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October 8, 2021

Ms. Tanowa Troupe, Secretary  
Ohio Power Siting Board  
Docketing Division  
180 East Broad Street, 11<sup>th</sup> Floor  
Columbus, Ohio 43215-3797

**Re: Fourth Supplement to Application – Memorandum of Understanding between the Ohio State Historic Preservation Office and Yellow Wood Solar Energy LLC Case No. 20-1680-EL-BGN**

In the Matter of the Application of Yellow Wood Solar Energy LLC for a Certificate of Environmental Compatibility and Public Need to Construct a Solar-Powered Electric Generation Facility in Clinton County, Ohio.

Dear Ms. Troupe:

On February 24, 2021, as supplemented on June 17, August 19, and September 3, 2021, Yellow Wood Solar Energy LLC (“Applicant”) filed an application with the Ohio Power Siting Board (“OPSB”) for a Certificate of Environmental Compatibility and Public Need to construction a 300-megawatt, solar-powered electric generation facility in Clinton County, Ohio (“Application”).

The purpose of this Fourth Supplement to the Application is to provide the OPSB the attached copy of the executed Memorandum of Understanding between the Ohio State Historic Preservation Office and the Applicant.

We are available, at your convenience, to answer any questions you may have.

Respectfully submitted,

/s/ Christine M.T. Pirik

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(Counsel of Record)

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***Attorneys for Yellow Wood Solar Energy LLC***

Cc: Andrew Conway  
Theresa White  
Randall Schumacher  
Jonathan Pawley

## CERTIFICATE OF SERVICE

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to these cases. In addition, the undersigned certifies that a copy of the foregoing document is also being served upon the persons below this 8<sup>th</sup> day of October, 2021.

/s/ Christine M.T. Pirik

Christine M.T. Pirik (0029759)

Counsel:

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Administrative Law Judge:

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[Jacqueline.St.John@puco.ohio.gov](mailto:Jacqueline.St.John@puco.ohio.gov)

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**MEMORANDUM OF UNDERSTANDING  
BETWEEN THE OHIO STATE HISTORIC PRESERVATION  
OFFICE AND YELLOW WOOD SOLAR ENERGY, LLC REGARDING THE  
YELLOW WOOD SOLAR ENERGY PROJECT IN  
CLINTON COUNTY, OHIO**

**WHEREAS**, on February 24, 2021 Yellow Wood Solar Energy LLC (“Yellow Wood Solar”) submitted an application for a Certificate of Environmental Compatibility and Public Need in Case No. 20-1680-EL-BGN (“Certificate”) to the Ohio Power Siting Board (“OPSB”), and intends to operate the Yellow Wood Solar Energy Center Project (“Project”), an up to 300 MW solar-powered electric generating facility to be located in Clark and Jefferson Townships in Clinton County, Ohio.

**WHEREAS**, a Phase I Archaeological Reconnaissance Survey and Report and a Phase I History Architecture Reconnaissance Survey and Report were completed (collectively, the “Reports”);

**WHEREAS**, Yellow Wood Solar and the Ohio State Historic Preservation Office (“SHPO”) established an Area of Potential Effects (“APE”) (see Appendix A) for the Survey to include the area of potential ground disturbance and any property that may be physically altered or destroyed by the Project, as well as a visual radius around the Project for visual impacts; and

**WHEREAS** the Reports identified cultural resources of archaeological and architectural significance;

**ARCHAEOLOGICAL RECITALS**

**WHEREAS**, the archaeological sites 33-CN-504 (prehistoric component only), 33-CN-515 (prehistoric component only), 33-CN-522 (prehistoric component only), 33-CN-523, 33-CN-524, and 33-CN-527 were identified within the boundaries of the Project and determined through SHPO consultation to be potentially eligible for the National Register of Historic Places (NRHP) (Appendix B);

**WHEREAS**, the potentially eligible archaeological NRHP sites 33-CN-504 (prehistoric component only), 33-CN-524, and 33-CN-527 were identified within the boundaries of the Project. These sites will be avoided by all Project activities, and a 50-ft protective buffer will be established surrounding each site;

**WHEREAS**, the historical location of a wooden boarding house/train depot located along the B & O NW railway line “The Big Onion” was identified. This area includes sites 33-CN-500, 33-CN-552, and 33-CN-553 (small, diffuse historic-era artifact scatters) located at the historically mapped locale of “The Big Onion”. Due to the potential association of these sites with the Big Onion, Yellow Wood Solar has delineated an avoidance area out of caution and local interest in preserving this resource. Should the community be interested in establishing a historical marker at the location of The Big Onion, Yellow Wood Solar will contribute up to \$1,500.00 toward the cost of the monument/signage. Should the community move forward with the monument/signage, it is recommended that the Lynchburg Historical Society take an active role in developing the verbiage for the monument.

**WHEREAS**, the archaeological sites 33-CN-515 (prehistoric component only), 33-CN-522 (prehistoric component only), and 33-CN-523 were identified within the boundaries of the Project and determined through SHPO consultation to be potentially eligible for the NRHP;

## HISTORIC ARCHITECTURE RECITALS

**WHEREAS**, seventeen architectural resources were identified within the visual APE of the Project through the Survey (Ohio Historic Inventory Ref. Nos. HIG0047707 (FS11), CLI0030512 (FS84), CLI0031513 (FS86), HIG0047807 (FS95), HIG0047907 (FS102), CLI0018313 (FS186), CLI00181213 (FS187), CLI0030613 (FS188), CLI0030713 (FS190), CLI0030813 (FS191), CLI0030913 (FS192), CLI0031013 (FS194), HIG003507 (FS201), HIG0048007 (FS220), CLI0031213 (FS245), HIG0029807 (FS253), HIG0048107 (FS256), and CLI0031413 (FS283) , which have been determined as individually eligible for listing in the National Register of Historic Places (“NRHP”);

**WHEREAS**, seven of the eighteen resources were preliminarily identified in the Phase I History Architecture Reconnaissance Survey and Report as having potential indirect adverse effects due to visual impacts from the Project (Ohio Historic Inventory Ref. No. HIG0047707 (FS11), CLI0031513 (FS86), HIG0047807 (FS95), HIG003507 (FS201), HIG0048007 (FS220), CLI0031213 (FS245) and CLI0031413 (FS283);

**WHEREAS**, upon subsequent study, design revisions, and review with SHPO, adverse impacts from the Project are not anticipated to resources HIG0047707 (FS11), HIG0047807 (FS95), HIG003507 (FS201), HIG0048007 (FS220), and CLI0031213 (FS245) due to their distance from the Project, existing vegetation in the direct vicinity of these resources that assist with screening, existing vegetation at greater distances from the resources that help to obscure portions of the Project’s aboveground infrastructure from view, and the continued traditional agricultural use of the surrounding landscape (Appendix C);

**WHEREAS**, Yellow Wood Solar utilized its currently proposed Vegetation Management Plan, as submitted in their application as Exhibit M (Appendix D), to the OPSB to address visual impacts to resources CLI0031513 (FS86) and CLI0031413 (FS283) from the Project and propose strategies to mitigate adverse impacts. A final landscape plan will be provided to OPSB and SHPO for review prior to construction; based on final design; however, the historic properties screening Plan (Appendix C) depicts vegetation mitigation plans as related to the historic properties referenced herein.

**WHEREAS**, Effects and Mitigation Measures for the foregoing resources have been identified as **Appendices A and B**.

**NOW, THEREFORE**, the SHPO and Yellow Wood Solar agree in this Memorandum of Understanding (“MOU”) as follows:

### **I. RECITALS**

The recitals set forth above are incorporated into and are made a part of this MOU.

### **II. STIPULATIONS**

- A. The SHPO agrees that the provisions of **Appendices A and B** specific to the foregoing identified resources and the associated resource specific mitigation measures adequately address the impacts to the resources identified in the recitals to this MOU.
- B. The SHPO and Yellow Wood Solar agree that if the Project is constructed, the Project shall be implemented in accordance with the following stipulations to account for the effect of the Project on historic resources.
  1. Yellow Wood Solar will avoid ground disturbance in the designated avoidance

areas for archaeological sites 33-CN-504 (prehistoric component only), 33-CN-524, and 33-CN-527. Temporary construction fencing will be placed within the 50-foot buffer of these resources, near the buffer edge, prior to construction to physically demarcate the area from construction personnel, indicating avoidance. This fencing will be maintained in good condition throughout the duration of construction and will be included in the plan notes of the final design plans.

2. Yellow Wood solar will conduct geophysical investigation and manual coring at archaeological sites 33-CN-515 (prehistoric component only), 33-CN-522 (prehistoric component only), and 33-CN-523. This investigation will be completed and the results submitted to SHPO for review and comment regarding the need for further investigation or avoidance prior to construction;
3. Subject to paragraph 4 below, Yellow Wood Solar will implement a project- specific Landscape Mitigation Plan to mitigate for adverse effects.
4. Yellow Wood Solar may revise the Landscape Mitigation Plan upon development of the Project's final facility layout subject to the following conditions:
  - a. The revised Landscape Mitigation Plan shall not remove planned vegetative screening between any of the aboveground Project components and architectural resources CLI0031513 (FS86) and CLI0031413 (FS283).
  - b. Changes to the Landscape Mitigation Plan that do not impact views to the resources identified in paragraph (a) above are not subject to SHPO review.
  - c. Any reduction in screening between aboveground project components and the resources identified in paragraph (a) above shall not occur unless an amendment to this MOU is executed pursuant to Section IV of this MOU.

### **III. POST-REVIEW DISCOVERIES**

1. In the event that Yellow Wood Solar discovers a previously unidentified site within the APE that may be eligible for listing in the NRHP that would be affected by the Project, Yellow Wood Solar shall promptly stop work in the immediate area of the unidentified site and notify the SHPO within 48 hours of the discovery. If Yellow Wood Solar and SHPO concur that the discovered resource is eligible for listing in the NRHP, Yellow Wood Solar will consult with the SHPO to evaluate measures that will avoid, minimize, and/or mitigate adverse effects. Upon agreement between Yellow Wood Solar and SHPO regarding such measures, Yellow Wood Solar shall implement the measures and notify the OPSB through its Staff of the implementation of the measures.
2. If Yellow Wood Solar discovers any human or burial remains during implementation of the Project, Yellow Wood Solar shall cease work immediately in the surrounding area, notify the SHPO and the OPSB's Staff and adhere to applicable state and federal laws regarding the treatment of human or burial remains. Temporary respectful protection of the exposed remains from looting or other natural disturbances will be provided.

