Wisconsin Department of Natural Resources

Engineering Plan

Koshkonong Solar Energy Center

Dane County, Wisconsin

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LIST OF ACRONYMS

AC	Alternating current
Amsl	Above mean sea level
ANSRI	Areas of Natural Resource Special Interest
BESS	Battery Energy Storage System
BMP(s)	Best Management Practice(s)
CPCN	Certificate of Public Convenience and Necessity
DC	Direct Current
ECSWMP	Erosion Control and Storm Water Management Plan
GIA	General Interconnection Agreement
Invenergy	Invenergy Solar Development North America LLC
kV	Kilovolt
MISO	Midcontinent Independent System Operator
MPFCA	Multi Party Facility Construction Agreement
MW	Megawatt
MWh	Megawatt-hour
O&M	Operations and Maintenance
PADUS	Protected Area Database of the United States
Koshkonong Solar	Koshkonong Solar Energy Center LLC
PCS	Power Conversion Station (inverter, transformer and monitoring/communications equipment)
PSC	Public Service Commission of Wisconsin
PSCW	Public Service Commission of Wisconsin
PV	(Solar) Photovoltaic
ROW	Right-of-Way
SCADA	Supervisory Control and Data Acquisition
SPCC	Spill Prevention, Control and Countermeasure Plan
USFWS	United States Fish and Wildlife Service
W	Watts
WBIC	Water Body Identification Code
WDNR	Wisconsin Department of Natural Resources
WLCD	Wisconsin Land Cover Database

1.0 INTRODUCTION

Koshkonong Solar Energy Center LLC (Koshkonong Solar), a subsidiary of Invenergy Solar Development North America LLC and an affiliate of Invenergy LLC (collectively "Invenergy"), is preparing an application for a Certificate of Public Convenience and Necessity (CPCN) to the Public Service Commission of Wisconsin (PSC) to construct and place in service the Koshkonong Solar Energy Center ("Project" or "proposed Project" or "Koshkonong Solar"), an electric generation facility with a generation potential of up to 375 megawatts (MW) alternating current (AC). The on-site facilities may include a Battery Energy Storage System (BESS).

Invenergy develops, builds, owns and operates large-scale energy facilities across four core technologies: wind (101 projects; 15,323 MW), natural gas (12 projects; 5,642 MW), solar (35 projects; 3,874 MW), and battery storage (16 projects; 300 MW / 900 MWh). Invenergy projects are mainly located in the United States, with other projects located in Japan, Poland, Scotland, Mexico, and Uruguay. Invenergy has a proven development track record of 164 large-scale projects with a capacity of over 25,000 MW.

In accordance with Wisconsin Statute § 196.491(3)(a)3a, Koshkonong Solar is submitting this Engineering Plan (Plan). This Plan is being provided to the Wisconsin Department of Natural Resources (WDNR) at least 60 days before Koshkonong Solar will file the corresponding CPCN application with the PSC. Koshkonong Solar requests that within 30 days after receipt of this Plan, WDNR provide Koshkonong Solar with a listing of all permits or approvals, which, based on the information contained in this Plan, appear to be required to construct the generation facilities. In accordance with Wisconsin Statute § 30.025(1s), Koshkonong Solar will promptly apply for all federal and state permits and approvals identified.

All distances, widths, and descriptions below are estimates and are subject to change based upon final facility siting and layout.

1.1 Project Overview

The proposed Project is located in the Town of Christiana, Dane County and the Town of Deerfield, Dane County, Wisconsin, north and east of I-90 and intersected by Highway 12/18 and west of the Dane County / Jefferson County line (**Exhibit 1**). The Project will generate electricity using silicon photovoltaic (PV) modules fixed to single axis solar trackers. It will be built on approximately 2,100 to 2,625 acres of land within a 11,900-acre Project Area and have an installed capacity of up to 375 MW AC (up to 484 MW of Direct Current (DC)).

The Project will include the following key elements:

- Solar array blocks consisting of solar modules mounted on a single-axis, horizontal tracker mounting system supported by steel posts;
- Electrical collector system infrastructure consisting of DC above- and below-ground cabling; Power Conversion Stations (PCSs) including inverters, step-up transformer, and monitoring and communications equipment; and medium voltage (34.5 kilovolts (kV) AC) above- and below-ground cabling;

- Approximately 14-foot wide gravel access roads that would connect the solar arrays to the existing public roads and provide access to the PCSs;
- A Project Substation with two or more 34.5 kV to 345 kV main power transformers, breakers, buswork, protective relaying and associated substation equipment, communications equipment, and a control enclosure;
- A newly-constructed 345 kV transmission line (less than one mile) connecting the Project Substation to the Interconnection Switchyard at the Point of Interconnection (existing American Transmission Company (ATC) Rockdale 345kV Substation) within the Project Area. The Point of Interconnection may require network upgrades which will be owned by ATC and will be constructed by ATC or Koshkonong Solar. The Interconnection Switchyard and any necessary network upgrades are related facilities to the Koshkonong Solar generating facility and are essential to allowing the electricity generated by Koshkonong Solar to be transmitted on the ATC transmission system;
- Operations and Maintenance (O&M) area that would accommodate an O&M building, parking area, and other associated facilities such as drinking water well, septic system, security gate, signage, lighting and flagpoles;
- Project security using a combination of perimeter security fencing, controlled access gates, on-site security patrols, lighting, electronic security systems and/or remote video system monitoring.

1.2 Exhibits
In order to provide pertinent information about the Project, Koshkonong Solar is including with this submission maps that identify the following features:

- Project Area and Public Lands
- Conceptual Project Layout including Project Substation and ATC Interconnection Switchyard at the existing ATC Rockdale Substation
- Project Topography
- Land Cover Types
- Water resources: lakes, rivers, streams, wetlands

2.0 DESCRIPTION OF THE PROPOSED PROJECT
2.1 General Facility Description and Design
Equipment and facilities will be designed and arranged for optimum use of the site as well as to ensure efficient operability and maintainability. The conceptual site layout for the Project is depicted in **Exhibit 2** and indicates the conceptual location of the proposed solar arrays, Project Substation, transmission line route, and Point of Interconnection at the existing ATC Rockdale Substation. Temporary construction lay down and parking areas will be constructed on the site as well.

2.1.1 Solar Modules
Solar modules or panels (the terms are synonymous) consist of a series of PV cells made out of semiconducting material. When light hits a PV cell, the energy releases electrons from their atoms. The freed electrons flow through conductors connected to the cells, creating an electric current. Individual cells are wired and mounted together to create a solar PV panel. Each panel is made from crystalline silicon, conductive metals for the

electron flow, anti-reflective glass, aluminum frames, and weather-resistant “quick connect” wire connectors. Together, these components are referred to as solar modules.

The Project will analyze current market offerings to make a final selection on specific solar module, inverter and racking system equipment. An example configuration that is representative of what would be used consists of approximately 730,023 to 912,184, high-efficiency solar PV panels with a capacity to generate approximately 530 watts (W) of DC power each.

The marketplace for solar modules is constantly changing, including, currently, with the imposition of tariffs on certain imported modules. Although the description above is representative of a likely choice for equipment, panels could range from 120 to 550 W each, potentially leading to more or fewer total panels. Additionally, glass could be a suitable frame material, in lieu of aluminum.

2.1.2 Horizontal Tracker Mounting System

The solar modules will be mounted to a horizontal single-axis tracking system to form arrays. In this type of system, the arrays would be arranged with north-south oriented rows. An electric drive motor would rotate the solar modules from east to west (on a single axis) to follow the sun throughout the day. A typical array layout using single-axis trackers is shown in **Exhibit 3**. The highest point for the tracker would be achieved during the morning and evening hours when the modules are tilted at their maximum angle, and would be a maximum of 15 feet above the ground surface. The bottom edge of the modules will be a minimum of approximately 18 inches above grade at maximum tilt, and approximately four to eight feet above grade when tilted flat at mid-day. The vertical support system for the tracker mounting system will consist of steel post foundations. The foundations may be direct driven, pre-drilled driven posts, screw anchors, helical piles, or other similar designs.

Meteorological stations located at the site will monitor wind speed and communicate with the tracker units. This will allow for the trackers to rotate to a stow position during high wind activity as needed to protect the trackers. The meteorological stations will be at multiple locations throughout the solar array and will not exceed 15 feet in height.

2.1.3 Onsite Electrical Collection System

The DC collection system will consist of DC string wiring mounted on the trackers and/or below ground and use DC combiner boxes or an in-line cable management system to combine power from multiple strings. The DC collection system will also include DC home run cabling to the inverters located at PCSs.

