APPENDIX E:
AGRICULTURE IMPACT MITIGATION PLAN

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Lake Wilson Solar and Storage Project

Murray County, Minnesota

FEBRUARY 2023

PREPARED FOR:

Lake Wilson
SOLAR ENERGY CENTER

Westwood

PREPARED BY:

Agricultural Impact Mitigation Plan

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Abbreviations and Definitions

AC	Alternating Current
AIMP or Plan	Agricultural Impact Mitigation Plan
BESS	Battery Energy Storage System
BMPs	Best Management Practices
BWSR	Minnesota Board of Water & Soil Resources
Commission or PUC	Minnesota Public Utilities Commission
Construction Manager	Person responsible for coordination and supervision of construction of the Project
Contractor	Construction Contractor
CSAH	County State Aid Highway
DC	Direct current
Decompaction	Treatment which relieves soil compaction by introducing air space into the soil.
Drain tile	System that removes excess water from the soil; typically, belowground.
Gen-Tie Line	Approximately 200-400 foot long overhead 115 kV overhead HVTL that will connect the Project Substation to the new Xcel Switchyard.
GPS	Global Positioning System
Lake Wilson Solar or Applicant	Lake Wilson Solar Energy LLC
kV	Kilovolt
LCC	Land Capability Class
MDA	Minnesota Department of Agriculture
MNDNR	Minnesota Department of Natural Resources
MW	Megawatts
MWD	Mostly Well Drained
NEC	National Electric Code
NERC	North American Electric Reliability Corporation
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
O&M building	Operations and maintenance building
POI	Point of Interconnection
Preliminary Development Area	Approximate up to 1,526-acre area where Lake Wilson Solar Energy LLC proposes to build the Lake Wilson Solar Energy Center facilities
Project	Lake Wilson Solar Energy Center (a photovoltaic solar energy conversion and battery storage project)
Project Area	Approximate 2,621-acre land area within which the Project will be developed
Project Substation	On-site substation that combines all the AC power from the 34.5 kV collection circuits and converts the power from 34.5 kV to 115 kV
PV	Photovoltaic
SCADA	Supervisory Control and Data Acquisition

SSURGO	Soil Survey Geographic Database
SWPPP	Stormwater Pollution Prevention Plan
Tile Contractor	Agricultural drain tile contractor
VSMP	Vegetation and Soil Management Plan
Xcel Line-Tap	Line-tap to interconnect the Project to the grid via the existing Fenton-Chanarambie 115 kV HVTL under the ownership of Xcel
Xcel Switchyard	Switchyard that will be used to interconnect the Project to the existing Fenton-Chanarambie 115 kV HVTL under the ownership of Xcel

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1.0 Purpose and Applicability of Plan

The objective of this Agricultural Impact Mitigation (Plan or AIMP) and the associated Vegetation and Soil Management Plan (VSMP) is to identify measures that Lake Wilson Solar Energy LLC (Lake Wilson Solar or Applicant) and its contractors will take to avoid, minimize, mitigate, and/or repair potential negative agricultural impacts that may result from the construction, operation, and eventual decommissioning of the Lake Wilson Solar Energy Center (Project)[1]. The Project is an up to 150 megawatts alternating current (MWac) photovoltaic (PV) solar energy conversion system with an associated up to 95 MWac / 380-megawatt hour (MWh) battery energy storage system (BESS). The Project is planned to be sited on approximately 1,526 acres of land located in Sections 15-17, 20-22, and 27, Township 106N, Range 42W in Murray County, MN (**Exhibit 1**). This Plan was also prepared in support of the Site Permit Application (SPA) that will be submitted to the Minnesota Public Utilities Commission (Commission or PUC) for approval of the Project.

Lake Wilson Solar will lease the majority of the property and purchase one parcel for the planned construction and operation of the Project. As a result, agricultural use/production of the areas occupied by the Project will temporarily cease during the anticipated 35-year life of the Project. This Plan outlines measures to ensure the Project Area may be returned to future agricultural use following the closure and decommissioning of the Project, including descriptions of best management practices (BMPs) that will be used during construction to minimize long-term impacts to soil. It is important to note that while Lake Wilson Solar and the construction contractor (Contractor) hired to build the facility fully intend to adhere to the specifics of this Plan, certain practices may vary as the Contractor identifies methods that work more efficiently in this specific location and provide the highest degree of safety while constructing the facility. Lake Wilson Solar will consult with the Minnesota Department of Agriculture (MDA) to discuss any significant deviations from practices and/or methods as outlined in this Plan prior to any such alternative practices and/or methods being implemented.

The Plan includes establishing beneficial perennial vegetation within and directly adjacent to the Project perimeter fence which will be installed around the planned Project PV solar arrays. Native and non-invasive plant species will be selected to thrive in shade conditions and not interfere with the operation of the solar panels yet provide benefits to the soil, wildlife and insects. The seed mixes are formulated to be native and regionally established plants and are developed with recommendations from plant specialists in coordination with the MDA, Minnesota Department of Natural Resources (MNDNR), and Minnesota Board of Water & Soil Resources (BWSR), as applicable, as described in the VSMP concurrently being implemented with this Plan for the Project.

The purpose of the VSMP is to determine a seed mix design and operational procedures that will achieve the goals Lake Wilson Solar has for efficiently operating the solar facility, promote beneficial habitat, establish stable perennial ground cover, suppress weeds, reduce soil erosion and runoff, improve water infiltration, and work in conjunction with the AIMP, NPDES construction stormwater permit, SWPPP, and related construction plans.

[1] Note the VSMP is a standalone document that works in conjunction with the AIMP, the NPDES construction stormwater permit/Stormwater Pollution Prevention Plan (SWPPP) and related construction-related approvals/permits and design plans.

Lake Wilson Solar will utilize an adaptive management approach[2] for vegetation management as further detailed in the VSMP and described in the *Draft: Vegetation Management Plan Template and Guidance* document; the VSMP is being prepared in consultation with Cardno Inc. (Cardno), an experienced native plant community restoration company, with input from the MDA, MNDNR , BWSR and the DOC. Cardno will work with Lake Wilson Solar to develop plans in the VSMP for maintenance of the Project site's plantings throughout the life of the Project. More information on maintenance of the native plantings is outlined in the VSMP.

This Plan is separated into the following sections: Section 2 provides an overview of the proposed Project and its components; Section 4 addresses limitations and suitability of the soils at the Project; Section 5 discusses the BMPs that will be used during construction and operation of the Project; and Section 6 outlines Project decommissioning.

2.0 Project Overview

2.1 Background

Lake Wilson Solar, a wholly owned subsidiary of Invenergy Solar Development North America LLC, proposes to construct the Lake Wilson Solar Energy Center (the Project), an up to 150 MWac solar-energy generating facility with an up to 95 MWac BESS, on approximately 2,621 acres (Project Area) of land in Leeds Township, Sections 15-17, 20-22, and 27, Township 106, Range 42, Murray County, Minnesota (**Exhibit 1**). Within the 2,621-acre Project Area, approximately 1,526 acres are currently designated as a possibility to host proposed Project facilities (Preliminary Development Area) (**Exhibit 2**). The Project lies south of State Highway 30 and is bordered by 105th Avenue to the east and 70th avenue to the west. It is approximately 2 miles southeast of the City of Lake Wilson, Minnesota. The Project will provide up to 150 MWac of renewable power capacity and generate an average of 313,000 MWh annually over the useful life of the Project which is enough energy to power approximately 28,000 homes annually and avoid the emission of approximately 222,000 metric tons of carbon dioxide equivalent annually (EPA, 2022). [3]

The SPA will be submitted to the Commission during the fourth quarter of 2022 along with a Certificate of Need (CN) application. The CN and Site Permit (SP) are expected to be issued by the PUC in the fourth quarter 2023 or first quarter 2024. Construction of the Project would occur in 2024-2025. The Project is planned to be placed in service by the end of 2025.

The Project will interconnect to the existing Northern States Power Company, d/b/a Xcel Energy (hereinafter referred to as Xcel) Fenton - Chanarambie 115 kilovolt (kV)high voltage transmission line (HVTL) via a line tap (Xcel Line Tap), at a new switchyard (Xcel Switchyard) to be located within the western portion of the Project Area adjacent to 70th Avenue. Lake Wilson Solar selected this site due to its proximity to existing transmission facilities, available transmission capacity, existing road infrastructure, willing landowners, and the relatively flat, unobstructed terrain in the Project Area. Importantly, in selecting the Project Area, Lake Wilson Solar also concluded that its development will not result in significant human settlement or environmental impacts.

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[2] As defined by the U.S. Department of the Interior (DOI), adaptive management (also known as adaptive resource management or adaptive environmental assessment and management) is a systematic approach for improving resource management by learning from management outcomes. It is a structured, iterative process of robust decision making in light of uncertainty, with an aim to reducing uncertainty over time via system monitoring. See Chapter1.pdf (doi.gov).

[3] This is based upon the U.S. Environmental Protection Agency (EPA) Greenhouse Gas Equivalencies Calculator and 313,000,000 kWh (313,000 MWhs) annual production PVsyst model.

The Project Area is on a near level to gently rolling landscape with elevations generally ranging from 1,620 to 1,784 feet above sea mean level. This nearly-level topography combined with highly fertile soils, favorable moisture holding characteristics, and usually adequate supplies of moisture from precipitation are well suited to agriculture and row crop production, which is currently the dominant land use for the Project Area.

Lake Wilson Solar has entered into lease and easement agreements and a purchase option agreement with landowners for all of the parcels on which the Project PV arrays, inverters, collection lines, BESS facilities, access roads and fencing are planned to be constructed (**Exhibit 2 and Exhibit 3**). The current land interests under these agreements are sufficient to accommodate the Project's facilities and setback requirements. Lake Wilson Solar entered into a purchase option agreement for the parcel of land that will, in part, host the Xcel Switchyard to be owned and operated by Xcel.

2.2 Project Components

The Project will include the following major components, systems and associated facilities:

- Solar modules, inverters, and tracking rack structures;
- Fencing;
- Access roads (as required);
- Operations and Maintenance (O&M) building;
- Project Substation;
- Power transformer(s);
- Gen-Tie Line;
- Electrical collection lines;
- BESS;
- Up to ten weather stations; and
- Ancillary equipment or buildings as necessary.

The Project will connect to the Xcel Fenton – Chanarambie 115 kV HVTL via a line tap at the new Xcel Switchyard site within the Project Area (point of interconnection or POI). The Project will interconnect with an approximately 200-400 foot long overhead 115 kV connection (Gen-Tie Line) between the Project Substation and the Xcel Switchyard (**Exhibit 3**). The Project Substation will also route power to the proposed BESS, to reduce the variability of solar generation and to create additional capacity value by leveraging the interconnection facilities and network upgrades necessary to accommodate the solar generation component of the Project.

Each of these components is described in more detail below.

2.3 Configuration of Solar Panels, Arrays, and Racking

The Project will convert sunlight into direct current (DC) electrical energy within the PV panels. The proposed inverter skids located throughout the Project convert DC into a utility frequency AC to be fed into the Project Substation. For purposes of describing construction, the Project can be considered an aggregate of individual PV panel components interconnected by cabling and infrastructure at increasing scales to ultimately generate up to 150 MWac of solar energy and, when paired with a BESS, deliver up to 170MWac of electricity to the existing Xcel Fenton – Chanarambie 115 kV HVTL via the Xcel Switchyard and Xcel Line Tap (**Exhibit 3**).

From smallest to largest scales Project components are described below and presented on **Exhibit 4**:

1. **Individual PV panels** are installed on metal foundations that are driven or screwed into the ground.
2. **Lines of Single Axis Trackers** consist of interconnected PV panels approximately 300-feet long, with each line oriented to and rotating along a north-south axis to track the east-west movement of the sun and maximize the interception of solar energy. These trackers represent the racking upon which the individual panels are mounted.
3. **Arrays** are north/south lines of PV panels organized in racks associated with an east/west oriented access road.
4. **Inverters** convert the DC electricity collected from the arrays into AC electricity and feed the electricity into the electrical collection system
5. **Groups** of PV panels typically consist of one or two arrays north, and one or two arrays south of a permanent access and maintenance road (**Exhibit 4**). Depending on site constraints, there may be fewer arrays associated with a specific group. Perimeter access roads are typically present on the periphery of individual groups.
6. **Construction Units** consist of groups of PV panels delineated by their connectivity and relationship to main roads (**Exhibit 3**). The Project consists of:
   a. a 358-acre (approximate) **Northwest Unit** bounded by Highway 30 to the north, 80th Avenue to the west, 90th Avenue to the east, and 91st Street to the south.
   b. a 161-acre (approximate) **Northeast Unit** bounded by Highway 30 to the north, 90th Avenue to the west, 105th Avenue to the east, and 91st Street to the south.
   c. a 202-acre (approximate) **Southwest Unit** bounded by 91st Street to the north, 80th Avenue to the west, 90th Avenue to the east, and 81st Street to the south.
   d. a 419-acre (approximate) **Southeast Unit** bounded by 91st Street to the north, 90th Avenue to the west, 105th Avenue to the east, and 81st Street to the south.
   e. a 95-acre (approximate) **South Unit** bounded by 81st Street to the north, 90th Avenue to the west, 105th Avenue to the east, and 71st Street to the south.
7. Approximately 441,000 feet of electrical collection system throughout the Project and underneath 91st Street, 80th Ave, 90th Ave, and 81st Street, connecting all inverters to the Project Substation.

Lake Wilson Solar will use a single axis tracking system where the panels are rotated by small motors to track with the sun throughout the day. The panels, aligned in north-south rows, face east in the morning, parallel to the ground during mid-day (i.e., horizontal position), and then west in the afternoon. Panels can be manually oriented to the east or west at maximum tilt angle to facilitate maintenance access and vegetation management or can be 'stowed' in the horizontal position to protect against wind or other storm events, if necessary. The current design has typical spacing between the panel edges, when at a horizontal position, of 15 feet, which is sufficient for maintenance vehicles. Separation of PV panel rows will typically be 20-feet from tracking axis to tracking axis (**Exhibit 3**).

2.4 Inverters, Transformers, and Electrical Collection System

Electrical wiring will connect the PV panels to inverters which will convert solar energy generated power from DC to AC. Power inverters convert approximately 1,500 volts of DC power output from the PV solar panels to between 600-690 volts of AC power. A step-up transformer then converts the inverter AC voltage to a medium voltage of 34.5 kV, which is then carried via collection cables to the Project Substation (see next section). Step-up transformers are paired with each of the inverters. The DC electrical collection system from the PV panels to the inverters will be installed either buried (below-ground electrical collection system) or underhung below the panels and then buried from the racking to the inverters (combined above and below-ground electrical collection system). The AC electrical collection system from the inverters/step-up transformer to the Project Substation will be buried. The final type of electrical system will be determined prior to construction based on technology, availability of materials, and costs.

2.5 Inverters and Step-Up Transformers

For the DC electrical collection cabling, the Contractor selected for the Project will be given the option to install the cabling either below-ground, underhung beneath the PV panels and racking (i.e., CAB system), or suspended above ground via the CAB system[4]. Inverter skids will be utilized at locations throughout the Preliminary Development Area and include a step-up transformer to which the inverters will feed electricity. The final number of inverters for the Project will depend on the inverter size, as well as inverter and panel availability. To represent the maximum potential impacts, the Project's preliminary design assumes below-ground cabling and has proposed 55 central inverter skids.