#### **IV. AMENDMENTS**

This MOU may be amended with the written agreement of the SHPO and Yellow Wood Solar. The amendment will be effective on the date a copy is signed by all parties unless otherwise stated and agreed to in the amendment.

#### **V. TERMINATION**

If Yellow Wood Solar determines that the terms of this MOU will not or cannot be carried out, they shall immediately consult with the SHPO to attempt to develop an amendment per Section IV of this MOU. If terms of an amendment cannot be reached within thirty days, the MOU may be terminated upon written notification to the SHPO.

Should the OPSB deny Yellow Wood Solar's application for a Certificate and such order of the OPSB becomes final and non-appealable, then either party may terminate this MOU at its discretion by providing written notice to the other party.

#### **VI. DURATION**

This MOU is effective upon its execution by both the SHPO and Yellow Wood Solar and shall remain in effect leading up to and upon receipt of a Certificate issued by the OPSB to Yellow Wood Solar or any subsequent transferee. Thereafter, this MOU shall remain in effect until expiration of the Certificate. Yellow Wood Solar shall maintain veiwshed mitigation vegetative screening for the life of the facility and shall replace any failed plantings so that after five years, at least 90% of the vegetation has survived. Yellow Wood Solar shall provide the Landscape Plan to SHPO for review and confirmation that it complies with this condition. Yellow Wood Solar shall also provide a copy of the final lighting plan to the SHPO for review and comment prior to finalizing for construction.

#### **VII. EXECUTION IN COUNTERPARTS**

This MOU may be executed in counterparts, with a separate page for each signatory, each of which shall constitute an original, and all of which shall constitute one and the same agreement.

**Ohio History Connection  
State Historic Preservation Office**

**Diana Welling**

Digitally signed by Diana Welling  
DN: cn=Diana Welling, o=Ohio History Connection,  
ou=State Historic Preservation Office,  
email=dwelling@ohiohistory.org, c=US  
Date: 2021.10.06 14:26:19 -0400

10/6/2021

Diana Welling, Department Head &  
Deputy State Historic  
Preservation Officer for  
Resource Protection &  
Review

Date

Contact:

800 East 17th Avenue Columbus, OH 43215  
614-298-2000

[dwelling@ohiohistory.org](mailto:dwelling@ohiohistory.org)

**Yellow Wood Solar Energy LLC**

DocuSigned by:

*Michael Kaplan*

Michael Kaplan

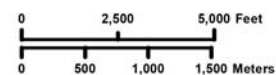
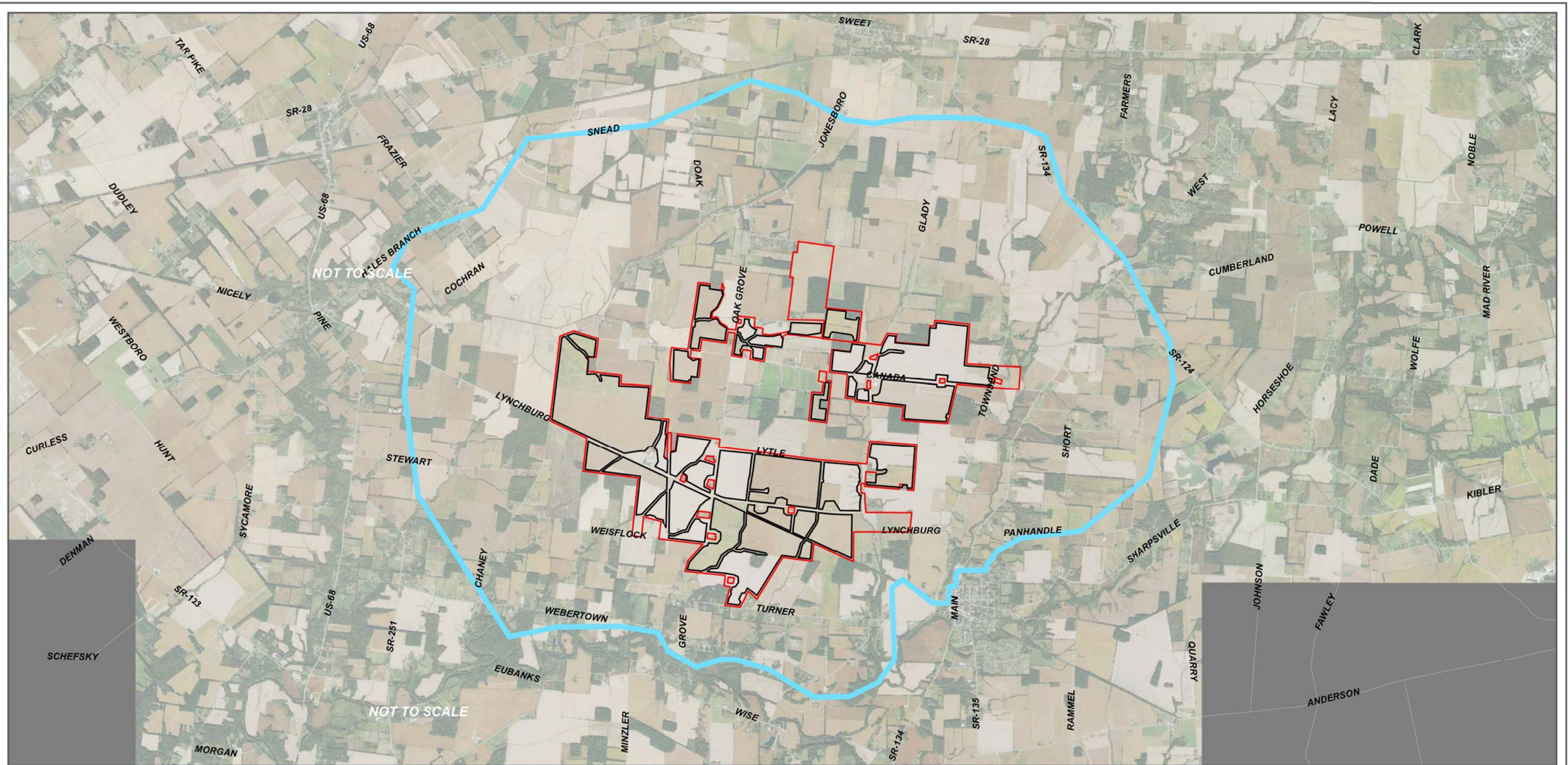
Authorized Signatory Yellow Wood Solar Energy, LLC

Date

Contact:

1 S. Wacker Dr.  
Chicago IL 60606  
Suite 1800  
mkaplan@invenergy.com

## **Appendix A – Yellow Wood Solar Project Area and Area of Potential Effects**



- Fenceline
- Direct Project Area
- Historic APE

Project No.  
e320301702

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Date: 8/26/2021  
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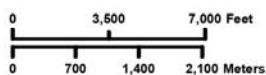
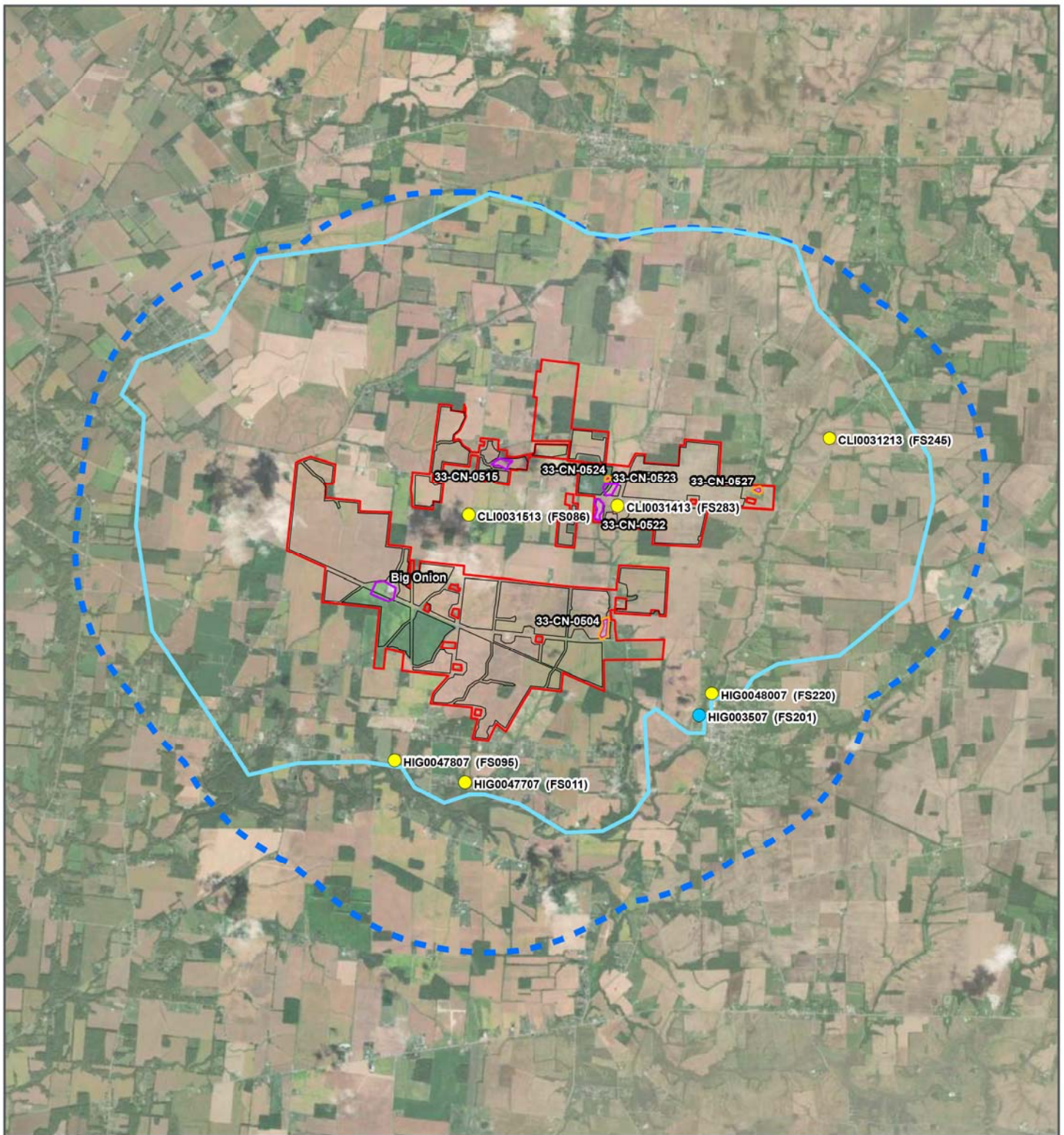
## Project Area and Area of Potential Effects