PCSs will be distributed throughout the array to convert the DC power generated by the modules into AC power, and increase the system voltage to 34.5 kV. To accomplish this, each PCS will consist of a central inverter, a medium-voltage transformer, and monitoring and communications equipment. The PCSs will be installed on steel skids and/or concrete pads, and may have a steel driven post foundation. PCS size can vary, with approximately 4 to 4.5 MW AC per PCS being an expected, representative size.

The 34.5 kV collection system may comprise both direct-buried underground and aboveground cabling connecting the PCSs to the Project Substation. The collection system trenches may also include fiber optic cable for communications and controls. At the transition from underground to overhead collection circuits, above-grade sectionalizing cabinets or pad-mounted switchgear may be installed adjacent to the riser pole(s).

2.1.4 Transmission System Interconnection

2.1.4.1 Project Substation

The Project Substation will be situated on approximately five acres within the Project Area and will be designed and constructed in accordance with applicable electrical safety codes. The Project Substation would be separately fenced to provide increased security around the medium and high voltage electrical equipment. The AC collection system will enter the Project Substation, where two or more main power transformers will step up the collection system voltage to the 345 kV interconnection voltage. The Project Substation would also include transformer containment areas, a control enclosure, overhead bus and associated structures, circuit breakers, disconnect switches, relay panels, surge arresters, battery banks, a grounding system, and relaying, metering, and communication equipment. The transformer containment areas would be lined with an impermeable membrane covered with gravel and would include a drain with a normally-closed drain valve.

2.1.4.2 Project Tie Line to ATC Transmission System

The approximate 0.25 mile 345 kV transmission line will consist of monopole structures that range between 95 and 130 ft. in height. These structures will be directly embedded or placed on concrete foundations of varying diameters, based on the geotechnical information and the Engineer of Record’s calculations during the design phase. The number of structures to be installed, as well as the location of each, will also be determined during the design phase of the project.

The conductor will be selected and sized to carry the required power of the project, and to meet any thermal stability, vibration resistance, or other specific technical criteria required.

The right-of-way (“ROW”) required to maintain a clear path and meet any required safety clearances will range between 100 and 120 ft. total width.

APLIC suggested practices shall be implemented to ensure that the transmission line is designed and constructed in a manner to minimize bird collision and electrocution risk.

2.1.4.3 Interconnection Switchyard

Koshkonong Solar or the transmission owner, ATC, will make modifications and network upgrades as determined by the studies performed by Midcontinent Independent System Operators (MISO) and ATC. These modifications will be constructed pursuant to a Generator Interconnection Agreement (GIA) to be entered into among MISO, ATC, and Koshkonong Solar. The network upgrades have yet to be determined but an initial round of results (Definitive Planning Phase 1) are expected in early 2021. The necessary network upgrades and Interconnection Switchyard are related facilities to the Koshkonong Solar generating facility and are essential for allowing the electricity generated by Koshkonong Solar to be transmitted on the ATC transmission system.

2.1.5 Operation and Maintenance Facilities

An O&M area will be located within the Project Area. The O&M area will accommodate a permanent O&M building, parking area, and other associated facilities that may be necessary such as drinking water well, above ground water storage tanks, septic system, security gate, lighting, signage, and flagpoles. The permanent O&M building will house administrative, operations, and maintenance equipment and personnel. It would be up to approximately 5,000 square feet in size, with a maximum height of approximately 34 feet, and would have an adjacent parking area. The O&M building will include communication equipment, a storage and equipment area, offices, restrooms, and other features necessary for habitation on a daily basis. The design and construction of this building will be consistent with applicable Wisconsin State Building Code and, if applicable, Dane County Building Standards.

2.1.6 Battery Energy Storage System

A Battery Energy Storage System (BESS) may be included with the Project to provide such functions as frequency response, capacity on demand, generation smoothing, shifting and/or firming. Different power outputs and energy capacities will offer different performance capabilities. A final configuration will be determined at a later date. A representative system size could have a power output of 75 MW and storage capability of 75-300 megawatt-hours (MWh) from approximately 330-1350 battery racks.

The BESS would operate at an annual energy flux of approximately 27,375-109,500 MWh of energy. The facility would not generate energy, but simply store solar energy and release it to the grid when desired. The BESS would be a complement to the solar facility.

Project facilities would include commercial-scale lithium-ion (or similar technology) batteries, converters or inverters, pad-mount transformers, and electrical interconnection facilities. The BESS may be contiguous and interconnect to the solar facility's collector Substation via underground 34.5 kV lines or an overhead 345 kV transmission line ("AC-coupled") or it may be distributed and directly interconnect to the solar facility's inverters ("DC-coupled").

Such a 75 MW/75-300 MWh AC-coupled storage system would consist of enclosures similar to a warehouse(s), ISO containers, or outdoor-rated modular enclosures or similar with a total footprint of approximately 75,000-200,000 square feet. These enclosures would be fully outfitted with auxiliary systems (such as HVAC, controls, and fire suppression). Adjacent to the containers would be rows of pad-mount transformers and inverters. The inverters will be connected to the pad-mount transformers, which will then connect to a common bus which will connect directly to the Substation.

A DC-coupled storage system would have storage enclosures spread throughout the solar facility, connecting to the solar inverters and pad mount transformers via DC-DC converters.

2.1.7 Site Security and Fencing

The site will be fenced to facilitate Project and equipment security and public safety. Surveillance methods such as security cameras or motion detectors may be installed at locations along the perimeter fence. Gates would be installed at the road entrances to the site. Limiting site access will be necessary both to ensure the safety of the public and to protect the equipment from potential theft and vandalism. The perimeter fence around the solar arrays will be up to 8-feet-high. No barbed wire will be used on the perimeter fence, and wooden post "deer fence" will be considered assuming compliance with state and national electrical codes. Fencing around the Project Substation and O&M building will likely be a chain link design with barbed wire to satisfy applicable security requirements for those Project components.

2.1.8 Project Access Roads

Gravel access roads will be constructed to provide access from the public road network to the solar array areas, and within the array to provide vehicle access to the solar equipment for construction and O&M activities. These gravel access roads within the array will be approximately 14 feet wide. The roads will be constructed to maintain the existing stormwater flow patterns on the surface. The locations of new driveway entrances from public roads, as well as access road routing within the array, will be designed to avoid or minimize crossings of existing wetlands and waterways, and in coordination with local road authorities. Waterway culvert crossings and at-grade low water crossings of shallow drainage paths will be installed along the access roads as necessary.

2.1.9 Water Uses and Sources

If the O&M site is located within an existing town water and sewer district, potable water and wastewater needs will be served accordingly. If the O&M site is not located near existing water and sewer systems, domestic water and sanitary waste needs during operations will be supplied by a new well and septic system constructed on-site. Any new wells drilled and septic tanks and drain fields constructed for domestic purposes will be developed consistent with WDNR and Dane County Departments of Public Health Standards, if applicable.

Non-sanitary wastewater generated during construction and operation would include stormwater runoff and equipment wash-down water. This wastewater is typically nonhazardous, and will be handled consistent with WDNR permits and other applicable regulations. Any wastewater deemed hazardous by chemical quality will be handled and disposed of in accordance with WDNR permits and other applicable regulations.

2.1.10 Stormwater Drainage and Erosion Control

Topography within the Project Area consists of gently rolling terrain with slopes ranging from mild to greater than 10%. The elevation within the Project Area ranges from approximately 800 feet to 1,100 feet above mean sea level (amsl) (**Exhibit 4**). Much of the current topography is suitable for the placement of PV panels with little site preparation or improvements required aside from smoothing areas of undulating terrain. Drainage patterns from the Project site will remain similar to pre-developed conditions, with a majority of the site draining via sheet flow. Surface water runoff from the facility site drains toward Mud Creek to the northwest, Koshkonong Creek to the east, and Saunders Creek to the south. Most of the current land cover in the Project footprint consists of agricultural row crops. (**Exhibit 5**).

Soil stabilization measures will be used to prevent soil erosion caused by stormwater runoff. To avoid increasing runoff rates, a low impact development approach is proposed. The proposed stormwater management will consist of a vegetated filter under the proposed arrays and throughout the site. Construction site erosion control Best Management Practices (BMPs) will be detailed and followed.

The proposed site layout minimizes impervious surfaces and will consist of solar panels, gravel roads, and other electrical equipment as described. Solar panels have a unique runoff characteristic unlike buildings or roads because they have a fully-disconnected impervious surface. The runoff generated from the solar panels will flow to the edge of the panels and be allowed to drip onto the pervious surface below.

