Redwood County Environmental Office -- PO Box 130, Redwood Falls, MN 56283 Phone: (507) 637-4023

Redwood County

www.co.redwood.mn.us

Application for Conditional Use Permit

Permit #: 1-25 **Date:** 12-23-24

Location of Proposed Use:

Address: XXXX Saratoga Ave (House # / Street Name) **City:** Morgan Township **State:** MN **Zip:** 56266

Parcel #: 59 015 1040 **Township:** Morgan **Section:** 15 **Twp #:** 111 **Range:** 34

Legal Description:

E1/2 NE 1/4 & NE 1/4 SE 1/4, 120.A,
Sec. 15, Twp. 111, R 34, Redwood County, Minnesota

Information about the Site:

Zoning District: A - Agricultural

NOTICE: Change of land use may affect your property taxes.

General description of the building(s) and proposed use:

A Large Solar Energy System is proposed, consisting of one two phases. One 1 megawatt-AC community solar garden and one 4 megawatt-AC community solar garden development. The total project size will be 5 megawatt-AC. Please see Memorandum and attachments for more details.

Building Size: (Please enter dimensions in feet)

Width: _____ **Length:** _____ **Diameter:** _____ **Total Height:** _____

Setbacks: (Please enter in feet) see memorandum and site plan

Side Yard Setback: _____ **Direction:** _____

Side Yard Setback: _____ **Direction:** _____

Rear Yard Setback: _____ **Direction:** _____

Road Type: _____ **Setback from the Right-of-Way:** _____

Setback from the center of the road _____ ft

Type of Sewer System:

no sewer system proposed - no on-site drainage or restrooms

Drainage Plan:

see stormwater management analysis for details on existing and proposed

Other Information:

see attachments

Applicant Information:

First Name: Colin **Last Name:** O'Neil

Business Name: RedwoodSun, LLC

Address: 202 N Cedar Avenue, Suite #1 **City:** Owatonna **State:** MN **Zip:** 55060

Home Phone: (800) 793-0786 **Cell Phone:** (952) 486-2748 **Email:** info@mysunshare.com

Operator Information: (Complete only if different from Applicant)

First Name: _____ **Last Name** _____

Business Name _____

Address: _____ **City:** _____ **State:** MN **Zip:** _____

Home Phone: _____ **Cell Phone:** _____ **Email:** _____

Land Owner Information: (Complete only if different from applican

First Name: Richard & Lynn **Last Name:** Green

Address 43569 260th St **City:** Morgan **State:** MN **Zip:** 56266

HomePhone: _____ **CellPhone:** _____ **Email:** _____

I affirm that the forgoing information is true and accurate. I understand that if any portion of this information is false or materially misleading, any conditional use permit issued in reliance upon this information is voidable at the election of Redwood County.

Land Owner Signature: Signed by: Richard C. Green Lynn M. Green 1F47973CF648432... **Date:** 12/19/2024

Office Use Only: * The section below is to be filled out by the Environmental Office Staff

Permit Fee: $700.00 **Receipt #:** 332588 **Date Approved:** _____

Application Received: 12-23-24

Commission Action:

Approved: _____ **Date:** _____

Disapproved: _____ **Date:** _____

County Board Action:

Approved: _____ **Date:** _____

Disapproved: _____ **Date:** _____

wsb

Memorandum

To: **Redwood County Board of Commissioners**

From: **Lillian Prybil, WSB**
On behalf of: RedwoodSun, LLC

Date: **December 20, 2024**

Re: **Redwood County, "RedwoodSun Solar" Large Solar Energy System Conditional Use Permit Application**
PID: 59-015-1040
WSB Project No. 026704-000

RedwoodSun, LLC ("The Applicant") is pleased to present the necessary applications for a community solar photovoltaic (PV) project (RedwoodSun Solar) in Redwood County, MN. The proposed project requires the following approvals:

- **Conditional Use Permit –** The proposed Large Solar Energy System requires application and receipt of a Conditional Use Permit (CUP).

Overview and Project Description

RedwoodSun, LLC is developing solar garden projects in conjunction with the State of Minnesota Solar Garden Program. In 2013, the state established the Solar Garden program allowing developers to develop, permit, own, and operate solar projects with the ability to sell solar electricity directly to customers. The projects connect to Xcel's distribution grid and Xcel delivers the power to customers, while RedwoodSun, LLC bills the customer for the electricity they purchase.

The proposed solar site is located in the southwest quarter of the intersection of 260th St and Saratoga Ave, in Morgan Township. The total parcel area is approximately 121 acres and is located within Section 15 of Township 111, Range 34. The proposed solar project would be built on approximately 36 acres of the parcel. The site is currently used for agricultural row crops. After the solar panels are in place, the project site will be vegetated with a short growth pollinator mix.

RedwoodSun, LLC is proposing to develop one (1) - 5 MWac community solar garden project on a property in Redwood County (**Appendix A**). The following application and analysis will encompass the entire property boundaries of the affected property.

Due to interconnection demands with Xcel Energy, this project has been split into two phases. The first phase is a 1 MWac project in the southeast portion of the parcel **(Appendix A, page C-002)**. We expect interconnection approval for phase 1 with construction commencement in 2025 or early 2026 **(Appendix B)**. The second phase is an additional 4 MWac project **(Appendix A, page C-003).** We expect the interconnection study and screening process to take more time for this phase and

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estimate a 2027-2028 construction date. While these two phases will require separate building permits, we seek a conditional use permit for both phases. Due to supply chain issues and interconnection delays currently occurring, we would ask for flexibility in the conditional use permit term should that continue to be the case as this project advances.

Zoning & Performance Standards

The project site is zoned as A - Agricultural. Large Solar Energy System uses are allowed in the agricultural district with a conditional use permit. The setbacks and standards for Large-Scale Solar Energy Systems are listed in Section 153.337 of the Redwood County Zoning Ordinance. The following information addresses the primary performance standards for the project:

(A)

(1) Solar energy systems shall be subject to the structure setbacks set forth in each respective zoning district in respect to property lines, road right-of-way lines, county tile lines and county and judicial ditches.

The required setbacks for the Agricultural District are identified in section 153.144 of the Redwood County Zoning Ordinance. The setback between building (in this case, solar equipment) and public road right-of-way is 67' from all public roads and 100' from four-lane highways. Side and rear yards have 10' minimum setbacks. Fences under 8' in height are not subject to building setback requirements.

The proposed development meets and exceeds these setback requirements. PV Panels are a minimum of 99' from Saratoga avenue, exceeding the 67' minimum. PV panels are set back from side and rear yards by at least 48'. Perimeter fences are set back a minimum of 28' from neighboring property lines.

(2) The Zoning Administrator may waive the judicial and county tile line setback requirements upon a written recommendation approving the waiver from the county's Drainage Inspector. The waiver will take into consideration the depth of the tile, the structural integrity of the tile, the soil characteristics, the location of the tile to surrounding structures and any other information deemed to be of importance. The written waiver, if approved, shall state that by reducing the minimum setback requirement the project will not negatively affect the structure or utility of the tile and will not create problems for the future maintenance or relocation of the tile.

County tile lines are present on the site. Setbacks for county tile lines are identified in Section 153.281 of the Redwood County Zoning Ordinance. The applicant has coordinated with the Drainage Inspector and seeks a waiver from the minimum setback requirements and seeks to build the site as proposed. As of the submittal date, the Drainage Inspector has been unable to evaluate the tile to assess an appropriate setback for access roads and PV panels, if any. The Applicant is agreeable to making site reconfigurations as necessary based on these findings.

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(B) Any ground mounted solar energy system larger than 0.25 acres in area must be located at least 150 feet away from any dwelling, other than the project owner's dwelling.

The proposed solar energy system is well over 150' from all dwellings. See ***Appendix A*** *for details.*

(C)

(1) Height. Solar energy systems are subject to the following height requirements.
   a) Building or roof-mounted solar energy systems (...)
   b) Ground or pole-mounted solar energy systems shall not exceed 20 feet in height when oriented at maximum tilt; except that, in the Rural Residential ground or pole-mounted solar energy systems shall not exceed ten feet in height.

The solar array will consist of panels on a single axis solar tracker system connected to smart inverters. The single axis tracker panels will have a maximum height of 12 – 15 feet.

(2) Location within lot. Solar energy systems must meet the accessory structure setback for the zoning district.
   a) Roof-mounted solar energy systems. (...)
   b) Ground-mounted solar energy systems.
      1. Ground-mounted solar energy systems may not extend into the side-yard, rear or road right-of-way structure setback when oriented at minimum design tilt.
      2. Ground-mounted solar energy systems that result in the creation of one or more acres of impervious surface, must comply with the MPCA construction storm water permit requirements.

As discussed in section (A) above, the solar energy system meets the required structure setbacks and will not extend into the setback area when oriented at the minimum design tilt. All necessary permits will be achieved, after Conditional Use permit receipt and prior to construction. These include but are likely not limited to the MPCA construction storm water permit.

(3) Rural Residential District *[Standards not included: the proposed development is located in the agricultural district and as such these standards are not applicable]*

(4) Standards for Large Solar Energy Systems
   a) Storm water, erosion and sediment control. Storm water management and erosion and sediment control shall meet the requirements of the MPCA construction storm water permit requirements.

The project will receive all necessary construction storm water permits, including submitting a SWPPP prior to construction.

   b) Foundations. The manufacturer's engineer or another qualified engineer shall certify that the foundation and design of the solar panels is within accepted

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professional standards, given local soil and climate conditions.

A geotechnical analysis will be completed before application for a building permit. The results of this geotechnical analysis will recommend appropriate foundation systems for the solar panels, inverters, and the transformer. Engineer certification will be submitted with building permit application.

c) Other standards and codes. All large solar energy systems shall be in compliance with any applicable local, state and federal regulatory standards, including the state's Uniform Building Code, as amended, and the National Electric Code, as amended.

The proposed solar energy system is in compliance with all local, state, and federal regulatory standards.

d) Power and communication lines. Power and communication lines running between banks of solar panels and to electric substations or interconnections with buildings shall be buried underground, to the extent practicable.

Power lines will be buried underground to the point of interconnection, wherever possible ***(Appendix A)****.*

e) Wetlands. All large solar energy systems shall be in compliance with all applicable federal, state and local wetland laws, rules and regulations and shall provide copies of all wetland permits obtained in connection with the large solar energy system to the county upon request.

*A Level II field wetland delineation was completed with field work occurring in November 2024. The field assessment concluded that the area of interest is upland and no wetlands exist****(Appendix C).*** *The TEP review of these findings and concurrence letter from USACE is pending.*

Conditional Use Permit

The proposed use of the site will meet all approval standards for a conditional use as identified in Section 153.449 of the ordinance. The proposed solar energy system will not be detrimental to or adversely affect public health, safety, or general welfare. The project will not be injurious to or diminish the use or enjoyment of nearby property, nor will it substantially diminish and impair property values of surrounding properties. The establishment of the use will not impede development or improvement on any surrounding properties. Adequate public utilities, access roads, and drainage have been provided. The facility will not increase traffic congestion (see "project parameters" below) and will manage fire risk by coordinating with local first responders and fire stations on any necessary training or resources. Lighting of the site will be limited to the transformer/inverter equipment pad. Lighting will be shielded to prevent light from spilling onto any adjacent properties. These lights will also have shut off timers set at a 30-minute maximum. Additional noise created by the site will be very minimal. The proposed use of the property is consistent with the purpose and intent of the Ordinance and the Comprehensive Plan.

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All application materials required for a Conditional Use Permit for Large Solar Energy System are included in this application packet.

Comprehensive Plan

The 2017 Redwood County Comprehensive Plan identifies 17 objectives for land use and growth within the County. While some of these objectives don't directly relate to the proposed land use, the proposed land use is aligned with the overall intent of the comprehensive plan objectives and intent.

In Comprehensive Plan objective 1, the County has a goal to protect the rural, agricultural character of Redwood County. The solar use does not constitute a permanent conversion of land from agricultural uses. Once the facility is fully decommissioned, soil quality will be as good or better than prior to construction, maintaining the value of agricultural property. Following decommissioning, the land will once again be available for agricultural use. This project will support the future use of this land for agricultural activity and does not conflict with this objective in the comprehensive plan.

In the Comprehensive Plan objective 5, the County identifies the need to preserve and protect the natural qualities and existing rural character of the landscape. The proposed development and associated vegetation under panels would serve as vital habitat and natural areas on the landscape. The appearance of the site would not conflict with this goal. Similarly, objective 6 is to preserve open space and wildlife habitat. The proposed site would provide an improvement of wildlife habitat and fodder for pollinators and other small animals over the site's current agricultural use.

Objective 14 is to support the efforts of private and public sectors to develop renewable energy production as a viable business within the county. Objective 15 is to support the efforts of the private and public sectors to ensure Redwood County's energy efficiency and independence. The proposed project would generate energy through the Minnesota community solar garden program. Residents within the county, and other Minnesota residents would be eligible to subscribe to receive credits from this solar garden, furthering the goal for residents to have energy independence and clean energy. This solar project is a sustainable development for the county that would provide cost effective energy to subscribers. The project is economically and environmentally viable over the long term.

Site Appearance

SunShare proposes to construct a community-scale solar facility on a 120.7 acre parcel in Redwood County, MN **(Appendix A).** The legal description of the parcel is included in the application form. The land is currently utilized for agricultural row crops. The solar array will consist of one (1) - 5MWac solar facility, to be constructed in two phases. The final array will occupy about 35.81 acres of land inside the fencing. The final layout of the arrays will be subject to construction and electrical engineering and Xcel Energy final interconnection approval.

One access driveway will be requested from Saratoga Avenue to access the site. This

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20' wide access road is proposed to provide an approach to the solar arrays for light duty service vehicles for maintenance and equipment purposes. The solar array will be contained within an area protected by an eight-foot chain link security fence. An easement with the neighboring property to the south will grant access for a utility line tie-in and point of common coupling.

Rows of panels are separated by 15 feet wide lanes. Under and between the rows of panels, the site will be vegetated with a short growth pollinator mix. Maintenance of the vegetation will be minimal as these will be plant species that are not very tall. Trimming and mowing will be completed as necessary. Utilizing perennial vegetation under and between the panels will provide reduced runoff and peak flow volumes from the site **(Appendix D).**

Once both phases are constructed, the solar array will consist of 10,528 680-Watt panels and single axis solar tracker systems that will connect to forty 125 KW smart inverters. Smart inverters are then connected to a meter which measures the amount of electrical energy produced. The electrical energy will then be distributed directly to the public utility grid via a point of interconnection (POI) on the south central edge of the property line **(Appendix A)**. The single axis tracker panels and equipment will have a maximum height of 12-15 feet.

The angle of the solar arrays will change throughout the day as the panels "track" the Sun. The highest degree of tilt that a tracker panel will reach is approximately 23°. Detailed equipment specifications are provided in **Appendix A**. All photovoltaic systems will comply with the Minnesota State Electric Code and National Electric Code.

Project Parameters

The maximum number of occupants on the site at one time will be 2 people. The maximum number of occupants on-site per day during construction will be approximately 25 people. The maximum number of employees on site per day during operation is approximately 2 employees periodically during any given month. Vehicles accessing the site for maintenance will include light duty service vehicles for maintenance and equipment purposes. The maximum number of vehicles per day during construction will be approximately 30 vehicles. The maximum number of vehicles per day during operation will be approximately 2 vehicles periodically during any given month. There are no existing or proposed parking spaces, public restrooms, or floor drains on the site.

Hydrological Features

The FEMA FIRM maps for Redwood County, Minnesota identify that the project site is completely outside of the FEMA floodplain zoning district **(Appendix E, figure 8).** The project area is not within a MNDNR shoreland district. A stormwater analysis of the site was conducted and provided in **Appendix D**. The analysis concludes that the proposed development and establishment of short growth pollinator mix will result in lower peak flow rates, lower runoff volumes, and improved runoff quality from the project site than currently exist.

A water quality treatment BMP will be provided and achieved through providing a ditch graded on either side of the proposed access road with 6" tall ditch checks **(Appendix**

A, Appendix D).

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey defines Hydrologic Soil Groups (HSG) on the property. Within the proposed solar area, soil types include HSG D, defined as having high runoff potential when thoroughly wet; HSG B, defined as having moderately low runoff potential when thoroughly wet; and HSG C, defined as having moderately high runoff potential when thoroughly wet **(Appendix D, figure 4)**.

Topography within the project area ranges from 1032 feet above mean sea level (AMSL) in the northwestern corner of the project area to 1056 ft AMSL in the southeastern portion of the project area. Topographic relief is moderate, with an elevation difference of approximately 24 feet across the project area **(Appendix E, figure 3).** Erosion control best management practices and a Stormwater Pollution Prevention Plan (SWPPP) will be submitted prior to application for a building permit.

One domestic well was identified within 500 feet of the parcel **(Appendix E, figure 8).** No impact to the well is anticipated with this development.

Wetlands

Neither the MNDNR National Wetlands Inventory nor USGS NHD map identify wetlands or flow lines in the project area. No MNDNR Shoreland or Wild, Scenic, and Recreational rivers occur within the project area. A Level II onsite wetland delineation has been completed and determined that areas examined were all upland and no wetlands exist**(Appendix C)**. A delineation concurrence application has been submitted.

Critical Issues Analysis

A critical issues analysis was conducted for the site and is provided in **Appendix E**. A review of the MNDNR Natural Heritage Information System database was completed for records within the project area or within one mile of the area. No MBS sites of biodiversity significance, MNDNR Native Plant Communities, or MNDNR railroad rights-of-way prairies were mapped within one mile of the project area.

Based on the U.S. Fish and Wildlife Service Information for Planning and Consultation, the tri-colored bat and the monarch butterfly may occur within the project area or surrounding region. The bald eagle may also be present and is protected under federal law. Based on their statuses and low likelihood of occurrence on the site, conservation measures (avoidance and minimization) should not be required for these species or their habitats.

The farmland ratings within the disturbance area include Prime farmland if drained, prime farmland, and farmland of statewide importance. The primary soil in the disturbance area is prime farmland if drained. The soils classification map is included in **Appendix E, figure 7**. Additional detailed soils classifications are included in **Appendix E, table 2**.

Potential to Effect the Environment and Public Health

Minimal impacts to public health and the environment are anticipated at the site during

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construction or during the 35-year operation of the facilities. The generation of electricity from photovoltaic (PV) solar panels is researched to be safe and effective. According to the U.S. Department of Energy, few power-generating technologies have as little environmental impact as photovoltaic solar panels. There are no anticipated negative effects on public health from the installation and maintenance of these solar arrays. Unlike conventional fossil fuel power generation (such as coal, gas and oil), generating electricity with ground-mounted solar arrays uses no water, and produces no direct emissions or contaminates.

Decommissioning Plan

Deconstruction of the RedwoodSun Solar Energy System will be completed within 90 days from the end of the system's serviceable life or becoming a discontinued use and shall include removal of all solar related equipment/facilities and restoration of the site. The system becomes a discontinued use if it does not generate energy for a period of 12 consecutive months.

A decommissioning plan is attached for both phases of development in **Appendix F**. The decommissioning plan and associated surety may be adjusted as necessary to reflect final site conditions and estimated decommissioning cost at time of building permit approval(s). The estimated decommissioning cost for the first (1 MW) phase of development is $209,890; and for the second (4 MW) phase, the estimated cost is $186,700. Please refer to site plan sheet C-002 to see the improvements specific to phase 1 of development **(Appendix A).** The decommissioning plan identifies the payment schedule for financial surety throughout the project life cycle. The financial surety terms with will be agreed upon by Redwood County prior to the issuance of a building permit.

Conclusion

The applicant is seeking a conditional use permit to operate one (1) – 5 MWac solar project on a property in Redwood County. The solar installation is a clean, efficient means of power production with few moving parts and minimal maintenance that creates no noise, dust, runoff or nuisance factors associated with other forms of power production.

We appreciate your consideration of the requested conditional use permit. If you have questions or need additional information, please feel free to call Colin O'Neil at 952-486-2748.

cc. Colin O'Neil, Development Manager, RedwoodSun, LLC

Appendix A: Site Plan
Appendix B: Interconnection Agreement Status
Appendix C: Level II Wetland Delineation
Appendix D: Stormwater Management Analysis
Existing
Figure 1 - Project Location
Figure 2 - Property Details

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Figure 3A – FEMA Floodplain Map
Figure 3B – Existing Conditions Drainage Map
Figure 4 - Hydrologic Soils Map
Figure 5 - Land Cover Map
Proposed
Figure 6 - Proposed Site Plan
Appendix E: Critical Issue Analysis
Figure 1 – Project Location (Street)
Figure 2 – Project Location (Aerial)
Figure 3 – Topography
Figure 4 – Land Cover (NLCD)
Figure 5 – Transmission Lines
Figure 6 – Soils – Hydric Rating
Figure 7 – Soils – Farmland Classification
Figure 8 – Surface Hydrological Resources
Attachment A: FAA Notice Criteria Tool Results
Attachment B: MNDNR Natural Resources Natural Heritage Report
Attachment C: USFWS Information for Planning and Consultation Report
Attachment D: Minnesota State Historic Preservation Office Correspondence
Appendix F: Decommissioning Plan

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Appendix A: Site Plan

NOTE: LINEWORK SHOWN IS FROM COUNTY GIS.
NO FIELD SURVEY WORK HAS BEEN COMPLETED.
ALL LINEWORK SHOWN IS APPROXIMATE.

N

0 220 440
SCALE IN FEET

LOCATION

NOT TO SCALE

5 MW System Details	
Project Size (DC)	7159.04 kW
AC Size	5000 kW / 5280 kVA
Module Type	(10528) CSI CS7N-680TB-AG
Module Output	680 W
Inverters	(40) CPS SCH125KLT-DO/US-600
Inverter Size	125kW/132 kVA
Intercon. Voltage	23.9 kV
DC/AC Ratio	1.43
Pitch	23'
Tracker	ATI Duratrack HZ v5
Modules / Row	84 (3 strings of 28 modules) & 56 (2 strings of 28 modules)

LEGEND

- DENOTES PARCEL LINE
- DENOTES RIGHT OF WAY LINE
- DENOTES EXISTING COUNTY DRAIN TILE
- DENOTES FENCE SETBACK LINE
- DENOTES PANEL SETBACK LINE
- DENOTES EXISTING OVERHEAD POWER LINE
- DENOTES PROPOSED PANELS
- DENOTES PROPOSED FENCE
- DENOTES PROPOSED GRAVEL ACCESS ROAD
- DENOTES PROPOSED CONCRETE
- DENOTES PROPOSED UNDERGROUND MV FEEDER
- DENOTES POWER POLE
- DENOTES PROPOSED DRAINAGE DITCH WITH DITCH CHECKS
- DENOTES PROPOSED SEEDED AREA SHORT GROWTH PERENNIAL POLLINATORS

AREA WITHIN PERIMETER FENCE - 35.81 ACRES

SITE DATA

PIN#	59-015-1040
PROPERTY OWNER	RICHARD AND LYNN GREEN
PROPERTY ADDRESS	XXXX SARATOGA AVENUE
	MORGAN, MN 56266
SITE AREA	
PROJECT AREA	± 120.70 AC
PRELIMINARY SOLAR PANEL AREA	± 24.89 AC
PRELIMINARY DISTURBED AREA	± 35.86 AC
*** PRELIMINARY AREAS SUBJECT TO CHANGE ***	
ZONING JURISDICTION	BLUE EARTH COUNTY
ZONING - EXISTING	A - AGRICULTURAL
ZONING - PROPOSED	A - AGRICULTURAL
CURRENT LAND USE	AGRICULTURE
PROPOSED LAND USE	LARGE SOLAR ENERGY SYSTEM
PARCEL SETBACK LINES	
FRONT YARD (EAST - ROW)	67 FT
SIDE YARD	10 FT
REAR YARD	10 FT
DWELLINGS	150 FT
DRAINAGE TILE (TYPICAL)	100 FT

SunShare
SUNSHARE LLC
1724 GILPIN STREET
DENVER, CO 80218
(800)793-0786

wsb
WSB PROJECT NO.:
026704-000

WSB
701 XENIA AVE S, #300
GOLDEN VALLEY, MN 55416
(763) 541-4800

PLAN: ECY DESIGN: ECY
CHECK: LP / EZ

REVISIONS

NO.	DATE	DESCRIPTION

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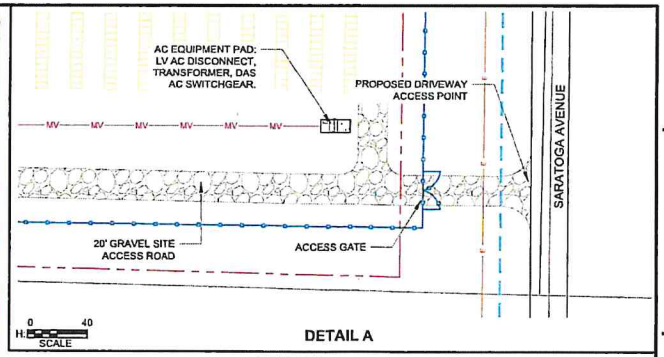
PLAN DATE: DECEMBER 11, 2024

REDWOODSUN SOLAR PROJECT
REDWOOD COUNTY, MN
SUNSHARE, LLC

OVERALL 5MW PROJECT SITE PLAN

SHEET
C-001

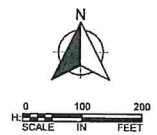


DETAIL A

LEGEND

- DENOTES PARCEL LINE
- DENOTES RIGHT OF WAY LINE
- DENOTES EXISTING COUNTY DRAIN TILE
- DENOTES FENCE SETBACK LINE
- DENOTES PANEL SETBACK LINE
- DENOTES EXISTING OVERHEAD POWER LINE
- DENOTES PROPOSED PANELS
- DENOTES PROPOSED FENCE
- DENOTES PROPOSED GRAVEL ACCESS ROAD
- DENOTES PROPOSED CONCRETE
- DENOTES PROPOSED UNDERGROUND MV FEEDER
- DENOTES POWER POLE
- DENOTES PROPOSED DRAINAGE DITCH WITH DITCH CHECKS
- DENOTES PROPOSED SEEDED AREA SHORT GROWTH PERENNIAL POLLINATORS

AREA WITHIN PERIMETER FENCE - 35.81 ACRES



1 MW System Details	
AC Size	1000 kW
Module Type	(2100) CSI CS7N-660TB-AG
Module Output	680 W
Inverters	(8) CPS SCH125KLT-DO/US-600
Inverter Size	125kW/132 kVA
DC/AC Ratio	1.43
Pitch	23'
Tracker	ATI Duratrack HZ v4

NOTE: LINEWORK SHOWN IS FROM COUNTY GIS. NO FIELD SURVEY WORK HAS BEEN COMPLETED. ALL LINEWORK SHOWN IS APPROXIMATE.