Skids provide the steel foundation for the enclosed inverter, step-up transformer, and Supervisory Control and Data Acquisition (SCADA) systems. The height of a skid is approximately 6-10 feet above grade. The skids will be placed atop a poured reinforced concrete slab or pier foundations and will typically measure 10 feet wide by 25 feet long. Concrete foundations will be poured onsite or precast and assembled off-site. The inverter skids are located within the interior fenced portion of the Project along access roads.

A specific solar inverter has not yet been selected for the Project. Preliminary designs modeled use of the Power Electronics FS4200M Unit. However, several other models and vendors are under consideration, including units manufactured by FIMER, TMEIC, GE, SMA, and Sungrow. Lake Wilson Solar will consider the costs and performance of each option as well as environmental and safety standards when making its final selection.

2.5.1.1 Below-ground Electrical Collection System

As indicated above, the solar panels deliver DC power to the inverters/step-up transformers through cabling. An all below-ground electrical collection system is being considered for the Project. In such a configuration, DC cabling will be located in a below-ground trench (measuring approximately 4 feet deep and 4 - 10 feet wide).

Below-ground AC electric conductor collection lines will transfer the converted 34.5 kV AC electricity from the transformer/inverter equipment (which is assembled on skids and delivered to the Project as a package) to the Project Substation. During trench excavations, the topsoil and subsoil will be removed and stockpiled separately in accordance with Section 5.7 of this Plan. Once the electrical collection lines are laid in the trench, the trench will be backfilled with subsoil followed by segregated topsoil. Electrical collection technology is changing and will be site-specific depending on geotechnical analysis, constructability, and availability of materials. Final engineering and procurement recommendations will help determine the construction method for the electrical collection system.

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[4] In this option some Project construction locations may install the CAB system on pile foundations (without racking on it) to connect the DC cables to the inverter/equipment pad.

2.5.1.2 Combined Above and Below-ground Electrical Collection System

A combined above and below-ground electrical system is being considered for the Project for several reasons, including ease of access for operations and maintenance, reduced ground disturbance, and cost considerations. In a combined above and below-ground system, DC collection cables will be strung under each row of panels and/or suspended above ground via the CAB system, and AC collection will be buried belowground from the inverter/transformer skid to the Project Substation following the same procedures as above.

2.6 Project Substation, Switchyard, Battery Energy Storage System, and Operations and Maintenance Building

The Project will include an on-site Project Substation that combines all the AC power from the above-described 34.5 kV collection circuits where it will convert the power through a step-up power transformer(s) from 34.5 kV to 115 kV. The Project Substation will be located within the southwest portion of the Project Area and in proximity to the planned new Xcel Switchyard site existing Xcel Fenton-Chanarambie 115 kV HVTL as depicted in **Exhibits 3 and 4**.

As discussed above, the Project will interconnect to the existing Xcel Fenton-Chanarambie 115 kV HVTL that crosses through the west side of the Project Area. An approximate 200-400 foot long 115 kV transmission line (Project Gen-Tie) will provide the physical interconnection between the Project Substation (a 34.5/115 kV step-up substation) and the planned new 115 kV Xcel Switchyard/ Xcel Line Tap connected at the Fenton-Chanarambie 115 kV HVTL.

The Project Substation will be designed according to regional utility practices, Midcontinent Independent Transmission System Operator (MISO) Standards, Midwest Reliability Organization Standards, National Electrical Safety Code, and Xcel standards, as applicable. As indicated above, Xcel will modify the existing Fenton-Chanarambie 115 kV HVTL, installing new dead-end structures within the right-of-way to re-direct the circuit in/out of the new Xcel Switchyard (the Xcel Line-Tap). Xcel will also design, engineer, permit and construct the new Xcel Switchyard and Xcel Line-Tap. Lake Wilson Solar will convey the real property for this facility to Xcel. These facilities will be network facilities owned and operated by Xcel.

The Project Substation site will occupy approximately 4 acres that will be fenced with a controlled access gate (**Exhibit 3**). Fencing is described below. The ground surface area within the fenced Project Substation site will be graveled to minimize vegetation growth and reduce fire risk. The Project Substation's footprint within the approximate 4-acre area may be approximately 400 feet by 400 feet once construction is complete. Final dimensions will depend on equipment selection, engineering, and design specifications.

The BESS yard will occupy approximately 6 acres that will be fenced with a controlled access gate (**Exhibit 3**). Fencing will likely be a chain link fence and will adhere to any National Electric Code (NEC) requirements. The ground surface area within the fenced BESS yard will be graveled to minimize vegetation growth and reduce fire risk. The BESS' footprint within the approximate 6-acre area may be approximately 450 feet by 475 feet once construction is complete. Final dimensions will depend on equipment selection, engineering, and design specifications.

The proposed new Xcel Switchyard will be designed/engineered and constructed by Xcel according to applicable Xcel, MISO and other HVTL standards, and will be adjacent to the Project Substation (**Exhibit 3**). It will be fenced with a lockable gate (fencing is described below). Lake Wilson Solar will acquire the land underlying the new Xcel Switchyard (via an already signed purchase option agreement) and secure any other land rights that are necessary to facilitate the loop-in of the Xcel Fenton-Chanarambie 115 kV HVTL to the new Xcel Switchyard. Xcel will modify the existing Fenton-Chanarambie 115 kV HVTL via the Xcel Line-Tap, i.e., new dead-end structures within the right-of-way to re-direct the circuit in/out of the new Xcel Switchyard. Lake Wilson Solar will convey the real property for this facility to Xcel. These facilities will be network facilities owned and operated by Xcel.

The Project Substation will also route power to the proposed Project BESS, which will charge from power generated by the Project and discharge energy to the grid. The BESS will be configured of commercial-scale lithium-ion (or similar technology) battery cells arranged in modules for efficient operations. The batteries will be housed in racks within a series of standard ISO-style steel shipping containers, outdoor-rated modular enclosures, or similar enclosures. The BESS will include rows of inverters and medium voltage transformers to transfer the energy to and from the batteries. Standard battery storage enclosures are typically 20 feet long by 8 feet wide and 9.5 feet high. Containers will be supported on slabs/spread footings or piles/piers, with the ultimate choice based on final design. Each container will have an exterior heating, ventilation, and air conditioning (HVAC) system. From the BESS container, low voltage cables will connect to pad mounted switchgear, step up transformer(s) and a power distribution system. Some Power from the Project will be used to charge the BESS, where the energy will be stored until a dispatch signal is sent to the BESS. From there, it will be returned to the Project Substation where it can then be routed through the Xcel Switchyard and onto the adjacent Fenton-Chanarambie 115 kV HVTL. Additionally, stabilized gravel access roads and perimeter fencing will be provided.

The BESS will be equipped with a state-of-art battery management system (BMS) which will monitor cell level voltage, state of health, cell temperature, and cell current in and out. If any of the monitored parameters are above or below pre-determined limits, the BMS would shut down and electrically isolate the battery rack from the system, preventing any potential for overheating and risk of thermal runaway. The solar arrays and BESS will communicate directly with the SCADA system for remote performance monitoring at the Invenergy Control Center, energy reporting, and troubleshooting. Through remote monitoring, Lake Wilson Solar will ensure the batteries stay within optimal operating bands to ensure both safety and long-term performance. Critical information such as battery temperature, state of charge, and any system warnings are monitored on a 24/7 basis. Any anomaly is identified immediately and can be addressed by action from the Invenergy Control Center or by dispatching local technicians to the site

An O&M building will provide a facility for Project maintenance and operations as well as storage of equipment, tools, materials, etc. The O&M building will be located adjacent to the Project Substation (**Exhibit 3**). The building will contain an office for an onsite Project Plant Manager, a technician room, restroom, and storage area/maintenance shop for equipment to operate and maintain the Project. Equipment within the building will include a SCADA cabinet, spare panels, spare parts and equipment to operate the Project Substation and BESS , as well as safety equipment for working with live electricity and materials/supplies necessary for vegetation management.

Parking will be made available to employees but is not currently designed. The final size will be determined in accordance with the Murray County Ordinance and Site Permit. The parking lot will have no less than one parking space for each two employees to comply with the parking and loading regulations detailed in Section 1702 of the Murray County Zoning Ordinances (Murray County, 2020).

2.7 Access Roads

The Project will include approximately 11.5 miles of graveled access roads that lead to the inverters, Xcel Switchyard/ Xcel Line Tap, Project Substation, BESS and O&M building (**Exhibit 3**). The final length of the access roads will depend on the equipment selected and final engineering/design. These roads are up to 20 feet wide along straight portions of the roads and wider along curves at internal road intersections (approximately 45 feet).

Lake Wilson Solar is including access roads at strategic locations throughout the Project Area for effective and efficient access for operations and maintenance activities and for safe ingress and egress of employees, visitors, and emergency responders. Lake Wilson Solar has minimized the amount of access roads within the Preliminary Development Area and has avoided existing infrastructure to prevent interference with other land use.

Upgrades or other modifications to the existing public roads may be required for construction entrances or operation of the Project. Lake Wilson Solar will work with Murray County, Leeds Township and other local road authorities, as applicable, to facilitate public road upgrades that meet the required standards. Lake Wilson Solar will continue to coordinate with Local, County and State agencies as the Project develops. Lake Wilson Solar will secure driveway permits from the applicable road authority for any new driveways or changes to existing driveways prior to construction. Lake Wilson Solar will also work with Murray County and Leeds Township on a road use agreement or similar agreement to address road use and related concerns.

2.8 Permanent Fencing

Permanent security fencing will be installed along the perimeter of each grouping of the solar arrays in the construction unit areas (**Exhibit 3**). Fencing will consist of a lightweight agricultural woven wire (containing wire “knots” wrapped around each intersecting wire) secured to wooden posts which will be directly embedded in the soil or set in concrete foundations as required for structural integrity. The fencing will extend a maximum total height of approximately 8 feet above grade. Barbed wire will not be used at the top of the fence around the Project arrays/construction units. “High Voltage Keep Out” signs will be placed in accordance with NEC requirements along the fence line. This fencing will be designed to prevent the public and larger wildlife from gaining access to solar array electrical equipment which could cause harm or injury.

To comply with the NEC, security fencing around the Project Substation will consist of a 7-feet high chain-link fence with one foot of barbed wire at the top (8-feet total height). High voltage warning signs will also be installed on the Project Substation fence. A lockable gate will be installed with the Project Substation site fencing. This fencing and gate will be designed to prevent the public and wildlife from gaining access to electrical equipment which could cause injury.

2.9 Stormwater Drainage Basins

Lake Wilson Solar will design drainage basins throughout the Preliminary Development Area that will manage stormwater runoff from the Project during operation. These basins will be located in existing low areas that also contain hydric soils, and these areas will be vegetated with a wet seed mix that will help stabilize soils after rain events.

2.10 Transmission System

The Project will interconnect into the existing Xcel Fenton-Chanarambie 115 kV HVTL via a 200-400 feet long 115-kV overhead Project Gen-Tie Line extending from the Project Substation to the new Xcel Switchyard. The current design includes a set of dead-end structures (up to 100 feet in height) located within the Project Substation site and in the new Xcel Switchyard which will be connected via conductors in a single short span. Final layout and design of these facilities may require use of intermediate tangent structures if the span length is increased from what is expected at this time. In that case, a single dead-end structure will be located within the Project Substation and additional tangent pole structures will route the Project 115 Kv conductors from the Project Substation to the Xcel Switchyard. The number of poles and length of Project Gen-Tie Line are pending final engineering and design. The tangent structures will likely be made of wood or metal and will be 60-90 feet tall (**Image 4**). The type of conductor will be determined following the completion of detailed electrical design.

The new Xcel Switchyard will be connected via the 115 kV Xcel Line Tap to the existing Fenton-Chanarambie 115 kV HVTL; these in and out lines will each be approximately 200-400 feet in length (Xcel Line Tap). As discussed above, Xcel will design, permit, construct, own and operate the Xcel Switchyard and Xcel Line Tap.

2.11 Temporary Construction Facilities

During construction of the Project, Lake Wilson Solar will utilize temporary construction laydown areas within the Project Area. Temporary laydown areas are currently proposed to be approximately 3-10 acres each and located in the eastern and central portions of the Project Area, however, the laydown areas have not been finalized yet but will be determined as the final design is completed. These areas will serve both as a parking area for construction personnel and staging areas for Project components and office trailers during construction. Topsoil will be stripped and cut down, the depth of which will be dependent on final geotechnical engineering surveys but is estimated to be 4-8 inches. Filter fabric may be placed and then topped with aggregate to segregate subsoil from aggregate topping. Silt fencing will be used downstream of all disturbed areas throughout the site which should be considered the fence line plus a buffer, access road entrances, laydown yards, as well as the substation, interconnection, and O&M facilities. These laydown areas have been sited to avoid any tree clearing. After construction, the laydown areas will be restored to pre-construction elevation and conditions and reseeded as described in the Project VSMP.

3.0 Construction

3.1 Site Clearing & Vegetation Removal

The start of construction is anticipated to begin as early as mid-2024 subject to permitting and other factors. A majority of the Project Area and area to be developed with Project facilities are agricultural fields and contain little other vegetation or other natural features (**Exhibit 1**). Depending on timing of the start of construction, row-crops may be harvested prior to construction, mowed down to remove vegetation, or not planted, if construction occurs between fall and late spring. Site preparation and the sequence of activities will ultimately be determined when construction starts. Temporary and perennial vegetation seed mixes, herbicide treatments, and mowing will be used in combination to prepare the site for re-vegetation while keeping soil stabilized during construction and reducing the establishment of noxious or invasive species that will be detrimental to both short-term and long-term vegetation establishment and maintenance. The VSMP includes guidance for a planned schedule and sequence of site preparation activities under different construction start scenarios.

3.2 Earthwork

Mass grading on the site is not planned or needed based upon site topography, design and engineering factors. The majority of soil disturbances will occur during the first phase of Project construction when grading (generally limited to building internal access roads, substation, O&M, and BESS area construction, and preparation for inverter skid locations) takes place. The Contractor may need to move soils in some areas to "flatten" parts of the Project site or to complete minor grading of topsoil to lessen further disruption and avoid erosion. The earthwork activities will be completed using typical earthmoving construction equipment – scrapers, bulldozers, front-end loaders, excavators and skid-steers. BMPs that will be used during these earthmoving activities are described in detail in Section 5.5.

Topsoil handling will first include stripping topsoil that sits higher than other areas that need to be leveled. Topsoil will be pushed outside of the cut/fill areas and collected into designated spots for later use. Once topsoil is removed from the cut/fill areas, the subgrade materials will be removed as required from on-site hills and relocated to on-site low spots. Prior to relocating subgrade materials to the low spots, topsoil in the low areas will be stripped and set aside before the fill is added, then re-spread over the new fill. The subgrade materials would be compacted in place. When compaction is complete, the topsoil spoil piles will be re-spread over the reconditioned sub-grade areas.