All areas below the panels, amongst the posts and PCSs, will be seeded with a vegetated filter consisting of a low-maintenance perennial seed mix. This vegetated filter will act as a permanent BMP and allow for runoff, sediment and other pollutants to be infiltrated or captured by the vegetation. To further aid in the site's soils infiltration capacity, minimal site grading is proposed.

In the conceptual site layout depicted in **Exhibit 2,** facilities within the Preliminary Solar Development Areas are sited outside of the currently (desktop) delineated wetland areas. Following further constraints analysis, including additional field wetland delineations, the final design could include limited facilities placed within wetlands. To the maximum extent practicable, any construction within wetland areas will be planned to avoid permanent impacts. Mitigation measures will be identified and incorporated if a permanent impact is unavoidable to complete construction.

2.1.11 Lighting

Shielded area-specific lighting for security purposes will be limited to the Substation, O&M area, and the Project entrance gates. These lights will be down-shielded and turned on either by a local switch as needed, or by motion sensors that will be triggered by movement. There will be no lights around the site perimeter fence in order to minimize the Project's visual impact.

Nighttime O&M activities within the array would be performed with temporary lighting. Lighting will also be provided in the construction laydown yard. Impacts from night lighting used during construction, operation, and maintenance of the Project would be mitigated using directed lighting, shielding, and/or reduced lumen intensity.

2.1.12 Waste and Hazardous Materials Management

The primary wastes generated at the Project during construction, operation, and maintenance would be nonhazardous solid and liquid wastes. Koshkonong Solar would prepare a Hazardous Materials and Waste Management Plan, as well as a Spill Prevention, Control and Countermeasure (SPCC) Plan, which would address waste and hazardous materials management, including BMPs related to storage, spill response, transportation, and handling of materials and wastes.

2.2 Construction

2.2.1 Overview

Construction is expected to take approximately 18-24 months and would include the major phases of mobilization, construction grading and site preparation, installation of drainage and erosion controls, PV panel/tracker assembly, and solar field construction. Project construction is anticipated to commence as early as the first quarter of 2022 and is expected to be completed by the conclusion of the fourth quarter of 2023. Construction activities will require the services of managers, heavy equipment operators, licensed journeyman electricians, and laborers working on-site. It will include the use of combustion engine powered equipment, including heavy and light utility vehicles, pickup trucks, pile drivers, all terrain forklifts, and excavators. Construction activities for the proposed solar array and support facilities are described below.

2.2.2 Temporary Construction Workspace, Laydown and Mobilization Areas

The Project construction contractor would develop an approximately 40-acre temporary construction mobilization and laydown area within the Project Area that would include temporary construction trailers with administrative offices, construction worker parking, temporary water service, temporary construction power services, tool sheds, storage containers, and a laydown area for construction equipment and material delivery and storage.

2.2.3 Clearing and Grading

As the proposed solar array area is relatively flat, much of the current topography is suitable for the placement of PV panels with little site preparation or improvements required. Depending on the schedule for the start of construction, if crops are standing in the fields, they will need to be removed. Ideally, the initial step would be establishing ground cover in areas that do not require grading as stripping of top soil is not required for installation of posts to secure solar arrays. For areas requiring grading, necessary stormwater pollution prevention measures will be installed, the necessary grading will then be performed, then the groundcover will be established. Where grading is required, topsoil will be stripped and segregated for replacement on top of the final graded surface in order to maintain soil quality and stratification. Due to schedule and weather considerations, it may not be possible to get the ground cover fully established before the following construction processes commence. A minimal amount of grading would be required for roads and access ways between the solar arrays, and for electrical equipment pads. The proposed solar array area consists primarily of open farmland clear of existing trees, with minimal tree clearing proposed.

Due to soil types in the area, there is drain tile present in some of the fields. Prior to construction, the Project will obtain drain tile maps from landowners as well as conduct a survey to identifity drain tile potentially impacted by the Project. To the extent construction affects existing drain tile systems, the Project will repair, replace or re-route drain tile to maintain necessary drainage in adjacent agricultural fields.

2.2.4 Access Road Construction

The Project's access roads would be graded and constructed in order to facilitate construction and operations traffic through the arrays. Access road construction will use standard equipment and techniques to clear vegetation and topsoil materials from the road surface. The roads will be constructed with appropriate drainage and erosion control features (e.g., drainage culverts, silt fencing). Subgrade would then be compacted, geotextile fabric may be installed for additional stability, and then a gravel surface of appropriate thickness will be placed and compacted. Alternately, cement-stabilization is a technique that may be used to achieve the necessary strength by using less gravel. These construction methods will provide a stabilized foundation for construction access through the array and permanent all-weather access to the PCS locations, Substation, point of interconnection, and O&M facility. In general, the design standard for the roads and access ways within the Project Area will be consistent with the amount and type of use they will receive. The construction entrance and exit gates would be installed during this time as well. Permanent access gates may be installed concurrently or at a later time and potentially at different locations.

2.2.5 PV Solar Array Assembly and Construction

Within each area designated for PV equipment, the construction sequence would include the steps described below. Sequencing will vary, and due to the size of the Project, any or all of these activities may be ongoing concurrently throughout the Project Area.

Fence installation will begin followed by installation of the array foundations. After that, the steel tracking systems would be attached to the foundations. Trucks would be used to transport the solar modules to the tracking system. A small mobile crane may be used to assist construction workers in setting the solar modules on the driven steel posts. Final array assembly would require small cranes, tractors, and forklifts.

2.2.6 Electrical Collection System Installation

Similar to the PV array, the collection system construction sequence may vary and involve multiple components being constructed concurrently. Electrical construction would consist primarily of the activities listed below.

2.2.6.1 Underground cable

Cable trenches would be used to provide underground connection of Project infrastructure. Trenches would contain electrical conductors for power generation and fiber optic cables for equipment communication. Trenches will likely consist of a nominal width of 1 foot and a depth of 3 to 4 feet, depending on the number of conductors and voltage of equipment, to comply with applicable electrical codes. Where multiple trenches run in parallel, the construction area will be wider. Underground cable will be marked and access will be provided, as needed, via aboveground junction boxes. Cable will be installed with either trenching machines or “direct bury” plows.

Where wetland and waterway crossings of underground collector system cannot be avoided, these crossings will be directionally bored or, under limited circumstances, installed via a temporary trench where the wetland is restored to pre-construction conditions following installation. For directional borings, a plan for preventing and controlling the loss of drilling mud will be prepared and submitted for review.

2.2.6.2 Above-ground cable

Some collection system cable, particularly DC cables, will be installed above-grade in a cable management system within the array (e.g. cable tray or hanger). The cable management system may also include fiber optic cable for communications and controls. At the transition from underground to overhead collection circuits, above-grade sectionalizing cabinets or pad-mounted switchgear may be installed adjacent to the riser pole(s).

2.2.6.3 Collection System Equipment

Electrical equipment within the collector system will be installed in the following sequence:

1. Install underground cable or conduit that will run below equipment locations where necessary;
2. Install concrete and/or steel pile foundations as needed for collection system components;
3. Place electrical equipment including DC combiner boxes, PCS skids (including inverters and transformers), circuit breakers, disconnect switches, switchgear and distribution panels, lighting, communication, control, and supervisory control and data acquisition (SCADA) equipment;
4. Perform electrical terminations.

2.2.6.4 Grounding

All equipment and structures will be grounded as necessary. Within the array areas, an appropriate grounding system will be engineered and constructed in order to maintain personnel safety, protect equipment, and prevent stray voltage.

2.2.6.5 Telecommunications

Multiple communication systems will be required for the Project to properly operate, including T-1 internet, fiber optic, and telephone cables. All communications would be installed during electrical construction. The fiber optic lines will provide communication between the PCSs, Project Substation, O&M facility, and the electrical grid. The Project Substation will have a fiber optic connection to the O&M building and a communication system to the grid operator.

2.2.6.6 Testing and Commissioning

Electrical equipment will be inspected, tested, and commissioned prior to being connected to the grid.

2.2.7 Connecting Collection System to Transmission Grid

The Project Substation will be graded nearly flat, and a ground grid and gravel surface will be placed in compliance with applicable safety codes. The transformer containment area and equipment foundations (concrete pads, or deep foundations as necessary) will be installed, followed by steel structures, electrical equipment, and the control enclosure.

Koshkonong Solar is still evaluating the optimal location for the Project Substation that balances electrical losses, environmental and human impacts, construction costs, and other factors. A representative location is depicted in Exhibit 2.