Yellowwood Solar, LLC  
Clark and Jefferson Townships, Clinton County, Ohio



3901 Industrial Blvd., Indianapolis, IN 46254 USA  
Phone (+1) 317-388-1982 Fax (+1) 317-388-1986  
www.cardno.com

Saved By: Stephen LaFon



- NRHP Eligible       Fenceline
- NRHP Listed       50ft Buffer
- Archaeology Site       2-Mile Study Area
- Historic APE
- Direct Project Area



**Project No.**  
**e320301702**

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## Archaeological and Architectural Resources

### Yellow Wood Solar, LLC

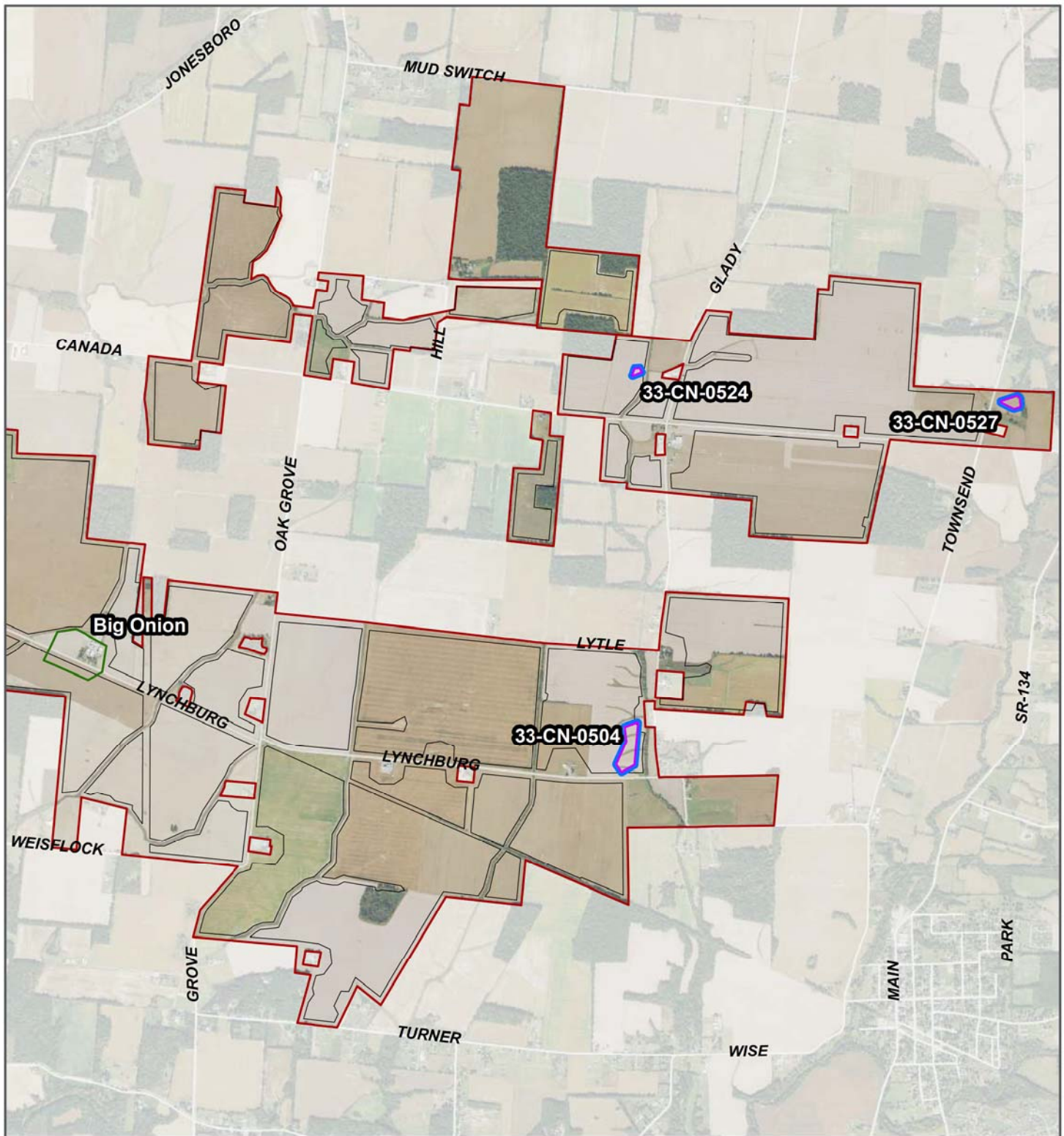
### Clark and Jefferson Townships

### Clinton and Highland Counties, Ohio



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## **Appendix B – Archaeological Sites (Avoidance/Further Investigation)**



- Fenceline
- Big Onion
- Direct Project Area
- Archaeology Site
- 50ft Buffer



Project No.  
e320301702

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#### NRHP Archaeological Sites to be Avoided

Yellowwood Solar, LLC  
Clark and Jefferson Townships,  
Clinton County, Ohio

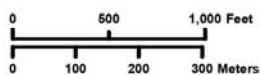
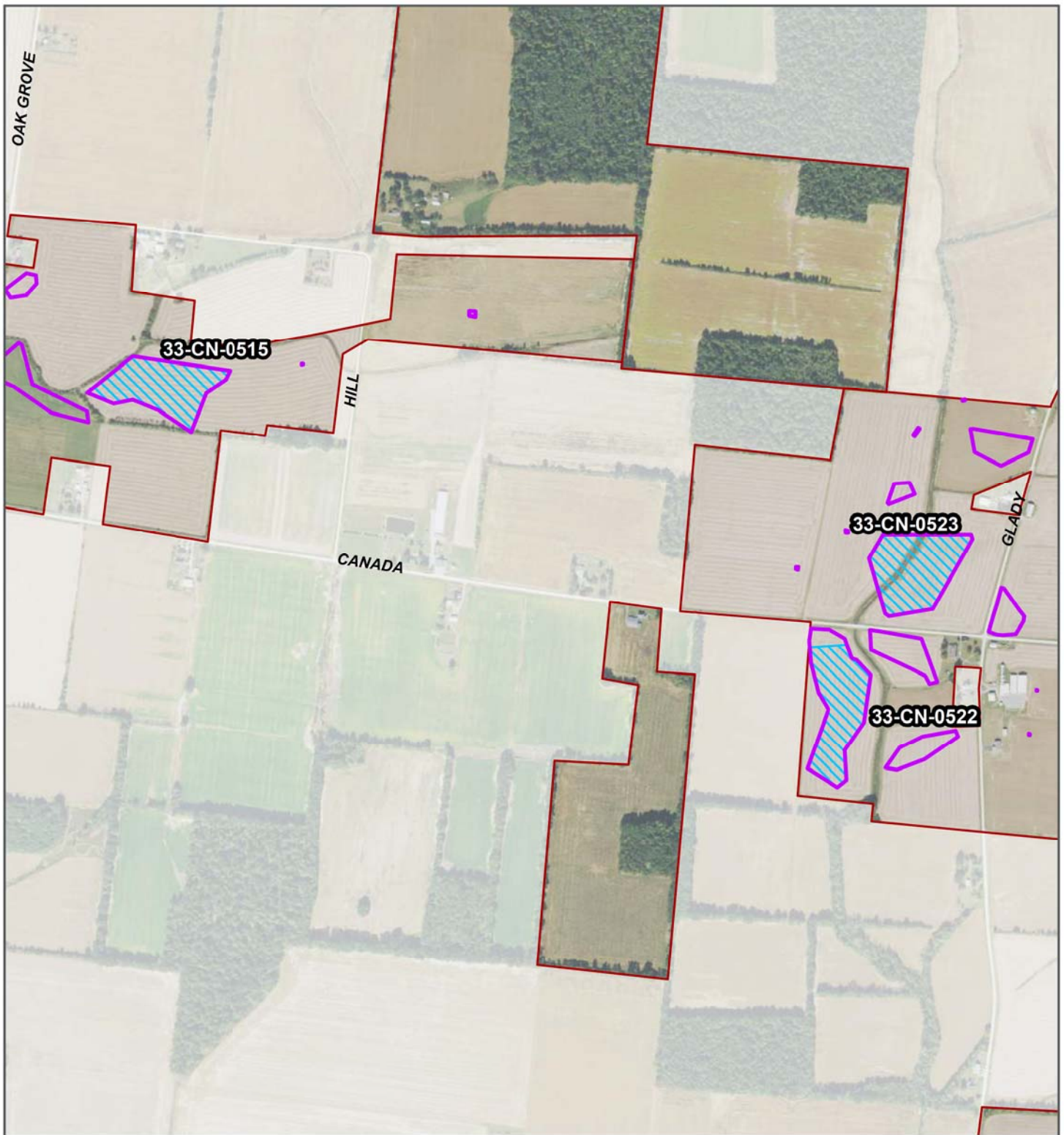


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Date: 8/26/2021  
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Saved By: Stephen.LaFon