SunShare
SUNSHARE LLC
1724 GILPIN STREET
DENVER, CO 80218
(800)793-0786

wsb
WSB PROJECT NO.:
026704-000

WSB
701 XENIA AVE S, #300
GOLDEN VALLEY, MN 55416
(763) 541-4800

PLAN: ECY DESIGN: ECY
CHECK: LP / EZ

REVISIONS

NO.	DATE	DESCRIPTION

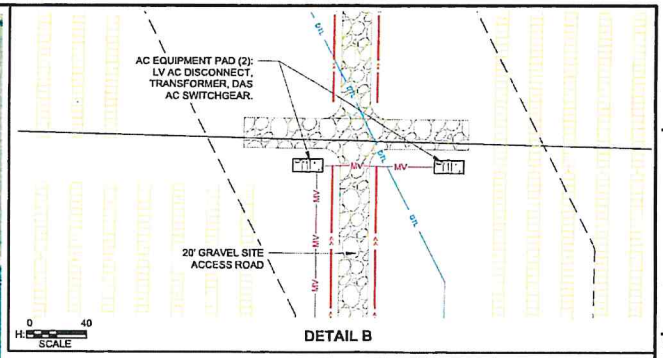
THIS DOCUMENT IS RELEASED FOR PERMITTING PURPOSES ONLY AND IS NOT FOR CONSTRUCTION

PLAN DATE: DECEMBER 11, 2024

REDWOODSUN SOLAR PROJECT
REDWOOD COUNTY, MN
SUNSHARE, LLC

PHASE 1
1MW
PROJECT
SITE PLAN

SHEET
C-002



DETAIL B

LEGEND

- DENOTES PARCEL LINE
- DENOTES RIGHT OF WAY LINE
- DENOTES EXISTING COUNTY DRAIN TILE
- DENOTES FENCE SETBACK LINE
- DENOTES PANEL SETBACK LINE
- DENOTES EXISTING OVERHEAD POWER LINE
- DENOTES PROPOSED PANELS
- DENOTES PROPOSED FENCE
- DENOTES PROPOSED GRAVEL ACCESS ROAD
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- DENOTES PROPOSED SEEDED AREA SHORT GROWTH PERENNIAL POLLINATORS

AREA WITHIN PERIMETER FENCE - 35.81 ACRES

N

0 100 200
SCALE IN FEET

NOTE: LINEWORK SHOWN IS FROM COUNTY GIS. NO FIELD SURVEY WORK HAS BEEN COMPLETED. ALL LINEWORK SHOWN IS APPROXIMATE.

4 MW System Details	
Project Size (DC)	5731.04 kW
AC Size	4000 kW / 4228 kVA
Module Type	(8428) CSI CS7N-680TB-AG
Module Output	680 W
Inverters	(32) CPS SCH125KLT-DO/US-600
Inverter Size	125kW/132 kVA
Intercon. Voltage	23.9 kv
DC/AC Ratio	1.43
Pitch	23°
Tracker	ATI Duratrack HZ v3
Modules / Row	84 (3 strings of 28 modules) & 56 (2 strings of 28 modules)

SunShare
SUNSHARE LLC
1724 GILPIN STREET
DENVER, CO 80218
(800)793-0786

wsb
WSB PROJECT NO.: 026704-000

WSB
701 XENIA AVE S, #300
GOLDEN VALLEY, MN 55416
(763) 541-4800

PLAN: ECY DESIGN: ECY
CHECK: LP / EZ

REVISIONS

NO.	DATE	DESCRIPTION

THIS DOCUMENT IS RELEASED FOR PERMITTING PURPOSES ONLY AND IS NOT FOR CONSTRUCTION

PLAN DATE: DECEMBER 11, 2024

REDWOODSUN SOLAR PROJECT
REDWOOD COUNTY, MN
SUNSHARE, LLC

PHASE 2
4MW
PROJECT
SITE PLAN

SHEET
C-003

NOTE: LINEWORK SHOWN IS FROM COUNTY GIS. NO FIELD SURVEY WORK HAS BEEN COMPLETED. ALL LINEWORK SHOWN IS APPROXIMATE.

N

0 180 360
H: SCALE IN FEET

LOCATION

NOT TO SCALE

LEGEND

- DENOTES PARCEL LINE
- DENOTES RIGHT OF WAY LINE
- DENOTES EXISTING COUNTY DRAIN TILE
- DENOTES FENCE SETBACK LINE
- DENOTES PANEL SETBACK LINE
- DENOTES EXISTING OVERHEAD POWER LINE
- DENOTES PROPOSED PANELS
- DENOTES PROPOSED FENCE
- DENOTES PROPOSED GRAVEL ACCESS ROAD
- DENOTES PROPOSED CONCRETE
- DENOTES PROPOSED UNDERGROUND MV FEEDER
- DENOTES POWER POLE
- DENOTES PROPOSED DRAINAGE DITCH WITH DITCH CHECKS
- DENOTES PROPOSED SEEDED AREA SHORT GROWTH PERENNIAL POLLINATORS

AREA WITHIN PERIMETER FENCE - 35.81 ACRES

SunShare
SUNSHARE LLC
1724 GILPIN STREET
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(800)793-0786

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THIS DOCUMENT IS RELEASED FOR PERMITTING PURPOSES ONLY AND IS NOT FOR CONSTRUCTION

PLAN DATE: DECEMBER 11, 2024

REDWOODSUN SOLAR PROJECT
REDWOOD COUNTY, MN
SUNSHARE, LLC

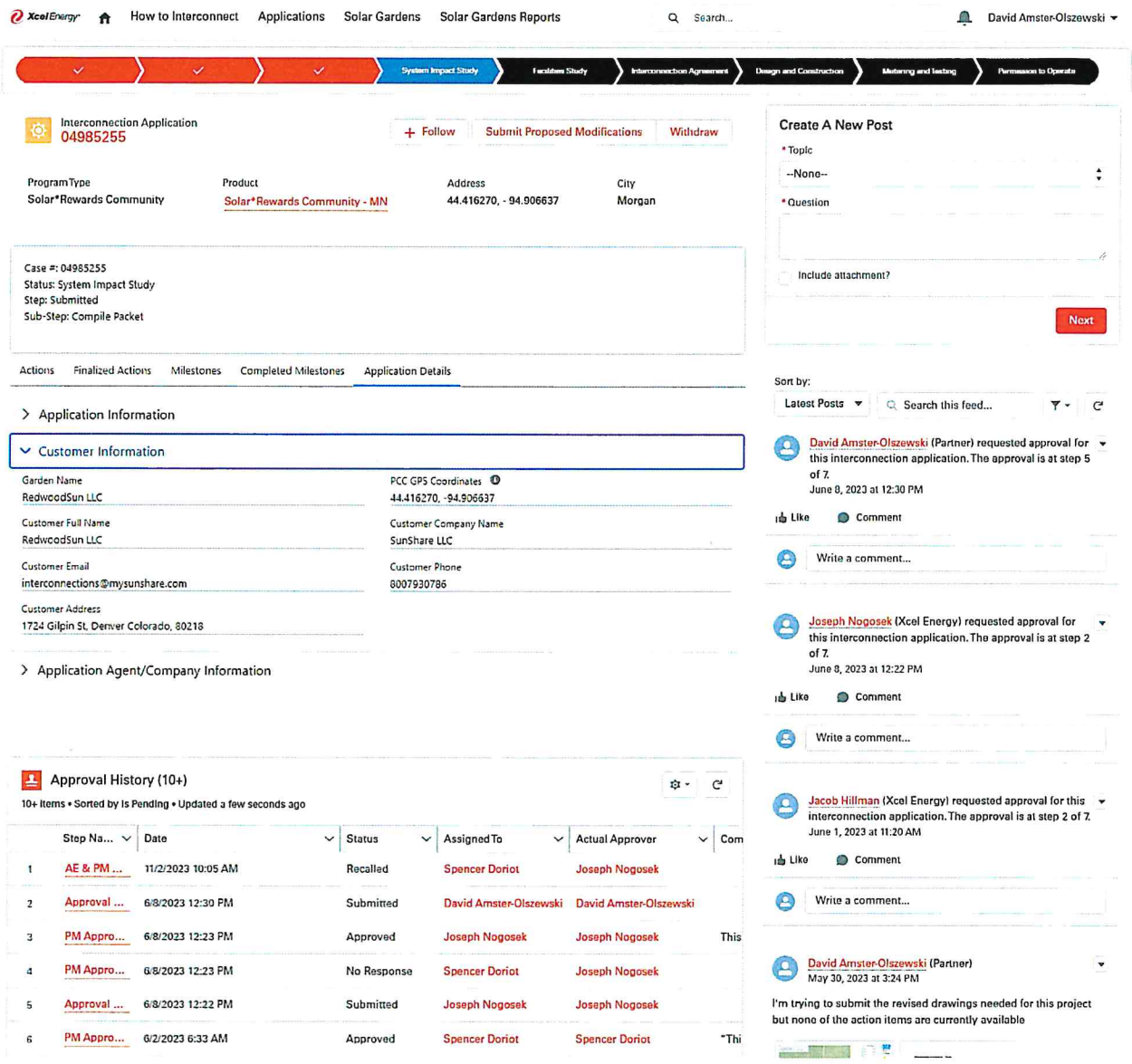
PROJECT VICINITY MAP

SHEET
C-004

Appendix B: Interconnection Agreement Status

Interconnection Agreement Status

The 1 MW portion is currently in the System Impact Study phase



701 XENIA AVENUE S | SUITE 300 | MINNEAPOLIS, MN | 55416 | 763.541.4800 | WSBENG.COM

Appendix C: Level II Wetland Delineation

Project Name and/or Number: RedwoodSun Solar

PART ONE: Applicant Information

If applicant is an entity (company, government entity, partnership, etc.), an authorized contact person must be identified. If the applicant is using an agent (consultant, lawyer, or other third party) and has authorized them to act on their behalf, the agent's contact information must also be provided.

Applicant/Landowner Name: SunShare LLC. (Dave Bergh)
Mailing Address: 1724 Gilpin Street, Denver, CO 80218
Phone: 612-968-5127
E-mail Address: dbergh@mysunshare.com

Authorized Contact (do not complete if same as above):
Mailing Address:
Phone:
E-mail Address:

Agent Name: WSB (Tim Paquin)
Mailing Address: 701 Xenia Ave. S., Suite 300, Minneapolis, MN 55416
Phone: 612-541-2549
E-mail Address: Tim.paquin@wsbeng.com

PART TWO: Site Location Information

County: Redwood **City/Township:** Morgan
Parcel ID and/or Address: **Tax Parcel Number(s):** Parcel 59-015-1040
Legal Description (Section, Township, Range): Section 15, T111N, R34W
Lat/Long (decimal degrees): 44.42535, -94.90894
Attach a map showing the location of the site in relation to local streets, roads, highways.
Approximate size of site (acres) or if a linear project, length (feet): 74 acres

If you know that your proposal will require an individual Permit from the U.S. Army Corps of Engineers, you must provide the names and addresses of all property owners adjacent to the project site. This information may be provided by attaching a list to your application or by using block 25 of the Application for Department of the Army permit which can be obtained at:

http://www.mvp.usace.army.mil/Portals/57/docs/regulatory/RegulatoryDocs/engform_4345_2012oct.pdf

PART THREE: General Project/Site Information

If this application is related to a delineation approval, exemption determination, jurisdictional determination, or other correspondence submitted ***prior to*** this application then describe that here and provide the Corps of Engineers project number.

Describe the project that is being proposed, the project purpose and need, and schedule for implementation and completion. The project description must fully describe the nature and scope of the proposed activity including a description of all project elements that effect aquatic resources (wetland, lake, tributary, etc.) and must also include plans and cross section or profile drawings showing the location, character, and dimensions of all proposed activities and aquatic resource impacts.

SunShare LLC is evaluating a potential future solar project at this parcel. This application is for wetland boundary/type decision, No-Loss, and preliminary USACE jurisdictional determination.

Project Name and/or Number: RedwoodSun Solar

PART FOUR: Aquatic Resource Impact[1] Summary

If your proposed project involves a direct or indirect impact to an aquatic resource (wetland, lake, tributary, etc.) identify each impact in the table below. Include all anticipated impacts, including those expected to be temporary. Attach an overhead view map, aerial photo, and/or drawing showing all of the aquatic resources in the project area and the location(s) of the proposed impacts. Label each aquatic resource on the map with a reference number or letter and identify the impacts in the following table.

Aquatic Resource ID (as noted on overhead view)	**Aquatic Resource Type** (wetland, lake, tributary etc.)	**Type of Impact** (fill, excavate, drain, or remove vegetation)	**Duration of Impact** Permanent (P) or Temporary (T)[1]	**Size of Impact**[2]	**Overall Size of Aquatic Resource** [3]	**Existing Plant Community Type(s)** in Impact Area[4]	**County, Major Watershed #, and Bank Service Area #** of Impact Area[5]

[1]If impacts are temporary; enter the duration of the impacts in days next to the "T". For example, a project with a temporary access fill that would be removed after 220 days would be entered "T (220)".
[2]Impacts less than 0.01 acre should be reported in square feet. Impacts 0.01 acre or greater should be reported as acres and rounded to the nearest 0.01 acre. Tributary impacts must be reported in linear feet of impact and an area of impact by indicating first the linear feet of impact along the flowline of the stream followed by the area impact in parentheses). For example, a project that impacts 50 feet of a stream that is 6 feet wide would be reported as 50 ft (300 square feet).
[3]This is generally only applicable if you are applying for a de minimis exemption under MN Rules 8420.0420 Subp. 8, otherwise enter "N/A".
[4]Use *Wetland Plants and Plant Community Types of Minnesota and Wisconsin* 3rd Ed. as modified in MN Rules 8420.0405 Subp. 2.
[5]Refer to Major Watershed and Bank Service Area maps in MN Rules 8420.0522 Subp. 7.

If any of the above identified impacts have already occurred, identify which impacts they are and the circumstances associated with each:

PART FIVE: Applicant Signature

☐ Check here if you are requesting a pre-application consultation with the Corps and LGU based on the information you have provided. Regulatory entities will not initiate a formal application review if this box is checked.

By signature below, I attest that the information in this application is complete and accurate. I further attest that I possess the authority to undertake the work described herein.

Signature: Colin O'Neil Date: 12/18/2024

I hereby authorize WSB (Tim Paquin) to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this application.

[1] The term "impact" as used in this joint application form is a generic term used for disclosure purposes to identify activities that may require approval from one or more regulatory agencies. For purposes of this form it is not meant to indicate whether or not those activities may require mitigation/replacement.

Project Name and/or Number: RedwoodSun Solar

Attachment A
Request for Delineation Review, Wetland Type Determination, or Jurisdictional Determination

By submission of the enclosed wetland delineation report, I am requesting that the U.S. Army Corps of Engineers, St. Paul District (Corps) and/or the Wetland Conservation Act Local Government Unit (LGU) provide me with the following (check all that apply):

☐ **Wetland Type Confirmation**

☒ **Delineation Concurrence**. Concurrence with a delineation is a written notification from the Corps and a decision from the LGU concurring, not concurring, or commenting on the boundaries of the aquatic resources delineated on the property. Delineation concurrences are generally valid for five years unless site conditions change. Under this request alone, the Corps will not address the jurisdictional status of the aquatic resources on the property, only the boundaries of the resources within the review area (including wetlands, tributaries, lakes, etc.).

☐ **Preliminary Jurisdictional Determination**. A preliminary jurisdictional determination (PJD) is a non-binding written indication from the Corps that waters, including wetlands, identified on a parcel may be waters of the United States. For purposes of computation of impacts and compensatory mitigation requirements, a permit decision made on the basis of a PJD will treat all waters and wetlands in the review area as if they are jurisdictional waters of the U.S. PJDs are advisory in nature and may not be appealed.

☐ **Approved Jurisdictional Determination**. An approved jurisdictional determination (AJD) is an official Corps determination that jurisdictional waters of the United States are either present or absent on the property. AJDs can generally be relied upon by the affected party for five years. An AJD may be appealed through the Corps administrative appeal process.

In order for the Corps and LGU to process your request, the wetland delineation must be prepared in accordance with the 1987 Corps of Engineers Wetland Delineation Manual, any approved Regional Supplements to the 1987 Manual, and the *Guidelines for Submitting Wetland Delineations in Minnesota* (2013).
http://www.mvp.usace.army.mil/Missions/Regulatory/DelineationJDGuidance.aspx

Attachment B
Supporting Information for Applications Involving Exemptions, No Loss Determinations, and Activities Not Requiring Mitigation

Complete this part ***if*** you maintain that the identified aquatic resource impacts in Part Four do not require wetland replacement/compensatory mitigation OR ***if*** you are seeking verification that the proposed water resource impacts are either exempt from replacement or are not under CWA/WCA jurisdiction.

Identify the specific exemption or no-loss provision for which you believe your project or site qualifies:

MN rules Chapter 8420.0415 – No-Loss Criteria A – an activity that will not impact a wetland.

Provide a detailed explanation of how your project or site qualifies for the above. Be specific and provide and refer to attachments and exhibits that support your contention. Applicants should refer to rules (e.g. WCA rules), guidance documents (e.g. BWSR guidance, Corps guidance letters/public notices), and permit conditions (e.g. Corps General Permit conditions) to determine the necessary information to support the application. Applicants are strongly encouraged to contact the WCA LGU and Corps Project Manager prior to submitting an application if they are unsure of what type of information to provide:

Wetlands do not exist within the parcel, as documented in the December 2, 2024 wetland delineation report, prepared by WSB.

WETLAND DELINEATION REPORT

REDWOODSUN

COMMUNITY SOLAR

MORGAN TOWNSHIP | REDWOOD COUNTY| MINNESOTA

December 2024

Prepared for:
SunShare LLC
1724 Gilpin Street
Denver, CO 80218

WSB PROJECT NO. 26704

LEVEL 2 WETLAND DELINEATION REPORT

RedwoodSun Solar

For:

SunShare LLC.

Wetland Delineation Report
December 2, 2024

Prepared by:

CERTIFICATION

The report was prepared by:

Tim Paquin, CMWP No.1452

Date: December 2, 2024 Title: Environmental Scientist

I hereby certify that this report was reviewed by me and that I am a Certified Wetland Professional in the State of Minnesota.

Shawn Williams, CMWP No.1178

Date: December 2, 2024 Title: Senior Environmental Scientist

TABLE OF CONTENTS

TITLE PAGE
CERTIFICATION
TABLE OF CONTENTS

SECTION I

I. Introduction

A. Project Location

The project is located at Redwood County County Parcel 59-015-1040, southwest of the intersection of 260th St. and Saratoga Ave. The site is about 0.50 miles northeast of Morgan, MN. The parcel area is approximately 74 acres in Section 15 of Township 111N and Range 34W, Major Watershed #28, BSA #9 (**Figure 1, Appendix A**).

B. Project Purpose

SunShare LLC. is studying a potential future community solar project at this parcel. This report is intended to define all aquatic resources boundaries within the review area for final design and permitting of this project. This wetland delineation was authorized by SunShare LLC.

C. Project Scope

The scope of this project was to verify whether Area 1 (from the Level 1 offsite wetland assessment) met wetland criteria. The wetland delineation review area included the entire parcel.

D. Summary of Findings

A Level 2 wetland delineation was performed on the site. A total of two (2) areas were investigated and determined to be upland, as summarized in **Table 1**. For a visual representation of the location, please see **Figure 6**, **Appendix B**. All other potential wetland areas (mapped hydric soils, NWI signatures, and low depressional areas) were reviewed on-site and determined to be upland.

Table 1: Summary of Investigated Areas, RedwoodSun Solar, Redwood County, Minnesota

Area ID	Delineation Method	No. Flags/ No. Transects	Eggers and Reed	Circular 39 (Cowardin)	NWI*	DNR PWI**	County Soil Survey (Hydric/Non-Hydric)***	Wetland Size (acres)
Area 1	Level 1/2	0/1	Not Wetland	Not Wetland	No	N/A	**L163A**	N/A
SP01	Level 2	0/1	Not Wetland	Not Wetland	No	N/A	**L83A**	N/A

** "Yes" indicates wetland is mapped in the NWI and "No" indicates the wetland is not mapped in the NWI.*

*** "NA" indicates the wetland is not mapped in the PWI. Numbers listed are the DNR ID, indicating the wetland is mapped in the PWI.*

****Bolded numbers indicate hydric soils.*

II. Delineation Procedure

A. Off-Site Determination: Base Map Review

Level 1 Offsite Hydrology Assessment: Due to the agricultural land use of the site, a Level 1 assessment was completed. The assessment utilized 10 years of historic aerial imagery between 1991 and 2021. Based on the review, one area of interest (Area 1) displayed hydrology signatures in enough normal years to warrant field verification. This assessment was summarized in a memo to SunShare LLC. in September 2024 and is available upon request.

Topography: The overall topography of the site includes elevations ranging generally between 1048 feet above mean sea level (AMSL) at the southern portion of the site to 1030 feet AMSL at the northwest portion (**Figure 2, Appendix A**). Topographic relief is moderate, with elevation difference of 18 vertical feet. Surface water (precipitation) is generally conveyed from south to north within the site.

The *DNR Public Waters and Wetlands Map, Redwood County, MN* (Minnesota Department of Natural Resources, 1983) shows no mapped public waters wetland within the review area (**Figure 3, Appendix A**).

The *National Wetlands Inventory Map* (Minnesota Department of Natural Resources) shows no mapped wetlands within the review area (**Figure 4, Appendix A**).

The *Soil Survey of Redwood County, Minnesota* (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm) identified the following soils (**Table 2**) within the addendum area (**Figure 5, Appendix A**):

Table 2: Soil Survey

Map Symbol	Soil Unit Name	Percent Hydric	Rating
86	Canisteo clay loam, 0 to 2 percent slopes	100	Hydric
421B	Amiret loam, 2 to 6 percent slopes	3	Predominantly Non-Hydric
423	Seaforth loam, 1 to 3 percent slopes	14	Predominantly Non-Hydric
999B2	Ves-Estherville-Storden complex, 3 to 6 percent slopes, eroded	0	Not Hydric
999C2	Storden-Estherville-Ves loams, 6 to 12 percent slopes, eroded	0	Not Hydric
L83A	Webster clay loam, 0 to 2 percent slopes	95	Predominantly Hydric
L163A	Okoboji silty clay loam, 0 to 1 percent slopes	100	Hydric
L201A	Normania loam, 1 to 3 percent slopes	5	Predominantly Non-Hydric

Antecedent Climate Conditions: Historic climate data and WETS data were obtained from the Minnesota Climatology Working Group preceding the November 6, 2024 site visit, which fell within the dry precipitation range. Records of the precipitation can be found in **Appendix D**.

B. On-Site Determination

A Level 2 field investigation was conducted by Tim Paquin (CMWP No.1452) of WSB on November 6, 2024 within the project area. No deviation or omissions were undertaken as part of this investigation.