Subsoil handling will be similar to the handling of topsoil as described in the above sections. Excess subsoil that comes from site grading will be segregated and relocated to low spots (see Section 5.2 below). Low spots will be filled after topsoil is stripped and set aside and then re-spread over the new fill.

3.3 Access Road Construction

As a component of earthwork, permanent Project entrances, access roads and turnouts will be constructed to support the Project as indicated in **Exhibit 3**. This work would start with the stripping and segregating of topsoil materials from the proposed roads. The Contractor will then compact the subgrade materials up to 20-feet wide to the specified compaction requirements as laid out by the civil and geotechnical engineer. After suitable compaction levels are reached and verified, the Contractor will then install the road as designed, typically done with or without geo-fabric depending on the soil type and then a surface of 4 to 12 inches of gravel. The gravel will be placed level with the existing grade to facilitate drainage and minimize ponding. After the road surface is compacted, the Contractor will shape Project drainage ditches as designed on the grading plan.

Lake Wilson Solar has chosen flatter areas within the Project Area to support Project infrastructure thus minimizing the amount of topsoil that will need to be removed due to grading. Topsoil removed from permanent access roads will be removed to suitable locations near the site of removal and graded for storage (**Exhibit 5**). Storage locations will be identified (global positioning system [GPS] boundary and depth) and recorded on site maps to facilitate final reclamation as part of decommissioning.

3.4 Solar Array Construction

After grading activities are complete, the racking system supports will be constructed using steel piles driven into the ground. In some situations where soils are low strength or consist of loose, non-cohesive sand, helical screw or auger-type foundation posts may be used. Foundations are typically galvanized steel and used where high load bearing capacities are required. The pile is driven using a hydraulic ram or screw installer that moves along tracks, which requires two workers. Soil disturbance for this task would be negligible since the solar pile driver equipment does not excavate soil. The pile driving equipment is about the size of a small tractor. It is equipped with tracks to disperse its weight over a larger ground surface and reduce soil disturbance, rutting and compaction.

The remainder of the racking system will be installed by construction crews using hand tools and all-terrain tracked equipment to distribute materials. Array racking will be bolted on top of the foundation piling to create a "rack" to which the solar panels can be fastened.

During array and racking assembly, multiple crews and various types of vehicles will be working within the Project Area. To the extent practicable, vehicular traffic will be limited to permanent and temporary access roads to minimize soil disturbance, mixing, and compaction. These vehicles include flatbed trucks for transporting array components, small all-terrain vehicles, and pick-up trucks used to transport equipment and workers throughout the Project Area. Panels will be staged in advance throughout the Project Area and be brought to specific work areas for installation by wagon-type trailers pulled by small tractors or by all-terrain tracked equipment. The solar panels will be installed by multiple crews using hand tools. Installation crews will proceed in a winding path along staked temporary access roads in a pre-established route to minimize off-road traffic.

3.5 Electrical Collection System

The collection system will either be buried in a trench or conduit or will be both above and below-ground, in which case the DC collection cables will be strung under each row of panels and racking via the CAB system, and the AC collection will be buried belowground. Under the preliminary design, part of the underground collection system will be horizontally directionally drilled under 91st and 81st Streets and 90th Avenue. Final engineering and procurement will help determine the construction method for the electrical collection system. For the purposes of this Plan, Lake Wilson Solar provides construction methods and BMPs for trenching. Measures to mitigate potential activities and conditions that could cause water pollution, such as trenching, will be outlined in the construction stormwater permit and associated SWPPP to be prepared and implemented during the construction of the Project.

The electrical collection system cabling will be installed using a trenching machine or excavator. The trencher will cut an exposed trench. Cabling will be installed to a depth of 2-5 feet. In any event, the upper 12 inches of topsoil will be stripped from the trench and temporarily stockpiled using a small backhoe. After cables are installed, the trenches would be backfilled, first with subsoil. Stockpiled topsoil would be replaced over the subsoil in sufficient quantities to ensure restoring the trench to the original grade after settling. BMPs that will be used during these earthmoving activities are described in detail in Section 5.7 and will be further discussed below.

3.6 Inverter Installation

Inverter installation will begin with topsoil removal; topsoil will be scraped and stockpiled at designated locations and graded to facilitate revegetation. Underground conduit and junction boxes will be installed throughout the Project to facilitate required cabling connecting equipment. The inverter units will then be placed on frost-footing supported concrete pads or on driven/helical screw pier foundations that will be designed to specifications necessary to meet the local geotechnical conditions. A truck with a flatbed trailer will deliver the premanufactured skids with an inverter, step-up transformer, and SCADA equipment to each inverter foundation. They will typically be set in place using a rough-terrain type hydraulic crane.

3.7 Project Substation Construction

Construction work within the proposed Project Substation will begin by scraping and segregating topsoil and placing it in a designated location. Refer to Section 5.2 for notes on soil segregation. Additional site preparation will include installation of substructures and electrical equipment. Installation of concrete foundations and embedments for equipment will require the use of trenching machines, concrete trucks, pumpers and vibrators, forklifts, boom trucks, and cranes. Above-ground and below-ground conduits from this equipment will run to a control enclosure that will house the protection, control, and automation relay equipment. A station service transformer will be installed for primary AC power requirements. Batteries and battery chargers will be installed inside the enclosure providing power to the switch stations control system. Crushed rock will be placed between and among installed substation equipment and adequate lighting will be installed around the substation site for worker safety during construction and operation.

Substation foundations will typically be installed using one of two methods as follows: Method 1 would be to use a small rubber tire backhoe to excavate major foundations prior to pouring the concrete slabs; and Method 2 would use an auger/drill type machine for minor foundations.

Using either method, the disturbance limit will be within the footprint of the substation for both the foundation equipment and the concrete delivery trucks. BMPs that will be used during these earthmoving activities are described in Section 5.6. Topsoil removed from the Project Substation will be segregated from the subsoil and preserved in a designated location for later restoration during Project decommissioning. The topsoil stockpile area(s) would be near the location where it was removed, accurately located (GPS boundary, soil depth) and graded to facilitate long term preservation and revegetation. Subsoil would be removed and re-used as needed or to an acceptable pre-established and approved area for storage. As part of later decommissioning, subsoil would be replaced first (as needed), followed by topsoil placement. The soil would be replaced and brought back to pre-construction contours to allow for farming.

3.8 Xcel Line Tap Construction

Given the close proximity of the existing Xcel 115 kV HVTL to the proposed Project Substation and new Xcel Switchyard, the Xcel Line Tap will be required to connect the Project to the grid. The number of poles and length of Xcel Line Tap are pending final engineering and design. The tangent structures will likely be made of wood or metal and be up to 100 feet tall. The poles will be directly embedded in an augured hole. The type of conductor will be determined following the completion of detailed electrical design.

3.9 Xcel Switchyard Construction

Construction work within the proposed Xcel Switchyard will begin by scraping and segregating topsoil and placing it in a designated location. Refer to Section 5.2 for notes on soil segregation. Additional site preparation will include installation of substructures and electrical equipment. Foundations will then be installed, and the XCEL Switchyard area will be graded with the ground surface dressed with crushed rock. Installation of concrete foundations and embedments for equipment will require the use of trenching machines, concrete trucks, pumpers and vibrators, forklifts, boom trucks, and cranes. Fencing around the new XCEL Switchyard will likely be a chain-link fence topped with barbed wire to satisfy North American Electric Reliability Corporation (NERC) requirements for security and safety purposes.

3.10 BESS

Construction work within the proposed BESS will begin by scraping and segregating topsoil and placing it in a designated location. Refer to Section 5.2 for notes on soil segregation. Additional site preparation will include installation of substructures and electrical equipment. Installation of concrete foundations and embedments for equipment will require the use of trenching machines, concrete trucks, pumpers and vibrators, forklifts, boom trucks, and cranes. Below-ground medium voltage cables from this equipment will run from the power conversion systems (PCSs) to the substation. The main equipment of the BESS will include battery enclosures, inverters (or PCSs), transformers, MV cabling, junction boxes, backup generators, automatic transfer switches, and auxiliary transformers. Yard stone will be placed between and among installed BESS equipment and adequate lighting will be installed around the BESS site for worker safety during construction and operation.

BESS foundations will typically be installed using one of the two methods described in Section 3.7.

3.11 Stormwater Drainage Basins

Similar to Project Substation construction described above, drainage basins would have topsoil removed and temporarily stored in a pre-established suitable location. Subsoil would then be excavated to a depth of four to seven feet and the sides of the drainage basin sloped to design requirements (including inlet/outlet areas). Excavated subsoil would be distributed throughout the site as fill material in areas where grading is required. Topsoil would be replaced, and the basins vegetated with a wet seed mix.

3.12 Project Fencing Installation

The Contractor or a subcontractor fencing company will be engaged to construct the perimeter security fencing around the Project construction units and the Project Substation as described above. The fencing will consist of an agricultural woven wire fence and will extend a maximum of 8 feet above grade.

The fencing around the Project Substation will likely be an 8-feet above grade chain-link fence topped with one foot of barbed wire to comply with the NEC from NERC. Corner posts will be augured 4 feet and embedded in concrete for structural support. Tangent posts will be direct buried 4 feet similar to corner posts. Holes created by fence poles will be filled in with either stockpiled soil or with supplemented soil to pre-construction conditions. The Project site fencing will have lockable doors and gates installed, as needed, to secure the PV arrays and prevent unauthorized access to Project facilities and equipment.

4.0 Limitations and Suitability of Site Soils

In general, soil types can vary considerably in its physical and chemical characteristics that strongly influence the suitability and limitations that soil has for construction, reclamation, and restoration. Overall major soil properties include:

- Soil texture;
- Drainage and wetness;
- Presence of stones, rocks, and shallow bedrock;
- Fertility and topsoil characteristics; and
- Slope;

Interpretative limitations and hazards for construction and reclamation are based to a large degree on the dominant soil properties, and include:

- Prime farmland status;
- Hydric soil status;
- Susceptibility to wind and water erosion;
- Susceptibility to compaction;
- Fertility and Plant Nutrition; and
- Drought susceptibility and revegetation potential;

4.1 Land Use Considerations

Based on an aerial imagery and written history regarding the Project Area, nearly all of the Project Area and surrounding land has been in agricultural use for decades (University of Minnesota, 2015). Much of the land has been farmland since the late 1800's, based on written history and aerial imagery from 1938 (**Exhibit 6**). The Project Area was originally settled in the late 1800's (lakeandwoods.com, 2022). The Project Area is located within the West Fork Des Moines - Head, as shown in **Exhibit 7**. Most of the land in the watershed area is cropland.

The majority of Murray County is made up of prime farmland (53%), prime farmland if drained (29%), prime farmland if protected from flooding or not frequently flooded during the growing season (3%) and farmland of statewide importance (7%). Typically, high value crops such as corn and soybean rotations are grown in the area. Upon decommissioning of the Project and expiration of leases and easements related to the Project, the land will be restored such that participating landowners could return the land back to agriculture uses.

4.2 Important Soil Characteristics

The Soil Survey Geographic Database (SSURGO) is the digitized county soil survey and provides a GIS database relating soil map unit polygons to component soil characteristics and interpretations. Soil map unit polygons in the SSURGO database were clipped to the Project Area and internal infrastructure boundaries, including the major pieces of infrastructure:

- Fenced area hosting solar panels, racks, and arrays;
- Inverter locations;
- Collection lines;
- Access roads;
- Laydown areas; and
- Project Substation and O&M building.

The acreage of major Project features sharing physical properties, classifications, and limitation interpretations important for construction, use, revegetation, and reclamation were determined by page spatial query of the GIS. Soils within the 2,621-acre Project Area (**Exhibit 1**) but not anticipated to be affected by construction or operations are indicated in **Tables 1-3** below. These areas are not included in the following analysis. The analysis includes the approximate up to 1,526-acre Preliminary Development Area that may be affected by construction (**Exhibit 2**).

A soil map of the Project Area is provided along with a table of selected characteristics of site soils including physical properties, classifications, and construction-related limitations in **Appendices A and B**. **Appendix A** includes a table of soil characteristics that denotes the map unit symbols which can then be used to see the locations of different soils on the accompanying soil map in **Appendix B**.

4.3 Selected Physical Characteristics: Texture, Slope, Drainage and Wetness, Topsoil Depth, Bedrock and Presence of Stones and Rocks

There are approximately 2,621 acres within the Project Area. Selected physical characteristics of site soils are broken down by acreage within the 1,526-acre Preliminary Development Area and the 1,095-acre undisturbed area (the area within the Project Area that will not be used or impacted by the Project – this is the difference between the Project Area and Preliminary Development Area) in **Table 1**.

Soil texture affects water infiltration and percolation, drought tolerance, compaction, rutting, and revegetation among other things. Soil texture is described by the soil textural family which indicates the range of soil particle sizes averaged for the whole soil. Most of the soils within the Preliminary Development Area (1,526 acres) are in the Fine-Loamy (1,287 acres, 84 percent) and Sandy (133 acres, 9 percent) textural families, indicating fine-medium-textured soils dominated by a diverse mix of soil particles in the loam, silt, sand, and clay fractions (between <0.002 and 3) as shown in **Appendices A and B**. Fine-textured and Medium-textured soils typically have good physical and available-water characteristics to support plant growth if not in excessively steep or wet conditions. They have high water-holding capacity, with most of the water being readily available for plant growth.

Slope affects constructability, water erosion, revegetation, compaction, and rutting, among other properties. Most of the soils (1,298 acres, 85 percent) within the Preliminary Development Area are nearly level soils with representative slopes falling within the 0-5 percent slope range. The remaining soils (228 acres, 15 percent) fall within the 5-16 percent slope range.

