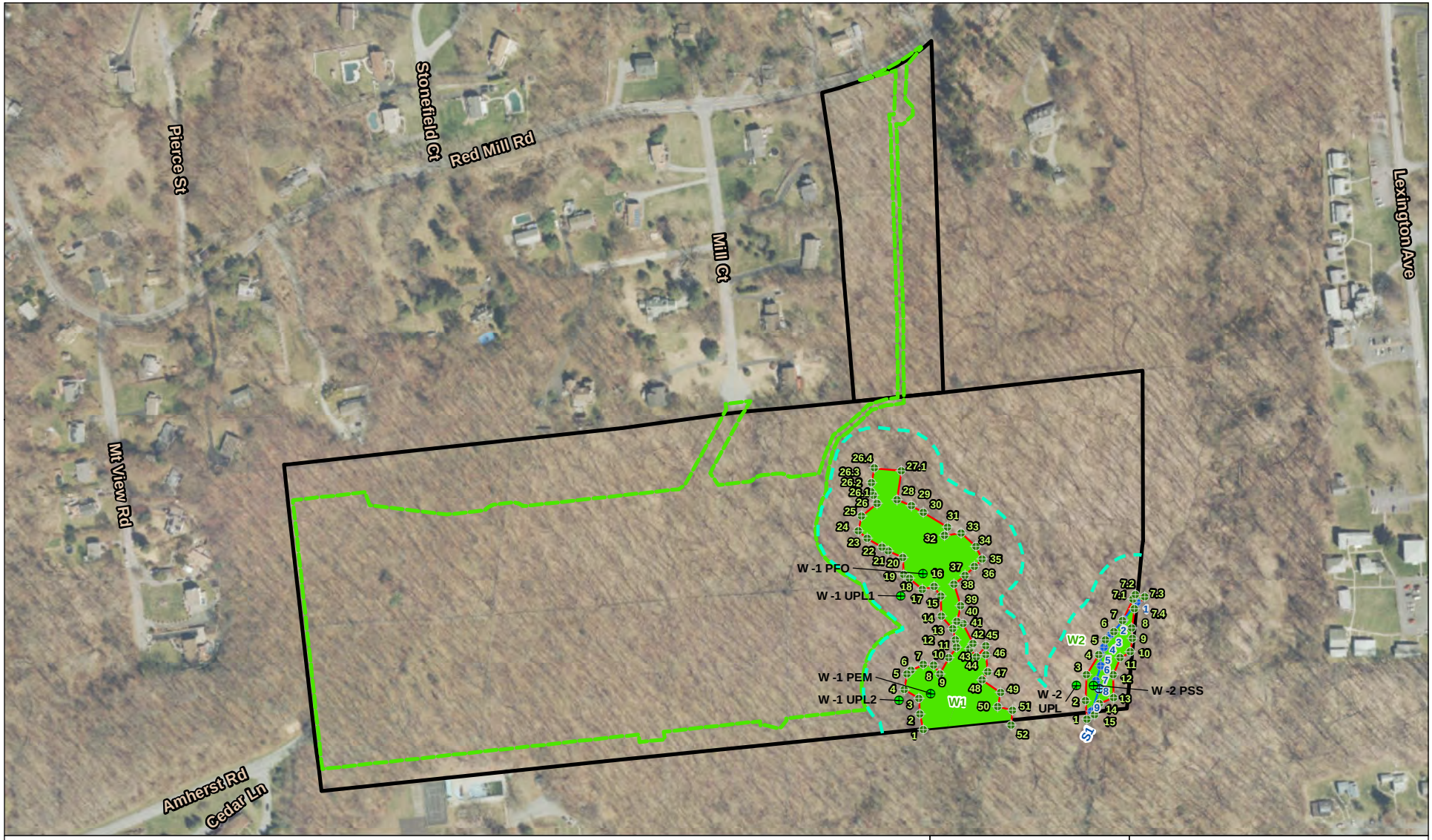
HUDSON RIVER VALLEY HABITATS

CVE NORTH AMERICA
CORTLANDT MILL SOLAR FARM

CORTLANDT, WESTCHESTER COUNTY NEW YORK

FIGURE 6 | MARCH 2021

S:\1-PROJECTS\CVE_NA\360551_Mill_Court_Cortland\5-MXD\Biodiversity_Assessment\Fig6_Mesophytic_Lowland_Forest_8x11L_20210316.mxd