The project area was delineated using the routine methodology described in the *Corps of Engineers Wetlands Delineation Manual* (US Army Corps of Engineers 1987), with additional guidance provided by the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Regional Supplement (Version 2.0)*. Wetlands were classified according to the methodologies set forth in *Wetlands of the United States (Circular 39),* USFWS Shaw and Fredine 1971; *Classification of Wetlands and Deepwater Habitats of the United States*, Cowardin 1979; and *Wetland Plants and Plant Communities of Minnesota and Wisconsin, 2nd ed.*, Eggers and Reed 1997. The wetland types in this report are classified by the Circular 39, Cowardin, and Eggers and Reed Classifications.

Soil types were researched prior to the on-site investigation with the assistance of the *Soil Survey of Redwood County* from the National Resources Conservation Service. All soil test pits were excavated to a minimum depth of 24 inches unless otherwise noted. Soil colors were described on-site per the *Munsell Soil Color Charts* (2009 Revised Edition) from the test pits in and adjacent to the wetlands. Hydric soils were identified using the current technical criteria for hydric soils developed by the NRCS in 2024 (Version 9.0).

The quadrant sampling method was employed for all sample points unless otherwise noted. Vegetation was measured as actual areal cover and may exceed 100 percent of total area due to overlap. Grasses and herbaceous vegetative cover were measured within a circular plot of a 5-foot-radius, all woody shrubs and saplings were measured within a circular plot with a 15-foot-radius, and trees and woody vines were measured in a 30-foot-radius circular plot. Regional plant identification resources were utilized in the identification of plant species, with indicator status taken from the *2022 National Wetland Plant List* (US Army Corps of Engineers 2022). Plant species dominance was estimated based on the absolute percent coverage for herbaceous, shrub-sapling, and tree strata if present. In addition to the use of indicators of hydrology, hydric soils, and the presence of hydrophytic vegetation, other evidence such as topographic breaks and watershed characteristics were used to determine the wetland boundary.

Midwest Regional Supplement Routine Wetland Delineation data forms were used to record vegetation, hydrology, and soil characteristics at sample points in and adjacent to the wetlands (**Appendix B**). Approximate sampling points, using sub-meter GPS, are shown on **Figure 6, Appendix B**. Pictures of each wetland can be found in **Appendix C**.

SECTION III

III. Results and Wetland Information

The wetland delineation data forms (**Appendix B**) and photos (**Appendix C**) are attached. A summary of the investigation is below.

A. Area 1

Circular 39: N/A
Cowardin: N/A
Eggers and Reed Field Classification: N/A - Upland
Soil mapping unit: Okoboji silty clay loam, 0 to 1 percent slopes (L163A)
Wetland Size (within Project Area): N/A

Area 1 was identified during the Leve 1 offsite review and is positioned in a depression area centrally located within the review area. Area 1 has been historically disturbed by agricultural land use. The location of the Area 1 sample point is outlined in **Figure 6, Appendix B**. Surface water is conveyed downhill to the west. Area 1 consisted of a tilled agricultural field with no vegetation present. Hydric soil indicator included Thick Dark Surface (A12). Wetland Hydrology indicators included Saturation Visible on Aerial Imagery (C9). Area 1 was determined to be upland due to the lack of hydrology indicators. Geomorphic Position (D2) hydrology indicator was not applied due to two functioning drain tiles within the depression area.

B. Additional Aquatic Resources

No additional aquatic resources, such as streams or ditches, were observed.

C. Additional Sampled Areas

One additional sample point was investigated in the review area. Sample point 1 (SP01) was investigated in the northwest portion of the review area in a low area that is mapped as hydric soil. Dominate vegetation at SP01 includes barnyard grass (*Echinochloa crus-galli*). Hydric soil indicator included Thick Dark Surface (A12). Hydrology indicator FAC-Neutral Test (D5) was present. SP01 was determined to be upland due to the lack of hydrology. Geomorphic Position (D2) hydrology indicator was not applied due to a functioning drain tile within the depression area.

SECTION IV

IV. Summary and Closing Statements

The two (2) investigated areas using the Level 2 method were determined to be upland.

The wetland delineation report was completed by Tim Paquin of WSB. This delineation report is being submitted as a request for wetland boundary/type and No-Loss approval from Redwood County Soil and Water Conservation District, the Local Government Unit (LGU) and the US Army Corps of Engineers.

V. References

The following sources of information were reviewed to assist in performing the wetland delineation.

Literature Sources

Board of Water and Soil Resources. 2009. Wetland Conservation Act Rules, Chapter 8420. Print Communication Division, St. Paul.

Cowardin L.M. USFWS. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Government Printing Office, Carver, D.C. 131 pp.

Eggers, S.D. and D.M. Reed. 2014. Wetland Plants and Plant Communities of Minnesota & Wisconsin, Second Edition. United States Army Corps of Engineers, St. Paul District. 263 pp.

Fredine, C.G. and S.P. Shaw. 1956. Wetlands of the United States (Circular 39). United States Government Printing Office, Carver, D.C.

Kollmorgen Instruments Corp. 2009 Revised Edition. Munsell Soil Color Charts.

United States Army Corps of Engineers. Minnesota 2022 State Wetland Plant List- National Wetland Plant List. 2022 Ratings. Cold Regions Research and Engineering Laboratory (CRREL).

United States Army Corps of Engineers. August 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Nobel. ERDC/EL TR-10-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

United States Army Corps of Engineers- St. Paul District and Minnesota Board of Water & Soil Resources. March 4, 2015. Guidance for Submittal of Delineation Reports to the St. Paul District Army Corps of Engineers and Wetland Conservation Act Local Governmental Units in Minnesota, Version 2.0.

United States Army Corps of Engineers. 1987 2014. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. Version 2.0 Waterways Experiment Station.

United States Department of Agriculture, Natural Resources Conservation Service. 2024. Field Indicators of Hydric Soils in the United States, Version 9.0.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Webs Soil Survey, Minnesota. Available online at http://websoilsurvey.nrcs.usda.gov/. Accessed 10/1/2024.

APPENDIX

APPENDIX A

Figure 1: Project Location
Figure 2: Topography
Figure 3: DNR Public Waters Inventory
Figure 4: National Wetlands Inventory
Figure 5: County Soil Survey

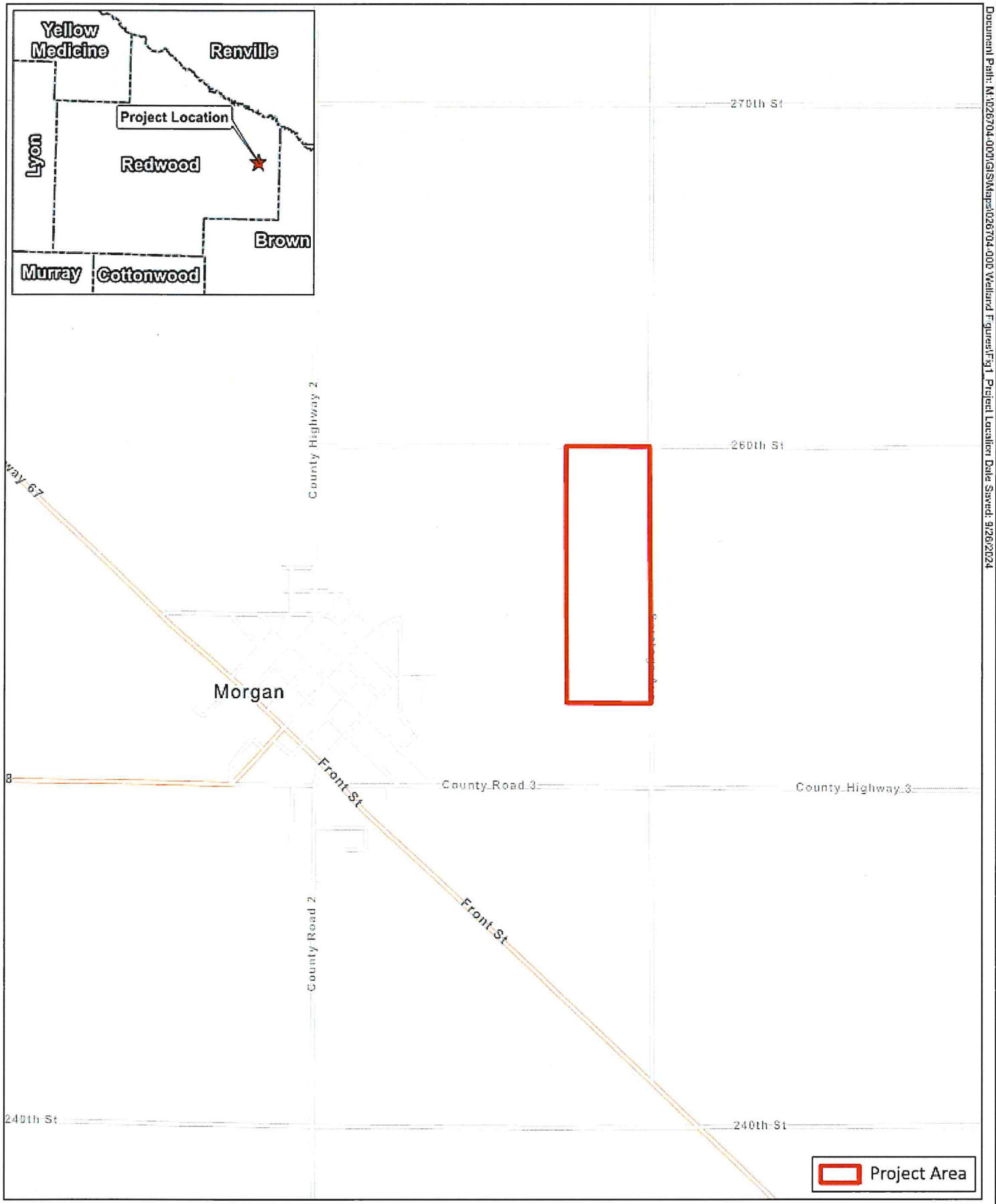


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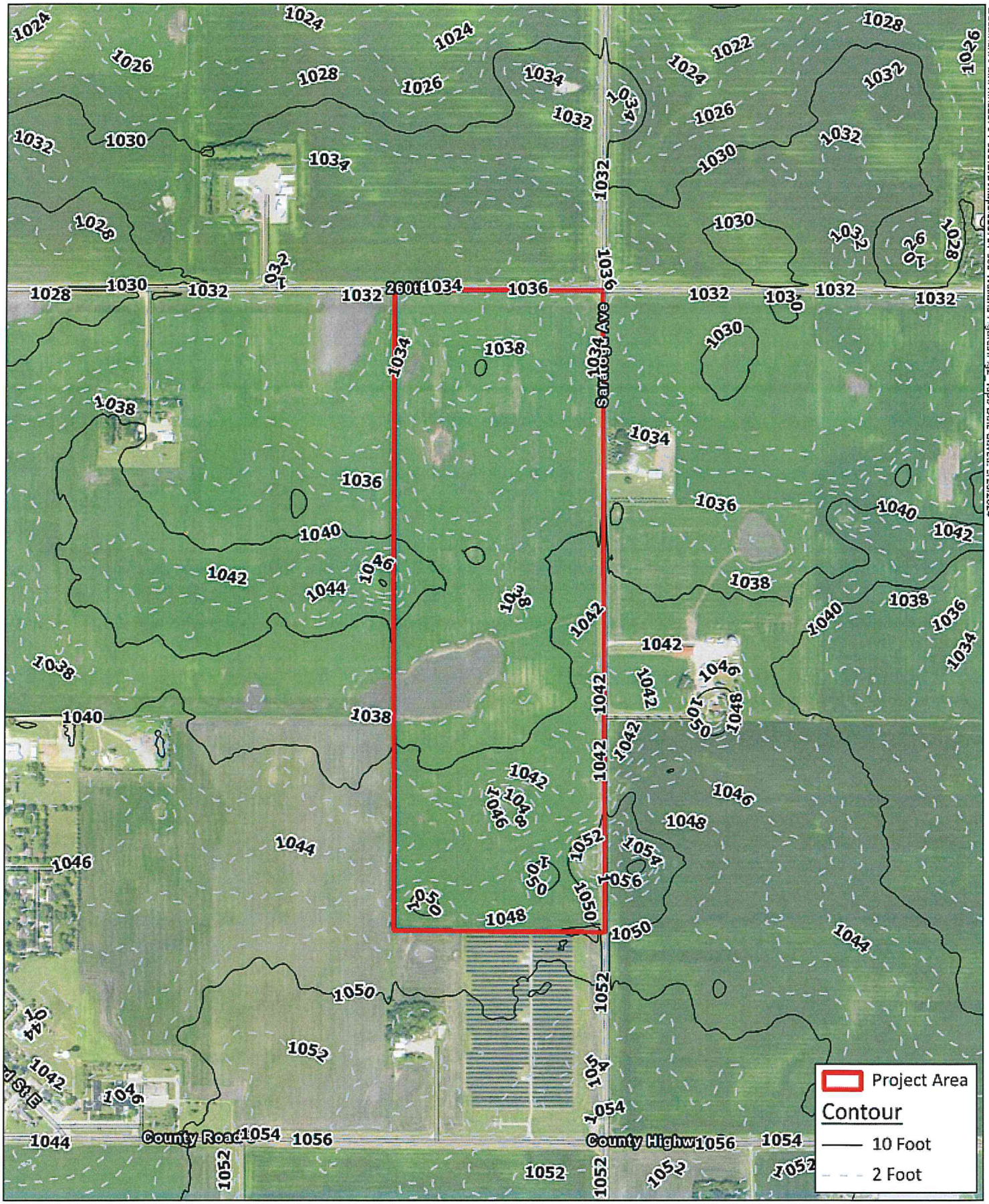
Figure 1 - Project Location

RedwoodSun
Morgan, MN

N

0 2,000 Feet

1 inch = 2,000 feet



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SunShare COMMUNITY SOLAR

Figure 2 - Topography

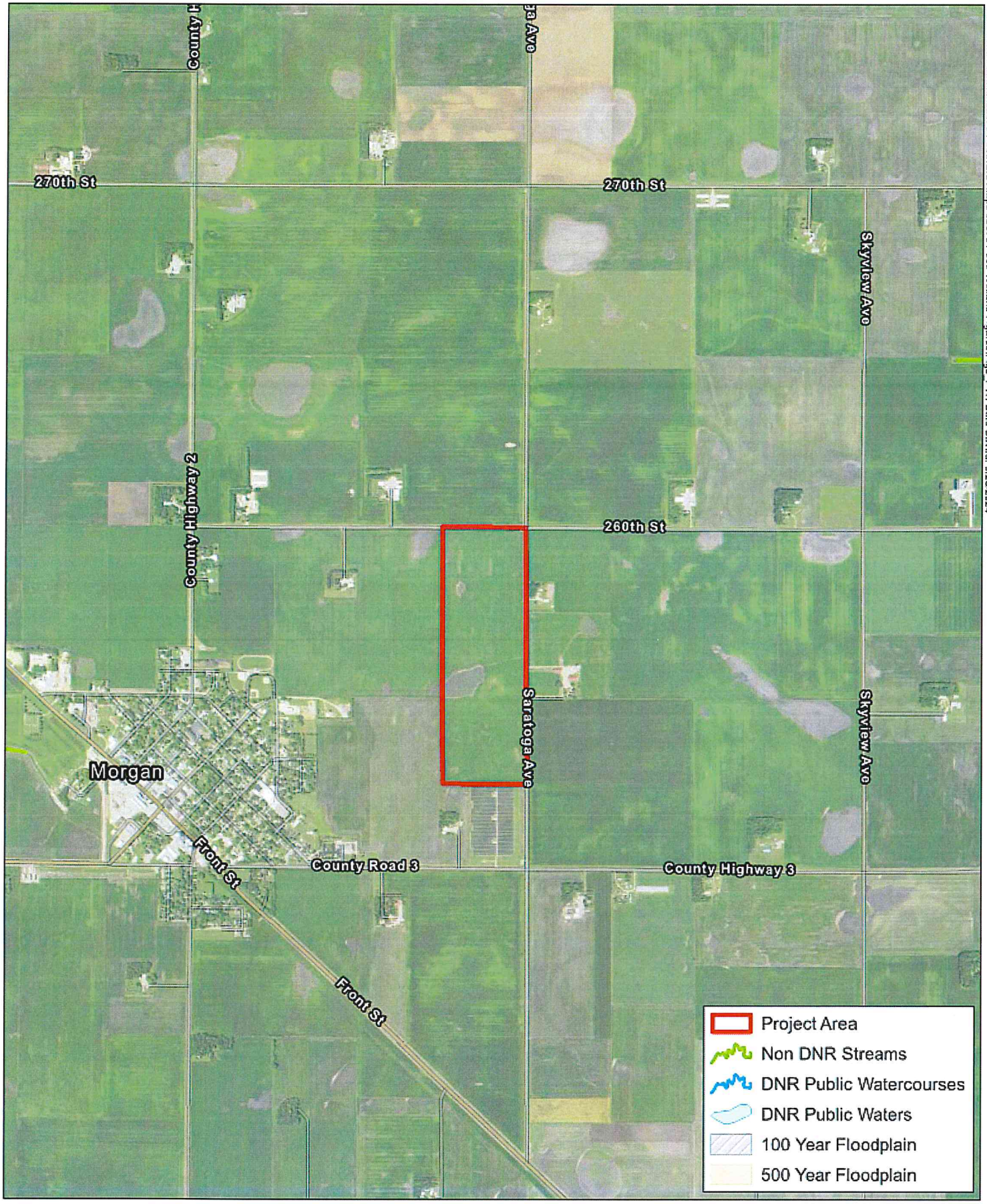
RedwoodSun
Morgan, MN

N

0 800 Feet

1 inch = 800 feet

wsb



SunShare COMMUNITY SOLAR

Figure 3 - DNR Public Waters

RedwoodSun
Morgan, MN

N

0 2,000 Feet

1 inch = 2,000 feet

wsb

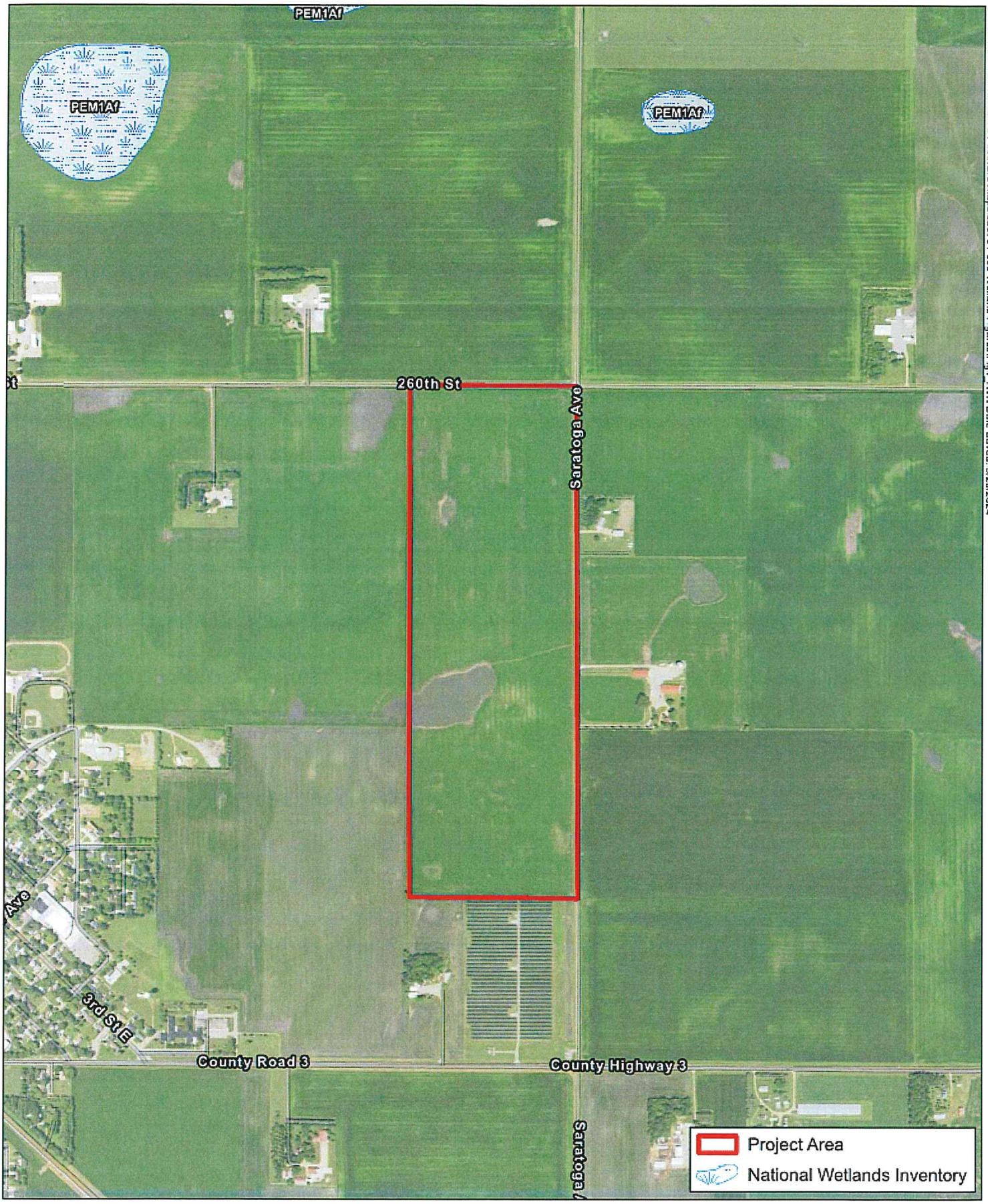


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Figure 4 - National Wetlands Inventory

SunShare COMMUNITY SOLAR

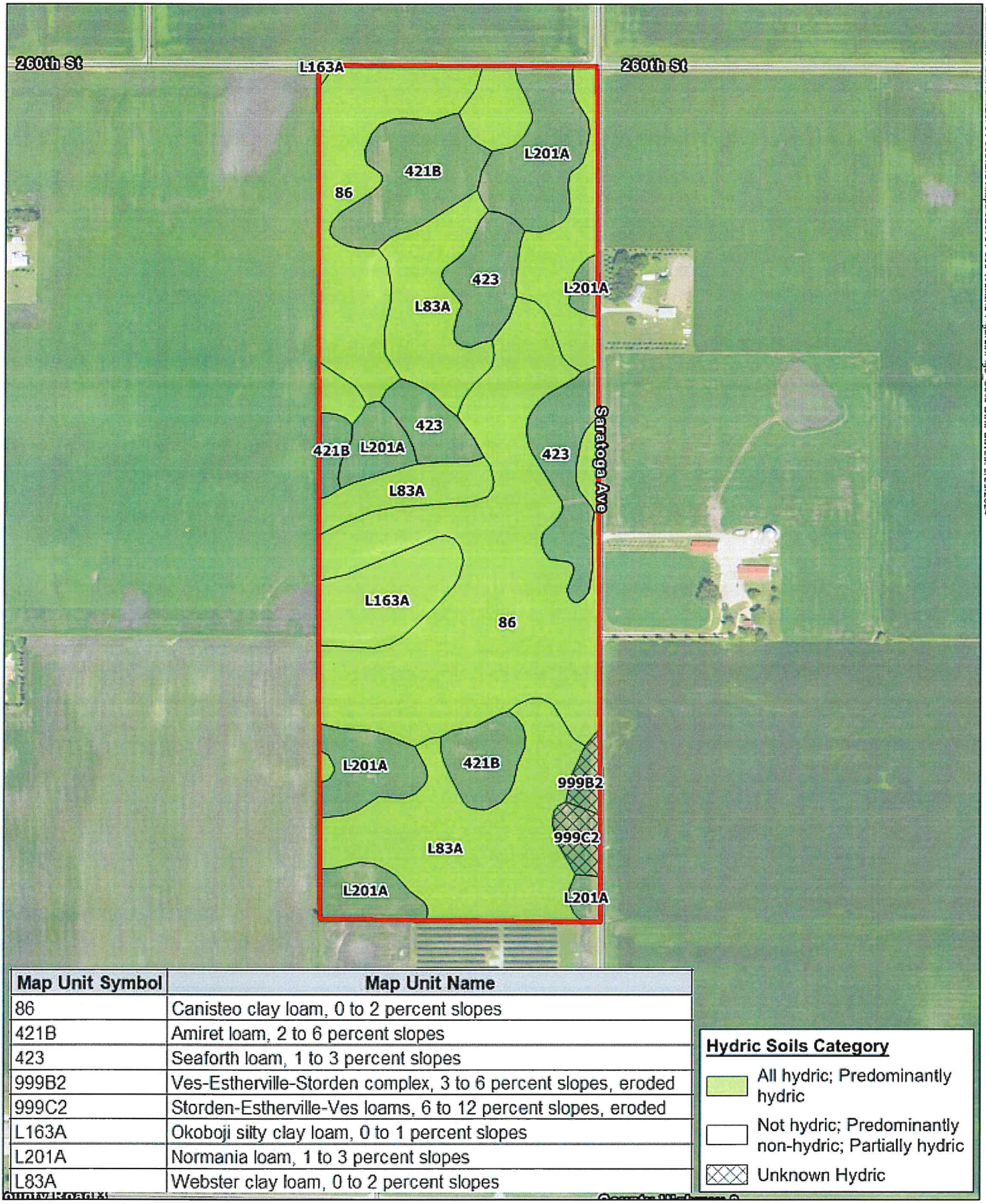
RedwoodSun
Morgan, MN

N

0 1,000 Feet

1 inch = 1,000 feet

wsb



Map Unit Symbol	Map Unit Name
86	Canisteo clay loam, 0 to 2 percent slopes
421B	Amiret loam, 2 to 6 percent slopes
423	Seaforth loam, 1 to 3 percent slopes
999B2	Ves-Estherville-Storden complex, 3 to 6 percent slopes, eroded
999C2	Storden-Estherville-Ves loams, 6 to 12 percent slopes, eroded
L163A	Okoboji silty clay loam, 0 to 1 percent slopes
L201A	Normania loam, 1 to 3 percent slopes
L83A	Webster clay loam, 0 to 2 percent slopes