- Area Requires Further Work
- Direct Project Area
- Archaeology Site



**Project No.**  
**e320301702**

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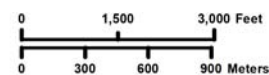
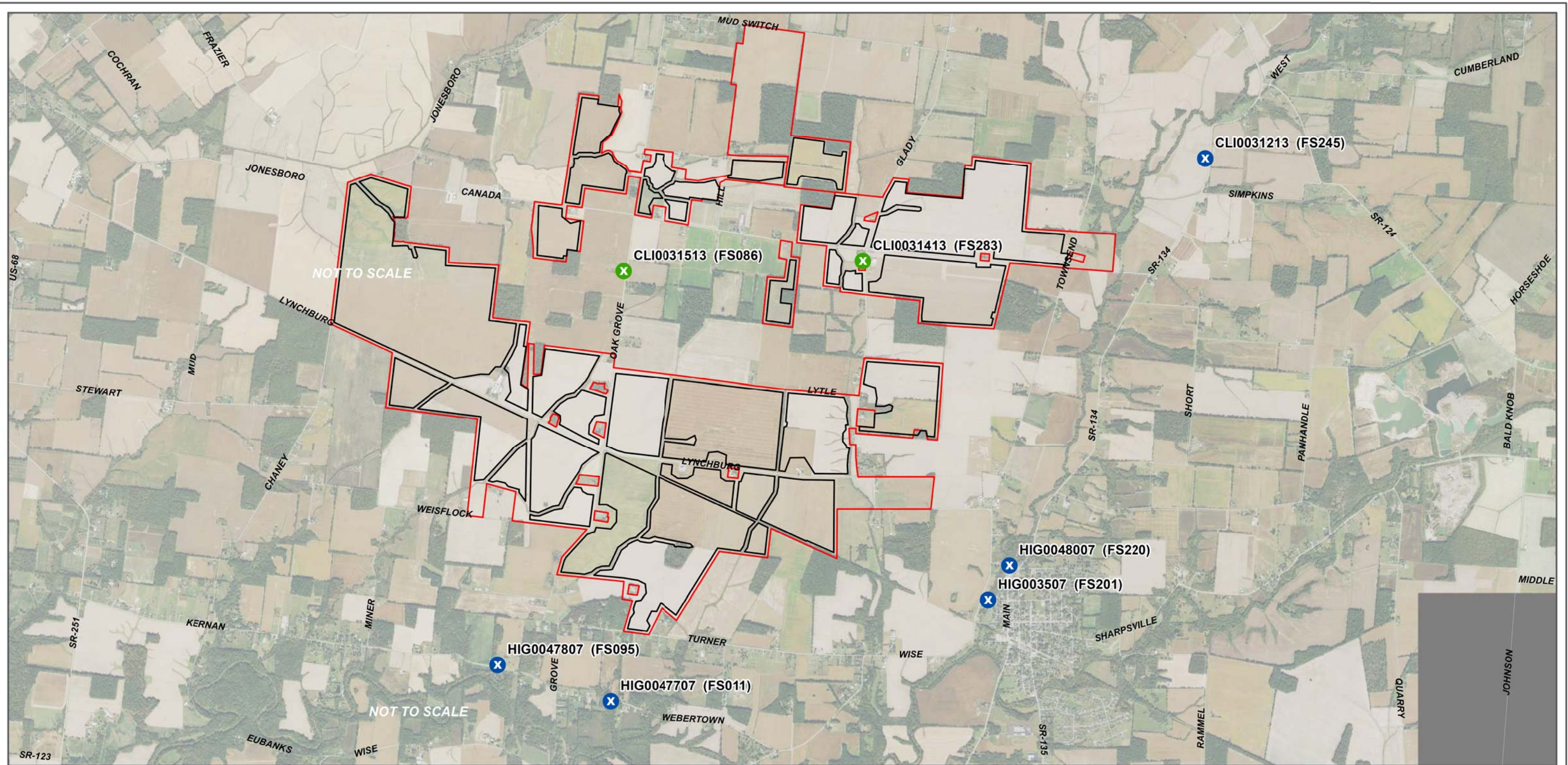
### NRHP Eligible Archaeological Sites Requiring Further Work

**Yellow Wood Solar, LLC**  
**Clark and Jefferson Townships,**  
**Clinton County, Ohio**



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## **Appendix C – Screening Plan for NRHP Eligible Structures**



- X NRHP Site - Screening Required       Fenceline
- X NRHP Site - No Screening Required       Direct Project Area

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**Project No.**  
e320301702

Date: 8/26/2021  
Basemap:

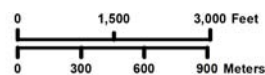
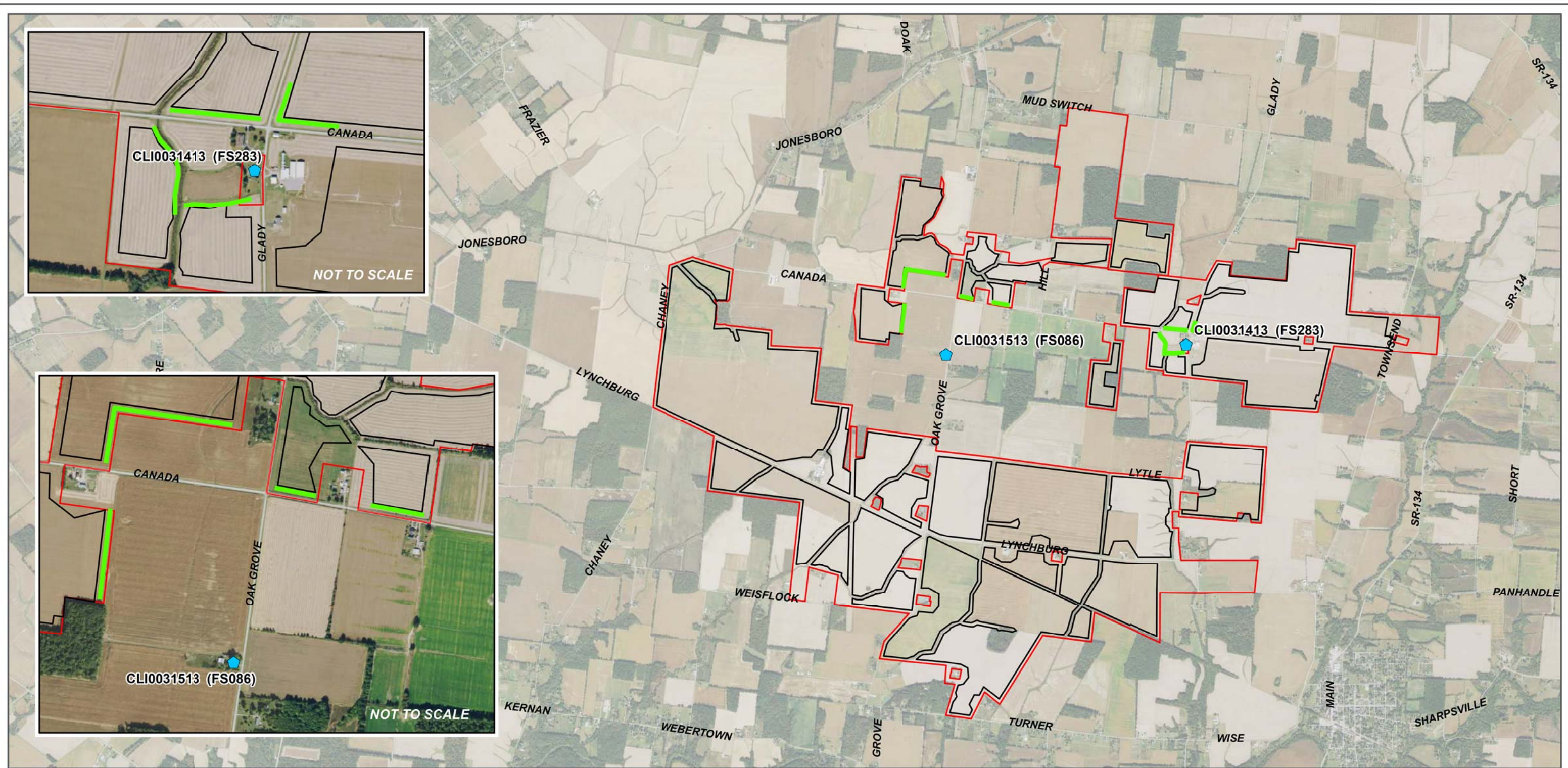
## Architectural Resources Requiring Screening

### Yellow Wood Solar, LLC

#### Clark and Jefferson Townships, Clinton County, Ohio

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- ◆ NRHP Site
- Module 3 Screening
- Fenceline
- Direct Project Area

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**Project No.**  
e320301702

Date: 8/26/2021  
Basemap:

## Screening Plan - Architectural Resources

Yellowwood Solar, LLC  
Clark and Jefferson Townships, Clinton County, Ohio

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## **Appendix D – Vegetation Management Plan**

# Vegetation Management Plan

## Yellow Wood Solar Energy Project

February 2021, Final



## Document Information

Prepared for	Yellow Wood Solar Energy LLC
Project Name	Yellow Wood Solar Energy Project Vegetation Management Plan
Project Number	E320301702
Project Manager	Ryan Rupprecht
Date	February 2021, Final

Prepared for:

Yellow Wood Solar Energy LLC  
A Subsidiary of:

**Invenergy**

Invenergy  
One South Wacker Drive, Suite 1800, Chicago, IL 60606

Prepared by:



Cardno, Inc.  
121 Continental Drive, Suite 308, Newark, DE 19713

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Appendix A	Vegetation Protection Measures
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# 1 Introduction

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Yellow Wood Solar Energy, LLC (Yellow Wood) is developing Yellow Wood Solar Energy Project, a 300-MW solar energy facility (Facility) located in Clinton County, Ohio. As part of the development of this site, Cardno, Inc. has worked with Yellow Wood to develop a landscape plan to help mitigate any visual impacts of the Facility from roadways and adjacent land uses while maintaining a natural character that fits within the context and character of the existing landscape. General information about proposed design methodology, plant materials, and planting modules are included in this document.

The Facility will be visible from various roadways and properties (both participating landowners and non-participating landowners). It is important that visual mitigation be considered differently for areas depending on the adjacent uses, intensity of viewership, viewsheds and overall contextual relationship to the Facility. Specific treatment modules as outlined in this plan are designed to be replicable and are able to be prescribed in various scenarios around the Facility.

With any site, plant community composition varies due to differences in topography, soils, sun exposure, and other factors. It is important to not only recognize what plants are appropriate for a region but for a specific site or area. This landscape plan proposes to utilize native landscape material that will be well adapted to the climate of this region. Native plants also provide long term maintenance benefits as well as ecological benefits for soil stabilization, water quality, wildlife habitat and pollinators. These ecological benefits will all be balanced with the need to provide visual mitigation and overall aesthetic character that will complement the existing land use and setting.

## 2 Design Methodology

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The overall goal of the landscape plan is to provide visual interest while softening the infrastructure of the Facility. Screening should be provided in higher viewership areas and where there are adjacent land uses that would require them. Screening intensity will vary based on the need to provide a visual barrier. Three specific treatment modules are proposed and are designed to be replicable and flexible in order to be prescribed in the various scenarios around the Facility. The primary goals of the modules are to:

- Provide visual interest to soften the proposed infrastructure;
- Provide screening and visual barriers that consider viewership intensity and adjacent land use;
- Develop modules that would be appropriate for the existing landscape;
- Incorporate species that are existing in the landscape that were noted in the field;
- Utilize existing landscape where possible;
- Avoid rhythmic planting designs that don't mimic a natural rural landscape;
- Avoid monocultures of same species in order to increase biodiversity and;
- Utilize native plant material when possible.