Data: CVEGroup,TRC, 2019/2020
Base Map: Esri/NAIP, "World Imagery", 2018, Esri & Contributors

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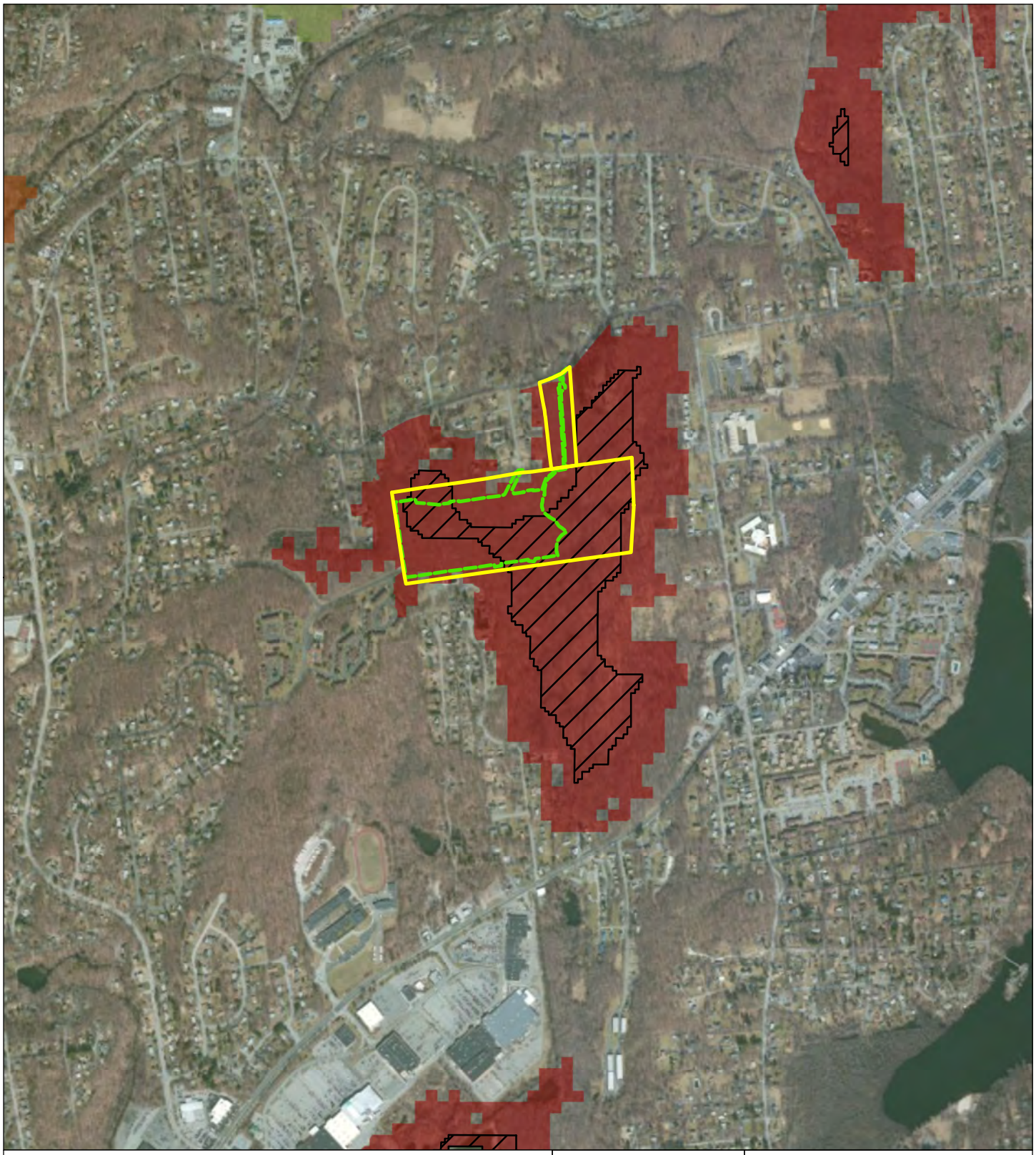
DELINEATED WETLANDS AND STREAMS