Hydric Soils Category

- All hydric; Predominantly hydric
- Not hydric; Predominantly non-hydric; Partially hydric
- Unknown Hydric

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SunShare COMMUNITY SOLAR

Figure 5 - County Soil Survey

RedwoodSun
Morgan, MN

N

0 600 Feet

1 inch = 600 feet

wsb

APPENDIX B

Figure 6: Wetland Delineation
Wetland Determination Data Forms

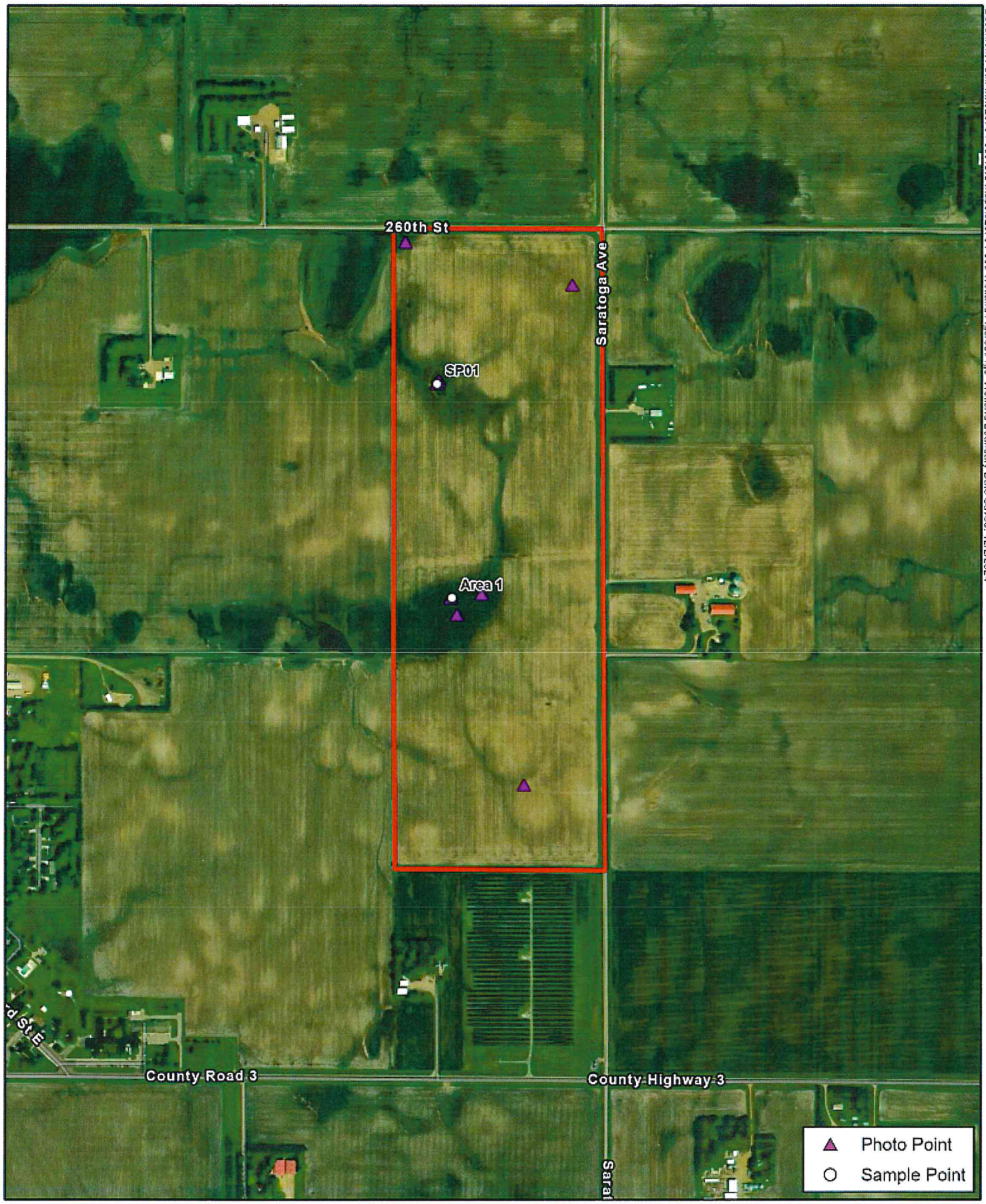

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Figure 6 - Wetland Delineation

SunShare COMMUNITY SOLAR

RedwoodSun
Morgan, MN

N

0 800 Feet

1 inch = 800 feet

wsb

U.S. Army Corps of Engineers **WETLAND DETERMINATION DATA SHEET – Midwest Region** See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R	*OMB Control #: 0710-0024, Exp:11/30/2024* *Requirement Control Symbol EXEMPT:* *(Authority: AR 335-15, paragraph 5-2a)*

Project/Site: RedwoodSun Solar City/County: Redwood County Sampling Date: 11/06/2024

Applicant/Owner: SunShare LLC. State: MN Sampling Point: Area 1

Investigator(s): Tim Paquin Section, Township, Range: Sec. 15, T111N, R34W

Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: 44.420756 Long: -94.910065 Datum: WGS 84

Soil Map Unit Name: Okoboji silty clay loam, 0 to 1 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
APT indicates drier than normal conditions. Vegetation and soil have been disturbed in past years from agricultural land use. Hydrology is altered due to two functioning drain tiles within the depression. The field is currently harvested and tilled, which was planted with soybeans.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	____ =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ =Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

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

SOIL

Sampling Point: Area 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2/1	100					Loamy/Clayey	
18-24	10YR 3/1	100					Loamy/Clayey	
24-30	10YR 5/1	98	10YR 4/6	2	C	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

Two functioning drain tiles within depression.

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Midwest Region
See ERDC/EL TR-10-16; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp:11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: RedwoodSun Solar | City/County: Redwood County | Sampling Date: 11/06/2024
Applicant/Owner: SunShare LLC. | State: MN | Sampling Point: SP01
Investigator(s): Tim Paquin | Section, Township, Range: Sec. 15, T111N, R34W
Landform (hillside, terrace, etc.): Depression | Local relief (concave, convex, none): Concave
Slope (%): 0-2 | Lat: 44.424406 | Long: -94.910415 | Datum: WGS 84
Soil Map Unit Name: Canisteo clay loam, 0 to 2 percent slopes | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes ____ No X
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
APT indicates drier than normal conditons. Vegetation and soil have been disturbed in past years from agricultural land use. Hydrology is altered due to a functioning drain tile within the depression. Field is currently harvested that was planted with corn.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: ____)			
1. *Echinochloa crus-galli*	5	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	5 (A)		10 (B)
Prevalence Index = B/A =			2.00

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
X 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

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

SOIL

Sampling Point: SP01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 2/1	100					Loamy/Clayey	
14-22	10YR 3/1	100					Loamy/Clayey	
22-30	10YR 5/1	97	10YR 4/6	3	C	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

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

Remarks:

Functioning drain tile present.

APPENDIX C

Wetland Photos

RedwoodSun Solar

Photos

11/6/2024

	**Photo 1: Sample Point 1** Direction Photo is Taken: North Photo Location: From sample point 1
	**Photo 2: Sample Point 1** Direction Photo is Taken: South Photo Location: From sample point 1
	**Photo 3: Area 1** Direction Photo is Taken: East Photo Location: From offsite Area 1

	**Photo 4: Area 1** Direction Photo is Taken: South Photo Location: From offsite Area 1
	**Photo 5: Tile Drain (1)** Direction Photo is Taken: Ground Photo Location: Within offsite Area 1
	**Photo 6: Tile Drain (2)** Direction Photo is Taken: South Photo Location: Within offsite Area 1

	**Photo 7: Drain Tile (3)** Direction Photo is Taken: Ground Photo Location: Near sample point 1
	**Photo 8: Upland** Direction Photo is Taken: West Photo Location: Northwest corner of review area near 260th St.
	**Photo 9: Upland** Direction Photo is Taken: West Photo Location: Northeast corner of review area off Saratoga Ave.

	**Photo 4: Upland** Direction Photo is Taken: North Photo Location: Southern section of review area

APPENDIX D

Antecedent Precipitation Data

NRCS method - Rainfall Documentation Worksheet Hydrology Tools for Wetland Determination
NRCS Engineering Field Handbook Chapter 19

Date	11/25/2024	**Landowner/Project**	RedwoodSun
Weather Station		**State**	Minnesota
County	Redwood	**Growing Season**	2024
Photo/obs Date	11/6/2024	**Soil Name**	N/A

shaded cells are locked or calculated

Long-term rainfall statistics (from WETS table or State Climatology Office)

	Month	30% chance <	30% chance >	Precip	Condition Dry, Wet, Normal	Condition Value	Month Weight Value	Product of Previous 2 Columns
1st Prior Month*	October	1.08	3.05	0.21	D	1	3	3
2nd Prior Month*	September	2.01	3.41	0.00	D	1	2	2
3rd Prior Month*	August	2.83	4.53	3.06	N	2	1	2
							Sum	7

*compared to photo/observation date

Note: If sum is	
6 - 9	prior period has been drier than normal
10 - 14	prior period has been normal
15 - 18	prior period has been wetter than normal

Condition value:
Dry =1
Normal =2
Wet =3

Conclusions: **prior period has been drier than normal**

Appendix D: Stormwater Management Analysis

wsb

Memorandum

To: Redwood County, Minnesota

From: Earth Evans, PE, WSB
Treasure Agbonkhese, EIT, WSB

Date: December 10, 2024

Re: RedwoodSun Solar Project Stormwater Management Analysis
WSB Project No. 026704-000

Project Summary

RedwoodSun Solar, LLC is proposing to develop a 5-megawatt solar project in Redwood County, Minnesota. This project, referred to as RedwoodSun Solar, is located in the northwest intersection of County Road 3 and Saratoga Ave, east of the City of Morgan, Minnesota (***Figure 1***).

Site Characteristics

The RedwoodSun Solar project site consists of approximately 120.9 total acres of cultivated crop and existing impervious area (***Figure 5***) based on the 2021 land use data.[1] The proposed solar panel area is 24.9 acres, and the estimated disturbed area is 35.9 acres (***Figure 6***). Hydrologic Soil Group (HSG) D is the soil type on 82.6 acres while HSG B and C are the soil types on 12.6 and 25.7 acres of the site (***Figure 4***).[2]

The RedwoodSun Solar project site is completely outside of the 100-year floodplain but is within a 500-year floodplain boundary, classified as FEMA flood hazard area Zone X (i.e., an area of Minimal Flood Hazard) per FEMA FIRM Panel 27127C0375C for Redwood County, Minnesota (***Figure 3A***).

There are no National Wetland Inventory (NWI) wetlands found within the existing RedwoodSun Solar project site. There are NWI wetland features adjacent to the site referred to as a "Freshwater Emergent Wetland" according to Minnesota Wetland Data. The freshwater emergent wetlands are located 2,062 feet northeast of the site at the closest. There is one area noted in the Desktop Wetland Delineation, 4.0 acres in area, in the western portion of the site (***Figure 3B***) classified as a non-wetland. The site also contains an existing drain tile that effectively drain the depression (***Figure 3B***). There are no known restrictions for this existing draintile. The proposed solar panels arrays avoid impacts to the NWI areas adjacent to the site by keeping the proposed solar panel area within the site's constraints limits.

701 XENIA AVENUE S | SUITE 300 | MINNEAPOLIS, MN | 55416 | 763.541.4800 | WSBENG.COM

[1] National Land Cover Database. United States Geological Survey.
https://www.usgs.gov/centers/eros/science/national-land-cover-database
[2] Web Soil Survey. United States Department of Agriculture.
http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

Summary of Findings

This project will be taking place in two phases - first a 1 MW development phase, then a 4 MW expansion phase. For the purposes of this report and the corresponding figures, the cumulative 5 MW design was used to determine the proposed site plan and the proposed peak flow and runoff results.

The Existing Conditions of the RedwoodSun Solar project site consists of pervious surfaces with moderate peak flows and runoff volumes due to tighter soils that are not conducive to infiltration. The proposed RedwoodSun Solar project site between both phases will take place on the central portion of the site and will result in approximately 1.1 acres (46,459 sq ft) of new impervious surface consisting of 20-foot-wide access/maintenance roads and other project components within the southern edge of the site.

The proposed improvements will include replacing the existing pervious area within the proposed solar panel area with native short growth perennial pollinator mixes of grasses and flowers underneath the panels. Converting this existing pervious and impervious area with the proposed short growth pollinators will off-set the addition of the proposed impervious coverages and result in overall lower peak flow rates and runoff volumes from the project site. The proposed PV array avoids impacts to the offsite freshwater emergent wetlands and desktop wetlands (***Figure 6***).

Per Minnesota Pollution Control Agency (MPCA) guidelines, RedwoodSun is required to determine the required water quality volume for the proposed solar panels. The MPCA's methodology and guidelines were used to determine the water quality volume and can be found in ***Tables 8-10***.

HydroCAD Model - Hydrologic Analysis

Using the Curve Number method, a hydrologic analysis was conducted at the RedwoodSun Solar project site to determine the Peak Flow Rates and Runoff Volume for both Existing and Proposed Conditions. The analysis was developed using a HydroCAD model (version 10).

The rainfall distribution was based on the MSE distribution 24-hr storm type coupled with NOAA Atlas 14 rainfall depths data for: 24-hour 1-year, 2-year, 10-year, and 100-year storm at the RedwoodSun Solar project site per the Redwood County Zoning Ordinance (***Table 1***).

Table 1: Redwood County Minnesota Atlas 14 Rainfall Depth

Storm	Depth (in)
1-year	2.35
2-year	2.69
10-year	3.91
100-year	6.46

Site areas and composite curve numbers were determined using a GIS platform (ArcGIS Pro). An area weighted average was used to calculate the composite curve number.

Existing Conditions

The existing conditions soil cover consists of the following:

- 81.2 acres of cultivated HSG D cropland;
- 12.1 acres of Cultivated HSG B cropland;
- 25.2 acres of Cultivated HSG B cropland, and;
- 2.4 acres of existing impervious area (***Figure 5)***.

The site was delineated into six separate drainage/tributary areas that include offsite areas that contribute flow into the site (***Figure 3B***). Drainage area delineations were based off existing contours, LiDAR (2014), existing roads, and existing culverts. The components of the existing culvert was not surveyed and was obtained through LiDAR. Drainage area 1 is the main drainage area that enclose much of the RedwoodSun Solar project site and the proposed development.

Drainage will run from the high points south of the site and will drain to the northeast and northwest. Because Drainage area 1 contains all of the RedwoodSun Solar project site, the peak flows and runoff volumes leaving these drainage areas were assessed separately to properly determine the changes from Existing to Proposed Conditions.

Similarly, because Drainage areas 1 and 2 enclose all of the proposed solar panel area that will be revegetated from cultivated cropland to the proposed vegetation, there was a reduction in curve number from Existing to Proposed Conditions. Because the remaining drainage areas did not enclose the solar panel area, there was no change in curve number from Existing to Proposed Conditions. Using the NRCS guidelines, the curve numbers for each drainage area summarized in **Table 2** were used to define the Existing Conditions.

The time of concentration was calculated using the Sheet Flow method with a P2 (2-year, 24-hr rainfall) value and the Shallow Concentrated Flow method with a velocity factor. The hydraulic data for the site's Existing Conditions are summarized in (***Table 2***). The time of concentration increased for Drainage area 1 from Existing to Proposed Conditions due to the change in land cover from cultivated crop to the proposed vegetation in the flow path. The hydraulic data for the site's Existing Conditions are summarized in (***Table 2***).

Table 2: Existing Project Site Characteristics

Drainage Area	Drainage Area (ac)	EX Impervious Area (ac)	Composite Curve Number	Time of Concentration (minutes)
DA-1	197.4	3.8	87	94.1
DA-2	1.2	0.3	89	12.3
DA-3	0.7	0.2	91	12.0
DA-4	33.6	0.0	86	45.1
DA-5	9.8	0.8	88	33.5
DA-6	9.6	0.6	87	32.5
Total	252.3	5.7	90	N/A

Proposed Conditions

The Proposed Conditions model was created by including proposed impervious surfaces such as access roads and other project components. Additionally, the buildable area under the panels will be revegetated with a specified native low-growth pollinator grass seed mix as the Best Management Practice (BMP) for this project. This BMP will act as a method to reduce Peak Flows and Runoff Volumes. A water quality treatment BMP will be provided and achieved through a ditch graded on either side of the proposed road with half a foot tall ditch checks along it.

Because such a small addition of impervious area is being constructed for this site and the disturbed area will be revegetated from bare untilled land, there was a decrease in the composite curve number for Drainage areas 1 and 2 which will result in lower runoff potential in proposed conditions. Peak flows and runoff leaving the large low point storage area within Drainage Area 1 was assessed for Drainage Area 1's results. The Proposed Conditions were modeled to generate a conservative curve number using a surface description of a non-grazed meadow. The hydraulic data for the site's Proposed Conditions are summarized in (***Table 3***).

Table 3: Proposed Project Site Characteristics

Drainage Area	Drainage Area (ac)	EX Impervious Area (ac)	Total Impervious Area (ac)	Composite Curve Number	Time of Concentration (minutes)
DA-1	197.4	3.8	4.9	85	118.9
DA-2	1.2	0.3	0.3	88	12.3
DA-3	0.7	0.2	0.2	91	12.0
DA-4	33.6	0.0	0.0	86	45.1
DA-5	9.8	0.8	0.8	88	33.5
DA-6	9.6	0.6	0.6	87	32.5
Total	252.3	5.7	6.8	89	N/A

Hydrologic Runoff Analysis Results

Peak flow rates for the 1-year, 2-year, 10-year, and 100-year storms were calculated at the RedwoodSun Solar project site based on the site area.

Table 4: 1-year Site Flows

Destination	Peak Flow (cfs)		Runoff Volume (af)	
	Existing	Proposed	Existing	Proposed
Leaving DA 1	0.9	0.0	0.6	0.0
Total	53.6	53.6	6.0	5.3

Table 5: 2-year Site Flows

Destination	Peak Flow (cfs)		Runoff Volume (af)	
	Existing	Proposed	Existing	Proposed
Leaving DA 1	7.1	3.6	5.2	3.0
Total	66.9	66.9	11.8	9.5

Table 6: 10-year Site Flows

Destination	Peak Flow (cfs)		Runoff Volume (af)	
	Existing	Proposed	Existing	Proposed
Leaving DA 1	58.8	46.3	23.1	20.0
Total	117.0	117.0	34.5	31.6

Table 7: 100-year Site Flows

Destination	Peak Flow (cfs)		Runoff Volume (af)	
	Existing	Proposed	Existing	Proposed
Leaving DA 1	203.7	176.8	62.5	58.8
Total	225.2	225.2	85.0	81.3

The limited added impervious surfaces in combination with revegetation of the disturbed area with a specified low-growth native seed mix as a stormwater management BMP would result in a net reduction in peak flow rates and runoff volumes. As a result, no further specific measures to limit the peak flow rates and runoff volumes to Existing Conditions levels will need to be developed for the refined project design.

No additional mitigating stormwater management BMPs based on the Redwood County Zoning Ordinance will be needed aside from erosion control BMP's that will be implemented as part of construction and as shown on the proposed erosion control plans and project Stormwater Pollution Prevention Plan (SWPPP) for future submittals.

Minnesota Pollution Control Agency Solar Calculator Results[3]

Following the methodology and guidelines of the Minnesota Pollution Control Agency's Solar Credit Calculator, the quantity of stormwater quality volume required to be retained at the RedwoodSun Solar project site was determined. The National Pollutant Discharge Elimination System (NPDES) construction stormwater permit (CGP) requires stormwater management practices be designed to treat the water quality volume based on the number of impervious surfaces being constructed.

[3] Stormwater management for solar projects and determining compliance with the NPDES construction stormwater permit. Minnesota Pollution Control Agency. https://stormwater.pca.state.mn.us/index.php?title=Stormwater_management_for_solar_projects_and_determining_compliance_with_the_NPDES_construction_stormwater_permit

Because the standard calculation for the water quality volume, that being 1-inch times the area of the impervious surface, doesn't recognize the vegetated surface left in place under the panels, this calculation was done using the disconnected impervious credit.

The following assumptions play a role and were made to facilitate this calculation: the angle of the solar panel from the horizontal being a constant 45-degree angle for each solar panel, a width of vegetative access of 16.6 feet based on previous solar calculations, a total number of solar panels of 4,704, a runoff depth from each solar panel of 22.5 inches, and a performance goal of 1 inch per the MPCA.

Using the known dimensions and the calculated average length of each solar panel would yield a pervious area of 152.8 sq feet per solar panel, an impervious area of 23.3 sq feet per panel, and an average annual runoff depth of 7.2 inches based on the conservative use of HSG D as the main soil group on the site. Curve Number, however, does not play a role in this calculation regardless of this site's reduction in Curve Number.

Table 8: Solar Calculator Summary: Pre-Disconnection

Runoff From Impervious (ft3)	Runoff From Pervious (ft3)	Total Runoff (ft3)
42.0	101.0	143.0

Table 9: Solar Calculator Summary: Post-Disconnection

Total Runoff (ft3)	Total Runoff Reduced (ft3)	Runoff From Pervious (ft3)	Runoff From Impervious (ft3)	Adjusted Impervious (ft2)
119.0	24.0	101.0	18.0	9.7

Table 10: Solar Calculator Summary: Performance Goal

Performance Goal (ft3)	BMP Volume Credit (ft3)	Performance Goal Achieved (%)	Remaining Water Quality Volume to be Treated Per Panel (ft3)	Total Water Quality Volume to be Treated (ft3)
1.9	1.1	56.7	0.8	7,682

The required volume for each panel is 0.8 cubic feet. The required water quality volume for all 4,704 solar panels is 3,810 cubic feet. The new impervious area (not including the panel area) is 1.1 acres. The required volume for the new imperious (not including the panels) is 3,872 cubic feet. As a result, the total required volume of water to be treated is 7,682 cubic feet. This treatment can be achieved through a ditch graded on either side of the proposed road with half a foot tall ditch checks along it as the water quality BMP.

OTHER CONSIDERATIONS:

Scour and Erosion Potential

The potential for scour is a function of localized topography and flow patterns. Due to moderate slopes, scour potential is unlikely. The erosion control plan will be developed to include potential BMPs such as silt fencing, straw waddles and other BMPs for erosion control during construction activities for the proposed conditions.

Redwood County Requirements[4]

Before beginning any development project that disturbs more than one (1) acre of land, the developer of land shall obtain a Land Use Permit from the Zoning Administration. Since this project hydrologically disturbs more one (1) acre of land, this project shall file an application for the Redwood County Land Use Permit.

Regarding site runoff control requirements, Redwood County requires that developments must minimize the extent of disturbed areas, runoff velocities, erosion potential, and reduce and delay runoff volumes. Peak rates of discharge and runoff volumes indicated by the post-development analysis are less than the peak rates of discharge indicated by the Existing Conditions as shown in ***Tables 4-7***, meeting the requirements to minimize runoff velocities, erosion potential, and runoff volumes.

Redwood County requires runoff control where one or more off of the following runoff volume reduction hierarchy is utilized: whenever possible:

- Existing natural drainageways, wetlands and vegetated soil surfaces are used to convey, store, filter and retain stormwater runoff before discharge to public waters;
- Disturbed areas shall be stabilized; and
- Preference shall be given to designs using surface drainage, vegetation and infiltration.

This project preserves natural features and existing natural streams, channels, and drainageways by utilizing a 50-foot floodplain/wetland buffer zone for all nearby floodplain and wetland features. This project's proposed BMP of revegetation of the buildable area with a short-growth perennial pollinator mix of grasses and flowers as natural landscaping further meets the runoff control requirements.