The ROW for the 345kV transmission line will range between 100 and 120 ft. wide and the span between structures will be approximately 550-900 feet. The transmission line may consist of as few as only two structures, both dead-end, with one in the Project Substation and one in the Interconnection Switchyard.

Network upgrades to the existing transmission system, including potential modifications to the existing ATC Rockdale 345kV Substation, will be described in the GIA among MISO, Koshkonong Solar and ATC.

2.3 Site Stabilization, Protection, and Reclamation

Appropriate water erosion and dust-control measures would be implemented to control the amount of dust and erosion around the construction site in order to comply with the Project Erosion Control and Stormwater Management Plan (ECSWMP) and, if applicable, Dane County dust control requirements. Dust during construction would be controlled and minimized by applying water transported to the site by water trucks. The Project would incorporate erosion-control measures required by regulatory agency permits and contract documents as well as other measures selected by the contractor. Project-specific BMPs would be designed by the contractor and included in the Project ECSWMP.

The Koshkonong Solar Project is committed to minimizing impacts to soil in the Project Area and mindful that, in the future, the site may be returned to active agricultural use. To promote maintenance of good soil conditions, Koshkonong Solar plans to revegetate the Project Area with perennial vegetative cover using locally sourced seed mix (as available) appropriate for the location and soil type.

Creation of permanent vegetative cover in the Project Area will provide stormwater management benefits, reduce vegetation management costs during Project operations, reduce snow drift, and improve drought resistance, among other benefits. Gravel access roads will be maintained to allow passage by maintenance vehicles and personnel, but the areas under and between the solar modules will be seeded.

2.4 Operation and Maintenance

2.4.1 Photovoltaic Panel Cleaning

Based on average precipitation levels in the area, Koshkonong Solar anticipates that regular panel cleaning will not be required and any washing events will be extremely rare. If needed, cleaning the solar modules involves washing the surfaces with water containing no additive cleaners or chemicals. Koshkonong Solar or contractor work crews will obtain water from nearby approved water sources and truck it to the solar array. They will clean dust and dirt which may accumulate on the module surfaces using a pressure nozzle. The frequency of washing will depend on the level and frequency of rainfall on the Project site. This wash water would drain off and infiltrate into the ground.

2.4.2 Electrical Equipment Maintenance

In addition to the above activities, periodic maintenance would include replacing air filters within the inverters when needed, testing connections with thermal imaging cameras and addressing any issues discovered, and sampling the mineral oil within the transformers. Tracking system maintenance will include periodic battery replacement and minor greasing of internal gearbox components. Once the solar array has been constructed, Koshkonong Solar or contractor personnel will use the access roads and areas between solar arrays to service and maintain the equipment as necessary.

2.4.3 Ground Cover Maintenance

One of Koshkonong Solar's goals in selecting a seed mix for the ground cover is to minimize ground cover maintenance. The post-construction ground cover maintenance program will consist of a combination of mowing using mechanized equipment, string trimming, and if necessary, application of localized herbicide. Alternatively, Koshkonong Solar will evaluate the usage of compatible livestock to graze the Project site. The Project's ground cover will be maintained and controlled throughout the life of the Project.

2.5 Decommissioning

The Project's Solar Easement Agreements have a maximum operating term of 50 years. At the end of the Project's useful live, the system will be decommissioned, and the site returned to its previous condition.

Upon decommissioning, the following facilities would be removed:

- Photovoltaic modules, panels and above-ground wiring;
- Racking systems and support structures will be removed completely if practicable, or piles will be excavated and cut to a depth of 3 feet below grade if they are not able to be removed;
- Inverters and transformers;
- Concrete foundations to a depth of 3 feet below grade;
- Underground electrical collection to a depth of 3 feet below grade;
- Access roads if the hosting landowner opts not to leave them in place;
- Project Substation;
- O&M building if a suitable continuing use cannot be found; and
- Perimeter fencing.

The solar array system would be disconnected from the area of interconnection by first turning off the breaker switches and then severing the electrical cables. The individual solar modules would then be disconnected from the site electrical network and removed from the support racks. They would be re-used, recycled, or safely disposed of offsite in accordance with applicable laws and regulations. Restored areas would be seeded to stabilize exposed soil or de-compacted and returned to agricultural use in accordance with the easement agreements.

3.0 EXISTING ENVIRONMENT

3.1 Biological Resources

3.1.1 Land Cover Types

Land cover within the Project area was mapped and described using data and descriptions from the 2016 Wiscland 2.0 Land Cover Database (WLCD) (WDNR 2016), which combines ground level mapping, satellite imagery, and USDA data in a product produced jointly by the WDNR, UW-Madison and the State Cartographer's Office. A total of six land cover types were identified and mapped within the Project area. The majority of the Project Area is comprised of Agriculture (80.2 percent). Grassland, Forest, Urban/Developed, Wetland and Barren comprise the remaining land cover types within the Project Area (**Exhibit 5**) (**Table 3-1**). Results of field reconnaissance conducted September 24 and 25, 2019 and November 9-16, 2020 found WLCD land cover mapping is generally consistent with land cover types and extent observed in the field.

Table 3-1: WLCD Land Cover Types within the Project Area (WDNR 2016)

Land Cover Type	Area (Acres)	Percent of Total
Agriculture	9,543	80.2
Grassland	1,398	11.7
Forest	577	4.9
Urban/Developed	191	1.6
Wetland	189	1.6
Barren	2	<0.1
TOTAL	**11,900**	**100.0**

3.1.2 Wetlands and Riparian Areas

The preliminary desktop-delineation identified 215 wetlands and wetland complexes totaling 816.3 acres within the Project Area (**Exhibit 6**). Desktop-delineated wetlands categorized by Eggers and Reed Classification are summarized in **Table 3-2.** The assigned Eggers and Reed Classification was based on the predominant Eggers and Reed type within a given wetland polygon. The majority of the desktop-delineated wetlands are farmed seasonally-flooded basins (quantity of 124). Other common wetland types include wet meadows (27) and complexes associated with floodplain forests (20). Nineteen Water Body Identification Code (WBIC) waterways and 18 desktop-delineated waterways were identified within the Project Area. The total waterway mileage within the Project Area is 19.8 miles for WBIC streams and approximately 3.6 miles for additional desktop-delineated streams. Please note that the waterway acreage listed in Table 3-2 is comprised of a combination of WBIC flowlines and desktop-delineated streams, and incorporates and duplicates most all of the polyline features listed in Table 3-3. Field wetland delineations have been completed within leased Project parcels but the report is still forthcoming. The data from the field wetland delineations will supersede the desktop-mapped information and be used in final design and assessment of Project impacts.

Table 3-2: Desktop-Delineated Wetlands

Eggers and Reed Classification	Acres	Number of Features
Seasonally Flooded Basin	359.2	124
Wet Meadow	177.4	27
Floodplain Forest	113.5	20
Waterway	55.9	18
Shrub-Carr	37.7	5
Set of Stock Ponds	35.8	1
Shallow Marsh	20.1	9
Shallow Open Water	16.7	11
TOTAL	**816.3**	**215**

Table 3-3: WBIC and Desktop-Delineated Waterways

Feature Type	Length in Miles	Number of Polyline Features
WBIC Flowlines	19.8	19
Desktop-delineated Waterways (no WBIC ID#)	3.6	18
TOTAL	**23.4**	**37**

3.1.3 Federal and State Listed Species

The Project Area and associated two-mile buffer were evaluated for the potential presence of federally or state-listed species and their habitats. Federally protected species include those characterized by the U.S. Fish and Wildlife Service (USFWS) under the authority of the ESA of 1973 (16 United States Code [USC] 1531–1544) as threatened or endangered, as well as those proposed for listing (i.e., candidate species). The WDNR also maintains a list of threatened and endangered species for Wisconsin. Laws and regulations pertaining to state-listed endangered or threatened species are contained in Wisconsin State Statute 29.604 and Administrative Rule Chapter NR 27.

3.1.3.1 Federally Protected Species

A USFWS Information for Planning and Consultation (IPaC) request (Consultation Code: 03E17000-2021-SLI-0159) identified six species as potentially occurring within the Project Area. The species identified include the federally threatened northern long-eared bat (*Myotis septentrionalis*; NLEB), eastern prairie fringed orchid (*Platanthera leucophaea*), prairie bush-clover (*Lespedeza leptostachya*), and Mead's milkweed (*Asclepias meadii*), the federally-endangered rusty patched bumble bee (*Bombus affinis*), and the non-essential experimental population of whooping crane (*Grus americana*). Non-essential experimental population designations are assigned to populations deemed unnecessary for the continued existence of the species (USFWS 2016). Regulatory restrictions are reduced for non-essential experimental populations.