It is important to note that the plans will not provide 100% screening or visual obstruction from the Facility. The primary intent is to provide visual relief in order to break up the lines of the infrastructure and enhance the overall aesthetics of the Facility. Existing landscape along roadways, property lines and fence rows should be maintained where possible.

### 3 Vegetation Protection

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The Project has been sited in a way to minimize impacts to the forested lands, shrublands, wetlands, and streams within the Project area, thereby minimizing impacts to trees and woody vegetation. Project infrastructure and the maintained buffers around them will be located primarily on agriculture and open lands. In order to protect vegetation from unauthorized removal, Project drawings will clearly illustrate the limits of construction. Prior to any ground disturbing activities, the limits for clearing will be adequately flagged or staked in the field.

For the protection of vegetation in sensitive areas, like wetlands and tree lots, the Project will utilize the vegetation protection measures, as outlined in Appendix A.

## 4 Vegetation Management

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### 4.1 Construction

Construction activities for solar infrastructure have the potential to impact vegetation through cutting and clearing, removal of stumps and roots, and increased ground disturbance and soil exposure. In order to limit the impacts to vegetation, all clearing will be confined to the Project infrastructure footprint. Typical footprints include:

- > 10 feet on either side of access road centerline (80.9 acres)
- > 10 feet on either side of buried collection line centerline (67.9 acres)
- > 5 acres for supporting facilities (i.e. inverter pads, substation, support piles)
- > 5 acres for laydown yard(s)

Facility construction will require a total of 70 acres of clearing or permanent disturbance of vegetation. The majority of disturbance activities will occur in agricultural lands, and efforts to retain desirable vegetation growth will be maximized to the extent practicable. The Project will require the clearing of 7 acres of tree stands within various windrow or tree lot communities. No trees greater than 3 inches in diameter at breast height (DBH) will be cut outside of the approved cutting season of October 1 through March 31. Any trees and limbs removed, with approval, will be logged, and/or chipped, and either removed or left to remain on the land, per the landowners request and as allowed under federal, state, and local regulations. Authorization to leave cleared vegetation on the land (either chipped or utilized by landowners) reduces the need to for further equipment mobilization to haul cut vegetation, reducing further impacts to the site, but if removal is required, all equipment will utilize existing travel lanes to the extent practicable to reduce overland travel.

After construction, disturbed areas not used for Facility infrastructure will be returned to approximate pre-construction use and capability via reclamation and revegetation. This involves the treatment of soil as necessary to preserve approximate pre-construction capability and the stabilization of the work surface in a manner consistent with the initial land use. Disturbed soils within the Facility's fence line will be reseeded with low-growth turf grasses to stabilize exposed soils and control sedimentation and erosion.

### 4.2 Operation

During Facility operation, on-site vegetation within the fence line of the Project will be regularly maintained through mowing. The Facility area will also be inspected for the growth of noxious weeds, to guard against their establishment. If noxious weeds do become established, a licensed professional will be enlisted to apply an appropriate herbicide treatment. All vegetation monitoring and maintenance will be conducted by an experienced and qualified contractor.

## 5 Plant Materials

An inventory of existing trees and shrubs was conducted during the environmental field work. The plant palette used for the modules mimics these species. The species chosen are native to Southwest Ohio and no invasive or nuisance plants be used as identified in the Ohio Administrative Code 901:5-30-01. Existing native species that were observed at the site in some form of abundance include:

### Shrubs

Scientific Name	Common Name
<i>Asimina triloba</i>	Pawpaw
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Corylus americana</i>	American Hazelnut
<i>Ilex verticillata</i>	Winterberry
<i>Prunus americana</i>	Bitter-berry
<i>Rosa palustris</i>	Swamp Rose
<i>Viburnum prunifolium</i>	Blackhaw Viburnum

### Trees

Scientific Name	Common Name
<i>Acer rubrum</i>	Red Maple
<i>Acer saccharinum</i>	Silver Maple
<i>Acer saccharum</i>	Sugar Maple
<i>Aesculus glabra</i>	Ohio Buckeye
<i>Carya glabra</i>	Pignut Hickory
<i>Carya laciniosa</i>	Shellbark Hickory
<i>Carya ovata</i>	Shagbark Hickory
<i>Celtis occidentalis</i>	Hackberry
<i>Cornus drummondii</i>	Roughleaf Dogwood
<i>Fagus grandifolia</i>	American Beech
<i>Fraxinus pennsylvanica</i>	Green Ash
<i>Juglans nigra</i>	Eastern Black Walnut
<i>Juniperus virginiana</i>	Eastern Red Cedar
<i>Liquidambar styraciflua</i>	Sweetgum
<i>Nyssa sylvatica</i>	Black Tupelo
<i>Platanus occidentalis</i>	American Sycamore
<i>Populus deltoides</i>	Eastern Cottonwood
<i>Prunus serotina</i>	Black Cherry
<i>Quercus alba</i>	White Oak
<i>Quercus bicolor</i>	Swamp White Oak

Scientific Name	Common Name
<i>Quercus imbricaria</i>	Shingle Oak
<i>Quercus macrocarpa</i>	Bur Oak
<i>Quercus palustris</i>	Pin Oak
<i>Quercus rubra</i>	Red Oak
<i>Quercus shumardii</i>	Shumard Oak
<i>Sassafras albidum</i>	Sassafras
<i>Tilia americana</i>	Basswood
<i>Ulmus americana</i>	American Elm
<i>Ulmus rubra</i>	Slippery Elm

While the tables above provide a comprehensive list of species found within the limits of the site, it is important to select certain species that are best suited for the purpose of the modules which is further discussed in Section 4. It is also important to add some other native species to increase diversity and provide additional benefits such as ornamental and screening value which are further outlined below.

## 5.1 Native Plants

There are many benefits to using native plants. Most notably, they are adapted to the specific conditions of a region and are able to better tolerate weather, drought, disease, soil conditions and are generally hardier than non-native species. Because of these benefits, native plants generally survive longer and are easier to maintain over the course of their establishment. Native plants will also blend better into the existing landscape since many of these plants are naturally occurring in existing fields, roadsides, fence rows, etc.

## 5.2 Pollinators

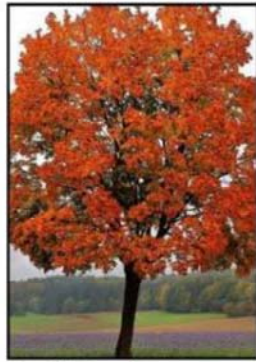
There is a trend moving away from traditional fescues and roadside seed mixes to utilizing native seed mixes with pollinators. As outlined in the *Technical Guide: Establishment and Maintenance of Pollinator-Friendly Solar Projects* published by the Michiana Area Council of Governments in January 2020, pollinators provide a variety of benefits to solar sites which include:

- > Provide food and habitat for pollinator species such as butterflies, bees and other species that promote crop pollination;
- > Provide food, cover and habitat for some species of mammals, birds, reptiles and amphibians;
- > Stabilize soil with a denser and deeper root system that reduces wind and water erosion;
- > Improve water quality by filtering nutrients, increasing water holding capacity, and stabilizing soil to prevent erosion into waterways;
- > Lower maintenance over time compared to traditional fescues;
- > Requires no fertilization;
- > Improve visual aesthetics by offering year-round color and texture.

In addition, the Ohio Pollinator Habitat Initiative (OPHI), a partnership of Federal and State agencies along with several national conservation organizations, has developed several resources to assist landowners and developers in establishing vegetation to support pollinator species on Project sites. In particular, the Ohio Solar Site Pollinator Habitat Planning and Assessment Form provides a methodology and scoring process. This scoring does award points for incorporating native vegetation and pollinator species in solar site buffer areas and adjacent landscapes as well as under and around the arrays itself.



Shagbark Hickory



Red Maple



Sycamore



Sugar Maple



White Oak



White Pine



Flowering Dogwood



Sassafras



Eastern Cedar



Mapleleaf Viburnum



Redtwig Dogwood



Winterberry



Blackhaw Viburnum



Common Ninebark



Fragrant Sumac



Pollinator Mix

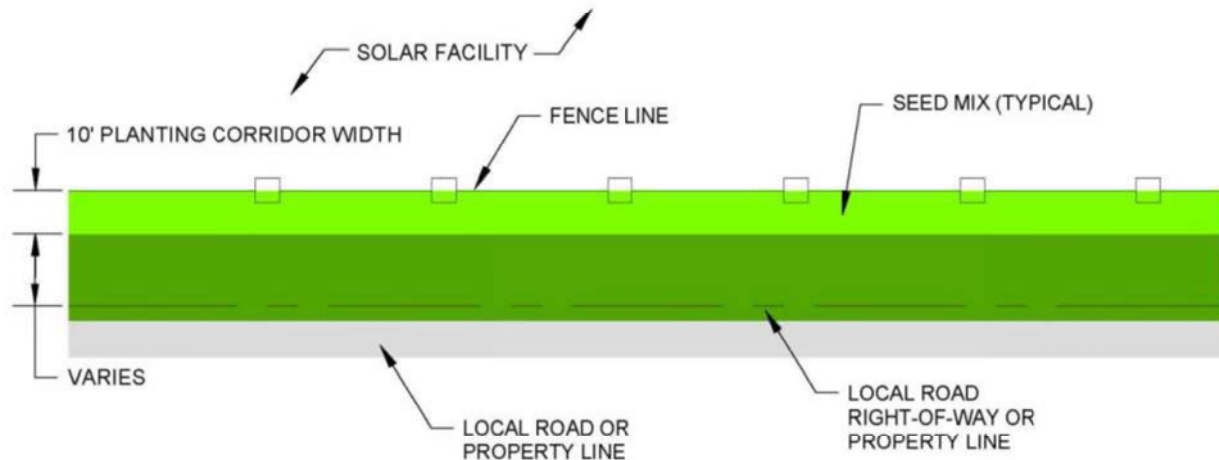
### Potential Plant Material Selection for the Yellow Wood Solar Energy Project

## 6 Planting Modules

Three modules have been developed for application to help soften the infrastructure of the Facility. The Yellow Wood Solar Energy Project Viewshed Analysis recommends and prescribes where each module is proposed. These modules are intended to be flexible and adaptable to the various conditions that occur along the perimeter of the Facility. They will be prescribed to various areas based on the need to provide more screening, visual interest, softening and character to the existing landscape. Where possible, existing vegetation will be utilized along the road, fence lines and property lines. These existing areas should be incorporated into any final design and the modules should be adjusted to account for such conditions.