The following additional requirements apply to this project:

- The impervious surface coverage of lots does not exceed twenty-five (25) percent of the lot area;
- This project resulted in the creation of one (1) or more acres of impervious surface and follows the MPCA Stormwater Solar Calculator Standard as a result;
- The proposed temporary and proposed soil erosion and sediment control practices that will be outlined in this project's SWPPP;
- A schedule of construction activities including, but not limited to, clearing and grading, stockpiling, responsible persons for inspection and maintenance of all soil erosion, sediment control practices outlined in this project's SWPPP, and any structural control measures utilized when that will be outlined in this project's SWPPP; and
- The long-term maintenance of any storm water management practices shall be outlined in this project's SWPPP.

---

[4] Redwood County, Minnesota. Redwood Couty Zoning Ordinance. https://redwoodcounty-mn.us/wp-content/uploads/2019/03/Title-15-Land-Usage.pdf

Permitting[5]

An NPDES Permit application and Storm Water Pollution Prevention Plan (SWPPP) are typically needed if a site results in more than one acre of soil disturbance. The proposed development and grading operations will likely result in more than one acre of soil disturbance thus triggering the need for an NPDES permit to be submitted to the MPCA which administers the NPDES permit for the State of Minnesota.

This project will result in one (1) or more acres of land disturbed, requiring an NPDES Stormwater Permit for Construction Activity and A Land Use Permit with Redwood County. To fulfill the requirements of this Land Use Permit, the project shall provide erosion and sediment control plan measures in a future SWPPP submittal.

Floodplain and Wetland Considerations

As stated above, there are no National Wetland Inventory (NWI) wetlands found within the existing RedwoodSun Solar project site. There are, however, NWI wetland features adjacent to the site referred to as a "Freshwater Emergent Wetland" according to Minnesota Wetland Data located 2,062 feet northeast of the site at the closest ***(Figure 3B).*** There are a few areas noted in the Desktop Wetland Delineations, 4.0 acres in area, in the western portion of the site. This project does not propose solar panel arrays near the offsite NWI wetlands or the onsite Desktop wetlands, avoiding impacts.

No solar arrays are proposed within FEMA Zone A floodplain zone, or the floodplain features nor is the site near or within FEMA Zone A or the floodplain features.

Attachments:

Existing

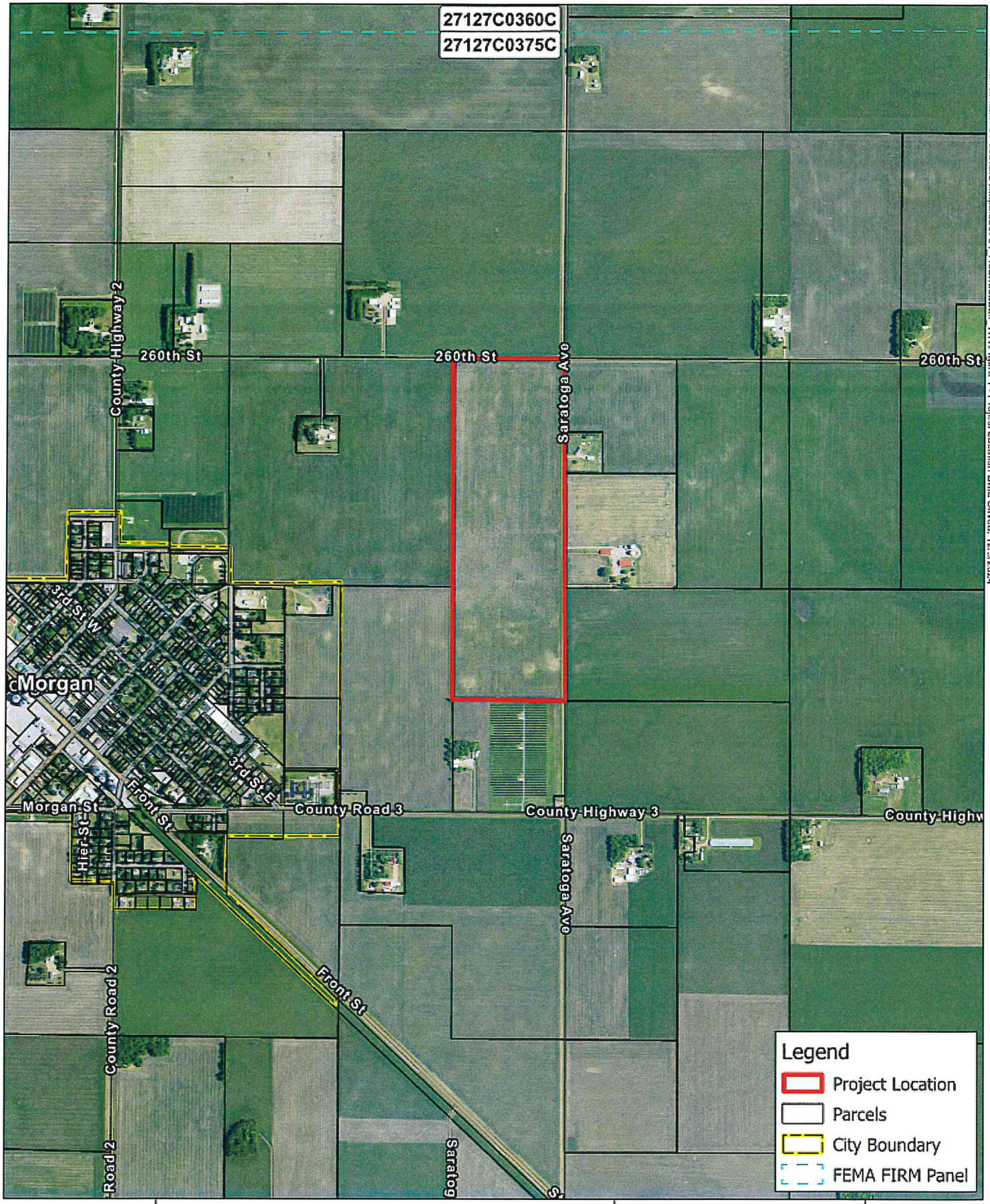
- Figure 1 - Project Location
- Figure 2 - Property Details
- Figure 3A - FEMA Floodplain Map
- Figure 3B – Existing Conditions Drainage Map
- Figure 4 - Hydrologic Soils Map
- Figure 5 - Land Cover Map

Proposed

- Figure 6 – Proposed Site Plan

FEMA FIRM Panel 27127C0375C; a FEMA FIRM map for this area of the county was not printed. An image of the area with the panel number was provided instead.

[5] Minnesota Pollution Control Agency. NPDES Permit for Construction Activities. https://www.pca.state.mn.us/business-with-us/construction-stormwater



Document Path: M:\226704-000\GIS\Maps\226704_RedwoodSun_WR\Figure 1 - Project Location Date Saved: 12/9/2024

Figure 1 - Project Location

RedwoodSun Solar Development
Redwood County, MN

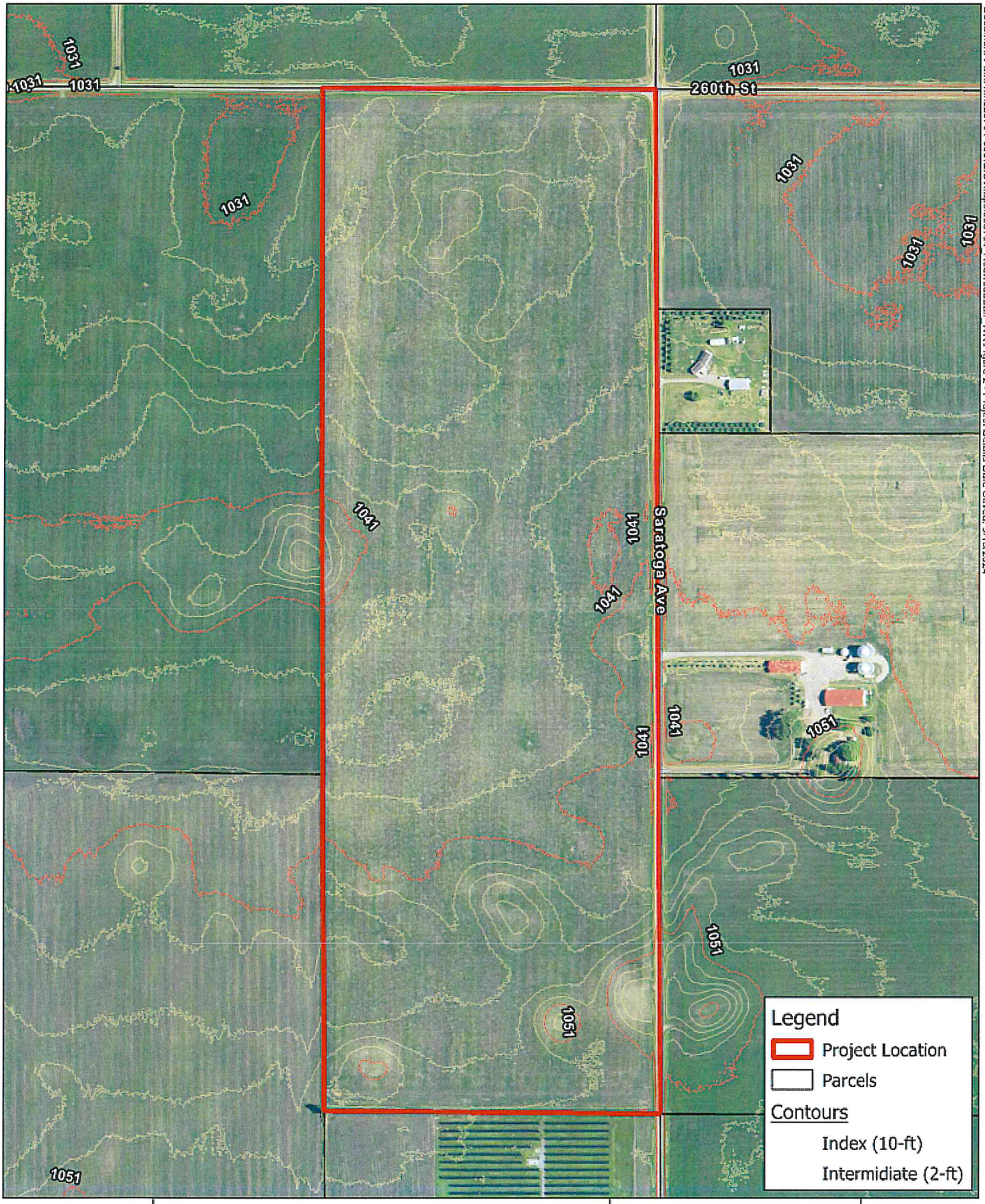
N

0 1,500 Feet

1 inch = 1,500 feet

SunShare COMMUNITY SOLAR

wsb



Document Path: M:\026704-001\GIS\Maps\026704_RedwoodSun_WR\Figure 2 - Project Details Date Saved: 9/13/2024

Figure 2 - Property Details

RedwoodSun Solar Development
Redwood County, MN

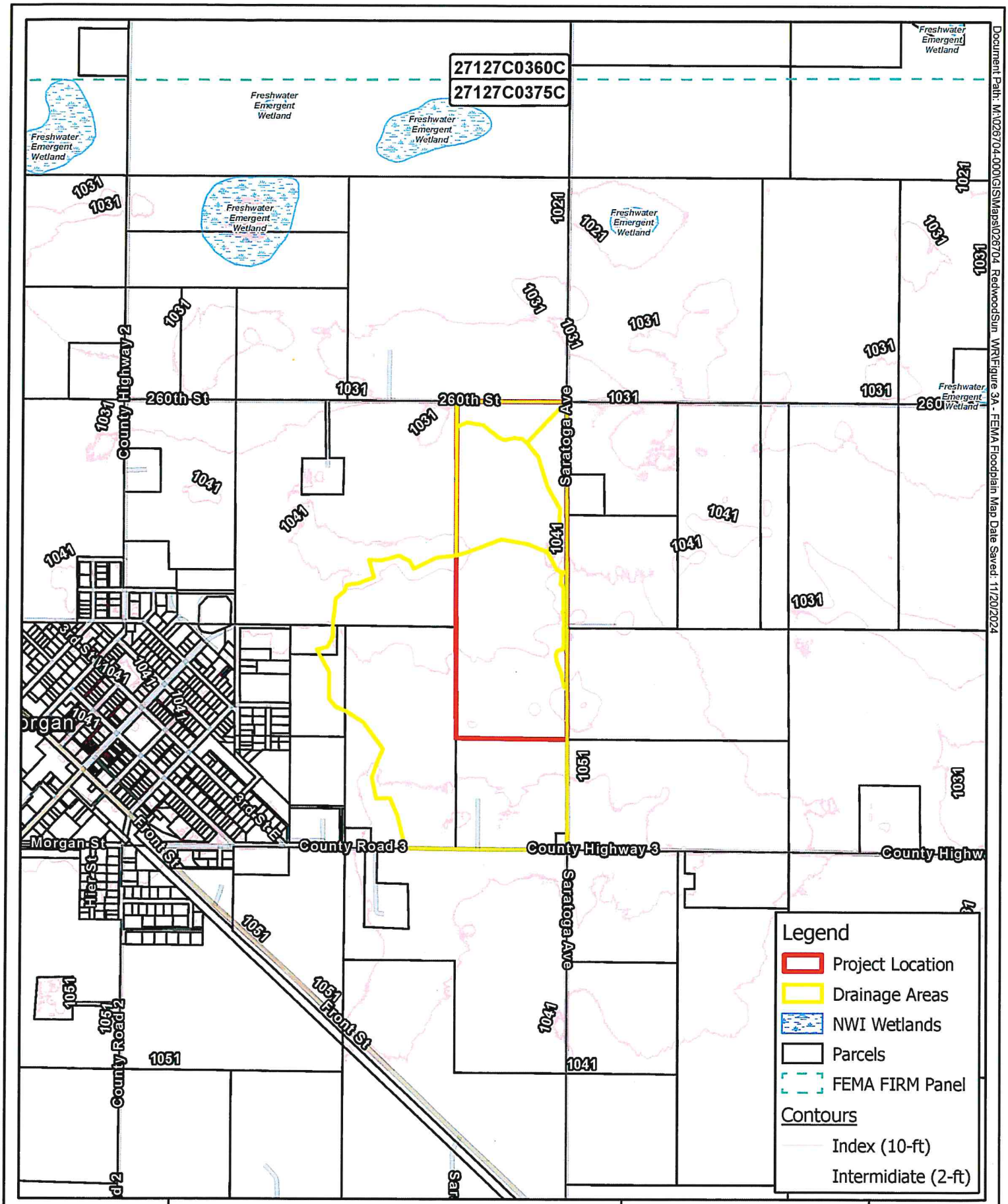
N

0 500 Feet

1 inch = 500 feet

SunShare COMMUNITY SOLAR

wsb



Document Path: M:\026704-000\GIS\Maps\026704 RedwoodSun WRI\Figure 3A - FEMA Floodplain Map Date Saved: 11/20/2024

Figure 3A - FEMA Floodplain Map

RedwoodSun Solar Development
Redwood County, MN

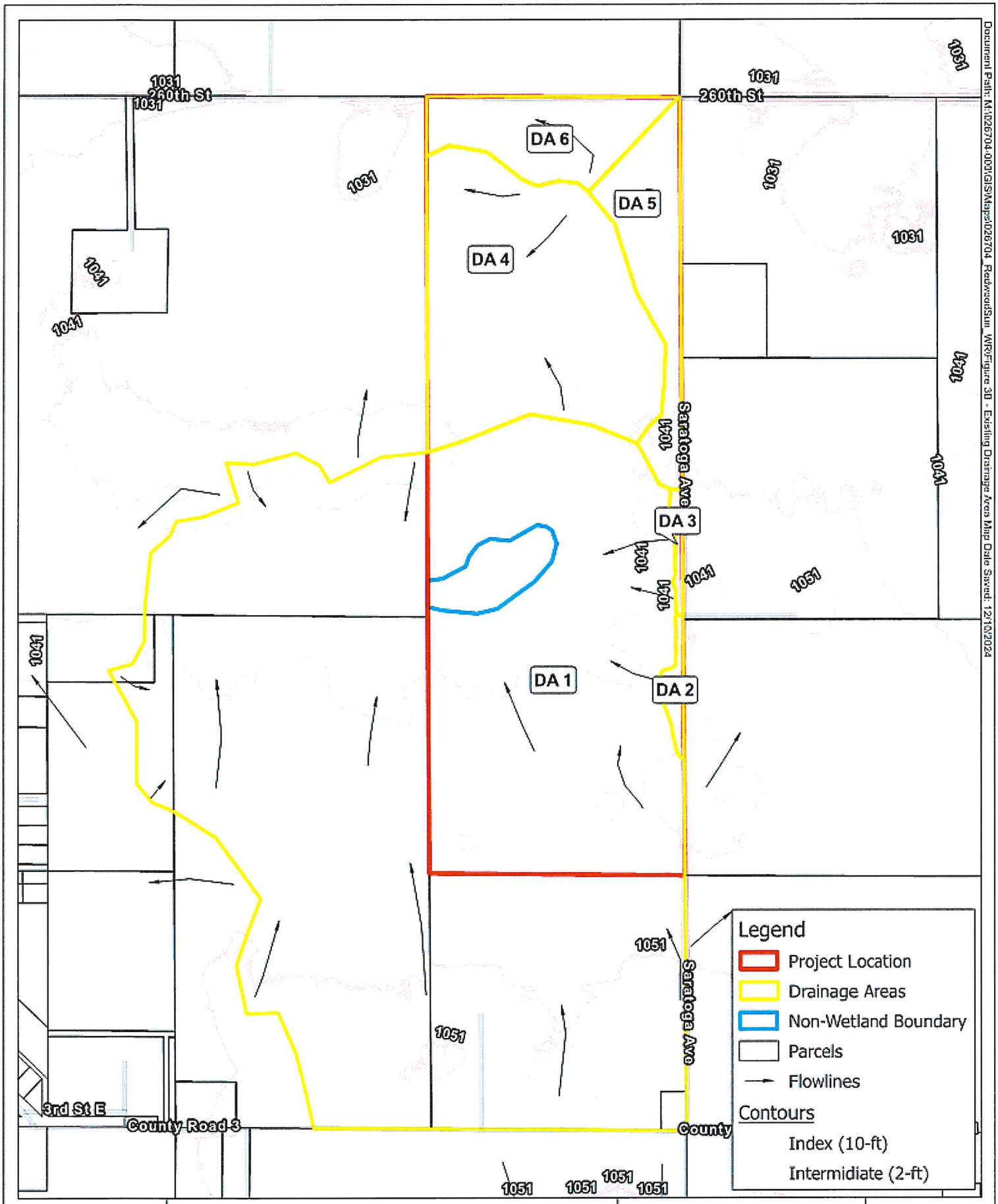
N

0 1,500 Feet

1 inch = 1,500 feet

SunShare COMMUNITY SOLAR

wsb



Document Path: M:\026704-001\GIS\Maps\026704_RedwoodSun_WR\Figure 3B - Existing Drainage Area Map Date Saved: 12/10/2024

Figure 3B - Existing Drainage Area Map

RedwoodSun Solar Development
Redwood County, MN

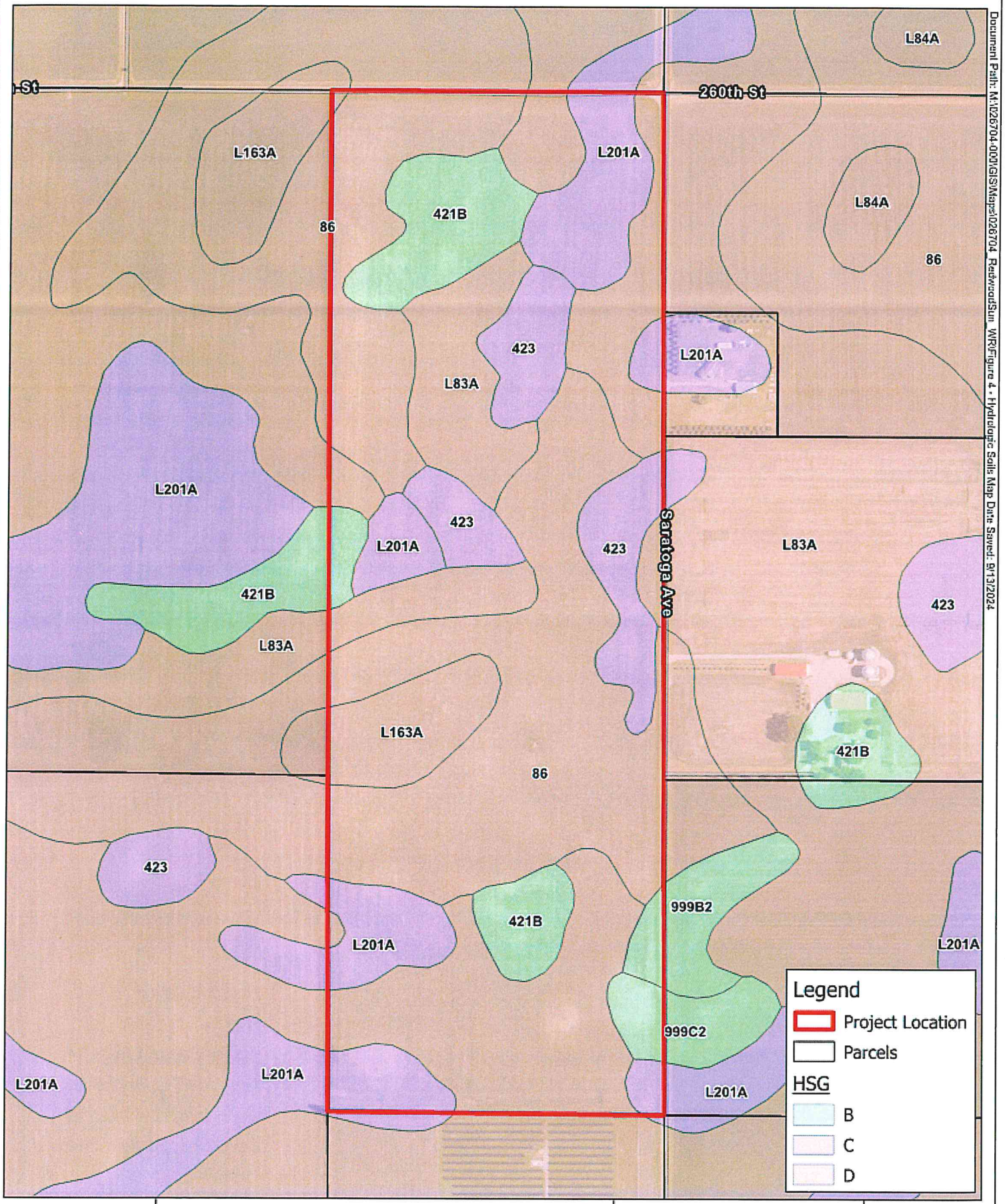
N

0 650 Feet

1 inch = 650 feet

SunShare COMMUNITY SOLAR

wsb



Document Path: M:\1826704-000\GIS\Maps\1826704_RedwoodSun_WR\Figure 4 - Hydrologic Soils Map Date Saved: 8/13/2024