There are no designated critical habitats identified within the Project Area for any federally protected species; however, there are 1,224 acres of rusty patched bumble bee High Potential Zone (10 percent of total acreage) and 10,676 acres of Low Potential Zone (90 percent) within the Project Area. Also, the 40-acre Smith-Reiner Drumlin Prairies preserve owned by The Prairie Enthusiasts located in the east-central region of the Project Area has a population of prairie bush-clover.

3.1.3.2 State-Protected Species

Three of the species identified in the IPaC (USFWS 2020) are also listed at the state-level. The eastern prairie fringed orchid and prairie bush-clover are state-endangered and the northern long-eared bat is state-threatened. Also, the whooping crane and rusty patched bumble bee are considered species of concern in Wisconsin.

Koshkonong Solar requested an updated Endangered Resources Review (ERR) from the WDNR for the Project Area and received a response on November 2, 2020 (ERR Log # 19-695). The WDNR did not identify any required permits, but did identify two required actions and nine recommended actions in their response. The required actions pertain to a federally-listed insect and a federally- and state-listed plant.

3.1.4 Special Management Areas

A desktop evaluation was conducted using the U.S. Geological Survey (2019) Protected Areas Database of the United States (PAD-US) to document special biological resource management areas such as conservation easements and state or federal lands managed for biodiversity within the Project Area and an associated 10-mile buffer. Results of this effort indicated that the Smith-Reiner Drumlin Prairie is located within the eastern portion of the Project Area. No other public lands were identified within the Project Area. There are approximately 25,008 acres of public lands (i.e., conservation easements, county, state, federal, or tribal lands) within the 10-mile buffer; of which, two private easements, two WDNR extensive wildlife habitats, and one county-owned property abut the Project Area.

4.0 REQUIRED PERMITS

The potentially required permits for construction and operation of the proposed Project are listed in **Table 4-1.** The regulatory agencies are also listed. Some permits identified may not be applicable or required based on final Project design.

Table 4-1: Preliminary Permit List

Permit	Governmental Authority	Notes
Federal Permits		
Spill Prevention, Containment and Countermeasures (SPCC) Plan	United States Environmental Protection Agency	Required if aggregate above-ground oil storage capacity exceeds 1,320 gallons or buried storage capacity exceeds 42,000 gallons.

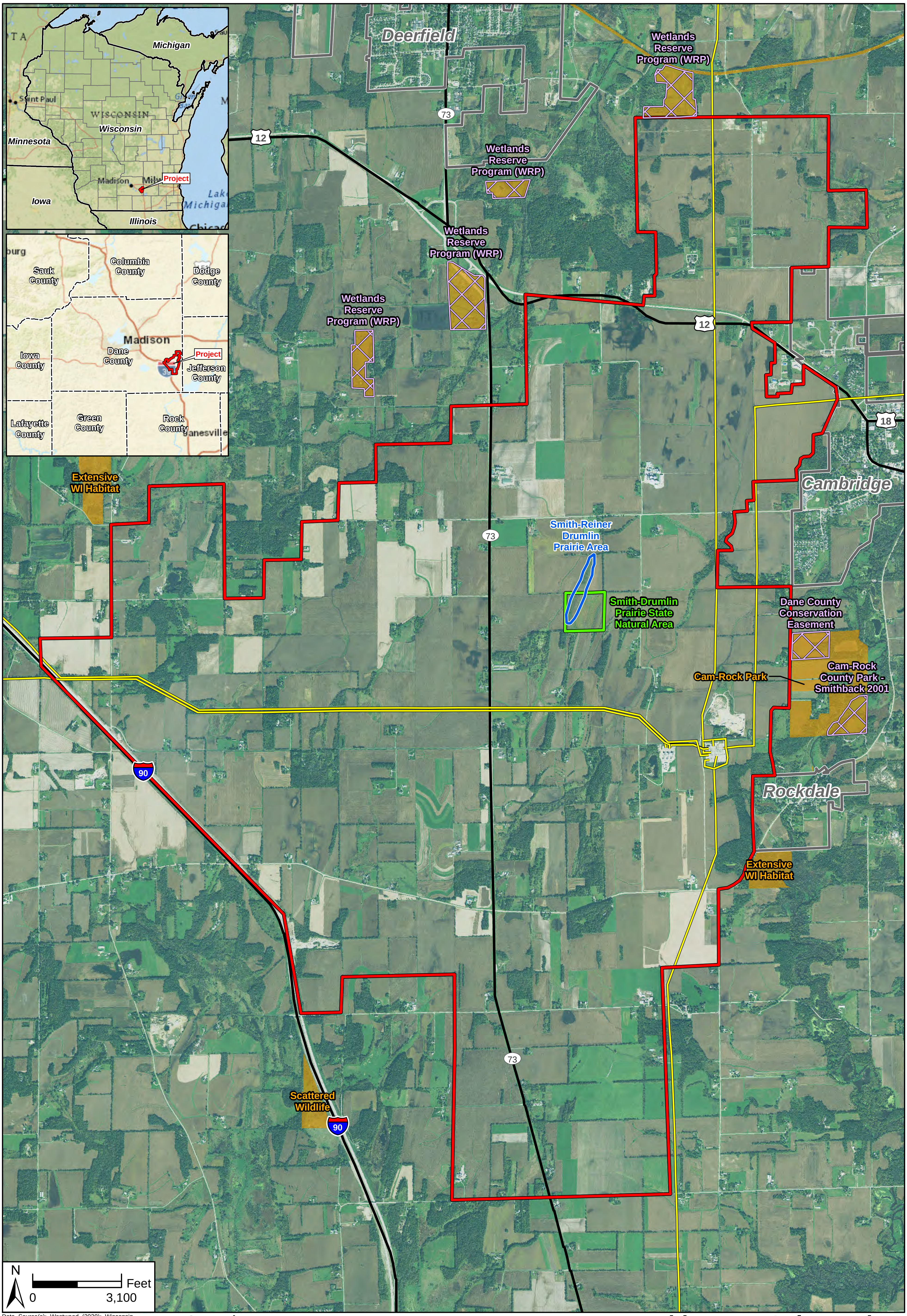
Emergency Planning and Community Right-to-Know (EPCRA) Reporting	Occupational Safety and Health Administration	EPCRA requires any facility storing hazardous chemicals, including lithium ion batteries, to file an annual report with the State Emergency Response Commission.
Section 404 Wetland Permit	U.S. Army Corps of Engineers	Impacts to jurisdictional water resources will be avoided and minimized to the degree practicable. Field wetland delineations within the final project footprint will be performed to determine the presence and extent of water resources, quantify potential impacts and determine the appropriate authorization for unavoidable impacts.
State Permits		
WPDES Construction Stormwater General Operating Permit	Wisconsin Department of Natural Resources	Required for land disturbance or construction activities that disturb one or more acres with a point source discharge to surface "waters of the United States."
Certificate of Public Convenience and Necessity	Public Service Commission of Wisconsin	A CPCN is required for any new generating facility with a capacity of 100 MW or greater.
Oversize-Overweight Vehicle Permit	Wisconsin Department of Transportation	Required for any vehicles exceeding posted limits on state roads.
Right-of-Way Permit	Wisconsin Department of Transportation	Required for any construction in a state highway right-of-way.
Driveway Permit	Wisconsin Department of Transportation	Required for construction of driveway on state highway.
Electrical and Plumbing Plan Review	Wisconsin Department of Safety and Professional Services	Required for installation of electrical and plumbing in commercial building.
Private Well Notification Number and Approval	Wisconsin Department of Natural Resources	Required for construction of a private well. Intended for O&M building.
Dane County Permits		
Access (Driveway) Permit	Dane County Department of Public Works, Highway and Transportation	Required for new connection to county right-of-way.
Permit to Work in County Trunk Highway Right-of-Way	Dane County Department of Public Works, Highway and Transportation	Required for installation of utilities in county right-of-way.
Sanitary Permit	Public Health Madison & Dane County	Required for installation of on-site septic system.
Well Location Permit	Public Health Madison & Dane County	Required for construction of a private well. Intended for O&M building.
Town of Christiana Permits		
Building Permit	Town of Christiana Building Inspector	Required for construction of any structure. Intended for O&M building.
Driveway Permit	Town of Christiana Public Works Department	Required for construction of new driveway on town road.
Other Permits	Town of Christiana	To be reviewed during Memorandum of Understanding (MOU) process.

Town of Deerfield Permits		
Driveway Permit	Town of Deerfield Highway Patrolman	Required for construction of new driveway on town road.
Other Permits	Town of Deerfield	To be reviewed during Memorandum of Understanding (MOU) process.