Table 1: Acreage of Soils with Selected Physical Characteristics

Project Feature	Total Acres[1]	Textural Family[2]							Slope Range[3]		Drainage Class[4]						Topsoil Thickness[5] (inches)		
		Fine	Fine-Loamy	Fine-Silty	Loamy	Coarse-Loamy	Fine-Loamy over Sandy or Sandy-skeletal	Sandy	Slope 0-5%	Slope >5-16%	E	W	MWD	SWP	P	VP	0-12	12-18	>18
	Acres																		
Preliminary Development Area (Potential Disturbance)																			
Fenced Area	1349.5	17.6	1141.6	26.4	0.0	16.0	26.8	121.1	1145.08	204.46	19.26	789.77	70.54	98.72	360.84	10.41	737.79	333.73	278.01
Access Road	61.8	0.2	54.0	0.8	0.0	0.1	1.4	5.2	52.98	8.78	1.17	37.09	4.42	4.08	14.76	0.24	37.24	11.59	12.94
Collection Line	93.3	3.5	70.9	8.6	0.0	2.7	1.0	6.5	85.36	7.94	0.94	45.63	5.21	6.09	32.58	2.84	39.70	28.56	25.04
Inverter	2.6	0.0	2.0	0.1	0.0	0.1	0.1	0.3	2.28	0.30	0.08	1.57	0.08	0.22	0.61	0.00	1.46	0.64	0.47
Substation	3.7	0.0	3.7	0.0	0.0	0.0	0.0	0.0	1.04	2.62	0.00	3.50	0.00	0.00	0.16	0.00	3.50	0.01	0.15
Switchyard	0.7	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.02	0.68	0.00	0.69	0.00	0.00	0.01	0.00	0.69	0.01	0.00
BESS	4.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	3.90	0.10	0.00	2.62	1.38	0.00	0.00	0.00	4.00	0.00	0.00
O&M	0.7	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.74	0.00	0.00	0.00	0.55	0.00	0.19	0.00	0.00	0.55	0.19
Laydown Yard	9.5	0.0	9.5	0.0	0.0	0.0	0.0	0.0	6.14	3.38	0.00	8.42	0.02	0.00	1.07	0.00	5.24	2.45	1.83
Subtotal	1525.8	21.4	1287.2	35.9	0.0	18.9	29.3	133.1	1297.5	228.3	21.5	889.3	82.2	109.1	410.2	13.5	829.6	377.5	318.6
Land Under Control but Not Currently Planned for Development																			
Undisturbed	1095.0	52.5	746.6	175.7	0.0	12.6	31.1	76.5	1018.53	76.45	5.59	381.48	64.40	73.10	498.41	72.00	384.75	360.25	349.98
Grand Total																			
TOTAL	***2620.8***	***73.9***	***2033.8***	***211.6***	***0.0***	***31.5***	***60.4***	***209.6***	***2316.1***	***304.7***	***27.0***	***1270.8***	***146.6***	***182.2***	***908.6***	***85.5***	***1214.4***	***737.8***	***668.6***

1 Total acres of Project features that are anticipated to be disturbed by supporting construction equipment traffic, excavation, and grading. Data obtained by merging Project facility polygons with the SSURGO spatial data in ArcGIS. Summations were performed in ArcGIS Pro or Microsoft Excel.
2 Data available directly from the Natural Resources Conservation Ser4vice (NRCS) SSURGO spatial or attribute database via geospatial query of the spatial or attribute data.
3 Representative slope values are taken directly from the SSURGO database. The SSURGO database provides representative slope values for all component soil series. Slope classes represent the slope class grouping in percent that contains the representative slope value for a major component soil series. For example, a soil mapped in the 2-6% slope class has an average slope of 4% which is within the 0-5% slope range.
4 Drainage class as taken directly from the SSURGO database. E-excessively drained, W- well drained, MW- moderately well drained, SWP- somewhat poorly drained, P- poorly drained, VP- very poorly drained
5 Topsoil thickness is the aggregate thickness of the A horizon described in the SSURGO database. See section 4.2 for notes on soil segregation.
6 Depth to bedrock taken directly from the SSURGO database. Stony/Rocky soils are those soils that have either a cobbley, stony, boulder, shaly, very gravely or extremely gravelly modifier to the textural class of the surface layer or that have a surface layer with >5% stones or rocks >3 inches in dimension.

The soil drainage class in **Table 1** above indicates the wetness in the soil profile along with the speed at which internal water moves through the soil. Soil drainage affects constructability, erosion by wind and water, and revegetation success. Most of the soils within the Preliminary Development Area are in the Well (W) and Poor (P) drainage classes (889 and 410 acres, respectively, cumulatively 85 percent of the Preliminary Development acreage), with smaller areas mapped into Moderately Well Drained (MWD) (82 acres, 5 percent), Excessively Drained (E) (21.5 acres, 1.4 percent), and Very Poorly Drained (VP) (13.5 acres, >1 percent) drainage classes. Soils in P drainage classes are highly productive when drained and are frequently converted to agriculture by the installation of subsurface drain tile. MWD and W drained soils typically are not droughty or wet and are typically well suited to intensive agriculture.

Topsoil thickness affects soil plant nutrition and surface soil structure. To maintain soil productivity, soils with thick topsoil will require larger areas for storage of larger volume of topsoil stripped from permanent infrastructure footprints. About half of the soils within the Preliminary Development Area are characterized by the presence of relatively thick topsoil greater than 12 inches in depth (696 acres, 46 percent).

The presence of bedrock near the soil surface and rocks and stones in the soil profile affects constructability and revegetation. The majority of the soils within the Preliminary Development Area are characterized by the presence of relatively thin topsoil less than 12 inches in depth (829.6 acres, 54 percent) making them shallow to bedrock or they have stones at the soil surface or within the soil profile.

4.4 Selected Classification Data: Prime Farmland, Land Capability Classification, Hydric Soils.

Selected classification information for site soils are broken down by acreage within the 1,526-acre Preliminary Development Area and the 1,095 acre undisturbed area in **Table 2**.

Natural Resources Conservation Service (NRCS)-designated prime farmland soils have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and are also available for these uses[5] (nrcs.uda.gov, 2000). Most of the soils in the Preliminary Development Area are classified into prime farmland, prime farmland if drained, soils of statewide importance, or not prime farmland, (762, 415, 191, and 150 acres, respectively; cumulatively 99.5 percent) (**Exhibit 8**).

Per Minnesota Rule 7850.4400, subpart 4, "no large electric power generating plant site may be permitted where the developed portion of the plant site… includes more than 0.5 acres of prime farmland per megawatt of net generating capacity unless there is no feasible and prudent alternative." Minnesota's Department of Commerce (DOC) issued guidance which provides

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[5] According to the USDA's NRCS, *prime farmland* has the combination of soil properties, growing season, and moisture supply needed to produce sustained high yields of crops in an economic manner if it is treated and managed according to acceptable farming methods. In general, prime farmland has an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, an acceptable level of acidity or alkalinity, an acceptable content of salt or sodium, and few or no rocks. Its soils are permeable to water and air. Prime farmland is not excessively eroded or saturated with water for long periods of time, and it either does not flood frequently during the growing season or is protected from flooding.

information on how to assess projects which exceed the 0.5 acre prime farmland/MW threshold under the rule.[6] This includes describing why alternatives were not chosen, how avoidance of certain impacts influenced site selection, and showing a good faith consideration was given to nearby non-prime farmland areas. As part of the SPA prepared for the Project, a detailed assessment of prime farmland impacts was included which indicated no other feasible or prudent site was identified in place of the proposed Project at the Project Area in Lake Wilson Township, Murray County, MN.

With the exception of a few areas, Murray County has a high percentage of soil that is classified as prime farmland or prime farmland if drained. Siting the Project focused on a location that contains a relatively large area of non-prime farmland and where other disturbances were minimized, and efficiency and ease of access could be maximized. While the County overall contains approximately 84% prime farmland, 81% of the Project Area includes prime farmland. As mentioned in Section 2.2.4, other alternative sites could not be identified in close proximity to Xcel's existing 115 kV HVTL to avoid prime farmland, make efficient use of existing equipment, minimize line loss and avoid the need for large transmission construction that had a higher potential to negatively impact the environment. Additionally, as further detailed in the Project VSMP Lake Wilson Solar will utilize an adaptive management approach for vegetation management in order to provide the best care and protection for the prime farmland from year to year. Lake Wilson Solar is committed to ensuring the vitality of the soils during construction, operation and eventual decommissioning of the Project.

[1] *Solar Energy Production and Prime Farmland – Guidance for Evaluating Prudent and Feasible Alternatives* (Minnesota EERA, May 19, 2020). See also https://mn.gov/eera/web/doc/13929/.

Table 2: Acreage of Soils with Selected Classification Data

Project Feature	Total Acres[1]		Prime Farmland				Land Capability Class												Hydric Soil[2]
		All Soils	Statewide Importance	If Drained	If Protected	Not Prime	1	2e	2s	2w	3e	3s	3w	4e	4s	5w	6s	7e	
	Acres																		
Preliminary Development Area (Potential Disturbance)																			
Fenced Area	*1349.5*	*672.01*	*171.36*	*370.26*	*0.39*	*135.52*	*49.96*	*586.44*	*24.48*	*360.24*	*162.95*	*11.02*	*10.41*	*115.66*	*8.51*	*0.60*	*19.26*	*0.00*	*371.25*
Access Road	*61.8*	*33.94*	*6.81*	*15.00*	*0.00*	*6.02*	*3.22*	*28.77*	*1.29*	*14.76*	*6.65*	*0.15*	*0.24*	*4.85*	*0.66*	*0.00*	*1.17*	*0.00*	*15.00*
Collection Line	*93.3*	*44.37*	*5.99*	*27.88*	*7.04*	*8.02*	*2.70*	*37.46*	*2.69*	*32.08*	*6.28*	*0.49*	*2.84*	*6.58*	*0.74*	*0.51*	*0.94*	*0.00*	*35.43*
Inverter	*2.6*	*1.43*	*0.25*	*0.61*	*0.00*	*0.28*	*0.05*	*1.30*	*0.04*	*0.61*	*0.25*	*0.00*	*0.00*	*0.20*	*0.05*	*0.00*	*0.08*	*0.00*	*0.61*
Substation	*3.7*	*0.88*	*2.62*	*0.16*	*0.00*	*0.00*	*0.00*	*0.88*	*0.00*	*0.16*	*2.62*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.16*
Switchyard	*0.7*	*0.01*	*0.68*	*0.01*	*0.00*	*0.00*	*0.00*	*0.01*	*0.00*	*0.01*	*0.68*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.01*
BESS	*4.0*	*3.90*	*0.10*	*0.00*	*0.00*	*0.00*	*1.38*	*2.52*	*0.00*	*0.00*	*0.10*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
O&M	*0.7*	*0.55*	*0.00*	*0.19*	*0.00*	*0.00*	*0.00*	*0.00*	*0.55*	*0.19*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.19*
Laydown Yard	*9.5*	*5.06*	*3.38*	*1.07*	*0.00*	*0.00*	*0.02*	*5.04*	*0.00*	*1.07*	*3.38*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*1.07*
Subtotal	*1525.8*	*762.2*	*191.2*	*415.2*	*7.4*	*149.8*	*57.3*	*662.4*	*29.0*	*409.1*	*182.9*	*11.7*	*13.5*	*127.3*	*10.0*	*1.1*	*21.5*	*0.0*	*423.7*
Land Under Control but Not Currently Planned for Development																			
Undisturbed	1525.8	762.2	191.2	415.2	7.4	149.8	57.3	662.4	29.0	409.1	182.9	11.7	13.5	127.3	10.0	1.1	21.5	0.0	0.0
Grand Total																			
Grand Total	**2620.8**	**1139.4**	**266.3**	**839.3**	**135.0**	**240.8**	**93.4**	**966.2**	**57.3**	**888.8**	**252.1**	**21.5**	**85.5**	**192.6**	**15.2**	**19.9**	**27.0**	**1.4**	**0.0**

1 Total acres of Project features that are anticipated to be disturbed by supporting construction equipment traffic, excavation, and grading. Data Obtained by merging facility polygons with the SSUGO spatial data in ArcGIS. Summations were performed in ArcGIS Pro and Microsoft Excel.

2 Data available directly from the NRCSS SSURGO spatial or attribute databases via geospatial query of the spatial or attribute data.

Land Capability Class (LCC) is a system of grouping soils primarily on the basis of their capability to produce common cultivated crops and pasture plants without deteriorating over a long period of time. Soils within the Preliminary Development Area are classified as LCC 1, 2e, 2s, 2w, 3e, 3s, 3w, 4e,4s, 5w, and 6s. A numerical value of 1 and 2 indicates soils with no or few limitations that restrict the choice of plants or require very careful management. Soils in LCC Class 1 are typically considered prime farmland and soils in LCC Classes 2 and 3 are typically considered prime farmland with conditions. Most of the soils in the Preliminary Development Area (1,375.9 acres, 90 percent) are in LCC Classes 1-3.

Hydric soils are generally described as soils in poorly drained to very poorly drained drainage classes. Hydric soils are formally a component of regulated wetlands and can be used to indicate areas with potential jurisdictional wetlands. About one-third of the soils in the Preliminary Development Area are hydric (424 acres, 28 percent), with the rest of the soils, 1,102 acres (72 percent) being considered non-hydric soils. Historical aerial photography indicates that these areas are successfully cropped year after year indicating the presence of subsurface drainage. According to the Murray County Drainage Ditch and Tile data (**Figure 9**), the eastern portion of the Project Area contains twenty-nine segments of County Ditch 46, which flows north into Judicial Creek 14. The far northeastern portion of the Project site contains two segments of County Ditch 47, which is isolated from other County ditch systems. The eastern, central, and southeastern portion of the Project Area contains 63 segments of Judicial Ditch 14. Lake Wilson Solar will further evaluate drain tile locations and take this into account as final design/engineering is completed for the Project.

4.5 Construction-Related Interpretations: Highly Erodible Land (Wind and Water), Compaction Prone, Rutting Prone, and Drought Susceptible with Poor Revegetation Potential.

Selected construction-related interpretative data for site soils are broken down by acreage within the 1,526-acre Preliminary Development Area and the 1,095-acre undisturbed area in **Table 3**.

Highly erodible land is identified as being susceptible to water and wind erosion. The minority of soils in the Preliminary Development Area are low relief, fine-medium-textured soils with intermediate-poor water infiltration characteristics that can cause soil erosion by the agent of water. Roughly one-tenth of the soils are highly erodible by water due to finer-soils being less permeable (160 acres, 10.5 percent). Lake Wilson Solar will develop plans to mitigate the potential loss of soil in the SWPPP and through BMPs throughout Section 5.

Wind erosion was evaluated using the wind erodibility group. Highly wind erodible soils are medium textured, relatively well drained soils with poor soil aggregation, resulting in soils with soil surfaces dominated by particles that can be dislodged and carried by the wind. There are no highly wind erodible soils in the Preliminary Development Area.

Soils prone to compaction and rutting are subject to changes in soil porosity and structure as a result of mechanical deformation caused loading by equipment during construction. Compaction and rutting are related to moisture content and texture and are worse when medium- and fine-textured soils are subject to heavy equipment traffic when wet. Rutting is anticipated on 1,526 acres (100 percent) if they are trafficked when wet. The application will develop operational guidelines to mitigate heavy trafficking soils when wet to minimize potential compaction and rutting in the SWPPP.

Soils susceptible to drought include coarse textured soils in moderately well to excessive drainage classes. Revegetation during seed germination and early seedling growth is severely compromised during dry periods on droughty soils. As indicated in **Table 3** none of the soils within the Preliminary Development Area are susceptible to drought.