Figure 4 - Hydrologic Soils Map

RedwoodSun Solar Development
Redwood County, MN

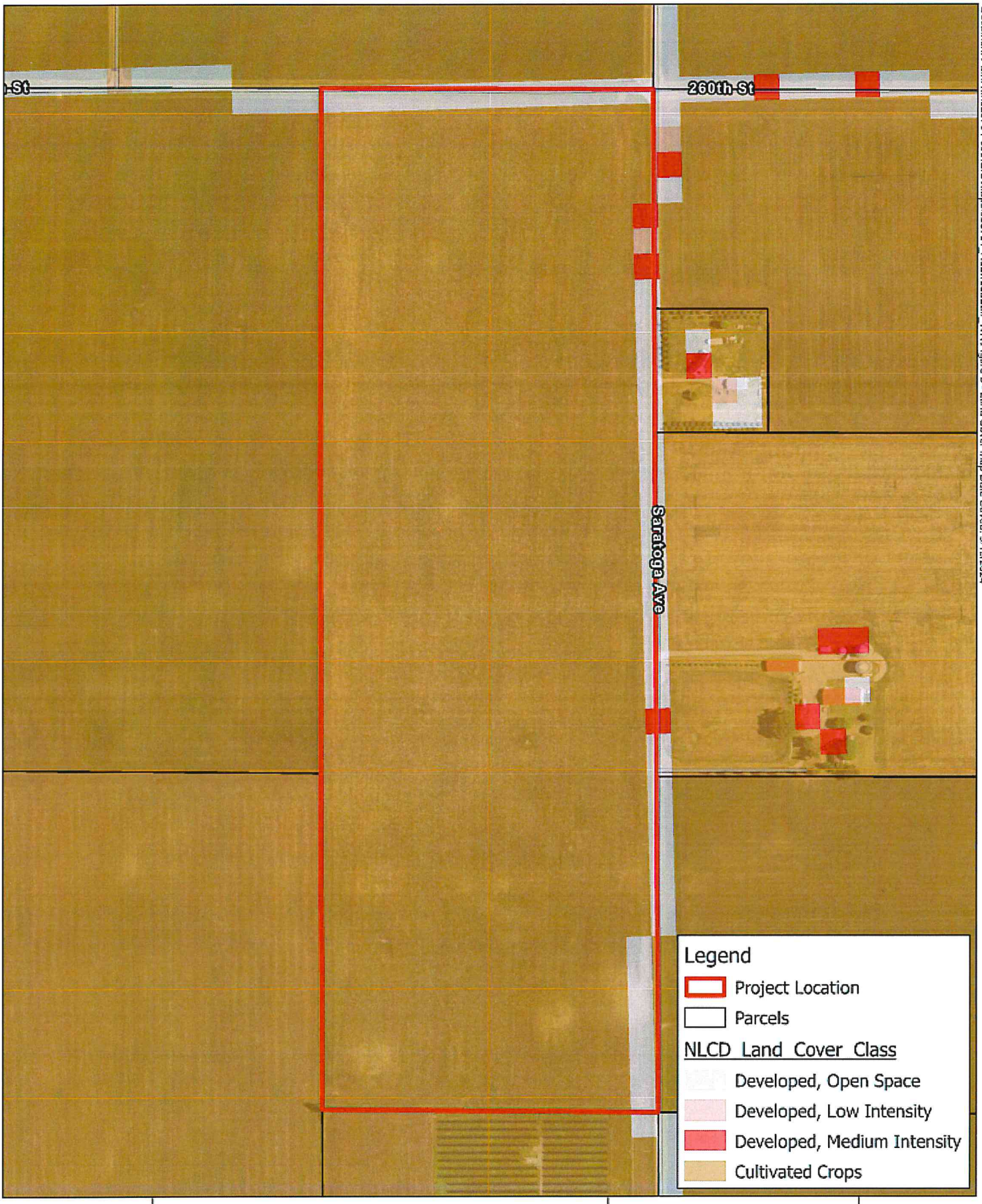
N

0 500 Feet

1 inch = 500 feet

SunShare COMMUNITY SOLAR

wsb



Document Path: M:\026704-003\GIS\Maps\026704_RedwoodSun_WR\Figure 5 - Land Cover Map Date Saved: 9/13/2024

Figure 5 - Land Cover Map

RedwoodSun Solar Development
Redwood County, MN

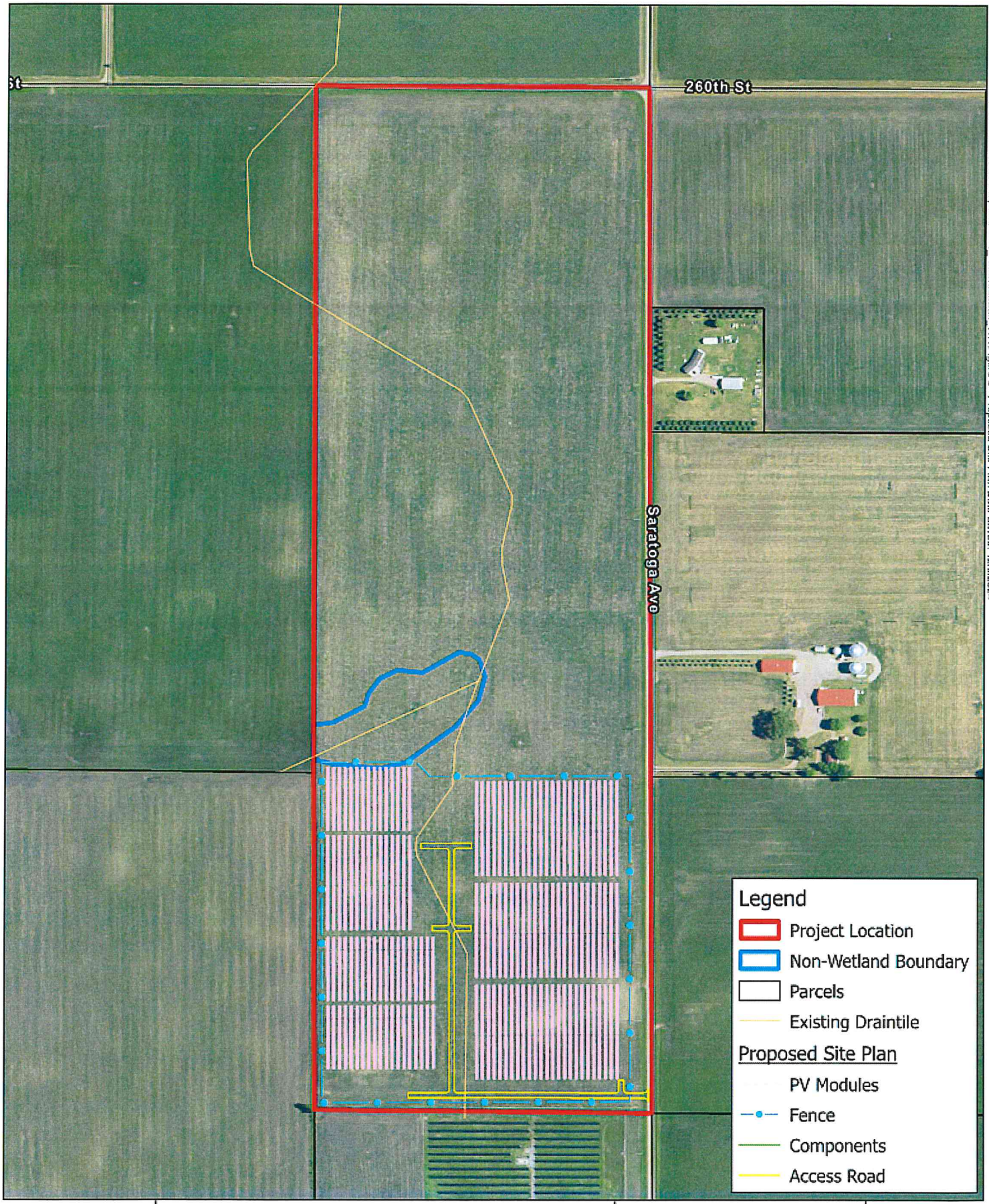
N

0 500 Feet

1 inch = 500 feet

SunShare COMMUNITY SOLAR

wsb



Document Path: M:\826704-000\GIS\Maps\826704_RedwoodSun_WR\Figure 6 - Proposed Site Plan Date Saved: 12/9/2024

Figure 6 - Proposed Site Plan

RedwoodSun Solar Development
Redwood County, MN

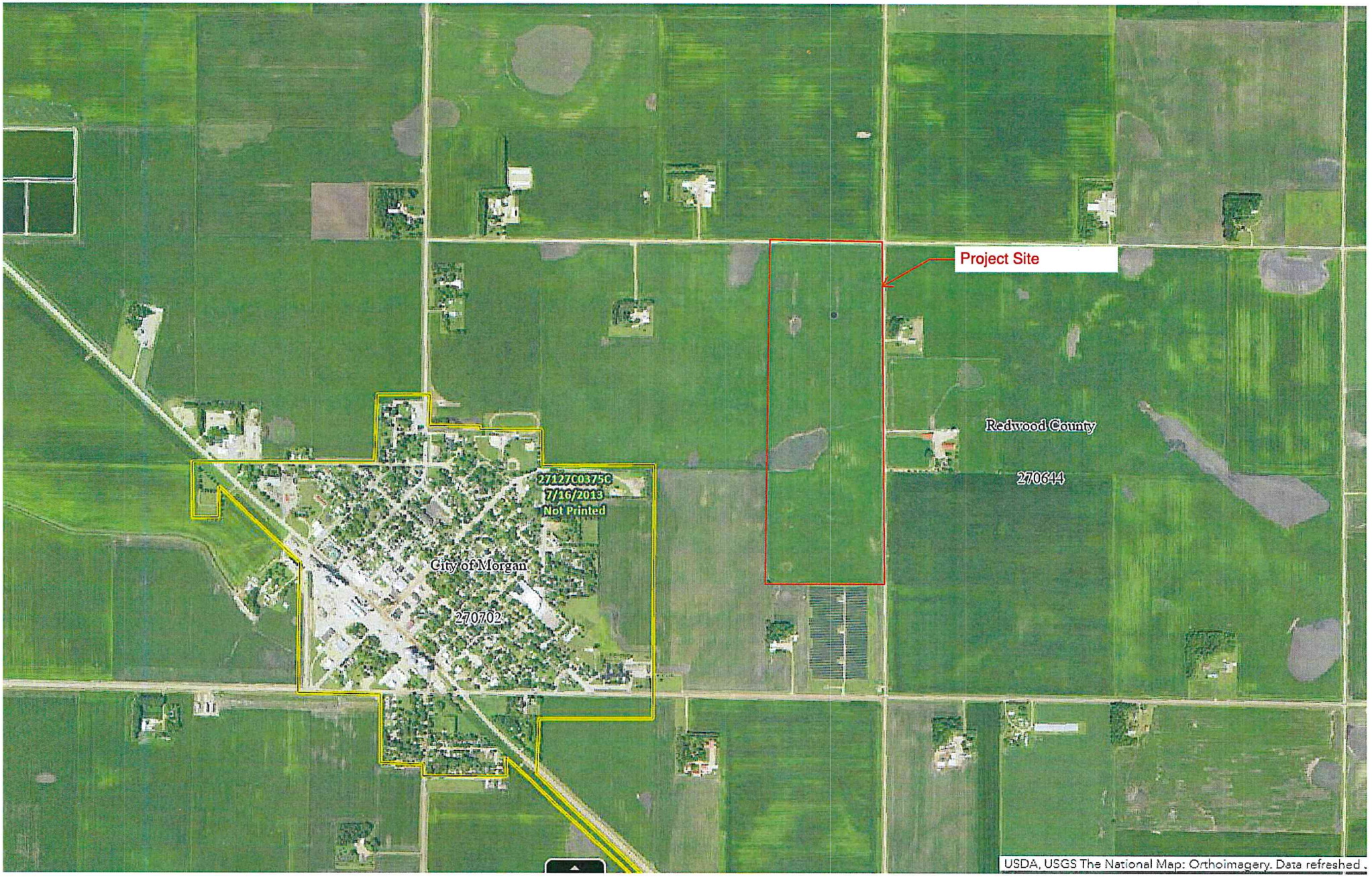
N

0 500 Feet

1 inch = 500 feet

SunShare COMMUNITY SOLAR

wsb


Project Site
Redwood County
270644
27127C0375C
7/16/2013
Not Printed
City of Morgan
270702
USDA, USGS The National Map: Orthoimagery. Data refreshed

Appendix E: Critical Issue Analysis

CRITICAL ISSUES ANALYSIS
REDWOODSUN SOLAR PROJECT

REDWOODSUN SOLAR

REDWOOD COUNTY, MINNESOTA

DECEMBER 10, 2024

Prepared for:

SunShare, LLC
1724 Gilpin Street
Denver, CO 80218

WSB PROJECT NO. 023178-000

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FIGURES

APPENDICES

1. Introduction and Purpose

1.1 Project Description

SunShare is proposing to construct a community-scale solar energy facility within approximately 120.8 acres in Redwood County, Minnesota (**Figure 1**). Specifically, the project area is in Township 111N Range 34W Sections 10 and 15 approximately 0.25 miles west of Morgan, Minnesota (**Figure 2**). The 120.8-acre project area is generally bounded by the following features (**Figure 2**):

- North: 260th Street, and cultivated cropland
- East: Saratoga Avenue, residences, and cultivated cropland
- South: Morgan Community Solar Garden, cultivated cropland, and residence
- West: Cultivated cropland and residences

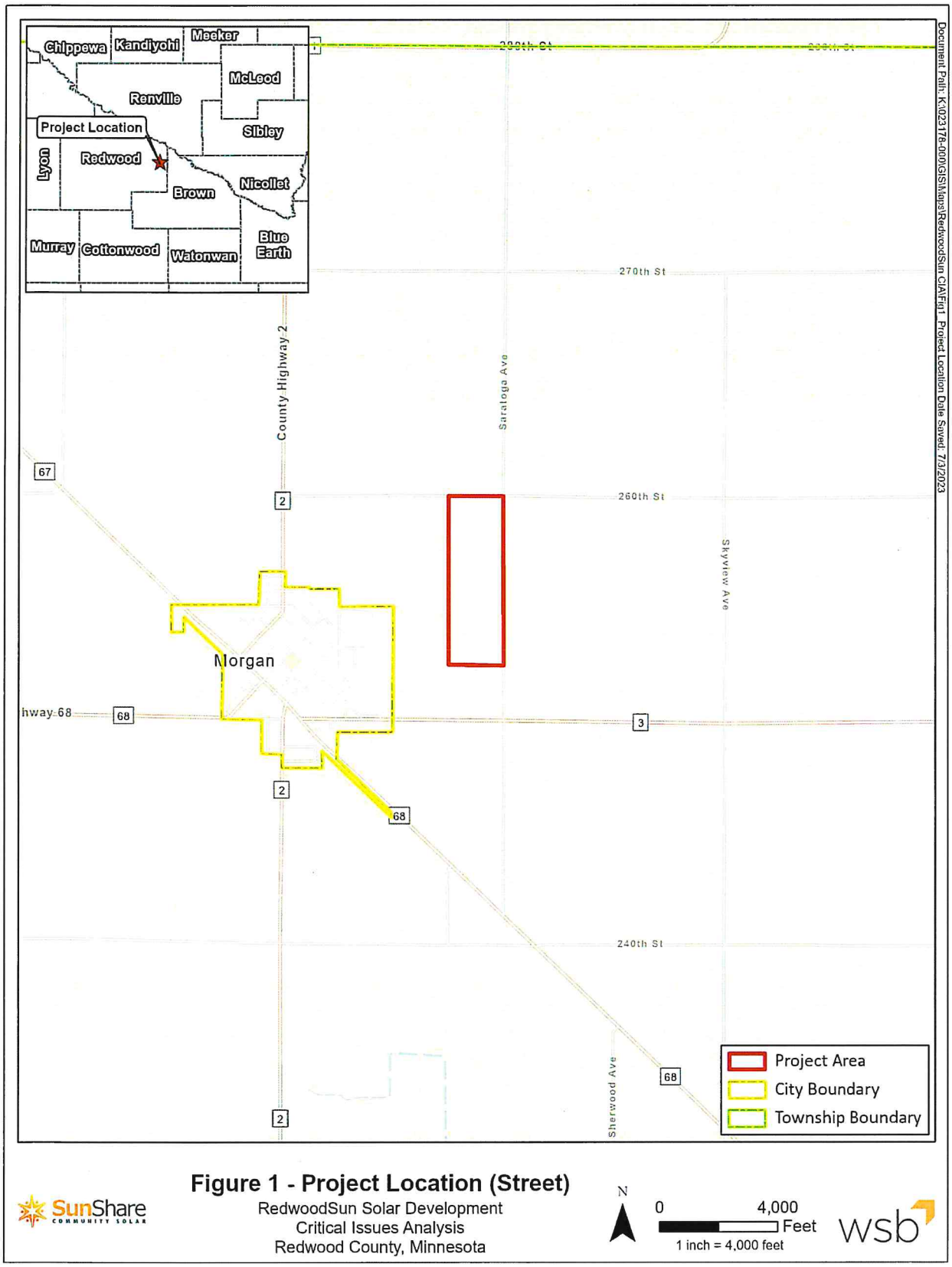
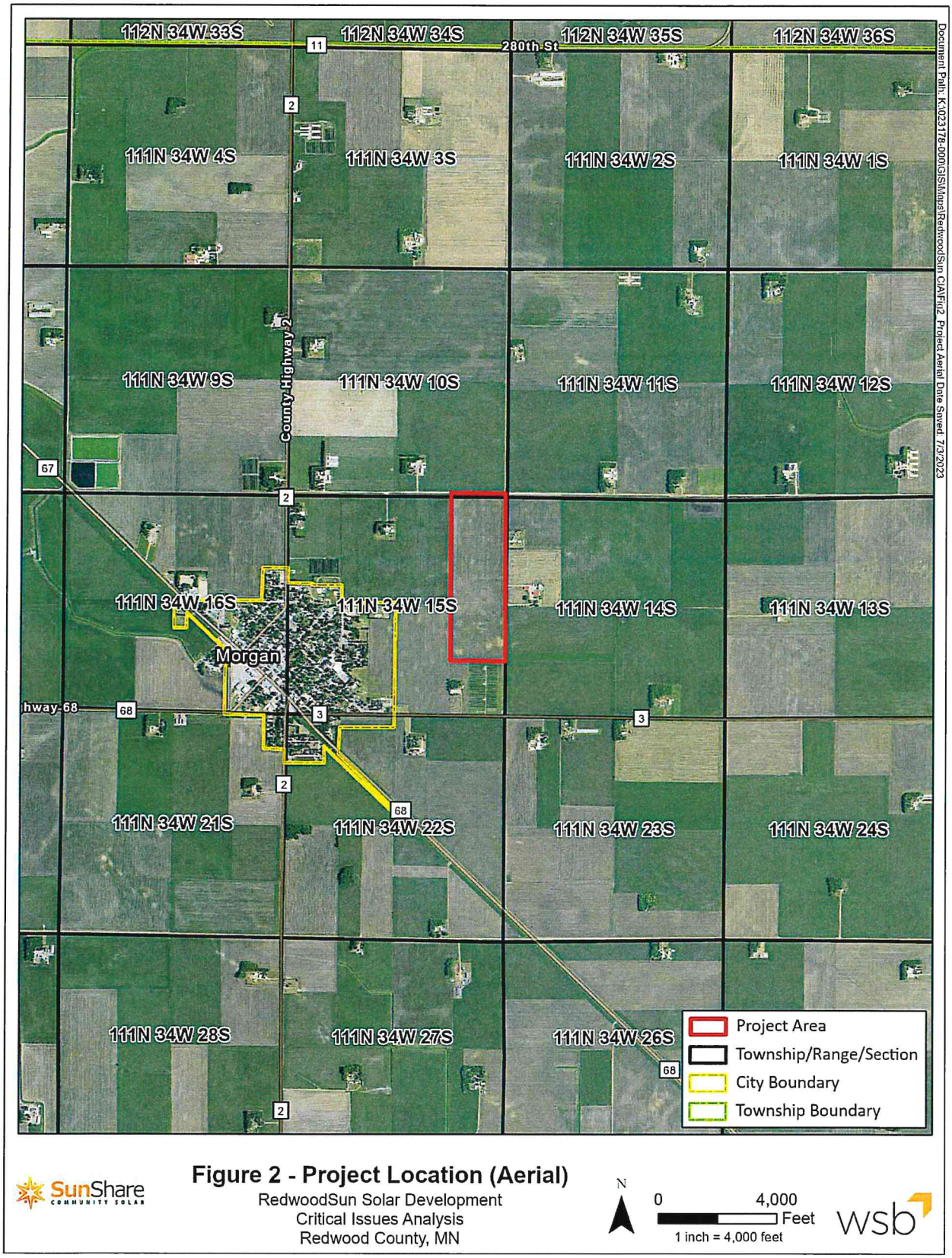


Figure 1 - Project Location (Street)

RedwoodSun Solar Development
Critical Issues Analysis
Redwood County, Minnesota

N
0 4,000 Feet
1 inch = 4,000 feet



SunShare COMMUNITY SOLAR

Figure 2 - Project Location (Aerial)

RedwoodSun Solar Development
Critical Issues Analysis
Redwood County, MN

N

0 4,000 Feet

1 inch = 4,000 feet

wsb

1.2 Purpose

On behalf of SunShare, WSB completed a desktop-based Critical Issues Analysis for the proposed project. The purpose of this review was to identify if environmental, biological, cultural, or historical features occur within or near the project area that may impact the siting or construction of a solar energy facility.

2. Methods

Publicly available data were reviewed to identify environmental, biological, cultural, or historical features within or near the project area. Publicly available data reviewed included remote sensing data, geographic information system (GIS) data, historic imagery, and information from local, state or federal agencies. The data collection effort included obtaining information from the following resources:

- Minnesota Biological Survey (MBS) Sites of Biodiversity Significance
- Minnesota Department of Natural Resources (MNDNR) Native Plant Communities (NPCs)
- MNDNR Wildlife Management Areas (WMAs)
- MNDNR Natural Heritage Report
- MNDNR National Wetland Inventory (NWI)
- MNDNR Railroad Rights-of-Way Prairies
- MNDNR Scientific and Natural Areas (SNAs)
- Minnesota Geospatial Commons
- Minnesota Pollution Control Agency What's in my Neighborhood
- Minnesota State Historic Preservation Office (SHPO)
- National Conservation Easement Database (NCED)
- Redwood County Draft Zoning Ordinance
- U.S. Department of Transportation (USDoT) National Pipeline Mapping System (NPMS)
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS)
- USDA Farm Service Agency
- US Environmental Protection Agency (EPA) NEPAssist
- U.S. Federal Aviation Administration (FAA) Notice Criteria Tool
- U.S. Federal Emergency Management Agency (FEMA) flood map
- U.S. Fish and Wildlife Service Information for Planning and Consultation (IPaC)
- U.S. Geological Survey (USGS) Map of Minnesota – Bedrock Geology
- USGS National Hydrography Dataset (NHD)
- USGS Map of Minnesota – Quaternary Geology
- USGS National Land Cover Database (NLCD)
- USGS Protected Areas Database of the U.S. (PADUS)
- USGS Topographic Maps

The results of the desktop review are provided below are provided below.

3. Results

3.1 Topography

Topography within the project area ranges from 1032 feet (ft) above mean sea level (amsl) in the northwestern corner of the project area to 1056 ft amsl in the southeastern portion of the project area (**Figure 3**). Topographic relief is considered moderate.

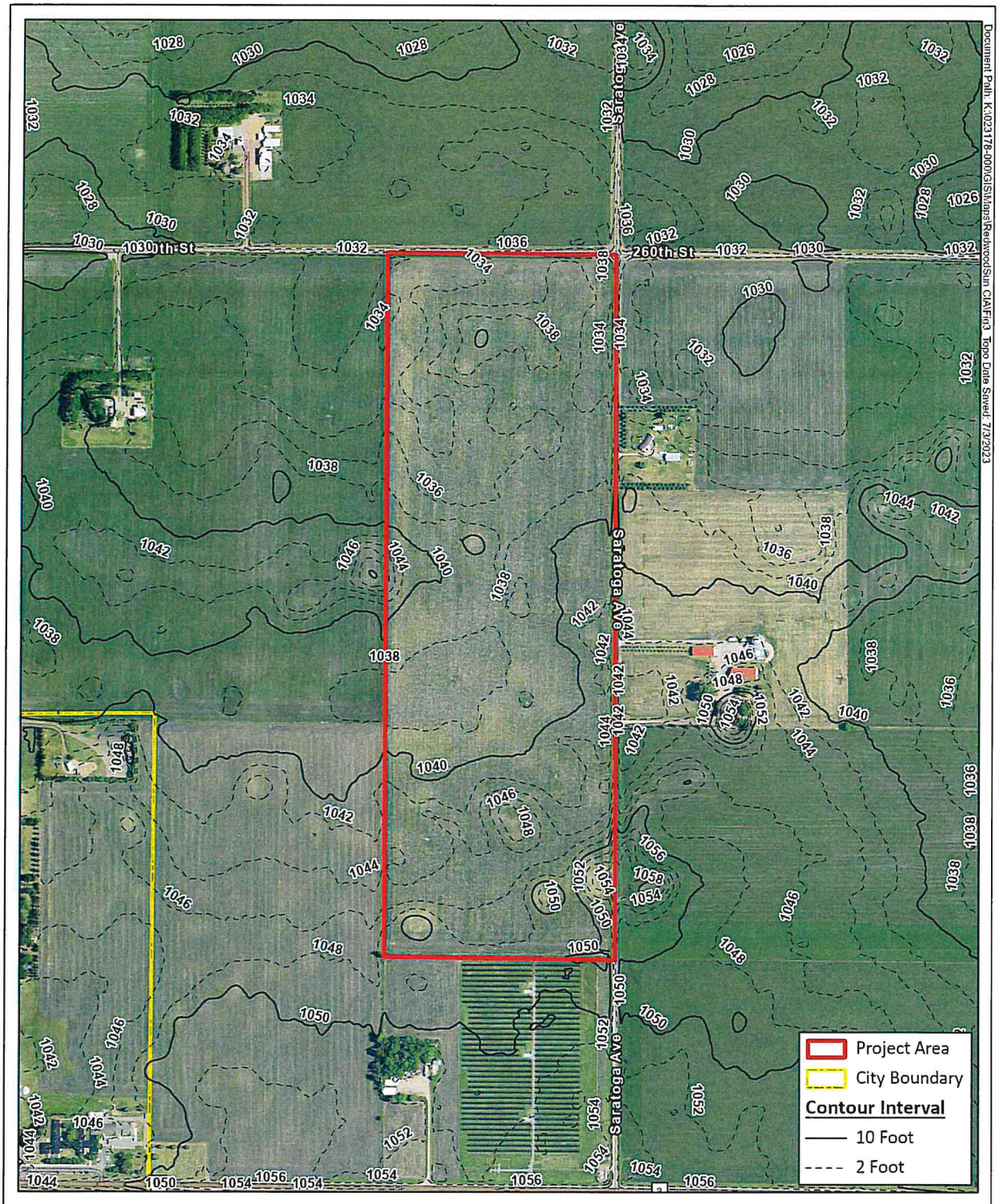


Figure 3- Topography
RedwoodSun Solar Development
Critical Issues Analysis
Redwood County, MN

3.2 Land Use

Two land cover types were identified within the project area based on the USGS NCLD. Most of the project area is comprised of cultivated crops (94.5 percent) with a minor portion of developed land (5.5 percent) (**Table 1**) (**Figure 4**).