### 6.1 Module 1

The intent of this module is to provide softening and visual interest in areas of low viewership. These areas would be defined as local roads (not through roads) and certain areas along adjacent property lines where there is periodic viewership but the viewing period is very low. The views in these areas would be more peripheral and of short duration to the passerby. This module proposes to use fescue and/or pollinator habitat between the receptor and the Facility. This habitat would be characterized by grasses and/or forbs (wildflowers) that would provide visual interest and soften the foreground of the Facility.



A fescue and/or pollinator seed mix will be developed for this application. Various alternatives may be recommended based on soil moisture, drainage features, etc. A sample pollinator seed mix is listed below.

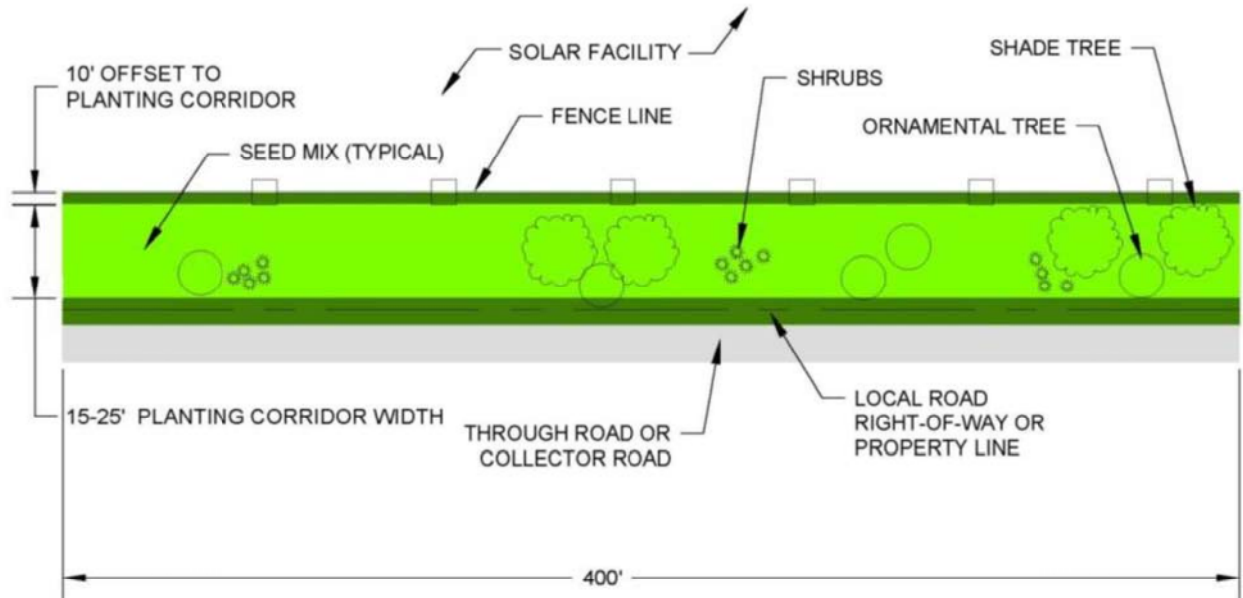
## Sample Pollinator Seed Mix

Botanical Name	Common Name	PLS Oz /Acre	Seeds/Oz	# Seeds/SF	Bloom Period
<b>Permanent Grasses/Sedges</b>					
<i>Bouteloua curtipendula</i>	Side-Oats Grama	24.00	9375	5.17	N/A
<i>Carex bicknellii</i>	Copper-Shouldered Oval Sedge	3.50	33422	2.69	N/A
<i>Koeleria macrantha</i>	June Grass	1.50	150000	5.17	N/A
<i>Schizachyrium scoparium</i>	Little Bluestem	64.00	8800	12.93	N/A
<i>Sporobolus heterolepis</i>	Prairie Dropseed	3.00	14000	0.96	N/A
	<b>TOTAL</b>	<b>96.00</b>		<b>26.91</b>	
<b>Temp Nurse Crop</b>					
<i>Avena sativa</i>	Seed Oats	400.00	8125	74.61	N/A
	<b>TOTAL</b>	<b>400.00</b>		<b>74.61</b>	
<b>Native Forbs</b>					
<i>Allium cernuum</i>	Nodding Onion	6.00	7700	1.06	Mid
<i>Aquilegia canadensis</i>	Wild Columbine	1.00	25000	0.57	Early
<i>Asclepias syriaca</i>	Common Milkweed	4.00	4000	0.37	Mid
<i>Chamaecrista fasciculata</i>	Partridge Pea	16.00	3800	1.40	Late
<i>Coreopsis lanceolata</i>	Sand Coreopsis	10.00	12500	2.87	Mid
<i>Dalea purpurea</i>	Purple Prairie Clover	6.00	20000	2.75	Mid
<i>Liatris aspera</i>	Rough Blazing Star	2.00	13000	0.60	Late
<i>Lupinus perennis v. occidentalis</i>	Wild Lupine	2.00	1000	0.05	Early
<i>Monarda punctata</i>	Horse Mint	1.50	94000	3.24	Mid
<i>Penstemon hirsutus</i>	Hairy Beard Tongue	1.50	125000	4.30	Early
<i>Solidago nemoralis</i>	Old-Field Goldenrod	1.00	240000	5.51	Late
<i>Symphotrichum ericoides</i>	Heath Aster	1.00	140000	3.21	Late
<i>Zizia aurea</i>	Golden Alexanders	2.00	12000	0.55	Early
	<b>TOTAL</b>	<b>54.00</b>		<b>26.48</b>	
	<b>Total Oz per acre</b>	<b>550.00</b>	<b>Total Native</b>	<b>53.39</b>	
	<b>Total Lbs per acre</b>	<b>34.375</b>	<b>Seeds/SF</b>		

## 6.2 Module 2

The intent of this module is to provide softening, visual interest and some limited screening in areas of higher viewership. These areas would be defined as major/through roads where viewership is higher and the viewing period is longer. The views in these areas would be more peripheral and of short duration to the passerby but a higher number of people would be exposed to this on a daily basis. This module proposes to use fescue and/or pollinator habitat between the receptor and the Facility. This habitat would be characterized by grasses and/or forbs (wildflowers) that would provide visual interest and soften the foreground of the Facility. This area would also provide a mix of shade trees, smaller ornamental trees and shrubs to help provide visual relief from the infrastructure of the Facility. Plants would be planted in random naturalized groups with space in between that would be filled with groundcover. Spacing should

be random and can be up to 75 to 100 feet for groupings (when full maturity of the trees is considered). Shading should be considered as to not cast shadows on the solar arrays.



Module 1 would be the base of this module with the addition of native shade trees, ornamental trees and shrubs. The intent would be to occasionally break up the views of the Facility for viewers.

## Shrubs

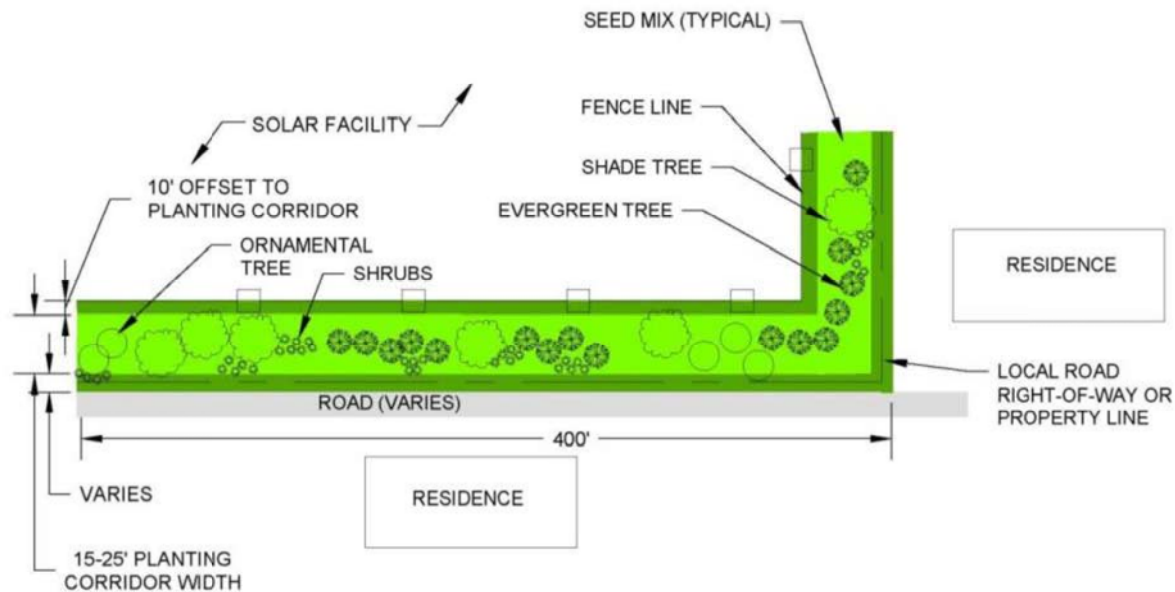
Scientific Name	Common Name
<i>Cornus sericea</i>	Redtwig Dogwood
<i>Ilex verticillata</i>	Winterberry
<i>Physocarpus opulifolius</i>	Common Ninebark
<i>Rhus aromatica</i>	Fragrant Sumac
<i>Viburnum acerifolium</i>	Mapleleaf Viburnum
<i>Viburnum prunifolium</i>	Blackhaw Viburnum

## Trees

Scientific Name	Common Name
<i>Acer rubrum</i>	Red Maple
<i>Acer saccharum</i>	Sugar Maple
<i>Carya ovata</i>	Shagbark Hickory
<i>Cornus florida</i>	Flowering Dogwood
<i>Platanus occidentalis</i>	American Sycamore
<i>Quercus palustris</i>	Pin Oak
<i>Sassafras albidum</i>	Sassafras

### 6.3 Module 3

The intent of this module is to provide softening, visual interest and more robust screening in areas of the highest viewership. These areas would be defined where viewership is the highest and the viewing period is longest. The views in these areas would be more stationary and longer in duration and a high number of people would be exposed to this on a daily basis. A good example would be when a residence is located across the street or adjacent to the Facility. This module proposes to use grass mix and/or pollinator habitat between the receptor and the Facility. This habitat would be characterized by grasses and/or forbs (wildflowers) that would provide visual interest and soften the foreground of the Facility. The intent of this module is to provide screening where when the landscape matures, more landscape is visible than the Facility itself during the growing season. It will not provide 100% screening. This area would also provide a mix of shade trees, evergreen trees, smaller ornamental trees and shrubs to help obscure the Facility while providing aesthetic benefits that fit the existing landscape character. Evergreen screening should be prioritized when directly across or beside residential structures. Plants would be planted in a random naturalized groups with some smaller spacing in between that would be filled with fescue and/or pollinator plantings as outlined in Module 1. Spacing should be random and up to 20 to 30 feet for groupings (when full maturity of the trees is considered). Shading should be considered as to not cast shadows on the solar arrays.