CVE NORTH AMERICA CORTLANDT MILL SOLAR FARM

CORTLANDT, WESTCHESTER COUNTY NEW YORK

FIGURE 7 | MARCH 2021

S:\1-PROJECTS\CVE_NA\360551_Mill_Court_Cortland\5-MXD\Biodiversity_Assessment\Fig7_Delineation_8x11L_20210316.mxd



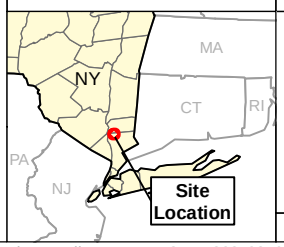
Project Parcel
Limits of Disturbance
Core Forest

Forest Condition Index (percentile)

0 - 20
20 - 40
60-80

N

0 600 1,200
Feet



Data Sources: CVEGroup, TRC, NYSDEC
Base Map: Esri/NAIP, "World Imagery", 2018

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HUDSON VALLEY FORESTS

CVE NORTH AMERICA
CORTLANDT MILL SOLAR FARM

**CORTLANDT, WESTCHESTER COUNTY
NEW YORK**

FIGURE 8 | MARCH 2021

S:\1-PROJECTS\CVE_NA\360551_Mill_Court_Cortland\5-MXD\Biodiversity_Assessment\Fig8_Cortlandt_Hudson_Valley_Forests_8x11_20210316.mxd

Project Parcel
Limit of Disturbance
USACE Plot
Delineated Intermittent Stream
Wetland Boundary Line

Wetland Covertype

PEM (Potential Bog Turtle Habitat)
PSS
PFO
100-ft Wetland Buffer
Bog Turtle Conservation Zone 1
Bog Turtle Conservation Zone 2