Table 1 – Land cover types and their respective coverages within the project area.

Land Cover	Acres	Percent of Project Area
Cultivated Crops	114.2	94.5
Developed	6.6	5.5
TOTAL	**120.8**	**100.0**
Note: Individual acreages or percentages may not sum to total due to rounding.		

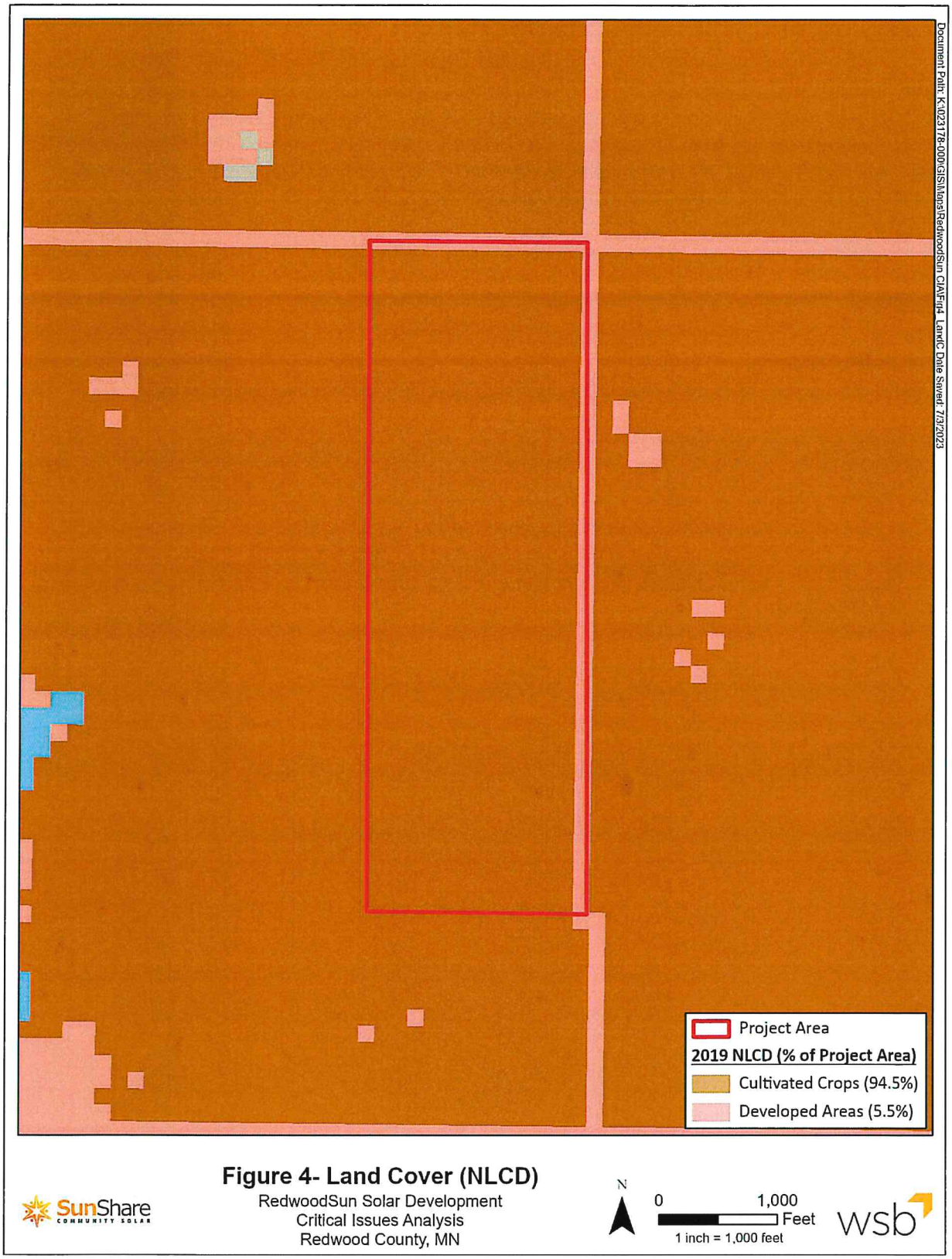


Figure 4- Land Cover (NLCD)
RedwoodSun Solar Development
Critical Issues Analysis
Redwood County, MN

3.3 Zoning and Special Considerations

Zoning
The project area is zoned within the County's agricultural district. Solar energy facilities are permitted within agricultural districts under a Conditional Use Permit per County Ordinance, Subdivisions 6 and 7 of the draft Redwood County Zoning Ordinance. In addition to the Conditional Use Permit, a Land Use Permit must be obtained from the Zoning Administrator by the landowner, prior to construction.

There are additional requirements for solar energy facilities per the Redwood County Zoning Ordinance including conforming to the setbacks and standards in Subdivision 8 and the decommissioning plan in Subdivision 9.

Special Considerations
The project area is not within a shoreland zoning district or a FEMA floodplain zoning district.

The FAA Notice Criteria Tool indicated that no further coordination with the FAA is required (**Appendix A**).

Based on the U.S. Energy Information Administration mapping system and the U.S. Electric Power Transmission Lines, there are no electric transmission lines (i.e., 69 kilovolts [kV] or more) within the project area. There are 69-kilovolt electric transmission lines adjacent to the eastern boundary of the project area (**Figure 5**).

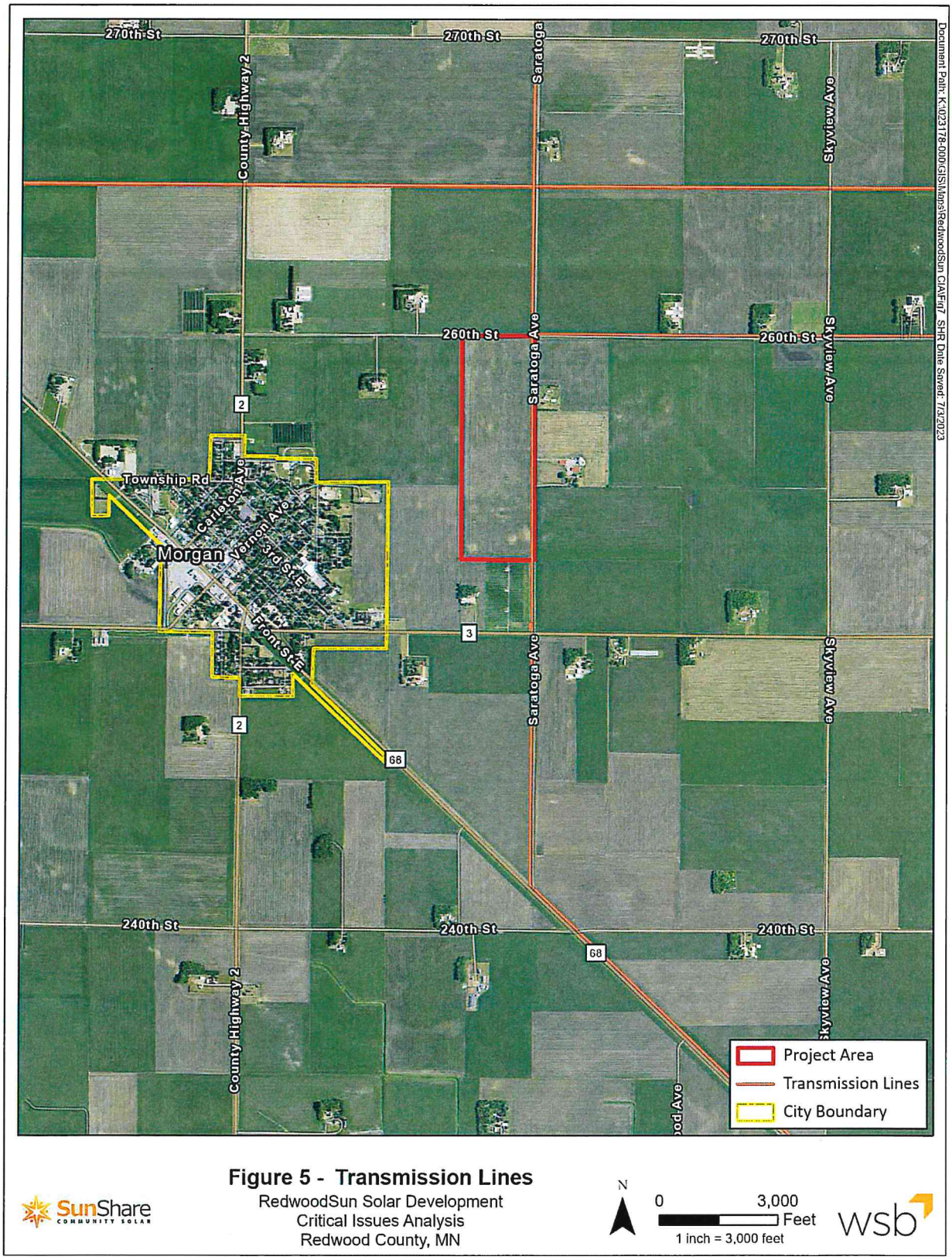


Figure 5 - Transmission Lines
RedwoodSun Solar Development
Critical Issues Analysis
Redwood County, MN

N
0 3,000 Feet
1 inch = 3,000 feet

3.4 Soils

Based on the USDA NRCS WSS soils within the project area are primarily comprised of loams (99.3 percent of project area), followed by complex soils (0.7 percent) (**Table 2**) (**Figure 6**). Approximately 68.3 percent of the soils within the project area are hydric (**Table 2**) (**Figure 6**).

Table 2 – Soil types and their respective coverages within the project area.

Map Unit Symbol and Map Unit Name	Rating	Acres	Percent of Project Area
86: Canisteo clay loam, 0 to 2 percent slopes	100	42.0	34.8
L83A: Webster clay loam, 0 to 2 percent slopes	95	35.2	29.1
L201A: Normania loam, 1 to 3 percent slopes	5	15.2	12.6
423: Seaforth loam, 1 to 3 percent slopes	14	10.5	8.7
421B: Amiret loam, 2 to 6 percent slopes	3	10.3	8.5
L163A: Okoboji silty clay loam, 0 to 1 percent slopes	100	5.3	4.4
999C2: Storden-Estherville-Ves loams, 6 to 12 percent slopes, eroded	0	1.4	1.2
999B2: Ves-Estherville-Storden complex, 3 to 6 percent slopes, eroded	0	0.9	0.7
Total	--	**120.8**	**100.0**

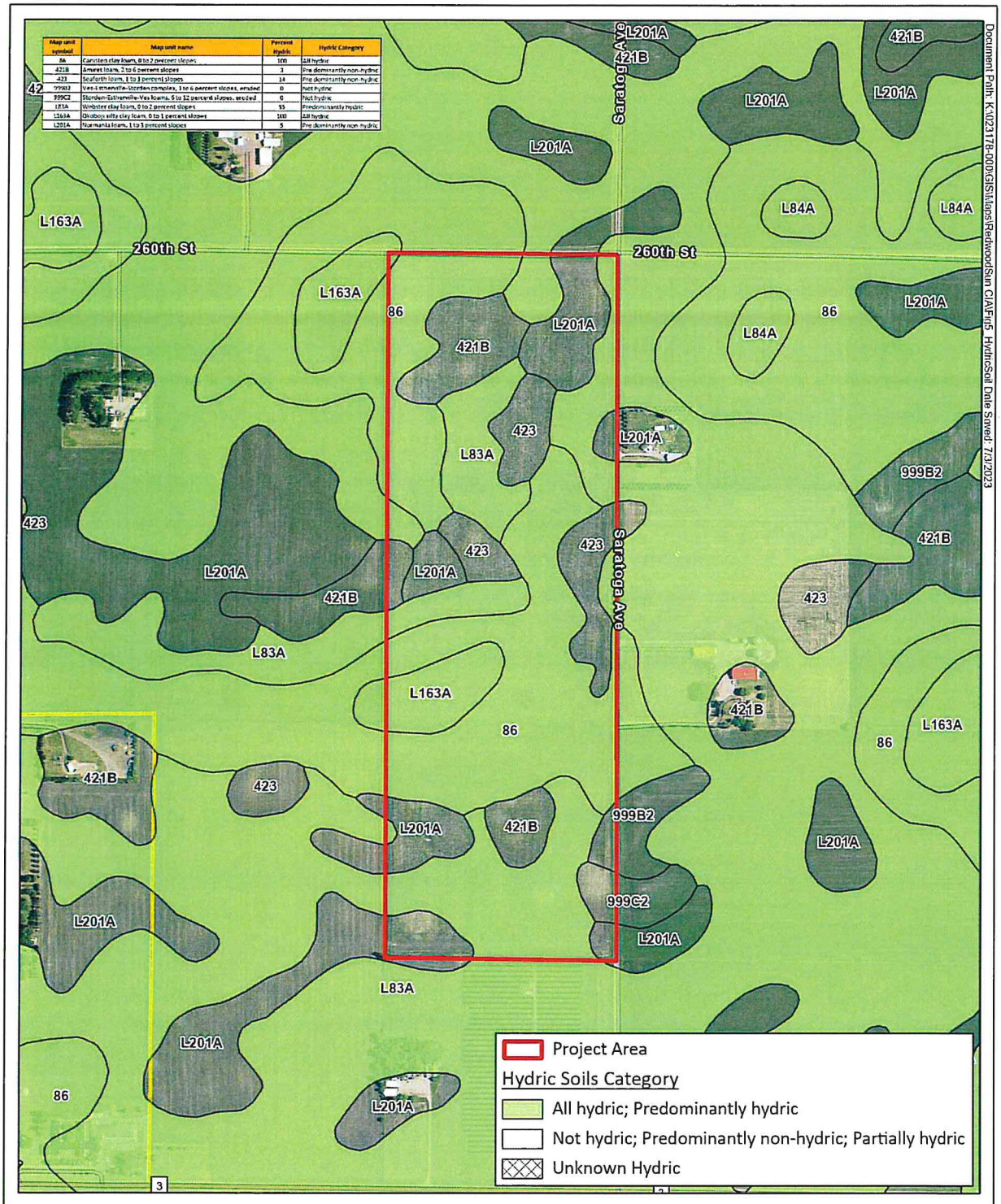


Figure 6- Soils-Hydric Rating

RedwoodSun Solar Development
Critical Issues Analysis
Redwood County, MN

Most of the project area is classified as prime farmland if drained (68.3 percent of the project area), followed by prime farmland (29.8 percent), and farmland of statewide importance (1.9 percent) (**Table 3**) (**Figure 7**).

Table 3 – Farmland classifications and their respective coverages within the project area.

Farmland Classification	Acres	Percent of Project Area
Prime farmland if drained	82.5	68.3
Prime farmland	36.0	29.8
Farmland of statewide importance	2.3	1.9
Total	**120.8**	**100.0**

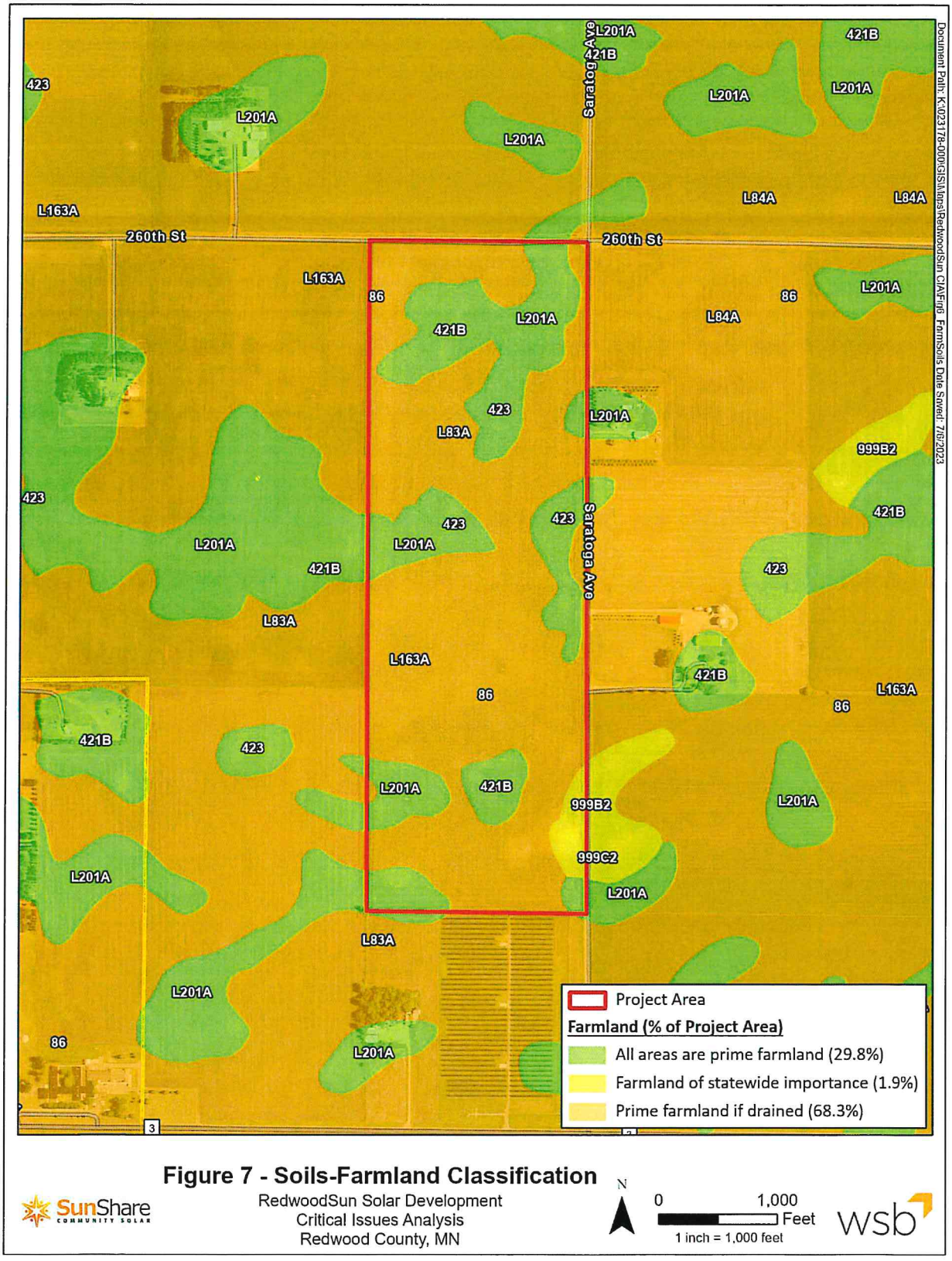


Figure 7 - Soils-Farmland Classification

RedwoodSun Solar Development
Critical Issues Analysis
Redwood County, MN

3.5 Geology

Based on the USGS Map of Minnesota Quaternary Geology, the surficial geology feature that overlies the project area is the Heiberg Member of the New Ulm Formation. The Heiberg Member is comprised of clayey diamicton, pebbly.

Based on the USGS Map of Minnesota Bedrock Geology, the project area is primarily comprised of a Mesoarchean to Paleoarchean intrusion with a minor portion of Paleoproterozoic mafic intrusion and intersected by a reversely polarized Paleoproterozoic or Mesoproterozoic dike. The Mesoarchean to Paleoarchean intrusion is comprised of granitic orthogneiss and migmatite. The Paleoproterozoic mafic intrusion is comprised of pyroxenite, peridotite, gabbro, or lamprophyre and is defined largely by its magnetic signature.

The depth to bedrock in the project area ranges from 200 to 250 ft below grade. Based on the USGS USA Karst database, the project area is not within a karst zone or an area prone to karsts.

3.6 Surface Hydrological Resources

No MNDNR NWI wetlands or USGS NHD flowlines were mapped within the project area (**Figure 8**). Also, no FEMA flood zones were mapped within the project area (**Figure 8**). No MNDNR Shoreland or Wild, Scenic, and Recreational Rivers occur within the project area or within one mile of the project area (**Figure 8**).

No wells were identified within the project area. However, there is an active domestic well (ID 627597) within 500 ft (152 m) to the east of the project area (**Figure 8**). The well depth is 118 ft (36 m) below grade with static groundwater level reported at 52 ft below casing top.

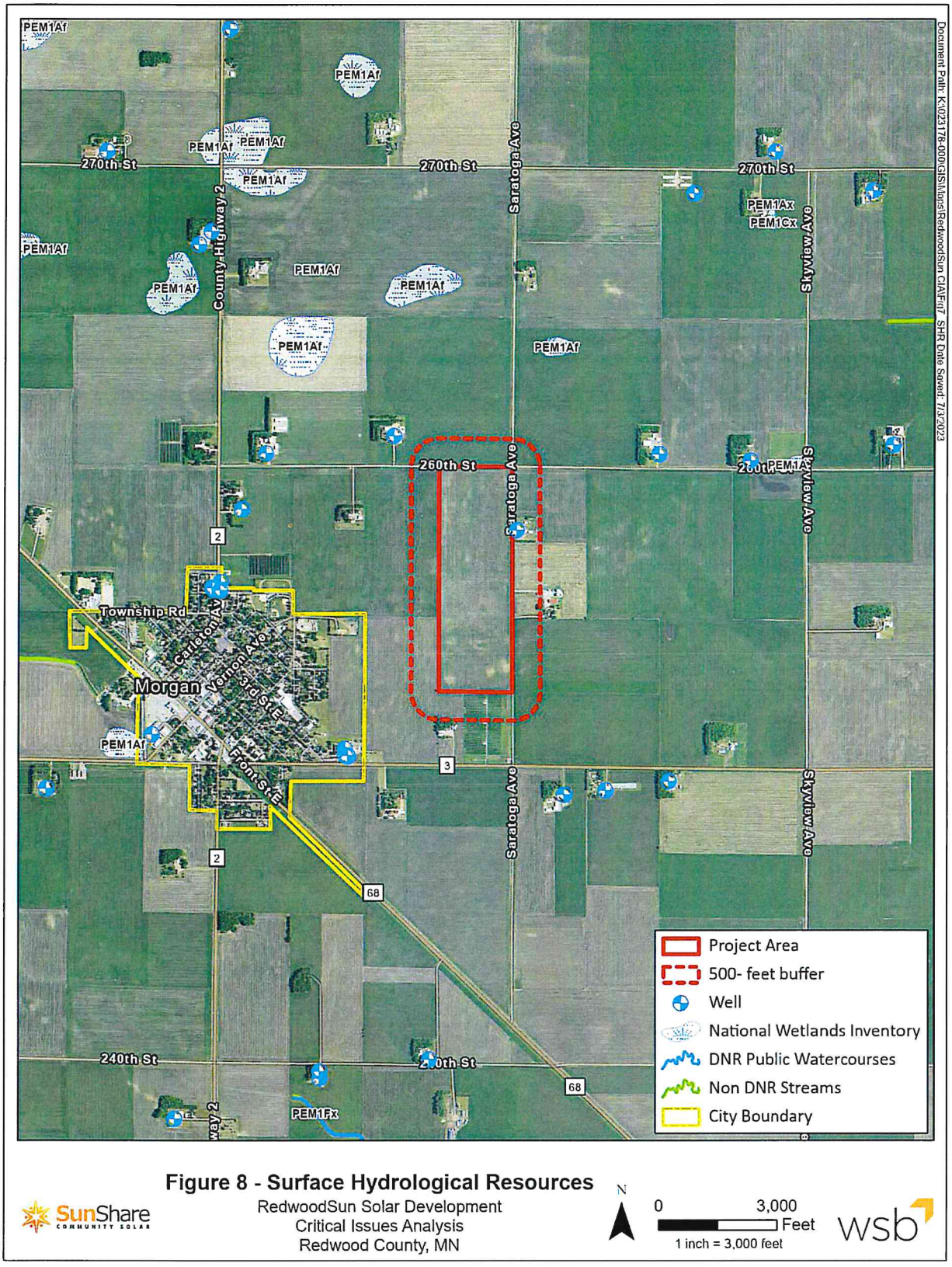


Figure 8 - Surface Hydrological Resources

RedwoodSun Solar Development
Critical Issues Analysis
Redwood County, MN

N
0 3,000 Feet
1 inch = 3,000 feet

3.7 Environmental Conditions

The Minnesota Pollution Control Agency (MPCA) What's in My Neighborhood (WIMN) and the U.S. EPA NEPAssist online databases were reviewed on July 5, 2023. No listings of hazardous material spills or releases were identified within the project area, adjacent sites, or within 500 ft of the project area.