Module 1 would be the base of this module with the addition of native shade trees, ornamental trees and shrubs. This module would be denser with woody plant material as compared to Module 2. The intent is to provide a year-round visual landscape screen for more stationary people while also enhancing aesthetics of the Facility to non-stationary receptors.

### Shrubs

Scientific Name	Common Name
<i>Cornus sericea</i>	Redtwig Dogwood
<i>Ilex verticillata</i>	Winterberry
<i>Physocarpus opulifolius</i>	Common Ninebark
<i>Rhus aromatica</i>	Fragrant Sumac
<i>Viburnum acerifolium</i>	Mapleleaf Viburnum
<i>Viburnum prunifolium</i>	Blackhaw Viburnum

## Trees

Scientific Name	Common Name
<i>Acer rubrum</i>	Red Maple
<i>Acer saccharum</i>	Sugar Maple
<i>Carya ovata</i>	Shagbark Hickory
<i>Cornus florida</i>	Flowering Dogwood
<i>Juniperus virginiana</i>	Eastern Red Cedar
<i>Pinus strobus</i>	White Pine
<i>Platanus occidentalis</i>	American Sycamore
<i>Quercus alba</i>	White Oak
<i>Quercus imbricaria</i>	Shingle Oak
<i>Quercus palustris</i>	Pin Oak
<i>Quercus rubra</i>	Red Oak
<i>Sassafras albidum</i>	Sassafras

## 7 Buffer Visualizations

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**Module 1 Simulation**



**Module 2 Simulation**



**Module 3 Simulation**

## 8 Maintenance

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### 8.1 Buffer Landscape Maintenance

#### 8.1.1 Native Plants

After the initial planting, maintenance of the native trees and shrubs would require:

- > Guying and maintenance of guying for at least one season for trees to ensure they stay upright during the establishment period;
- > Application of mulch around tree rings and shrub groupings – mulch should be consistently at a depth of 2 to 3 inches to help retain moisture and prevent weed growth;
- > Pruning of plants as needed to remove dead limbs or unwanted growth;
- > Watering as needed until final acceptance/warranty period expires.

After the initial maintenance period and 1-year warranty (provided by contractor), the plant material selected shouldn't require ongoing intensive maintenance since the woody material for the modules was selected for their native and site specific qualities. Yellow Wood will replace any plantings that die after one-year which will be responsibility of contractor. Typically, plant material that has sustained one full growing season has a very high likelihood of continued survival. Yellow Wood will monitor the plantings up to 5 years after planting to ensure the intent of the landscape plan and modules are met. Yellow Wood will continue to monitor the plantings annually after the first year to ensure no significant dieback or loss is occurring. The modules were designed in a more natural pattern to allow for some dieback mimicking natural succession. Some dieback is expected and Yellow Wood will evaluate any areas of concern to make sure the intent of the module prescribed is still being met for any specific area. If significant dieback were to occur, Yellow Wood would evaluate mitigation options as necessary and make sure the goals of the plan are still being met for that specific module(s).

#### 8.1.2 Pollinators

After the initial seeding, pollinators require some maintenance to ensure seed gets established. Typical maintenance for pollinator seeding establishment is:

- > Mowing – within the first year mowing is recommended up to 2 to 3 times to promote regrowth and decrease abundance of annual weeds that are typical in the first year. Following year one, the site can be evaluated for spot mowing based on need to control unwanted vegetation and to encourage propagation.
- > Spot Spraying – selective spraying of invasive and nuisance species should be conducted 2 to 3 times a year for the first 3 years. Spot spraying should be limited to target these unwanted species only. No broadcast spraying should be conducted.
- > Reseeding and Over-seeding – Reseeding and or/over-seeding should be done to areas where large bare areas are exposed. This is typically following the initial seeding where areas did not germinate or in areas where nuisance or invasive species were eradicated during maintenance.

Typically with native seeding, maintenance decreases each year during the establishment period (3 to 5 years). After the plantings are established, site maintenance is really only dictated by the need to control woody growth, which is limited to annual mowing and spot spraying. Yellow Wood will monitor any areas planted in pollinator habitat for the first 5 years to ensure adequate establishment and native abundance is present and to make sure the goals of the plan are still being met for that specific module(s).

### 8.1.3 **Fescue Mix**

After the initial seeding, fescue requires some maintenance to ensure seed gets established. Typical maintenance for seeding establishment is:

- > Mowing – within the first 5 years mowing is recommended up to 2 to 3 times per year to promote regrowth and decrease abundance of annual weeds that are typical during establishment. After Year 5, the need to mow may decrease based upon evaluation of establishment.
- > Spot Spraying – selective spraying of invasive and nuisance species should be conducted 1 to 2 times a year for the first 5 years. Spot spraying should be limited to target these unwanted species only. No broadcast spraying should be conducted.
- > Reseeding and Over-seeding – Reseeding and or/over-seeding should be done to areas where large bare areas are exposed. This is typically following the initial seeding where areas did not germinate or in areas where nuisance or invasive species were eradicated during maintenance.

Typically with fescue seeding, after the establishment period (5 years), the need for maintenance decreases. After the plantings are established, site maintenance is really only dictated by the need to control woody growth and grass height, which is limited to 1 to 2 annual mowing's and spot spraying as needed. Yellow Wood will monitor any areas planted in fescue for the first 5 years to ensure adequate establishment and desired fescue abundance is present and to make sure the goals of the plan are still being met for that specific module(s).

## 8.2 **On-site Vegetation Establishment**

The vegetation contractor shall be responsible for supplemental seeding, exotic and invasive species control, and any other factor that may contribute to the establishment of the vegetation. The contractor must have supervisors and crew who are experienced with identification of a variety of herbaceous vegetation. All crew members performing chemical applications must be licensed in accordance with state laws pertaining to the specific application being performed. There are several methods or techniques typically utilized to facilitate the establishment of a newly vegetated area. The exact techniques and frequencies used will depend largely on the degree of development of the site, as well as special social and cultural concerns that may arise from specific techniques. Typically after several years of intensive maintenance and more robust growth of desirable species the frequencies of the establishment activities will be reduced.

### 8.2.1 **Supplemental Seeding**

The need for supplemental seeding can usually be determined by the middle of the first growing season following installation. If the site exists as bare ground or is very sparsely vegetated, seeding should be performed with a no-till rangeland type drill planter.

### 8.2.2 **Mowing**

Mowing should be used for site management if an abundance of annual weeds is present which may compromise the success of the planting in the first few years after installation. Species such as Foxtail (*Setaria* spp.) and Ragweed (*Ambrosia* spp.) can be controlled by mowing.

### 8.2.3 **Chemical Applications**

Many perennial weed species in uplands, such as canada thistle (*Cirsium arvense*), spotted knapweed (*Centaurea maculosa*), purple loosestrife (*Lythrum salicaria*), and Common Reed (*Phragmites australis*), are best controlled through chemical applications. If left unmanaged, many of these weed species will quickly outcompete the young native species for sunlight, nutrients, and space. Additionally, allelopathic species such as spotted knapweed will actually emit chemicals into the soil that will inhibit the growth of other species

## 9 Conclusion

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The modules and discussions outlined in this plan serve as a guideline for the final landscape design to ensure that the final design and installation of plant material will align with the design intent set forth in this plan. This Vegetation Management Plan should be used as a guidance document along with the viewshed analysis which specifically prescribes where the modules are to be located. It is important that visual mitigation be considered differently for areas depending on the adjacent uses, intensity of viewership, viewsheds and overall contextual relationship to the Facility. It is also important that the proposed landscape blends into the overall character of the site by utilizing much of the same native plant materials found on-site. In the end, this will create a landscape that will visually soften the infrastructure of the Facility where needed while providing ecological benefits by incorporating native and pollinator species.

Vegetation Management Plan  
Yellow Wood Solar Energy Project

APPENDIX

A

VEGETATION PROTECTION MEASURES

# Appendix A

## Vegetation Protection Measures

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### A.1 General

#### A.1.1 Pre-Construction Meeting

Prior to the commencement of any construction activities, a Project kick-off meeting will be conducted to review the methods for vegetation protection outlined in this document. This includes:

- > The establishment and importance of vegetation protection zones;
- > Review of the applicable seasonal cutting dates for trees greater than 3 inches DBH;
- > The establishment of construction pathways for movement near protection zones;
- > Trenching by hand or air spade within protection areas; and
- > Oversight by qualified individuals to ensure proper adherence to established protection measures during construction activities, near protection zones.

#### A.1.2 Document Existing Conditions

Qualified personnel will document the existing trees and other plants that are to remain and require protection measures designed to prevent their removal. Such documentation will also be used to establish the pre-construction condition, in case it becomes necessary to replace any vegetation due to any damage during construction. Documentation includes:

- > Detailed site photographs or video recordings of trees within the protection zones; and
- > Detailed notes and photographs documenting any pre-existing damage or injury to the vegetation within the protection zones.

#### A.1.3 Quality Control Program

A written Quality Control Plan (QC Plan) will be developed that describes the purpose of the QC Plan, and provides for proper procedures, materials, handling, and equipment operation that are necessary to prevent damage to vegetation within the protection zones. The QC Plan will also provide detailed diagrams illustrating dimensions for the placement of fencing to ensure trees and root systems are protected, and defined equipment movement pathways. The QC Plan will include how these vegetation protection measures will be enforced.

#### A.1.4 Prohibited Actions in Protection Zones

The following activities are prohibited within the protection zones, as they can lead to damage or injury to vegetation, and degradation of habitat:

- > Storage of construction materials, debris, and any excavated material;
- > Construction of sheds or any temporary or permanent structure;
- > Any ground disturbing activities, unless otherwise noted;
- > Water impoundment;
- > Attachment of signs or wraps around trees, unless otherwise noted;
- > Movement of any equipment;

- > Foot traffic; and
- > Placement of heat and ignition sources, including smoking, near protection zones.