N

0 175 350
Feet

Data: TRC, NYGIS, Esri
Base Map: Esri World Imagery

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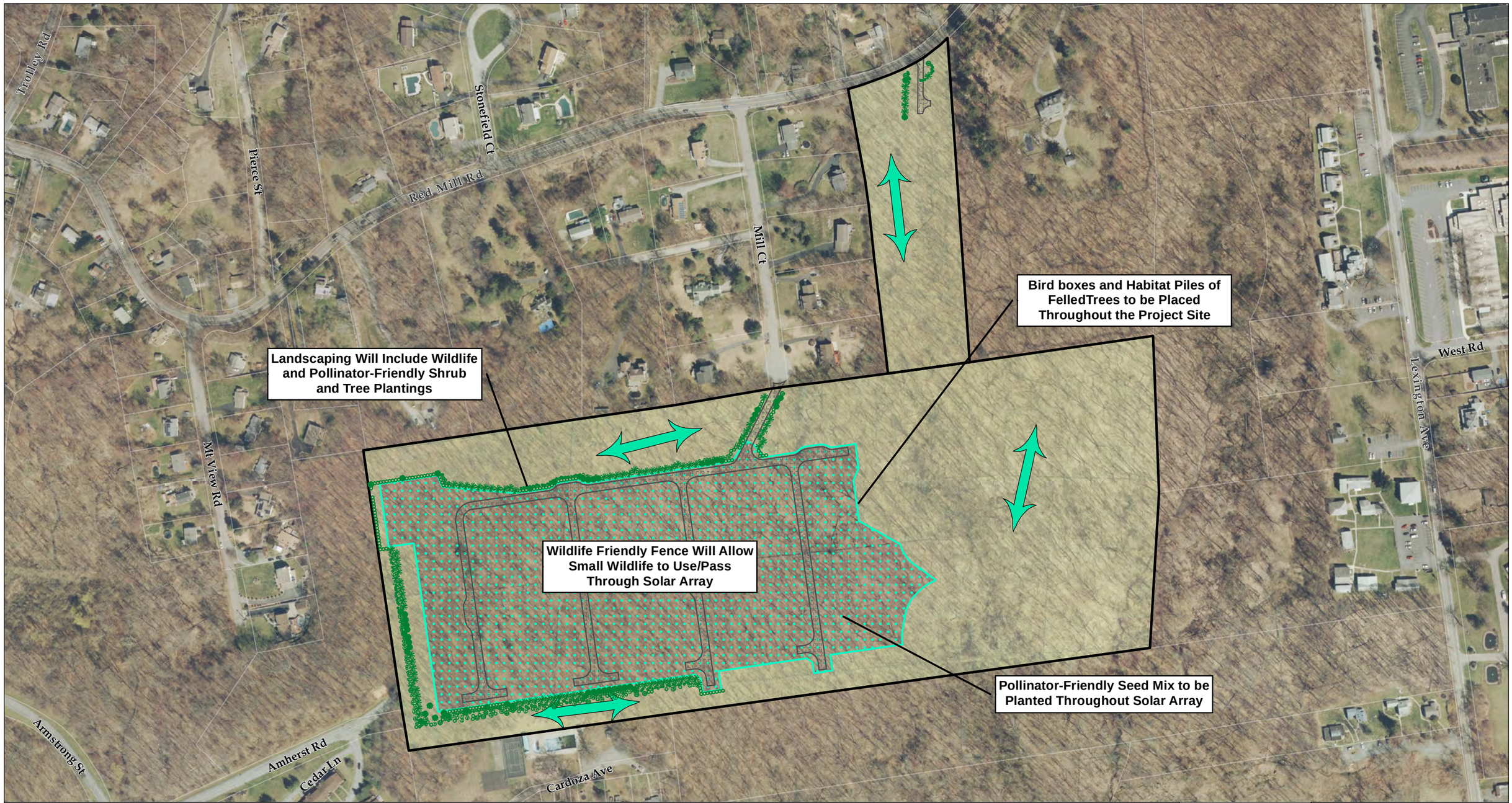
POTENTIAL BOG TURTLE HABITAT

CVE NORTH AMERICA
CORTLANDT MILL SOLAR FARM

CORTLANDT, WESTCHESTER COUNTY NEW YORK

FIGURE 9 | APRIL 2021

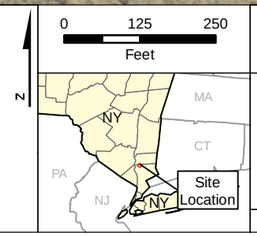
S:\1-PROJECTS\CVE_NA\360551_Mill_Court_Cortland\5-MXD\BogTurtle\Fig_2_BogTurtleHabitat_8x11L.mxd



Project Parcel
Parcel
Landscaping
Proposed Access Drive
Proposed Fenced Area
Wildlife Corridors
Wildlife Pathway

Design Version	Parcel (Acres)	Fenced Area		Available Wildlife Corridor	
		Acres	% of Parcel	Acres	% of Parcel
Proposed Project Area – 2021	43.12	16.31	38	26.82	62

43.12 acres (100% of Parcel) available for small wildlife.
26.82 acres (62% of Parcel) available for large wildlife.



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WILDLIFE ENHANCMENTS AND CORRIDORS

CVE NORTH AMERICA
CORTLANDT MILL SOLAR FARM

CORTLANDT, WESTCHESTER COUNTY NEW YORK

FIGURE 10 | APRIL 2021

S:\1-PROJECTS\CVE_NA\360551_Mill_Court_Cortland\5-MXD\Biodiversity_Assessment\Fig10_Cortlandt_Wildlife_Corridor_11x17L_20210416.mxd