5.0 PROJECT SCHEDULE

Koshkonong Solar anticipates commercial operation of the facility to begin in the fourth quarter of 2023. The CPCN application submittal is planned for February/March 2021. The other permitting processes would be completed concurrently with the CPCN approval timeline. Construction is anticipated to begin as early as the first quarter of 2022.

Map Document: N:\0023582.00\GIS\Engineering Plan Exhibits\Koshkonong_EP_Ex1_ProjectAreaMap_201218.mxd 12/18/2020 12:45:08 PM radevito



Data Source(s): Westwood (2020); Wisconsin NAIP Imagery (2018); Census Bureau (2019); Ventyx Velocity Suite, Ventyx Energy LLC. (2020); Conservation Biology Institute PAD-US (2016); NCED and Partners (2016).

Legend

- Project Area
- Transmission Line
- Major Road
- Municipal Boundary
- Smith-Reiner Drumlin Prairie Area
- Smith-Drumlin Prairie State Natural Area
- NCED Conservation Easement
- PADUS Public Land

Westwood

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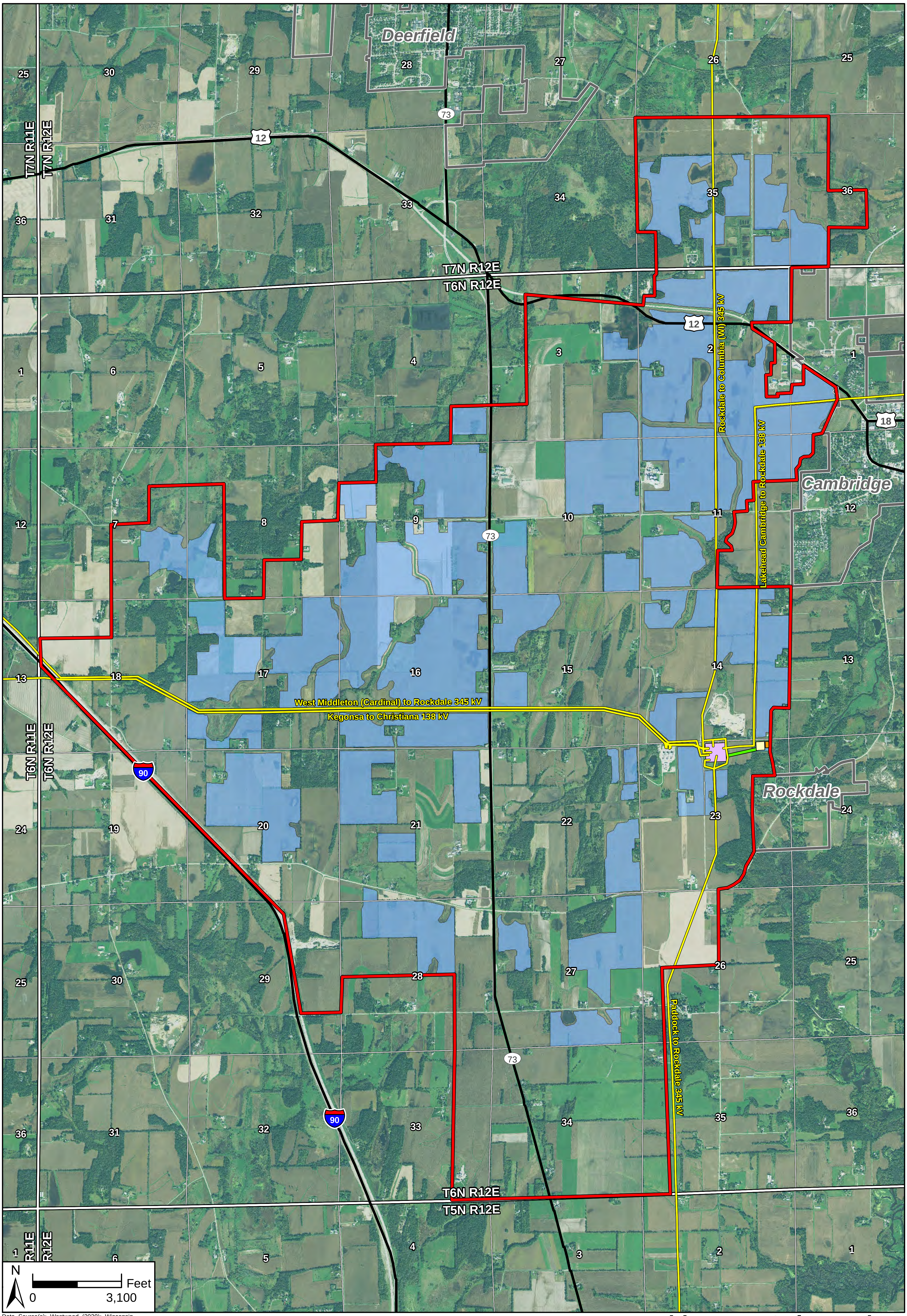
Koshkonong Solar Project

Dane County, Wisconsin

Project Area Map

EXHIBIT 1

Map Document: N:\0023582.00\GIS\Engineering Plan Exhibits\Koshkonong_EP_Ex2_SolarArrayMap_201218.mxd 12/18/2020 12:41:30 PM radevito



Data Source(s): Westwood (2020); Wisconsin NAIP Imagery (2018); Census Bureau (2019); Ventyx Velocity Suite, Ventyx Energy LLC. (2020).

Legend

- Project Area
- PLS Township Boundary
- PLS Section Boundary
- Municipal Boundary
- Preliminary Solar Development Area
- O&M Building
- Switchyard
- Major Road
- Project Substation
- Preliminary Transmission Line
- Existing Transmission Line

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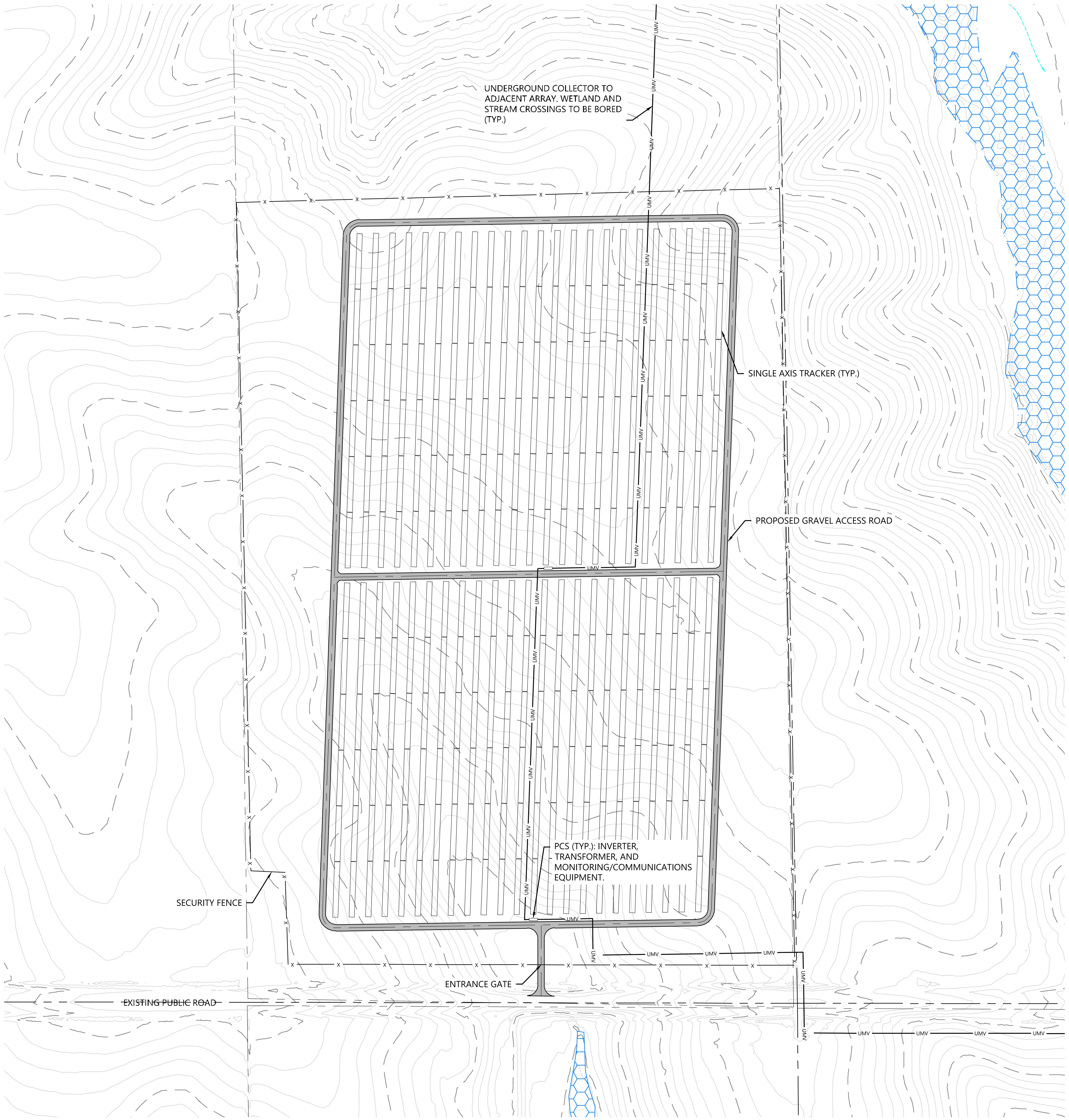
Dane County, Wisconsin