Table 3: Acreage of Soils in Selected Construction - Related Interpretations

Project Feature	Total Acres[1]	Highly Erodible[2]		Compact Prone[3]	Rutting Hazard[4]			Drought Susceptible[5]
		Water	Wind		Slight	Moderate	Severe	
	Acres							
Preliminary Development Area (Potential Disturbance)								
Fenced Area	1349.5	144.03	0.00	0.00	0.00	123.71	1225.83	0.00
Access Road	61.8	6.68	0.00	0.00	0.00	5.21	56.55	0.00
Collection Line	93.3	8.77	0.00	0.00	0.00	7.28	86.02	0.00
Inverter	2.6	0.33	0.00	0.00	0.00	0.32	2.26	0.00
Substation	3.7	0.00	0.00	0.00	0.00	0.00	3.66	0.00
Switchyard	0.7	0.00	0.00	0.00	0.00	0.00	0.70	0.00
BESS	4.0	0.00	0.00	0.00	0.00	0.00	4.00	0.00
O&M	0.7	0.00	0.00	0.00	0.00	0.00	0.74	0.00
Laydown Yard	9.5	0.00	0.00	0.00	0.00	0.00	9.52	0.00
Subtotal	1525.8	159.8	0.0	0.0	0.0	136.5	1389.3	0.0
Land Under Control but Not Currently Planned for Development								
Undisturbed	1095.0	96.20	0.00	0.00	0.00	80.32	1014.66	0.00
Grand Total								
Grand Total	**2620.9**	**560.7**	**0.0**	**0.0**	**0.0**	**216.8**	**2404.1**	**0.0**

1 Total acres of Project features that are anticipated to be disturbed by supporting construction equipment traffic, excavation and grading. Data obtained by merging facility polygons with the SSUGO spatial data in ArcGIS. Summations were performed in ArcGIS Pro and Microsoft Excel.
2 Highly Erodible Water includes soils in Land Capability Cass 4e through 8e or that have a representative slope value greater than or equal to 9%. High Erodible Water includes soils in wind erodibility groups 1 and 2.
3 Includes soils that are somewhat poorly drained to very poorly drained soils in loamy sands and finer textural classes.
4 Rutting potential hazard based on the soil strength as indicated by engineering texture classification, drainage class, and slope. In general, soils on low slopes in wetter drainage classes and compromised of sediments with low strength will have potential rutting hazards.
5 Includes soils with a surface texture of sandy loam or coarser that are moderately well to excessively drained.

4.6 Summary of Major Soil Limitations at the Lake Wilson Solar Project

4.6.1.1 Prime Farmland

Soils within the Project Area are nearly level, generally deep, moderately drained, medium and moderately fine textured clay loamy soils. A majority of the soils (81%) within the Project Area are prime farmland (**Exhibit 8a**). A little over half is prime farmland without condition (1,139 acres, 43 percent) (i.e., the categories prime farmland if drained and prime farmland if protected from flooding is not included in this acreage/%). The primary limitations for the soils during Project construction, operations and maintenance, and eventual decommissioning include compaction and rutting that may occur when the soils are trafficked when wet, and the need to reserve and store large volumes of topsoil.

While certain soils classified as prime farmland will be impacted by the proposed solar facility, Lake Wilson Solar will implement BMPs during construction detailed in Section 4.0 including soil segregation and decompaction, wet weather conditions, erosion and sediment control, as well as implement the VSMP and SWPPP for the Project. After construction, and for the life of the Project, soils will be stabilized and given an opportunity to rest, as the site is revegetated with a permanent cover of perennial, regionally appropriate vegetation, according to seeding and management specifications agreed to by Lake Wilson Solar to the benefit of wildlife and the soil as outlined in the VSMP. Upon decommissioning, the land could be returned to its pre-construction agricultural use or to another use if economic conditions at that time indicate another use is an appropriate use for the site. Lake Wilson Solar anticipates that the property will be restored to agricultural use upon decommissioning of the Project.

The cover crop is used to support soil health by preventing erosion, improving the soil's physical and biological properties, supplying nutrients, suppressing weeds, improving the availability of soil water, and breaking pest cycles. Initial post-construction revegetation efforts, establishment activities including selection of suitable plants and seeding times, and maintenance of vegetation during operations are detailed in the VSMP.

4.6.1.2 Topsoil Storage

Topsoil thickness across the Project Area currently ranges from 0 to greater than 18 inches (**Table 1**) and the soil is relatively high in organic matter and fertile (**Table 2**). Storing topsoil in large deep stockpiles is not recommended as deep piles of topsoil may not have the same biotic interaction of existing topsoil. It is recommended to have larger areas of shallower topsoil stockpiles to prevent compaction and retain original soil characteristics. To the extent practicable, topsoil should be conserved by preselecting areas to receive excess topsoil from nearby areas, grading and seed bed preparation as appropriate, and revegetation to maintain a rhizosphere suitable for plant growth.

4.6.1.3 Subsoil Storage

Storing subsoil will occur in the same process as described in Section 2.2 above. While some subsoil will be used to fill on-site low spots, any additional soil will be stored in shallow stockpiles to prevent compaction and retain its original soil characteristics. This soil will be stored for refilling drainage basins during decommissioning.

4.6.1.4 Compaction and Rutting

Compaction and rutting are potential limitations to constructing the Project in the Preliminary Development Area. Lake Wilson Solar will design construction access and manage construction traffic to minimize the number of trips occurring on a given soil and location and will implement wet weather procedures when rutting is observed. Deep compaction is not anticipated to be a significant problem as the number of construction equipment passes over a given area is expected to be limited and construction equipment consists of smaller, low-ground-pressure tracked vehicles. If compaction becomes an issue, decompaction of the soil by tilling or ripping may be performed if safely distanced from existing buried utilities or other infrastructure.

5.0 BMPs During Construction and Operation

The Project will be constructed and operated on property leased or owned by Lake Wilson Solar. Typical Project phasing is listed below. As stated above, the Project is located on productive farmland occupying a flat to gently rolling loess covered till plain in southwestern Minnesota (**Exhibits 1-3**).

Because all construction activities will be limited to the leased and purchased land, no direct impacts to adjacent land are expected. Additionally, technology to be deployed at the proposed facility does not require a completely flat or a uniform grade across the Project site. Because most of the Project site is currently nearly level or has slightly rolling terrain (**Table 1**), the amount of grading anticipated within the Preliminary Development Area is expected to be minimal. The PV arrays will be designed to follow the existing grade of the Project Site within certain tolerances, which allows the designer of the facility to minimize the number of earthmoving activities that are required (see **Exhibit 3**).

While some grading activities may be required to raise or lower certain areas within the Project site, the majority of the Project Site's topography would be left unchanged (**Exhibit 5**). The remainder of earthmoving activities would consist of work on the access roads, trenches for the DC and AC collection system, and foundations for the Project Substation and inverter skids, as necessary. The sections below describe the measures that the Contractor will implement to minimize the physical impacts to the integrity of the topsoil and topography of the Project site.

Project Construction Phasing:

- Identification of clearing and grading limits, sensitive areas, and wetlands prior to construction;
- Installation of sediment and erosion controls as identified by project plans/approvals, including any necessary site-specific modifications as identified;
- Performance of earthwork, drain tile adjustment, access road work, and initial stabilization of exposed soils;
- Construction/installation of permanent stormwater treatment facilities;
- Installation of the solar array and electrical components (concurrent with above);
- Application of seed and temporary stabilization; and
- Cleanup and permanent stabilization of the site.'

5.1 Environmental Monitor

In coordination with the MDA, Lake Wilson Solar will contract with a third-party environmental monitor (Monitor) to periodically observe earthmoving activities during Project construction to ensure appropriate measures are taken to properly segregate and handle the topsoil.

The Monitor will have a variety of duties, including but not limited to:

- Perform weekly inspections during Project construction in which they have the freedom to pick a day of the week at random to inspect trenching and perform the following duties:
    - Observe construction crews and activities to ensure that topsoil is being segregated and managed appropriately;
    - Monitor the site for areas of potential soil compaction (except within access roads) for areas returning to agriculture after construction and make specific recommendations for decompaction;
    - Make recommendations related to applicable earthwork activities to Lake Wilson Solar's Construction Manager; and
    - Assist in determining if weather events have created "wet weather" conditions and provide recommendations to the Construction Manager on the ability to proceed with construction.
- As applicable, attend construction and safety meetings upon accessing the construction site.

The Monitor will report potential and actual issues with BMPs to Lake Wilson Solar and its Construction Manager. The Construction Manager will use discretion to either correct the activity or stop work depending on the issue to be resolved.

5.2 Soil Segregation and Decompaction

During construction, one of the primary means to protect and preserve the topsoil at the Project site will be to separate the topsoil from the other subgrade/subsoil materials when earthmoving activities, excavation or trenching are taking place during grading, road construction, cable installation, foundation installation, etc. There may be limited situations where excavated subsoil will be stored on adjacent undisturbed topsoil as most subsoil will be untouched. In these situations, subsoil will be returned to the excavation with as little disturbance of the underlying topsoil as practicable. Laying down a thin straw mulch layer as a buffer between the subsoil and topsoil will be used as practicable to facilitate more effective separation of the subsoil and underlying topsoil during the excavation backfill process.

Based on SSURGO data, most of the topsoil has a thickness of 0-18 inches (94% of the Preliminary Development Area). This will be confirmed with geotechnical soil tests by prior to earthwork activities on the site. Lake Wilson Solar will identify the appropriate depth of topsoil that should be stripped and segregated from other subsoil materials during earthwork activities. This information will be provided with a recommendation on specific segregation methods/techniques to the Monitor for review and input.

As a preliminary recommendation Lake Wilson Solar suggests that the full depth of topsoil be stripped up to 12 inches in thickness in areas of construction grading. Topsoil greater than 12 inches from the soil surface would be treated similarly to the underlying subsoil. During the activities that require temporary excavations and backfilling (i.e., trenching activities) the subgrade material will be replaced into the excavations first and compacted as necessary, followed by replacement of topsoil to the approximate locations from which it was removed. Topsoil will then be graded to the approximate pre-construction contour. Lake Wilson Solar will strive to avoid compaction in other areas where it is not required by the design.

Following earthwork activities that require segregation of topsoil/subsoil, topsoil materials will be re-spread on top of the backfilled and disturbed areas to maintain the overall integrity and character of the pre-construction farmland. Any excess topsoil material would be re-spread on the Project site at pre-established locations. The location and amount of topsoil will be documented to facilitate re-spreading of topsoil as a part of Project decommissioning. This practice is described in more detail below for each of the earthmoving activities that are anticipated for this Project.

5.3 Wet Weather Conditions

During the construction of the Project, when periods of wet weather occur, a temporary halt of construction activities may be called if significant adverse impacts to soil occur. The Construction Manager for Lake Wilson Solar will have responsibility for halting activities if weather conditions pose a risk to worker safety or if conditions are such that heavy equipment would cause significant soil compaction or rutting of the Project site.

Following initial grading at the site, many activities could still proceed in wet weather conditions given the lack of heavy equipment required for those tasks. However, the Construction Manager for Lake Wilson Solar would be responsible for ensuring that topsoil erosion, rutting, compaction, or damage to drain tiles (as present) is avoided to the extent possible. The Construction Manager will ensure that proper techniques and practices are used to loosen soil appropriately when encountered. Soil loosening with chisel plows prior to disking and planting will typically be a standard method of soil preparation in areas proposed for seeding. Agricultural equipment capable of operating within the approximate 20-foot-wide space between panel lines when panels are oriented vertically would be used to loosen soil, prepare a seedbed, and plant suited seed mixes.

5.4 Adaptive Management During Construction

As with all forms of adaptive management, during construction of the Project changes may be made to the Plan should unforeseeable conditions arise that render the Plan unworkable. Using this approach will allow the Project to continue despite potential barriers. Should weather or site conditions during construction require different BMPs than those that are described in this section, Lake Wilson Solar will work with the MDA and other appropriate agencies to discuss and select potential new approaches to the specific conditions that are encountered.

Lake Wilson Solar will remain flexible and implement new practices/procedures that will help ensure the quality of the Project land while maintaining the safety of the workers.

5.5 Initial Grading/Road Construction/Array Construction

The first phase of Project construction activities will involve general civil work at the Project site where initial cut and fill activities will be performed by the Contractor. Lake Wilson Solar will identify the appropriate depth of topsoil up to 12 inches that should be stripped and segregated from other materials during initial grading activities. Based on soil information, topsoil in this region of Minnesota is generally 0-18," but may reach depths of up to 3 feet. This will be confirmed with tests prior to grading activities. If needed, Lake Wilson Solar will provide this information and a recommendation on specific segregation methods/techniques to the MDA for review and input.

The Contractor will first strip topsoil that sits higher than other areas. This will ensure that the topography falls within the tolerances allowed for by the solar array design. During this civil work, topsoil will be pushed outside of the cut/fill areas and collected into designated spots for later use. Once topsoil is removed from the cut/fill areas, the sub-grade materials will be removed as required from on-site hills and relocated to spots with the least potential for runoff and erosion. Prior to relocating subgrade materials to the low spots, topsoil in the low areas will be stripped and set aside before the fill is added, then re-spread over the new fill. Topsoil and subsoil will remain segregated in order to avoid mixing maintain the integrity of both soil types. The sub-grade materials would be compacted in place. When compaction is complete, the topsoil spoil piles will be re-spread over the reconditioned sub-grade areas.

This newly spread topsoil will be loosely compacted and/or "tracked" to give a smooth-surface and employ the wind and stormwater erosion prevention BMPs.

After most of the initial earthwork activities has been completed, the Contractor will start construction of the Project access road network. This work would start with the stripping of topsoil materials from the planned new roadbed areas to a depth of at least 12 inches. Topsoil will be windrowed to the edges of each roadbed. Windrowing will consist of pushing materials into rows of stockpiles adjacent to the road which will be loosely compacted and/or "tracked" with stormwater and wind erosion BMPs in place. The Contractor will then compact the sub-grade materials. After gravel is installed and compacted to engineers' requirements, the Contractor will shape Project drainage ditches as identified on the final grading plan. Previously stripped and windrowed topsoil will be re-spread throughout the Preliminary Development Area.

Following grading and road construction, the Contractor will begin the installation of foundation piles for the solar PV array racking system. This work will consist of directly driving the pile into the soil with pile driving equipment. The installation vehicles would operate on the existing surface of the ground and impacts would be limited and similar to a vehicle driving over the soil surface. Very little soil disturbance is expected from this activity.

5.6 Foundations

The Contractor will perform foundation work for the Project Substation, new Xcel Switchyard, and inverters. For the substation and switchyard, the Contractor will strip topsoil off the area, grade the site (as needed), install the pier-type foundations, compact sub-grade materials, re-grade spoils around the area, and then install clean rock on the surface. Topsoil stripped from the Project Substation area will be pushed outside of the substation area and collected into designated locations for later use. These topsoil piles will be windrowed or piled and loosely compacted and/or "tracked" with stormwater and wind erosion BMPs in place. Once substation construction is sufficiently complete, the topsoil piles would be distributed in a thin layer adjacent to the substation area and the topsoil revegetated with an appropriate seed mix.

Where inverters are installed, topsoil will be stripped and placed adjacent to the inverter. The inverter foundations will then be excavated using an excavator followed by installation of rebar and concrete. After the concrete cures and its testing strength is completed, the subgrade soils will be compacted around the inverters. After the inverter are set, the adjacent topsoil will be re-spread around the inverter.

5.7 Trenching

Construction of the Project may require trenching for the installation of both DC and AC collection lines across the Project Area. If the collection lines are buried, the Contractor will be installing AC and DC collection cables in trenches of approximately 2-5 feet deep using the "open trench" method. Topsoil and subgrade materials would be excavated from the trench using typical excavating equipment or backhoes and segregated as described above. The bottom of each trench may be lined with clean fill to surround the cables. Lake Wilson Solar anticipates that native subsoil will be rock free (**Table 1**) but will confirm this with thermal studies. Depending on the results, foreign fill may be necessary. After cables have been installed on top of bedding materials in the trench, 1 foot of screened, native backfill will be placed on the cables followed by additional 2 feet of unscreened native backfill trench spoil/subsoil. This material would be compacted as necessary. The last 1 foot of each trench will then be backfilled with topsoil material to return the surface to its finished grade after settling.