## **A.2 Materials**

Plastic construction fencing will be installed to delineate the vegetation protection zones within the Project area. Typical orange, high visibility construction fencing will be used, constructed of high-density polyethylene fabric with 2-inch maximum opening, measuring approximately 48 inches in height.

## **A.3 Implementation**

### **A.3.1 Sediment and Erosion Control**

Prior to installation of the construction fencing, qualified personnel will ensure all temporary sediment and erosion control measures are in place, and verify that any water flows are diverted away from the protection zones.

### **A.3.2 Site Preparation**

To assist with the delineation of protection zones to be cordoned off with construction fencing, all trees, shrubs, and other vegetation identified for preservation will be located and flagged with 1-inch vinyl tape, at a height of approximately 5 feet, or at the highest point, as to be visible to pedestrian traffic and equipment operators.

### **A.3.3 Protection Zones**

The protection zone fencing will be installed in the pre-determined areas, prior to any materials or equipment are brought to the site, and prior to the commencement of any construction activities. All fencing will be kept in good condition for the duration of construction activities, repaired if damaged or fallen, and kept free of weeds and trash. Protection zone fencing will not be removed during construction, for even temporary activities, including the delivery of materials or equipment. Vehicles will need to seek an alternate route.

### **A.3.4 Repair and Replacement**

Any trees, shrubs, or other vegetation that had been identified as requiring protection that may have been damaged during construction activities, or needed to be relocated, shall be repaired or replaced, as necessary. Any repairs or replacements will be submitted for approval to Yellow Wood and to a certified arborist. Repair or replacement should include the following steps:

- > Submit details of the damage and any proposed replacement or proposed pruning and repairs;
- > Perform the repairs within 24 hours of arborist approval;
- > Replace vegetation that cannot be repaired and restored to full-growth status as determined by Avangrid.
  - For small trees, measured 4 inches or less diameter at breast height (DBH), provide a replacement of the damaged tree, the same size and species.
  - For larger trees, measured more than 4 inches DBH, provide two trees per damaged tree, of which the species and location will be determined by the land owner.

## **A.4 Disposal**

At the end of construction, all excess excavated material, displaced trees, vegetative debris, and trash will be removed from the land owner's property and legally disposed of, following municipal guidelines.

Vegetation Management Plan  
Yellow Wood Solar Energy Project

APPENDIX

B

LIGHTING PLAN

## Appendix B

# Lighting Plan

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### **B.1 Introduction**

Yellow Wood Solar Energy, LLC (Yellow Wood) is developing Yellow Wood Solar Energy Project, a 300 MW solar energy facility (Facility) located in Clinton County, Ohio. As part of the development of this site, Cardno, Inc. has worked with Yellow Wood to develop a lighting plan. The site will need to have dusk till dawn lighting for construction and after construction when the Facility is operational. All of this lighting is intended to provide security and safety and light trespass onto adjacent properties will be minimized to the extent possible.

### **B.2 Construction Lighting**

Lighting during the construction phase will be necessary for some equipment operation, site construction and security. Work will be from 7:00 AM to 7:00 PM or until sunset after 7:00 PM (during the calendar year when this occurs). Work outside these hours will be limited and will be prioritized away from potential receptors not to bother adjacent land uses and vehicles traveling on adjacent roads.

#### **B.2.1 Work Area Lighting**

Work area lighting will be provided with portable spot lighting as well as equipment mounted lighting. This will be provided when there is a need to work in dark conditions. These areas will only be lit when active construction is taking place and will not remain lit when construction is not active. The need for this lighting is to provide safe working conditions for equipment and labor constructing the Facility. The portable lighting will move throughout the duration of the Project to the active worksite areas. Portable spot lighting will be oriented away from roadways and residences where possible. Areas adjacent to residences and roadways will be prioritized so that active working occurs in daylight hours when possible. Direct glare will be considered so that spot lighting is not disturbing residences and vehicles on adjacent roads.

#### **B.2.2 Equipment Lighting**

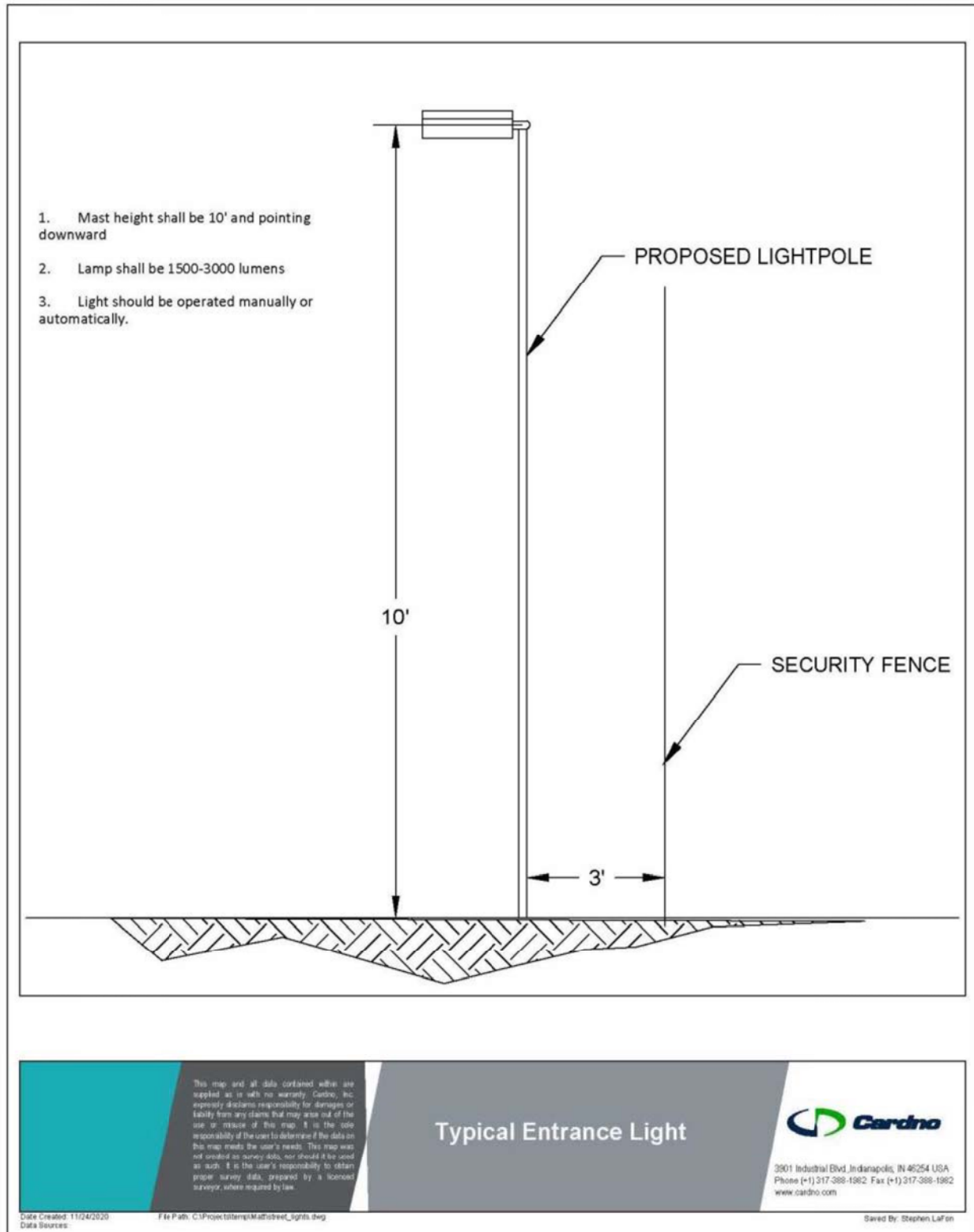
Equipment will have headlights and spot lights so that the immediate area they are working can be illuminated. These will be operational only when needed for operator and site safety and when there is active construction. Typically near dusk and dawn and after sunset on occasion. Spot lights will be cab mounted and boom mounted. Side lighting will be minimal and most of the lighting will be in front of machine and behind machine to a distance of approximately 50 feet. When practical, equipment will work parallel to nearby roads or residences or far enough away so that light trespass from equipment is kept minimal.

#### **B.2.3 Security Lighting**

Temporary construction lighting will be needed at night to provide security. Area lighting may be provided around equipment, material laydown areas and temporary construction facilities such as trailers. Area lighting will be provided by temporary down lighting. Motion activated flood or spot lighting may also be used. Stationary building lighting may be used on the temporary trailers to provide safety and security. The need for lighting may be adjusted throughout the project based on any additional needs for security or safety.

### **B.3 Operational Lighting**

Permanent lighting during facility operations will be necessary to provide safety and site security. High traffic and/or entrance areas of the Project will have switched or motion activated safety and security lighting that will be down lit and not exceed local code permanent footcandle levels.



**Figure B-1: Typical Entrance Light**

## **B.4 Complaint Resolution**

Yellow Wood is committed to addressing any concerns from adjacent owners and citizens. Yellow Wood will have a hotline, website and forms available to field any concerns related to the Facility lighting during construction and operations. Yellow Wood will work to address any concerns that may arise.



## About Cardno

Cardno is an ASX-200 professional infrastructure and environmental services company, with expertise in the development and improvement of physical and social infrastructure for communities around the world. Cardno's team includes leading professionals who plan, design, manage, and deliver sustainable projects and community programs. Cardno is an international company listed on the Australian Securities Exchange [ASX:CDD].

## Cardno Zero Harm

**Cardno**  
**ZERO**  
**HARM**  
EVERY JOB. EVERY DAY.

At Cardno, our primary concern is to develop and maintain safe and healthy conditions for anyone involved at our project worksites. We require full compliance with our Health and Safety Policy Manual and established work procedures and expect the same protocol from our subcontractors. We are committed to achieving our Zero Harm goal by continually improving our safety systems, education, and vigilance at the workplace and in the field. Safety is a Cardno core value and through strong leadership and active employee participation, we seek to implement and reinforce these leading actions on every job, every day.

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Summary: Application - Fourth Supplement to Application – Memorandum of Understanding between the Ohio State Historic Preservation Office and Yellow Wood Solar Energy LLC electronically filed by Christine M.T. Pirik on behalf of Yellow Wood Solar Energy LLC