Preliminary Solar Array Areas

EXHIBIT 2

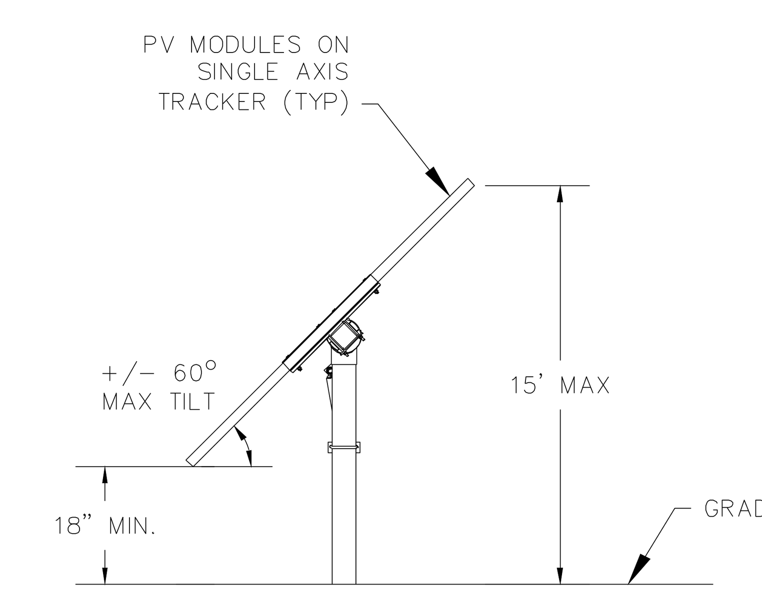
Westwood
Phone (608) 821-6600 8401 Greenway Blvd., Suite 400 Middleton, WI 53562 westwoodps.com
Westwood Professional Services, Inc.



1 Typical Solar Array Plan View

LEGEND:

- PROPOSED SOLAR ARRAY
- PROPOSED ACCESS ROAD
- PROPOSED SECURITY FENCE
- UNDERGROUND COLLECTION
- EXISTING PROPERTY LINE
- EX. INDEX CONTOUR
- EX. INTERVAL CONTOUR
- EX. STREAM CHANNEL
- EX. WETLAND



2 Typical Single Axis Tracker
NTS

PREPARED FOR:

Invenergy
One South Wacker Drive, Suite 1900
Chicago, IL 60606

REVISIONS:

#	DATE	COMMENT
A	11/23/2020	Engineering Report

0' 150' 300' 450'

Koshkonong Solar Energy Center

Dane County, Wisconsin

Figure 3 Typical Solar Array Layout

PRELIMINARY
NOT FOR CONSTRUCTION

DATE: 11/23/2020

SHEET: 1

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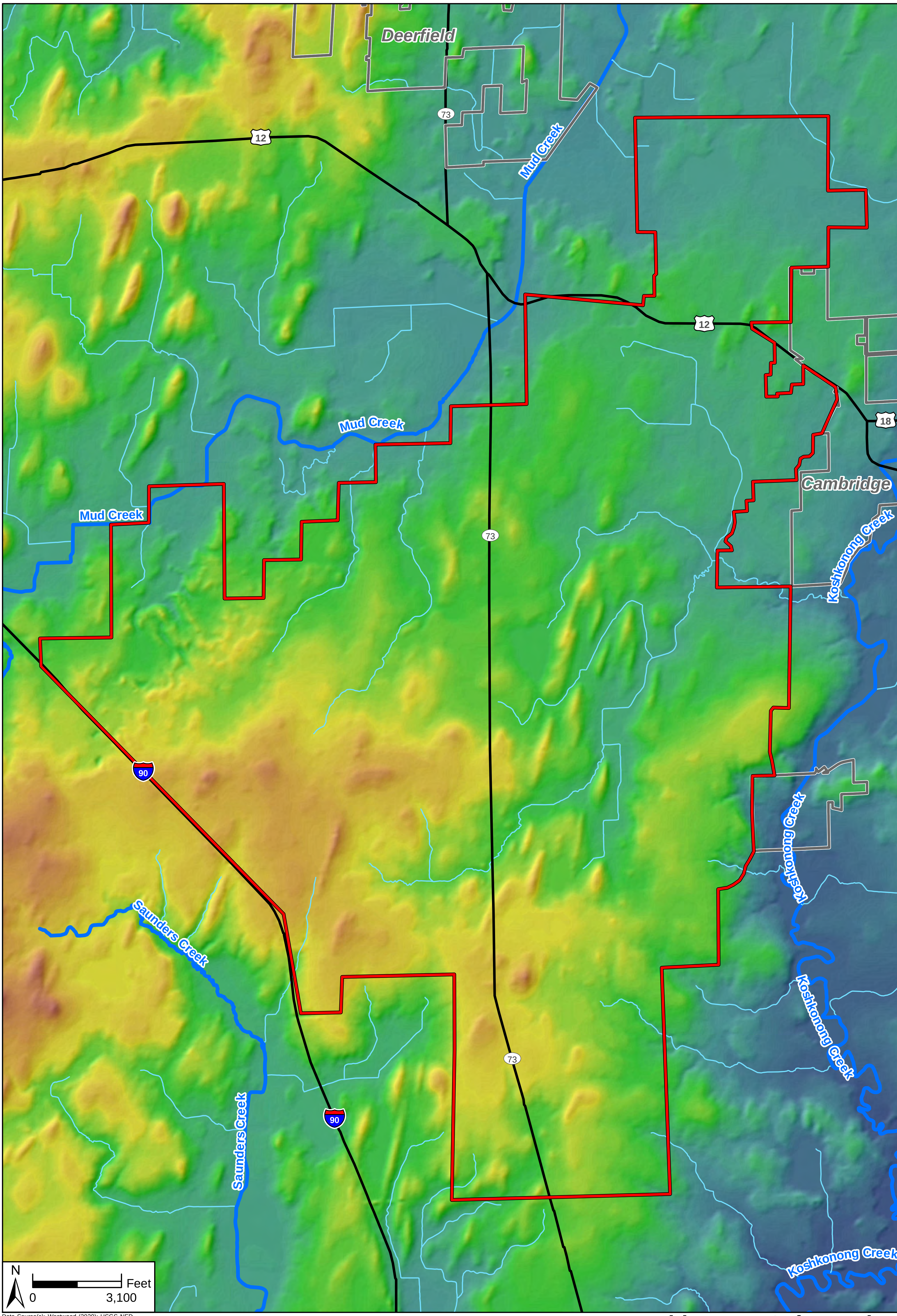

Data Source(s): Westwood (2020); USGS NED (2020); Census Bureau (2019); USGS NHD Dataset (2018).