5.8 Temporary Erosion and Sediment Control

By adhering to the Project specific Stormwater Pollution Prevention Plan (SWPPP) required under the National Pollutant Discharge Elimination System (NPDES) permitting requirement that is administered by the Minnesota Pollution Control Agency (MPCA), Lake Wilson Solar will minimize the risk of excessive soil erosion on lands disturbed by construction.

Prior to construction, Lake Wilson Solar will work with engineers and the Contractor to outline the reasonable methods for erosion control BMPs and prepare the SWPPP.

These measures would primarily include silt fencing on the downside of all hills, near waterways, and near drain tile inlets. This silt fencing would control soil erosion via stormwater. Check dams and straw waddles will also likely be used to slow water during rain events in areas that have the potential for high volume flow. In addition, the Contractor can use erosion control blankets on any steep slopes, although given the site topography this BMP will not likely be required. Lastly, as outlined above, topsoil and sub-grade material will be piled and loosely compacted and / or "tracked" while stored. The BMPs employed to mitigate wind and stormwater erosion on these soil stockpiles are planned to include installing silt fence on the downward side of the piles as needed and installation of straw waddles if these spoil piles are located near waterways.

The SWPPP will identify designated onsite SWPPP inspectors to be employed by the Contractor for routine inspections as well as for inspections after storm events per the plan outlined in the SWPPP.

5.9 Drain Tile Identification, Avoidance and Repair

Lake Wilson Solar will address interaction with County drain tiles and judicial ditches through a bilateral agreement and prudent design and construction practices (**Exhibit 9**). Where County drain tiles and judicial ditches need to be crossed by Project facilities (e.g., collection lines), Lake Wilson Solar will seek to avoid impacts to these tiles and ditches via construction methods like prompt repair of tiles after trenching or directional boring where trenching is not practicable. Lake Wilson Solar is aware of the presence of drain tiles within the Project Area, which appear to be adequately draining the Project Area and discharging off site primarily into adjacent County-managed drain tiles and judicial drainage ditches. To minimize unforeseen repairs or damages to existing drain tile lines and/or drain tile systems, Lake Wilson Solar is committed to preserve soil drainage performance on neighboring, non-participating properties and restoring drain tile systems on participating properties as-needed during operations, or upon Decommissioning if tiles are not deemed necessary during solar operations.

5.10 Pre-Construction Tile Mapping and Repair

Lake Wilson Solar has begun to expend considerable effort to map existing drainage infrastructure prior to construction to avoid or identify potential impacts. These efforts are in progress and include reaching out to all participating landowners to ask for their assistance in locating tile; requesting drain tile maps, personal knowledge of their property, and knowledge of existing tile that was placed without written record. Lake Wilson Solar will continue communication with landowners on a parcel-by parcel basis as construction approaches; possibly utilizing field location services and historical satellite imagery when necessary to identify drain tiles systems that may be impacted by construction activities.

Lake Wilson Solar will maintain or improve site drainage based on existing conditions. Drain tile mains within the construction areas that service upstream farms will be maintained or relocated as needed to maintain drainage in the Project Area. In the event damage to a drain tile main is unavoidable and such damage would create adverse drainage effects to participating or neighboring property, Lake Wilson Solar will re-route or repair the existing drain tile main during the construction process. Damaged drain tile will be visually identified by construction personnel. New or modified drain tile systems installed by Lake Wilson Solar will be recorded using GPS equipment and archived in Project construction files and the Project Decommissioning Plan. Tile repairs will be conducted in a manner consistent with industry-accepted methods and will be repaired with materials of the same or better quality as that which was damaged, likely incorporating the use of a fabric and a heavy walled portion of PVC pipe to connect non-damaged portions of the tile.

5.11 Project Design Considerations

Lake Wilson Solar will make commercially reasonable efforts to prevent damage to drain tile mains through locating the mains and incorporating the identified locations into engineering designs. In the event damage to a drain tile main is unavoidable and such damage would create adverse drainage effects to participating or neighboring property, Lake Wilson Solar will re-route or repair the existing drain tile main during the construction process.

5.12 Construction Debris

Construction-related debris and unused material will be removed by Lake Wilson Solar and the Contractor. Below-grade, unusable materials will be removed and loaded immediately onto trucks for subsequent disposal at a designated off-site location. The Contractor will use locally sourced dumpsters and removal services to regularly check and schedule pick-ups for full dumpsters which will be switched out for empty ones. To the extent practicable, recyclable materials (i.e., cardboard) will be sorted and recycled at a local facility.

Debris/trash collection points and dumpsters will be located both in the laydown yards as well as at strategically designated locations close to where actual work is being performed. If loose debris fails to be deposited into dumpsters or if it becomes wind-blown, the Contractor will inspect and clear fence lines of debris on a daily basis to ensure that debris and trash does not leave the Project Area. Contaminated materials are not expected; however, if such materials are encountered during construction, specialized dumpsters and handling instructions will be employed to suit the types of contaminated materials discovered. Contaminated materials will be disposed of at the nearest appropriate facility in accordance with applicable laws, ordinances, regulations, and standards.

6.0 Decommissioning

Lake Wilson Solar has prepared a formal Decommissioning Plan as required for the Site Permit to be issued by the Commission for the Project. At the end of the Project's useful life, Lake Wilson Solar will either take necessary steps to continue operation of the Project (such as re-permitting and retrofitting) or will decommission the Project, remove associated facilities and restore the site. Decommissioning activities will include:

- Removal of the solar arrays (modules, racking and steel foundation posts), inverters, fencing, access roads, above-ground portions of the electrical collection system, overhead and underground cables and lines to a depth of 4-feet below the ground, BESS, Project Substation, and possibly the O&M building p (the O&M building may be useful for other purposes);
- Removal of below-ground electrical cables to a depth of four feet so as to not impede the reintroduction of farming (cables buried below four feet will be left in place, or removed as required by applicable land easement agreements);
- Removal of buildings and ancillary equipment to a depth of four feet or as required by applicable land easement agreements;
- Removal of surface road material and restoration of the roads to substantially the same physical condition that existed immediately before construction;
- Grading, adding or re-spreading topsoil, and reseeding according to the NRCS technical guide recommendations and other agency recommendations, areas disturbed by the construction of the facility or decommissioning activities, grading and soil disturbance activities will be kept to the minimum necessary to restore areas where topsoil was stripped in construction, topsoil in decommissioned roads and compaction only in areas that were compacted during decommissioning activities so that the benefits to the soil that were achieved over the life of the Project are not counteracted by decommissioning; and
- Standard decommissioning practices would be utilized, including dismantling and repurposing, salvaging/recycling, or disposing of the solar energy improvements, and restoration.

6.1 Timeline

Decommissioning is estimated to take approximately 40 weeks to complete, and the decommissioning crew will ensure that all equipment is recycled or disposed of properly.

6.2 Removal and Disposal of Project Components

The removal and disposal details of the Project components are found below:

- **Panels**: Panels inspected for physical damage, tested for functionality, and removed from racking. Functioning panels packed and stored for reuse (functioning panels may produce power for another 25 years or more) or resale. Non-functioning panels packaged and sent to the manufacturer or a third party for recycling or another appropriate disposal method;
- **Racking**: Racking uninstalled, sorted, and sent to metal recycling facility;
- **Steel Pier Foundations**: Steel piles removed and sent to a recycling facility;
- **Wire**: underground cables and conduits shallower than the depth specified in the leases will be removed, overhead lines will be removed and taken to a recycling facility;
- **Conduit**: Above-ground conduit disassembled onsite and sent to recycling facility;
- **Junction boxes, combiner boxes, external disconnect boxes, etc.**: Sent to electronics recycler;
- **Inverter/Transformer**: Evaluate remaining operation life and resell or send to manufacturer and/or electronics recycler;
- **Concrete pad(s)**: Sent to concrete recycler;
- **Fence**: Fence will be sent to metal recycling facility and wooden posts for the agricultural fence will be properly disposed; and
- **Computers, monitors, hard drives, and other components**: Sent to electronics recycler. Functioning parts can be reused.

6.3 Restoration/Reclamation of Facility Site

After equipment is removed, the facility Project Area could be restored to an agricultural use (in accordance with this AIMP, Project lease and easement agreements, the VSMP and applicable portions of the SWPPP) or to another use if the economic conditions at that time indicate another use is an appropriate use for the site. Holes created by fence poles, concrete pads, re-claimed access road corridors and other equipment, as well as trenches/drains excavated by the Project, will be filled in with soil to existing conditions and seeded.

Grading and other soil disturbance activities during decommissioning will be kept to the minimum necessary to effectively decommission the site to maintain the soil benefits realized during the long-term operation of the Project, such benefits include building topsoil through plant matter decay, carbon capture, and beneficial soil bacteria that are often absent from soil subject to row crop agriculture. This will include the revegetation in accordance with the details of the Project VSMP. In accordance with the SWPPP, erosion and sediment control measures will be left in place, as needed, until the Project site is stabilized.

Lake Wilson Solar reserves the right to extend operations instead of decommissioning at the end of the Site Permit term, as provided in the lease and easement agreements for the Project. In this case, a decision may be made on whether to continue operation with existing equipment or to retrofit the facilities with upgrades based on newer technologies. If the decision is made to continue operations, the Lake Wilson Solar would evaluate the Project and determine if any changes would require re-permitting of the facility. If a new Site Permit is required, Lake Wilson Solar would prepare an application and secure this approval.

7.0 References

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Appendix A

Selected Soil Physical Features, Classifications, and Interpretations and Limitations

Lake Wilson Solar Energy Center
Agricultural Impact Mitigation Plan
Murray County, Minnesota

Appendix A: Selected Soil Physical Features, Classifications, and Interpretations and Limitations																
Feature Type	Acres[2]	Map Unit Symbol[3]		Selected Soil Physical Features					Selected Soil Classifications				Construction/Reclamation Interpretations and Limitations		
			Map Unit Name[3]	Particle Size Family[3]	Slope Range[4]	Drainage Class[5]	Topsoil Thickness[6]	Prime Farmland[3]	Land Capability Classification[3]	Hydric Soil Rating[3]	Highly Erodible Water[7]	Highly Erodible Wind[8]	Compact Prone[9]	Rutting Hazard[10]	Droughty[11]
Access Road	0.24	J1A	Parnell silty clay loam, depressional, 0 to 1 percent slopes	fine	0-5	Very poorly drained	22	Prime farmland if drained	3w	Yes	No	No	No	Severe	No
Access Road	11.40	J107A	Lakepark-Roliss-Parnell, depressional, complex, 0 to 3 percent slopes	fine-loamy	0-5	Poorly drained	27	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Access Road	1.30	J26B	Darnen loam, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	24	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Access Road	6.39	J101B	Hokans-Svea complex, 1 to 4 percent slopes	fine-loamy	0-5	Well drained	15	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Access Road	3.22	J104A	Svea loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	10	All areas are prime farmland	1	No	No	No	No	Severe	No
Access Road	1.20	J57A	Balaton loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	13	All areas are prime farmland	2s	No	No	No	No	Severe	No
Access Road	3.26	J31B	Arvilla-Sandberg complex, 2 to 6 percent slopes	sandy	0-5	Somewhat excessively drained	9	Not prime farmland	4e	No	Yes	No	No	Moderate	No
Access Road	1.17	J42C	Sandberg-Arvilla complex, 6 to 12 percent slopes	sandy	>5-16	Excessively drained	10	Not prime farmland	6s	No	Yes	No	No	Moderate	No
Access Road	2.61	J11A	Vallers clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	14	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Access Road	15.91	J106B	Barnes-Buse-Svea complex, 1 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Access Road	4.35	J232B	Barnes-Buse-Arvilla complex, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Access Road	0.56	J235C2	Buse-Barnes-Arvilla complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Access Road	5.47	J96C2	Barnes-Buse complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Access Road	1.59	J100D2	Buse, eroded-Wilno complex, 12 to 18 percent slopes	fine-loamy	>5-16	Well drained	8	Not prime farmland	4e	No	Yes	No	No	Severe	Yes
Access Road	0.64	J12A	Marysland loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	12	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Access Road	0.01	J199A	Fulda silty clay, 0 to 2 percent slopes	fine	0-5	Poorly drained	13	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Access Road	0.11	J196A	Forada loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Access Road	0.15	J105A	Arvilla sandy loam, Till Prairie, 0 to 2 percent slopes	sandy	0-5	Somewhat excessively drained	9	Farmland of statewide importance	3s	No	No	No	No	Moderate	No
Access Road	0.63	J7B	Sverdrup sandy loam, 2 to 6 percent slopes	sandy	0-5	Well drained	12	Farmland of statewide importance	3e	No	No	No	No	Moderate	No
Access Road	0.09	J75A	Fordville loam, coteau, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Well drained	8	All areas are prime farmland	2s	No	No	No	No	Severe	No

Access Road	0.66	J75B	Renshaw-Fordville loams, coteau, 2 to 6 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Somewhat excessively drained	8	All areas are prime farmland	4s	No	Yes	No	No	Severe	Yes
Access Road	0.81	J195B	Poinsett-Waubay silty clay loams, 1 to 6 percent slopes	fine-silty	0-5	Well drained	8	All areas are prime farmland	2e	No	No	No	No	Severe	No
Fenced Area	1.21	J1A	Parnell silty clay loam, depressional, 0 to 1 percent slopes	fine	0-5	Very poorly drained	22	Prime farmland if drained	3w	Yes	No	No	No	Severe	No
Fenced Area	63.32	J107A	Lakepark-Roliss-Parnell, depressional, complex, 0 to 3 percent slopes	fine-loamy	0-5	Poorly drained	27	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Fenced Area	7.76	J26B	Darnen loam, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	24	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Fenced Area	0.48	J8A	Egeland sandy loam, 0 to 2 percent slopes	coarse-loamy	0-5	Well drained	9	All areas are prime farmland	3s	No	No	No	No	Moderate	Yes
Fenced Area	49.48	J101B	Hokans-Svea complex, 1 to 4 percent slopes	fine-loamy	0-5	Well drained	15	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Fenced Area	14.21	J104A	Svea loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	10	All areas are prime farmland	1	No	No	No	No	Severe	No
Fenced Area	5.34	J57A	Balaton loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	13	All areas are prime farmland	2s	No	No	No	No	Severe	No
Fenced Area	0.03	J77A	Lamoure silty clay loam, 0 to 2 percent slopes, frequently flooded	fine-silty	0-5	Poorly drained	27	Not prime farmland	5w	Yes	Yes	No	No	Severe	No
Fenced Area	0.04	J23A	Lamoure silty clay loam, 0 to 2 percent slopes, occasionally flooded	fine-silty	0-5	Poorly drained	27	Prime farmland if protected from flooding or not frequently flooded during the growing season	2w	Yes	No	No	No	Severe	No
Fenced Area	21.68	J31B	Arvilla-Sandberg complex, 2 to 6 percent slopes	sandy	0-5	Somewhat excessively drained	9	Not prime farmland	4e	No	Yes	No	No	Moderate	No
Fenced Area	5.94	J42C	Sandberg-Arvilla complex, 6 to 12 percent slopes	sandy	>5-16	Excessively drained	10	Not prime farmland	6s	No	Yes	No	No	Moderate	No
Fenced Area	18.52	J11A	Vallers clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	14	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Fenced Area	0.02	J32A	Bigstone silty clay loam, depressional, 0 to 1 percent slopes	fine-silty	0-5	Very poorly drained	10	Prime farmland if drained	3w	Yes	No	No	No	Severe	No
Fenced Area	72.64	J106B	Barnes-Buse-Svea complex, 1 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Fenced Area	29.09	J232B	Barnes-Buse-Arvilla complex, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Fenced Area	2.28	J227D2	Buse, moderately eroded-Sandberg complex, 12 to 18 percent slopes	fine-loamy	>5-16	Well drained	8	Not prime farmland	4e	No	Yes	No	No	Severe	Yes
Fenced Area	11.67	J235C2	Buse-Barnes-Arvilla complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Fenced Area	28.27	J96C2	Barnes-Buse complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes

Fenced Area	5.71	J100D2	Buse, eroded-Wilno complex, 12 to 18 percent slopes	fine-loamy	>5-16	Well drained	8	Not prime farmland	4e	No	Yes	No	No	Severe	Yes
Fenced Area	3.76	J12A	Marysland loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	12	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Fenced Area	2.55	J199A	Fulda silty clay, 0 to 2 percent slopes	fine	0-5	Poorly drained	13	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Fenced Area	3.53	J196A	Forada loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Fenced Area	1.97	J105A	Arvilla sandy loam, Till Prairie, 0 to 2 percent slopes	sandy	0-5	Somewhat excessively drained	9	Farmland of statewide importance	3s	No	No	No	No	Moderate	No
Fenced Area	3.49	J7B	Sverdrup sandy loam, 2 to 6 percent slopes	sandy	0-5	Well drained	12	Farmland of statewide importance	3e	No	No	No	No	Moderate	No
Fenced Area	1.28	J75A	Fordville loam, coteau, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Well drained	8	All areas are prime farmland	2s	No	No	No	No	Severe	No
Fenced Area	2.77	J75B	Renshaw-Fordville loams, coteau, 2 to 6 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Somewhat excessively drained	8	All areas are prime farmland	4s	No	Yes	No	No	Severe	No
Fenced Area	7.33	J195B	Poinsett-Waubay silty clay loams, 1 to 6 percent slopes	fine-silty	0-5	Well drained	8	All areas are prime farmland	2e	No	No	No	No	Severe	No
BESS	1.38	J104A	Svea loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	10	All areas are prime farmland	1	No	No	No	No	Severe	No
BESS	2.52	J106B	Barnes-Buse-Svea complex, 1 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
BESS	0.10	J96C2	Barnes-Buse complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Collection Line	2.84	J1A	Parnell silty clay loam, depressional, 0 to 1 percent slopes	fine	0-5	Very poorly drained	22	Prime farmland if drained	3w	Yes	No	No	No	Severe	No
Collection Line	13.41	J107A	Lakepark-Roliss-Parnell, depressional, complex, 0 to 3 percent slopes	fine-loamy	0-5	Poorly drained	27	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Collection Line	1.23	J26B	Darnen loam, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	24	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Collection Line	0.48	J8B	Egeland sandy loam, 2 to 6 percent slopes	coarse-loamy	0-5	Well drained	9	All areas are prime farmland	3e	No	No	No	No	Moderate	Yes
Collection Line	0.31	J8A	Egeland sandy loam, 0 to 2 percent slopes	coarse-loamy	0-5	Well drained	9	All areas are prime farmland	3s	No	No	No	No	Moderate	Yes
Collection Line	14.21	J101B	Hokans-Svea complex, 1 to 4 percent slopes	fine-loamy	0-5	Well drained	15	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Collection Line	2.70	J104A	Svea loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	10	All areas are prime farmland	1	No	No	No	No	Severe	No
Collection Line	2.52	J57A	Balaton loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	13	All areas are prime farmland	2s	No	No	No	No	Severe	No
Collection Line	0.51	J77A	Lamoure silty clay loam, 0 to 2 percent slopes, frequently flooded	fine-silty	0-5	Poorly drained	27	Not prime farmland	5w	Yes	Yes	No	No	Severe	No
Collection Line	7.04	J23A	Lamoure silty clay loam, 0 to 2 percent slopes, occasionally flooded	fine-silty	0-5	Poorly drained	27	Prime farmland if protected from flooding or not frequently flooded during the growing season	2w	Yes	No	No	No	Severe	No

Collection Line	5.17	J31B	Arvilla-Sandberg complex, 2 to 6 percent slopes	sandy	0-5	Somewhat excessively drained	9	Not prime farmland	4e	No	Yes	No	No	Moderate	No
Collection Line	0.94	J42C	Sandberg-Arvilla complex, 6 to 12 percent slopes	sandy	>5-16	Excessively drained	10	Not prime farmland	6s	No	Yes	No	No	Moderate	No
Collection Line	8.85	J11A	Vallers clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	14	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Collection Line	17.68	J106B	Barnes-Buse-Svea complex, 1 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Collection Line	3.31	J232B	Barnes-Buse-Arvilla complex, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Collection Line	1.45	J235C2	Buse-Barnes-Arvilla complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Collection Line	4.15	J96C2	Barnes-Buse complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Collection Line	1.41	J100D2	Buse, eroded-Wilno complex, 12 to 18 percent slopes	fine-loamy	>5-16	Well drained	8	Not prime farmland	4e	No	Yes	No	No	Severe	Yes
Collection Line	0.13	J12A	Marysland loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	12	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Collection Line	0.70	J199A	Fulda silty clay, 0 to 2 percent slopes	fine	0-5	Poorly drained	13	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Collection Line	1.95	J196A	Forada loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Collection Line	0.18	J105A	Arvilla sandy loam, Till Prairie, 0 to 2 percent slopes	sandy	0-5	Somewhat excessively drained	9	Farmland of statewide importance	3s	No	No	No	No	Moderate	No
Collection Line	0.21	J7B	Sverdrup sandy loam, 2 to 6 percent slopes	sandy	0-5	Well drained	12	Farmland of statewide importance	3e	No	No	No	No	Moderate	No
Collection Line	0.17	J75A	Fordville loam, coteau, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Well drained	8	All areas are prime farmland	2s	No	No	No	No	Severe	No
Collection Line	0.74	J75B	Renshaw-Fordville loams, coteau, 2 to 6 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Somewhat excessively drained	8	All areas are prime farmland	4s	No	Yes	No	No	Severe	No
Collection Line	1.02	J195B	Poinsett-Waubay silty clay loams, 1 to 6 percent slopes	fine-silty	0-5	Well drained	8	All areas are prime farmland	2e	No	No	No	No	Severe	No
Fenced Area	8.11	J1A	Parnell silty clay loam, depressional, 0 to 1 percent slopes	fine	0-5	Very poorly drained	22	Prime farmland if drained	3w	Yes	No	No	No	Severe	No
Fenced Area	168.66	J107A	Lakepark-Roliss-Parnell, depressional, complex, 0 to 3 percent slopes	fine-loamy	0-5	Poorly drained	27	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Fenced Area	27.96	J26B	Darnen loam, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	24	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Fenced Area	2.14	J8A	Egeland sandy loam, 0 to 2 percent slopes	coarse-loamy	0-5	Well drained	9	All areas are prime farmland	3s	No	No	No	No	Moderate	Yes
Fenced Area	124.19	J101B	Hokans-Svea complex, 1 to 4 percent slopes	fine-loamy	0-5	Well drained	15	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Fenced Area	35.74	J104A	Svea loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	10	All areas are prime farmland	1	No	No	No	No	Severe	No

Fenced Area	15.24	J57A	Balaton loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	13	All areas are prime farmland	2s	No	No	No	No	Severe	No
Fenced Area	0.57	J77A	Lamoure silty clay loam, 0 to 2 percent slopes, frequently flooded	fine-silty	0-5	Poorly drained	27	Not prime farmland	5w	Yes	Yes	No	No	Severe	No
Fenced Area	0.36	J23A	Lamoure silty clay loam, 0 to 2 percent slopes, occasionally flooded	fine-silty	0-5	Poorly drained	27	Prime farmland if protected from flooding or not frequently flooded during the growing season	2w	Yes	No	No	No	Severe	No
Fenced Area	60.13	J31B	Arvilla-Sandberg complex, 2 to 6 percent slopes	sandy	0-5	Somewhat excessively drained	9	Not prime farmland	4e	No	Yes	No	No	Moderate	No
Fenced Area	13.32	J42C	Sandberg-Arvilla complex, 6 to 12 percent slopes	sandy	>5-16	Excessively drained	10	Not prime farmland	6s	No	Yes	No	No	Moderate	No
Fenced Area	73.35	J11A	Vallers clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	14	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Fenced Area	1.06	J32A	Bigstone silty clay loam, depressional, 0 to 1 percent slopes	fine-silty	0-5	Very poorly drained	10	Prime farmland if drained	3w	Yes	No	No	No	Severe	No
Fenced Area	177.62	J106B	Barnes-Buse-Svea complex, 1 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Fenced Area	73.33	J232B	Barnes-Buse-Arvilla complex, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Fenced Area	5.32	J227D2	Buse, moderately eroded-Sandberg complex, 12 to 18 percent slopes	fine-loamy	>5-16	Well drained	8	Not prime farmland	4e	No	Yes	No	No	Severe	Yes
Fenced Area	29.21	J235C2	Buse-Barnes-Arvilla complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Fenced Area	82.17	J96C2	Barnes-Buse complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Fenced Area	20.56	J100D2	Buse, eroded-Wilno complex, 12 to 18 percent slopes	fine-loamy	>5-16	Well drained	8	Not prime farmland	4e	No	Yes	No	No	Severe	Yes
Fenced Area	10.60	J12A	Marysland loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	12	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Fenced Area	5.68	J199A	Fulda silty clay, 0 to 2 percent slopes	fine	0-5	Poorly drained	13	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Fenced Area	9.88	J196A	Forada loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Fenced Area	6.43	J105A	Arvilla sandy loam, Till Prairie, 0 to 2 percent slopes	sandy	0-5	Somewhat excessively drained	9	Farmland of statewide importance	3s	No	No	No	No	Moderate	No
Fenced Area	8.12	J7B	Sverdrup sandy loam, 2 to 6 percent slopes	sandy	0-5	Well drained	12	Farmland of statewide importance	3e	No	No	No	No	Moderate	No
Fenced Area	2.61	J75A	Fordville loam, coteau, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Well drained	8	All areas are prime farmland	2s	No	No	No	No	Severe	No
Fenced Area	5.74	J75B	Renshaw-Fordville loams, coteau, 2 to 6 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Somewhat excessively drained	8	All areas are prime farmland	4s	No	Yes	No	No	Severe	No

Fenced Area	17.04	J195B	Poinsett-Waubay silty clay loams, 1 to 6 percent slopes	fine-silty	0-5	Well drained	8	All areas are prime farmland	2e	No	No	No	No	Severe	No
Inverter	0.43	J107A	Lakepark-Roliss-Parnell, depressional, complex, 0 to 3 percent slopes	fine-loamy	0-5	Poorly drained	27	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Inverter	0.04	J26B	Darnen loam, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	24	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Inverter	0.36	J101B	Hokans-Svea complex, 1 to 4 percent slopes	fine-loamy	0-5	Well drained	15	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Inverter	0.05	J104A	Svea loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	10	All areas are prime farmland	1	No	No	No	No	Severe	No
Inverter	0.04	J57A	Balaton loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	13	All areas are prime farmland	2s	No	No	No	No	Severe	No
Inverter	0.17	J31B	Arvilla-Sandberg complex, 2 to 6 percent slopes	sandy	0-5	Somewhat excessively drained	9	Not prime farmland	4e	No	Yes	No	No	Moderate	No
Inverter	0.08	J42C	Sandberg-Arvilla complex, 6 to 12 percent slopes	sandy	>5-16	Excessively drained	10	Not prime farmland	6s	No	Yes	No	No	Moderate	No
Inverter	0.05	J11A	Vallers clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	14	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Inverter	0.61	J106B	Barnes-Buse-Svea complex, 1 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Inverter	0.24	J232B	Barnes-Buse-Arvilla complex, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Inverter	0.03	J235C2	Buse-Barnes-Arvilla complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Inverter	0.15	J96C2	Barnes-Buse complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Inverter	0.03	J100D2	Buse, eroded-Wilno complex, 12 to 18 percent slopes	fine-loamy	>5-16	Well drained	8	Not prime farmland	4e	No	Yes	No	No	Severe	Yes
Inverter	0.04	J12A	Marysland loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	12	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Inverter	0.03	J199A	Fulda silty clay, 0 to 2 percent slopes	fine	0-5	Poorly drained	13	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Inverter	0.05	J196A	Forada loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Inverter	0.06	J7B	Sverdrup sandy loam, 2 to 6 percent slopes	sandy	0-5	Well drained	12	Farmland of statewide importance	3e	No	No	No	No	Moderate	No
Inverter	0.05	J75B	Renshaw-Fordville loams, coteau, 2 to 6 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Somewhat excessively drained	8	All areas are prime farmland	4s	No	Yes	No	No	Severe	No
Inverter	0.05	J195B	Poinsett-Waubay silty clay loams, 1 to 6 percent slopes	fine-silty	0-5	Well drained	8	All areas are prime farmland	2e	No	No	No	No	Severe	No
Laydown Yard	0.94	J107A	Lakepark-Roliss-Parnell, depressional, complex, 0 to 3 percent slopes	fine-loamy	0-5	Poorly drained	27	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Laydown Yard	0.89	J26B	Darnen loam, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	24	All areas are prime farmland	2e	No	No	No	No	Severe	Yes