Legend

- Project Area
- Municipal Boundary
- Major Road
- Major Drainage Feature
- Minor Drainage Feature

Elevation Range

High: 1,109ft

Low: 799ft

Koshkonong Solar Project

Dane County, Wisconsin

Topography & Major Drainage Features

EXHIBIT 4

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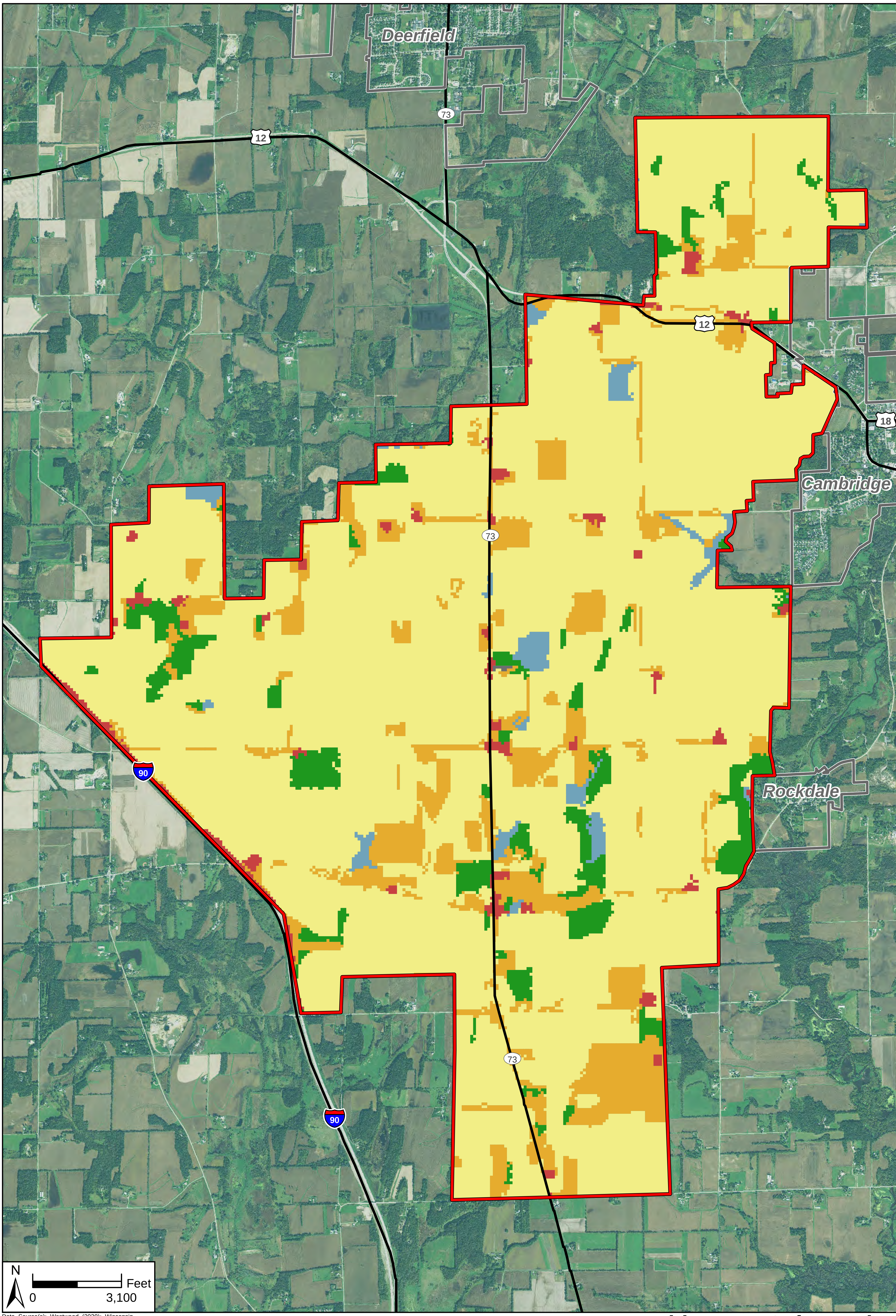
Map Document: N:\0023582.00\GIS\Engineering Plan Exhibits\Koshkonong_EP_Ex5_LandCoverMap_201218.mxd 12/18/2020 12:42:04 PM radevito



Data Source(s): Westwood (2020); Wisconsin NAIP Imagery (2018); Census Bureau (2019); USDA, Natural Resources Conservation Service (2017); WDNR (2016).

Legend

- Project Area
- Municipal Boundary
- Major Road

Land Cover Type

- Agriculture (80.20%)
- Grassland (11.74%)
- Forest (4.85%)
- Urban/Developed (1.60%)
- Wetland (1.59%)
- Barren (0.02%)

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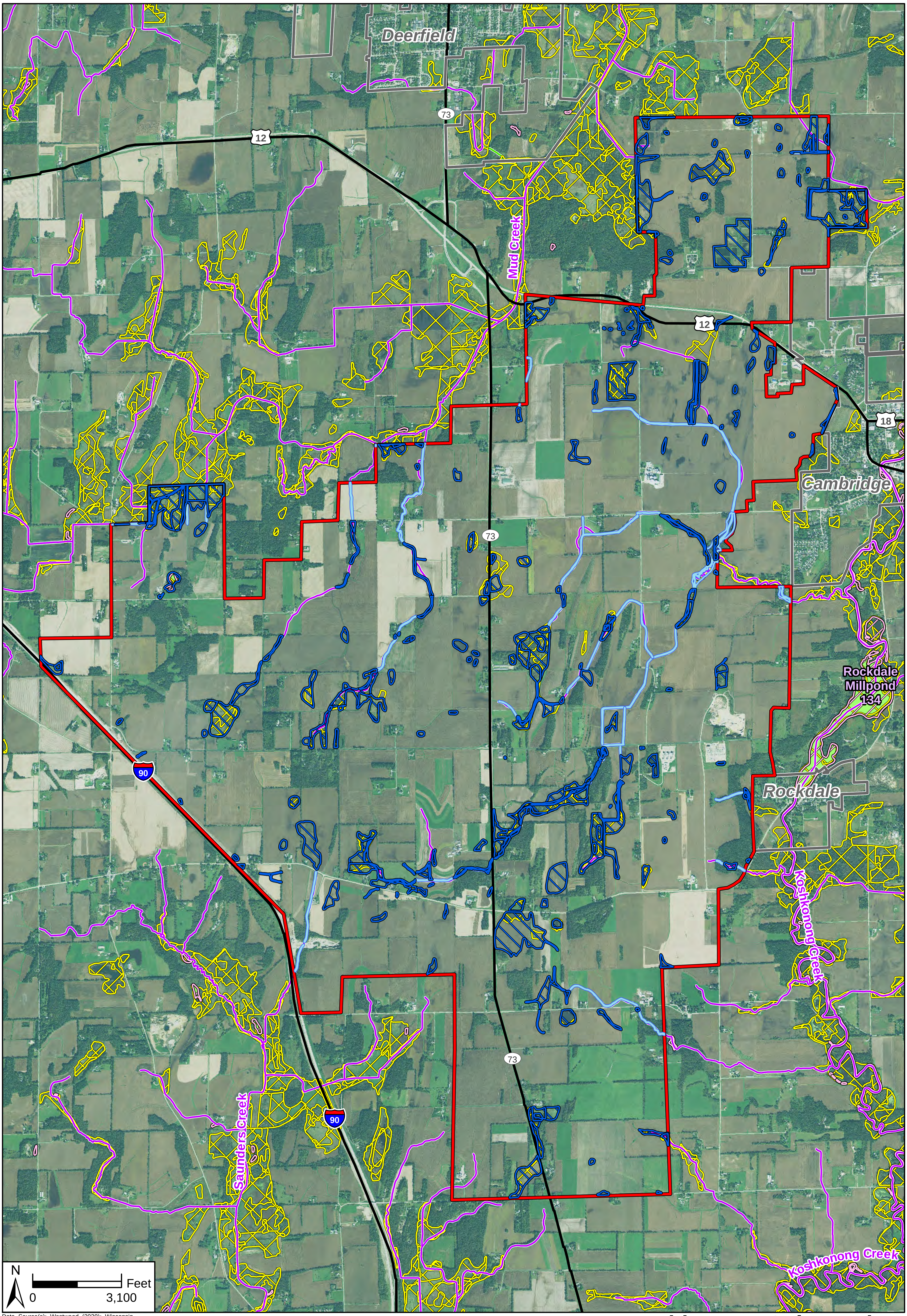
Koshkonong Solar Project

Dane County, Wisconsin

Land Cover Map

EXHIBIT 5

Map Document: N:\0023582.00\GIS\Engineering Plan Exhibits\Koshkonong_EP_Ex6_WaterResourcesMap_201218.mxd 12/18/2020 12:45:50 PM radevito



Data Source(s): Westwood (2020); Wisconsin NAIP Imagery (2018); Census Bureau (2019); WDNR (2018); USGS NHD Dataset (2018); U.S. Fish and Wildlife Service (2018); Ducks Unlimited (2018).

Legend

- Project Area
- Municipal Boundary
- Major Road
- Desktop Delineated Wetland
- Desktop Delineated Waterway
- WDNR WWI Wetland Area
- WDNR 24K Flowline
- WDNR 24K Waterbody
- NHD Flowline
- NHD Waterbody

Koshkonong Solar Project

Dane County, Wisconsin

Water Resources Map

EXHIBIT 6

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