Laydown Yard	2.32	J101B	Hokans-Svea complex, 1 to 4 percent slopes	fine-loamy	0-5	Well drained	15	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Laydown Yard	0.02	J104A	Svea loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	10	All areas are prime farmland	1	No	No	No	No	Severe	No
Laydown Yard	0.14	J11A	Vallers clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	14	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Laydown Yard	1.83	J106B	Barnes-Buse-Svea complex, 1 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Laydown Yard	3.38	J96C2	Barnes-Buse complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
O&M	0.19	J107A	Lakepark-Roliss-Parnell, depressional, complex, 0 to 3 percent slopes	fine-loamy	0-5	Poorly drained	27	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
O&M	0.55	J57A	Balaton loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	13	All areas are prime farmland	2s	No	No	No	No	Severe	No
Substation	0.15	J107A	Lakepark-Roliss-Parnell, depressional, complex, 0 to 3 percent slopes	fine-loamy	0-5	Poorly drained	27	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Substation	0.01	J11A	Vallers clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	14	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Substation	0.88	J106B	Barnes-Buse-Svea complex, 1 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Substation	2.62	J96C2	Barnes-Buse complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Switchyard	0.01	J11A	Vallers clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	14	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Switchyard	0.01	J106B	Barnes-Buse-Svea complex, 1 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Switchyard	0.68	J96C2	Barnes-Buse complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Undeveloped Area	2.506148	J100D2	Buse, eroded-Wilno complex, 12 to 18 percent slopes	fine-loamy	>5-16	Well drained	8	Not prime farmland	4e	No	Yes	No	No	Severe	Yes
Undeveloped Area	114.29267	J101B	Hokans-Svea complex, 1 to 4 percent slopes	fine-loamy	0-5	Well drained	15	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Undeveloped Area	36.101221	J104A	Svea loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	10	All areas are prime farmland	1	No	No	No	No	Severe	No
Undeveloped Area	7.988519	J105A	Arvilla sandy loam, Till Prairie, 0 to 2 percent slopes	sandy	0-5	Somewhat excessively drained	9	Farmland of statewide importance	3s	No	No	No	No	Moderate	No
Undeveloped Area	139.77191	J106B	Barnes-Buse-Svea complex, 1 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Undeveloped Area	137.43346	J107A	Lakepark-Roliss-Parnell, depressional, complex, 0 to 3 percent slopes	fine-loamy	0-5	Poorly drained	27	Prime farmland if drained	2w	Yes	No	No	No	Severe	No

Undeveloped Area	176.93699	J11A	Vallers clay loam, 0 to 2 percent slopes	fine-loamy	0-5	Poorly drained	14	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Undeveloped Area	25.899432	J12A	Marysland loam, 0 to 2 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Poorly drained	12	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Undeveloped Area	11.17746	J17A	Quam silty clay loam, depressional, 0 to 1 percent slopes	fine-silty	0-5	Very poorly drained	10	Prime farmland if drained	3w	Yes	No	No	No	Severe	No
Undeveloped Area	6.798669	J195B	Poinsett-Waubay silty clay loams, 1 to 6 percent slopes	fine-silty	0-5	Well drained	8	All areas are prime farmland	2e	No	No	No	No	Severe	No
Undeveloped Area	8.738613	J196A	Forada loam, 0 to 2 percent slopes	coarse-loamy	0-5	Poorly drained	16	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Undeveloped Area	3.10431	J199A	Fulda silty clay, 0 to 2 percent slopes	fine	0-5	Poorly drained	13	Prime farmland if drained	2w	Yes	No	No	No	Severe	No
Undeveloped Area	49.400203	J1A	Parnell silty clay loam, depressional, 0 to 1 percent slopes	fine	0-5	Very poorly drained	22	Prime farmland if drained	3w	Yes	No	No	No	Severe	No
Undeveloped Area	2.870796	J227D2	Buse, moderately eroded-Sandberg complex, 12 to 18 percent slopes	fine-loamy	>5-16	Well drained	8	Not prime farmland	4e	No	Yes	No	No	Severe	Yes
Undeveloped Area	27.442368	J232B	Barnes-Buse-Arvilla complex, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	11	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Undeveloped Area	27.221876	J235C2	Buse-Barnes-Arvilla complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes
Undeveloped Area	127.54089	J23A	Lamoure silty clay loam, 0 to 2 percent slopes, occasionally flooded	fine-silty	0-5	Poorly drained	27	Prime farmland if protected from flooding or not frequently flooded	2w	Yes	No	No	No	Severe	No
Undeveloped Area	15.484333	J26B	Darnen loam, 2 to 6 percent slopes	fine-loamy	0-5	Well drained	24	All areas are prime farmland	2e	No	No	No	No	Severe	Yes
Undeveloped Area	59.916178	J31B	Arvilla-Sandberg complex, 2 to 6 percent slopes	sandy	0-5	Somewhat excessively drained	9	Not prime farmland	4e	No	Yes	No	No	Moderate	No
Undeveloped Area	11.4234	J32A	Bigstone silty clay loam, depressional, 0 to 1 percent slopes	fine-silty	0-5	Very poorly drained	10	Prime farmland if drained	3w	Yes	No	No	No	Severe	No
Undeveloped Area	5.590428	J42C	Sandberg-Arvilla complex, 6 to 12 percent slopes	sandy	>5-16	Excessively drained	10	Not prime farmland	6s	No	Yes	No	No	Moderate	No
Undeveloped Area	28.300579	J57A	Balaton loam, 1 to 3 percent slopes	fine-loamy	0-5	Moderately well drained	13	All areas are prime farmland	2s	No	No	No	No	Severe	No
Undeveloped Area	5.196028	J75B	Renshaw-Fordville loams, coteau, 2 to 6 percent slopes	fine-loamy over sandy or sandy-skeletal	0-5	Somewhat excessively drained	8	All areas are prime farmland	4s	No	Yes	No	No	Severe	No
Undeveloped Area	18.752528	J77A	Lamoure silty clay loam, 0 to 2 percent slopes, frequently flooded	fine-silty	0-5	Poorly drained	27	Not prime farmland	5w	Yes	Yes	No	No	Severe	No
Undeveloped Area	2.97856	J7B	Sverdrup sandy loam, 2 to 6 percent slopes	sandy	0-5	Well drained	12	Farmland of statewide importance	3e	No	No	No	No	Moderate	No

Undeveloped Area	1.799251	J8A	Egeland sandy loam, 0 to 2 percent slopes	coarse-loamy	0-5	Well drained	9	All areas are prime farmland	3s	No	No	No	No	Moderate	Yes
Undeveloped Area	2.050126	J8B	Egeland sandy loam, 2 to 6 percent slopes	coarse-loamy	0-5	Well drained	9	All areas are prime farmland	3e	No	No	No	No	Moderate	Yes
Undeveloped Area	1.363713	J95F	Buse, stony-Wilno complex, 25 to 40 percent slopes	fine-loamy	>5-16	Well drained	45	Not prime farmland	7e	No	Yes	No	No	Severe	No
Undeveloped Area	36.897898	J96C2	Barnes-Buse complex, 6 to 12 percent slopes, moderately eroded	fine-loamy	>5-16	Well drained	8	Farmland of statewide importance	3e	No	Yes	No	No	Severe	Yes

2. Data obtained by merging facility polygons with the SSURGO spatial date in ArcGIS. Summations were performed in Microsoft Excel.
3. Obtained directly by query of the SSURGO geospatial database.
4. Representative slope values are taken directly from the SSURGO database. The SSURGO2 database provides representative slope values for all component soil series. Slope classes represent the slope class grouping in percent that contains the representative slope value for a major component soil series. For example, a soil mapped in the 2-6% slope class has an average slope of 4%, which is within the 0-5% slope range.
5. Drainage class as taken directly from the SSURGO database. ED, PD, and VPD indicate Excessively Drained, Poorly Drained, and Very Poorly Drained soils, respectively.
6. Topsoil thickness is the aggregate thickness of the A horizons described in the SSURGO database.
7. Includes soils in land capability classes 4e through 8e or that have a representative slope value greater than or equal to 9%.
8. Includes soils in wind erodibility groups 1 and 2.
9. Includes soils that are somewhat poorly drained to very poorly drained soils in loamy sands and finer textural classes.
10. Rutting potential hazard based on the soil strength as indicated by engineering texture classification, drainage class, and slope. In general, soils on low slopes in wetter drainage classes, and comprised of sediments with low strength will have potential rutting hazards.
11. Includes soils with a surface texture of sandy loam or coarser that are moderately well to excessively drained.

Appendix B

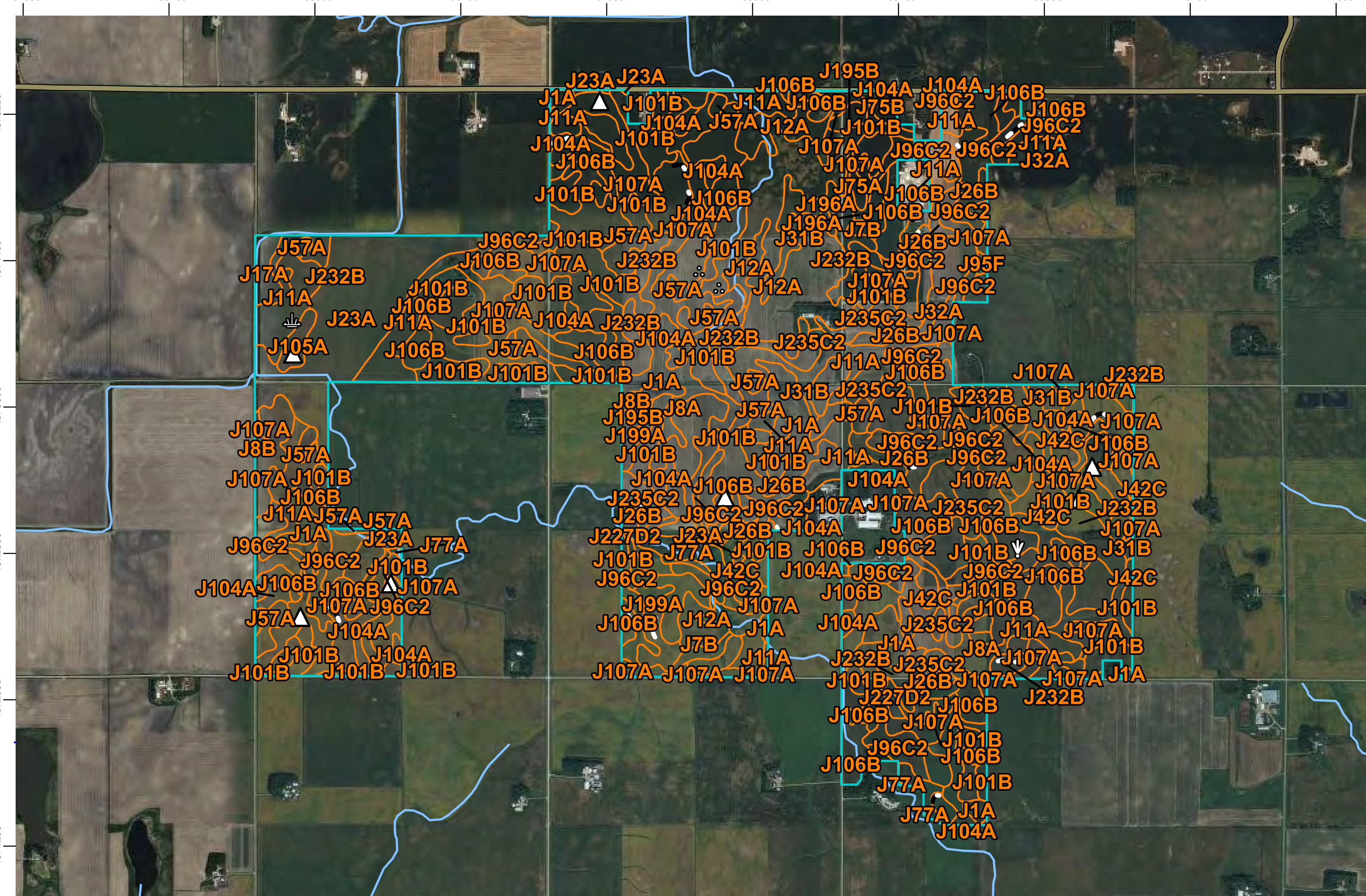
Soil Map

Lake Wilson Solar Energy Center
Agricultural Impact Mitigation Plan
Murray County, Minnesota

Soil Map—Murray County, Minnesota
(LW_ProjectArea_220627)

95° 56' 24" W | 264300 | 265100 | 265900 | 266700 | 267500 | 268300 | 269100 | 269900 | 270700 | 271500 | 95° 50' 50" W

43° 59' 49" N



43° 57' 12" N

264300 | 265100 | 265900 | 266700 | 267500 | 268300 | 269100 | 269900 | 270700 | 271500

95° 56' 24" W | 95° 50' 50" W

Map Scale: 1:34,100 if printed on A landscape (11" x 8.5") sheet.

Meters: 0 500 1000 2000 3000

Feet: 0 1500 3000 6000 9000

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Murray County, Minnesota
Survey Area Data: Version 22, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 9, 2021—Jun 29, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
J1A	Parnell silty clay loam, depressional, 0 to 1 percent slopes	61.8	2.4%
J7B	Sverdrup sandy loam, 2 to 6 percent slopes	15.5	0.6%
J8A	Egeland sandy loam, 0 to 2 percent slopes	4.7	0.2%
J8B	Egeland sandy loam, 2 to 6 percent slopes	2.5	0.1%
J11A	Vallers clay loam, 0 to 2 percent slopes	280.4	10.7%
J12A	Marysland loam, 0 to 2 percent slopes	41.1	1.6%
J17A	Quam silty clay loam, depressional, 0 to 1 percent slopes	11.2	0.4%
J23A	Lamoure silty clay loam, 0 to 2 percent slopes, occasionally flooded	135.0	5.2%
J26B	Darnen loam, 2 to 6 percent slopes	54.7	2.1%
J31B	Arvilla-Sandberg complex, 2 to 6 percent slopes	150.3	5.7%
J32A	Bigstone silty clay loam, depressional, 0 to 1 percent slopes	12.5	0.5%
J42C	Sandberg-Arvilla complex, 6 to 12 percent slopes	27.0	1.0%
J57A	Balaton loam, 1 to 3 percent slopes	53.2	2.0%
J75A	Fordville loam, coteau, 0 to 2 percent slopes	4.2	0.2%
J75B	Renshaw-Fordville loams, coteau, 2 to 6 percent slopes	15.2	0.6%
J77A	Lamoure silty clay loam, 0 to 2 percent slopes, frequently flooded	19.9	0.8%
J95F	Buse, stony-Wilno complex, 25 to 40 percent slopes	1.4	0.1%
J96C2	Barnes-Buse complex, 6 to 12 percent slopes, moderately eroded	163.9	6.3%
J100D2	Buse, eroded-Wilno complex, 12 to 18 percent slopes	31.8	1.2%
J101B	Hokans-Svea complex, 1 to 4 percent slopes	311.2	11.9%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
J104A	Svea loam, 1 to 3 percent slopes	93.4	3.6%
J105A	Arvilla sandy loam, Till Prairie, 0 to 2 percent slopes	16.7	0.6%
J106B	Barnes-Buse-Svea complex, 1 to 6 percent slopes	429.4	16.4%
J107A	Lakepark-Roliss-Parnell, depressional, complex, 0 to 3 percent slopes	395.9	15.1%
J195B	Poinsett-Waubay silty clay loams, 1 to 6 percent slopes	33.1	1.3%
J196A	Forada loam, 0 to 2 percent slopes	24.2	0.9%
J199A	Fulda silty clay, 0 to 2 percent slopes	12.1	0.5%
J227D2	Buse, moderately eroded-Sandberg complex, 12 to 18 percent slopes	10.5	0.4%
J232B	Barnes-Buse-Arvilla complex, 2 to 6 percent slopes	137.7	5.3%
J235C2	Buse-Barnes-Arvilla complex, 6 to 12 percent slopes, moderately eroded	70.1	2.7%
Totals for Area of Interest		**2,620.4**	**100.0%**