3.8 National Pipeline Mapping System

Based on the USDoT NPMS Public Map Viewer there are no active natural gas transmission pipelines within or near the project area. Also, there are no liquefied natural gas plants or breakout tanks within the project area or immediately adjacent to the project area.

3.9 Biological Resources

Minnesota Special Status Species and Ecological Areas

On July 5, 2023, WSB submitted a formal request for a Natural Heritage Report from the MNDNR Minnesota Conservation Explorer. The Natural Heritage Report indicated that the project is not expected to negatively affect any known rare features (**Appendix B**).

WSB also reviewed MBS sites of biodiversity significance, MNDNR NPCs, and MNDNR railroad rights-of-way prairie data to determine if there were other important biological resources within the project area or the 1-mile buffer. No MBS sites of biodiversity significance, MNDNR NPCs, MNDNR railroad rights-of-way prairies, or MNDNR RSEAs were mapped within the project area or within one mile (1.6 km) of the project area.

Federally Protected Species

Based on the USFWS (2024) IPaC, a proposed endangered and a candidate species for federal listing may occur within the project area or surrounding region (**Appendix C**). The two species identified include the proposed endangered salamander mussel (*Simpsonaias ambingua*) and monarch butterfly (*Danaus plexippus*) a candidate for federal listing. The salamander mussel is also endangered at the state level. Also, the bald eagle (*Haliaeetus leucocephalus*) is included here due to being protected under the Bald and Golden Eagle Protection Act (BGEPA) and the species range.

Salamander mussel (*Simpsonaias ambigua*)

Salamander mussels are proposed endangered at the federal level and endangered at the state level. Salamander mussels occur in rivers and streams of 14 states including Minnesota. In Minnesota, they are currently restricted to the St. Croix River. Primary threats to salamander mussel populations in Minnesota include pollution, sedimentation, mortality from zebra mussels (*Dreissena polymorpha*), and hydrological changes due to damming, channelization, and dredging.

Salamander mussels occur in swift-flowing rivers and streams under rocks or in crevices. Specifically, they only occur under flat rocks or under ledges of rock walls.

As potentially suitable salamander mussel habitat is absent within the project area; they are unlikely to occur within the project area.

Monarch butterfly (*Danaus plexippus*)

As a candidate species for listing, monarchs are not afforded any legal protective status. Monarch butterflies occur throughout Minnesota during the summer and migratory periods. Primary threats to monarchs include habitat loss and the use of herbicides on their host plant, milkweeds (*Asclepias* spp.).

Monarch butterflies use fields and parks where native milkweed, and other flowering plant species are common. Monarch larvae are milkweed obligates, however adults feed on a variety of flowering plants.

As potentially suitable monarch habitat within the project area appears to be limited or absent; the probability for monarch occurrence within the project area is considered low.

Bald eagle (*Haliaeetus leucocephalus*)

Bald eagles are protected under the BGEPA. The Minnesota bald eagle population occurs year-round. Primary threats to bald eagle populations in Minnesota include climate change and lead poisoning.

Bald eagles typically nest in mature trees near water sources that support an adequate food supply. Once built, a nest may be reused and added to in subsequent years and alternate nest sites are common. Wintering grounds typically contain open water, food resources, and protective roosting sites. Preferred roost sites are in stands of mature trees with well-developed canopies.

As potentially suitable bald eagle roosting and nesting habitat is absent or limited within the project area; the likelihood of occurrence is considered low.

3.10 Special Management Areas

Based on the USGS PADUS and NCED, no conservation easements, federal, state, or other public lands were identified within the project area or within one mile of the project area.

3.11 Archaeological, Historical, and Cultural Resources

WSB submitted a database search request to the Minnesota State Historic Preservation Office (SHPO) on June 26, 2023. The SHPO submitted a response on June 28, 2023 indicating that no archaeological or historic records were within the project area (**Appendix D**).

4. Conclusions

Six potential constraints were identified for the project area that may need further assessment or avoidance/minimization measures (**Table 4**). Please note that when a resource is assigned a possible issue designation, it indicates an issue may be present if certain conditions are met (e.g., tree removal, project is federally funded or permitted, et cetera). If those conditions are not met, then no issues are identified for that resource.

Table 4 - Critical Issues Analysis Summary

Resource	Issue Present (Yes/Possible/No)	Comments
Topography	No	Topographic relief is considered moderate.
Zoning	Yes	The project area is within the County's agricultural district. Solar energy facilities are permitted within agricultural districts under a Conditional Use Permit per County Ordinance, Subdivisions 6 and 7 of the draft Redwood County Zoning Ordinance. In addition to the Conditional Use Permit, a Land Use Permit must be obtained from the Zoning Administrator by the landowner, prior to construction. There are additional requirements for solar energy facilities per the Redwood County Zoning Ordinance including conforming to the setbacks and standards in Subdivision 8 and the decommissioning plan in Subdivision 9.
Special Considerations	Possible	The project area is not within a shoreland zoning district or a FEMA floodplain zoning district. The Federal Aviation Administration (FAA) Notice Criteria Tool indicated that no further coordination with the FAA is required. Based on the U.S. Energy Information Administration mapping system and the U.S. Electric Power Transmission Lines, there are no electric transmission lines (i.e., 69 kilovolts [kV] or more) within the project area. There are 69-kilovolt electric transmission lines adjacent to the eastern boundary of the project area.
Soils	Possible	The soils within the project area are primarily comprised of loams (99.3 percent of project area), and approximately 68.3 percent of the soils within the project area are hydric. Most of the project area is classified as prime farmland if drained (68.3 percent of the project area), prime farmland (29.8 percent), and farmland of statewide importance. Further geotechnical analysis is recommended.
Geology	Possible	Based on the USGS Map of Minnesota Quaternary Geology, the surficial geology feature that overlies the project area is the Heiberg Member of the New Ulm Formation, which is a clayey diamicton, pebbly. Based on the USGS Map of Minnesota Bedrock Geology, the project area is primarily comprised of a Mesoarchean to Paleoarchean intrusion with a minor portion of Paleoproterozoic mafic intrusion and intersected by a reversely polarized Paleoproterozoic

Resource	Issue Present (Yes/Possible/No)	Comments
		or Mesoproterozoic dike. The depth to bedrock in the project area ranges from 200 to 250 ft below grade. Based on the USGS USA Karst database, the project area is not within a karst zone or an area prone to karsts Further geotechnical analysis is recommended.
Surface Hydrological Resources	Possible	No Minnesota Department of Natural Resources (MNDNR) National Wetland Inventory wetlands or U.S. Geological Survey National Hydrography Dataset flowlines were mapped within the project area. Also, no Federal Emergency Management Agency flood zones were mapped within the project area. No MNDNR Shoreland or Wild, Scenic, and Recreational Rivers occur within the project area or within one mile of the project area. No wells were identified within the project area. However, there is an active domestic well within 500 ft of the project area, to the east. A stormwater or groundwater management plan demonstrating best management practices, with erosion and sediment control provisions is recommended.
Environmental Conditions	No	Based on the Minnesota Pollution Control Agency's What's in My Neighborhood database, there are no listings of a hazardous material spill or release were identified within the project area, adjacent sites, or within 500 feet (152 meters) of the project area. Although no listings were identified, a Phase I Environmental Site Assessment (ESA) is recommended prior to project construction.
Pipelines	No	Based on the U.S. Department of Transportation National Pipeline Mapping System Public Map Viewer there are no active natural gas transmission pipelines, liquefied natural gas plants, or breakout tanks within or near the project area.
Biological Resources	No	No federal or state special status species records, rare habitats, or ecological areas were identified within the project area or one mile (1.6 km) from the project area. No additional coordination or surveys are expected to be required.
Special Management Areas	No	No conservation easements, federal, state or other public lands were identified within the project area or within one mile of the project area.
Archaeological, Historical, and Cultural Resources	Possible	The State Historic Preservation Office response indicated that there are no archaeological or historic

Resource	Issue Present (Yes/Possible/No)	Comments
		records within the project area. If the project requires federal permitting, approval, or uses federal funding additional historic and cultural resources studies may be required to comply with Section 106 of the National Historic Preservation Act.

5. References

Federal Aviation Administration. Notice Criteria Tool. Available at: Notice Criteria Tool (faa.gov)

Federal Emergency Management Agency. Map Service Center. Available online at: https://msc.fema.gov/portal/home.

Minnesota Department of Natural Resources. Minnesota Conservation Explorer. Available online at: Home | Minnesota Conservation Explorer (state.mn.us)

Minnesota Department of Natural Resources. National Wetland Inventory. Available online at: NWI Wetland Finder: Minnesota Department of Natural Resources (state.mn.us).

Minnesota Geospatial Commons. Geospatial Commons. Available online at: Welcome - Minnesota Geospatial Commons (mn.gov).

Minnesota Pollution Control Agency. What's in My Neighborhood?. Available online at: What's in my neighborhood (state.mn.us).

National Conservation Easement Database. Mapping Application. Available online at: NCED Mapping Application (conservationeasement.us).

Redwood County. 2018 Draft Redwood County Zoning Ordinance. Pp. 1-307. Available at: Draft-Redwood-County-Zoning-Ordinance.pdf (redwoodcounty-mn.us)

U.S. Department of Agriculture - Farm Service Agency. Aerial Photography. Available online at: Minnesota State Office (usda.gov).

U.S. Department of Agriculture Natural Resources Conservation Service. Web Soil Survey. Available online at: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx.

U.S. Department of Transportation National Pipeline Mapping System. Public Viewer. Available online at: https://pvnpms.phmsa.dot.gov/PublicViewer/.

U.S. Environmental Protection Agency. NEPAssist. Available online at: NEPAssist.

U.S. Geological Survey. 2011. Geologic Map of Minnesota: Bedrock Geology. Pp. 1.

U.S. Geological Survey. 2019. Geologic Map of Minnesota Quaternary Geology. Pp. 1.

U.S. Fish and Wildlife Service. Information for Planning and Consultation. Available online at: https://ecos.fws.gov/ipac/.

Appendix A

Federal Aviation Administration Notice Criteria Tool Results

Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

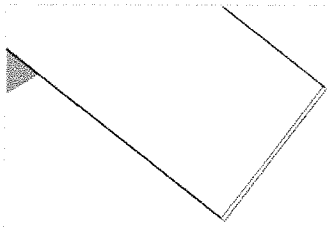
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	44 Deg 24 M 59.82 S N
Longitude:	94 Deg 54 M 27.05 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	1048 (nearest foot)
Structure Height :	40 (nearest foot)
Is structure on airport:	(•) No ( ) Yes

Results

You do not exceed Notice Criteria.



Appendix B

Minnesota Department of Natural Resources Natural Heritage Report

DEPARTMENT OF NATURAL RESOURCES

Formal Natural Heritage Review - Cover Page

See next page for results of review. A draft watermark means the project details have not been finalized and the results are not official.

Project Name: RedwoodSun Solar

Project Proposer: RedwoodSun Solar LLC

Project Type: Power, Solar

Project Type Activities: Other

TRS: T111 R34 S10, T111 R34 S14, T111 R34 S15

County(s): Redwood

DNR Admin Region(s): South

Reason Requested: Local Government Permit

Project Description: Construction of a community scale solar project and associated infrastructure.

Existing Land Uses: The project area is primarily cultivated cropland with a minor portion of developed land.

Landcover / Habitat Impacted: Cultivated cropland with a minor portion of developed land.

Waterbodies Affected: There are no waterbodies mapped within or adjacent to the project area.

Groundwater Resources Affected: N/A

Previous Natural Heritage Review: No

Previous Habitat Assessments / Surveys: No

SUMMARY OF AUTOMATED RESULTS

Category	Results	Response By Category
Project Details	No Comments	No Further Review Required
Ecologically Significant Area	No Comments	No Further Review Required
State-Listed Endangered or Threatened Species	No Comments	No Further Review Required
State-Listed Species of Special Concern	No Comments	No Further Review Required
Federally Listed Species	No Records	Visit IPaC For Federal Review

DEPARTMENT OF NATURAL RESOURCES

Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

July 5, 2023

Project ID: MCE #2023-00499

Lucas Wandrie
WSB & Associates, Inc.
701 Xenia Avenue South, Suite 300
Minneapolis, MN 55416

RE: Automated Natural Heritage Review of the proposed RedwoodSun Solar
See Cover Page for location and project details.

Dear Lucas Wandrie,

As requested, the above project has been reviewed for potential effects to rare features. Given the project details provided on the cover page, I do not believe the proposed project will negatively affect any known occurrences of rare features. To ensure compliance with federal law, conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota's rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available, and is the most complete source of data on Minnesota's rare or otherwise significant species, native plant communities, and other natural features. However, the NHIS is not an exhaustive inventory and thus does not represent all of the occurrences of rare features within the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location and the project description provided on the cover page. If project details change or construction has not occurred within one year, please resubmit the project for review.

The Natural Heritage Review does not constitute project approval by the Department of Natural Resources. Instead, it identifies issues regarding known occurrences of rare features and potential effects to these rare features. For information on the environmental review process or other natural resource concerns, you may contact your DNR Regional Environmental Assessment Ecologist.

Thank you for consulting us on this matter, and for your interest in preserving Minnesota's rare natural resources.

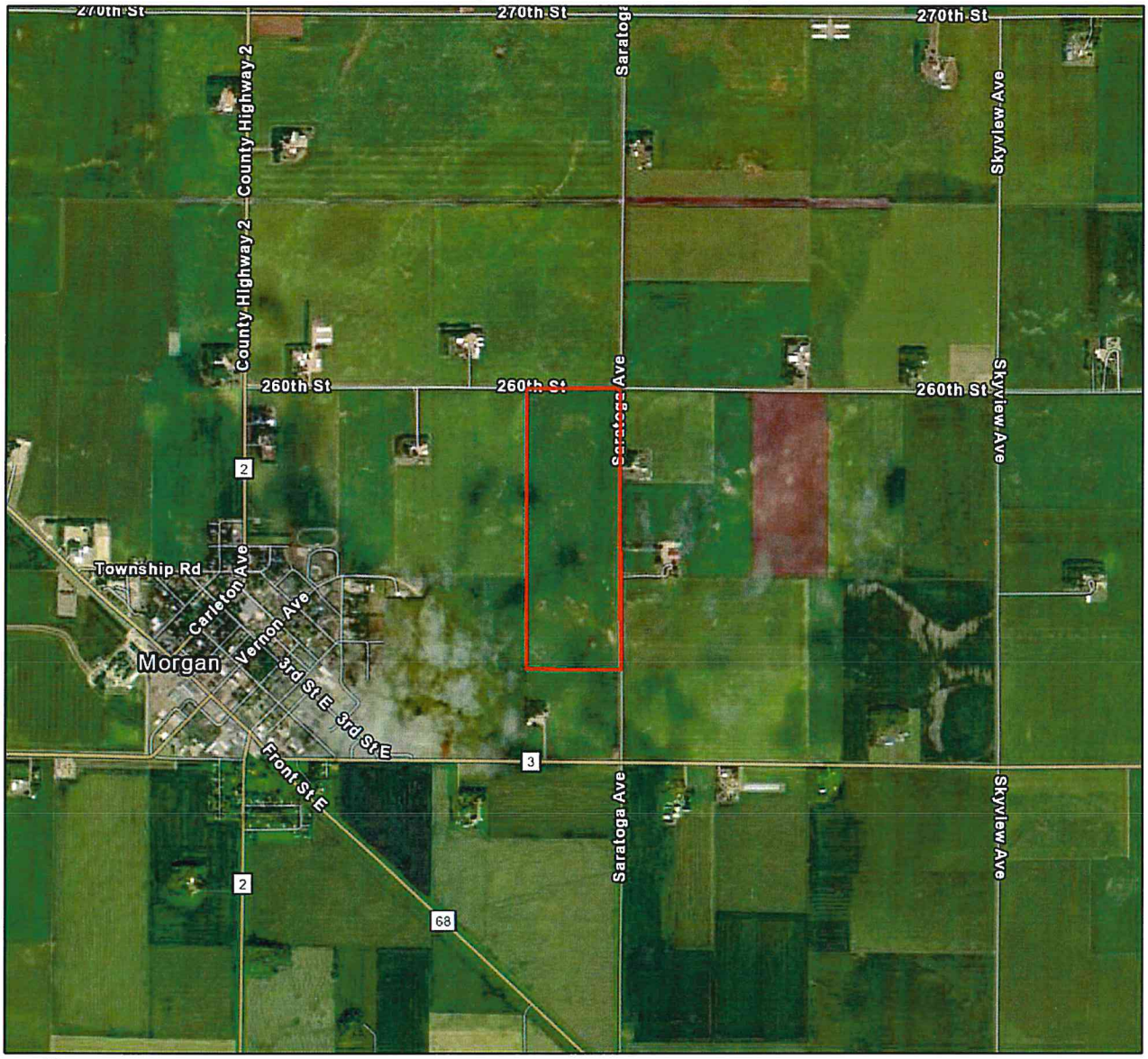
Sincerely,

Jim Drake Jim Drake
Natural Heritage Review Specialist
James.F.Drake@state.mn.us

Links: USFWS Information for Planning and Consultation (IPaC) tool
Information for Planning and Consultation (IPaC) tool
DNR Regional Environmental Assessment Ecologist Contact Info
https://www.dnr.state.mn.us/eco/ereview/erp_regioncontacts.html

RedwoodSun Solar

Aerial Imagery With Locator Map



N
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0 0.15 0.3 0.6 0.9 1.2
Miles

Project Boundary

Project Type: Power, Solar

Project Size (acres): 120.70

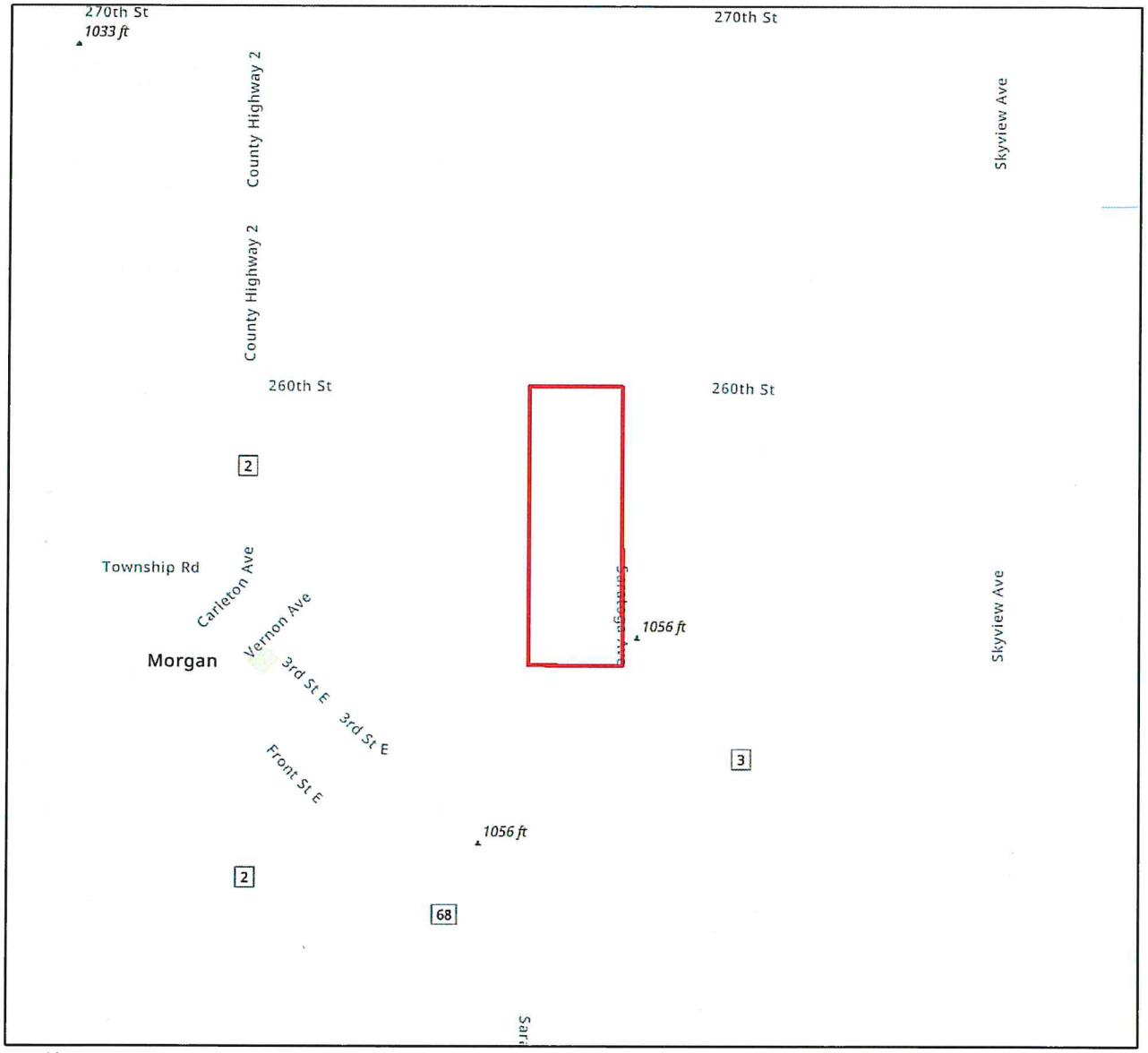
County(s): Redwood

TRS: T111 R34 S10, T111 R34 S14, T111 R34 S15

Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA
Earthstar Geographics

RedwoodSun Solar

USA Topo Basemap With Locator Map



Project Type: Power, Solar

Project Size (acres): 120.70

County(s): Redwood

TRS: T111 R34 S10, T111 R34 S14, T111 R34 S15

Esri, NASA, NGA, USGS, FEMA
Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Appendix C

U.S. Fish and Wildlife Service Information for Planning and Consultation Report

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
3815 American Blvd East
Bloomington, MN 55425-1659
Phone: (952) 858-0793

In Reply Refer To:
Project Code: 2023-0097402
Project Name: RedwoodSun Solar

12/10/2024 18:56:06 UTC

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

This response has been generated by the Information, Planning, and Conservation (IPaC) system to provide information on natural resources that could be affected by your project. The U.S. Fish and Wildlife Service (Service) provides this response under the authority of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), the Migratory Bird Treaty Act (16 U.S.C. 703-712), and the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*).

Threatened and Endangered Species
The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance
Please refer to refer to our Section 7 website for guidance and technical assistance, including step-by-step instructions for making effects determinations for each species that might be present and for specific guidance on the following types of projects: projects in developed areas, HUD, CDBG, EDA, USDA Rural Development projects, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

We recommend running the project (if it qualifies) through our **Minnesota-Wisconsin Federal Endangered Species Determination Key (Minnesota-Wisconsin ("D-key"))**. A demonstration video showing how-to access and use the determination key is available. Please note that the Minnesota-Wisconsin D-key is the third option of 3 available d-keys. D-keys are tools to help Federal agencies and other project proponents determine if their proposed action has the potential to adversely affect federally listed species and designated critical habitat. The Minnesota-Wisconsin D-key includes a structured set of questions that assists a project proponent in determining whether a proposed project qualifies for a certain predetermined consultation outcome for all federally listed species found in Minnesota and Wisconsin (except for the northern long-eared bat- see below), which includes determinations of "no effect" or "may affect, not likely to adversely affect." In each case, the Service has compiled and analyzed the best available information on the species' biology and the impacts of certain activities to support these determinations.

If your completed d-key output letter shows a "No Effect" (NE) determination for all listed species, print your IPaC output letter for your files to document your compliance with the Endangered Species Act.

For Federal projects with a "Not Likely to Adversely Affect" (NLAA) determination, our concurrence becomes valid if you do not hear otherwise from us after a 30-day review period, as indicated in your letter.

If your d-key output letter indicates additional coordination with the Minnesota-Wisconsin Ecological Services Field Office is necessary (i.e., you get a "May Affect" determination), you will be provided additional guidance on contacting the Service to continue ESA coordination outside of the key; ESA compliance cannot be concluded using the key for "May Affect" determinations unless otherwise indicated in your output letter.

Note: Once you obtain your official species list, you are not required to continue in IPaC with d-keys, although in most cases these tools should expedite your review. If you choose to make an effects determination on your own, you may do so. If the project is a Federal Action, you may want to review our section 7 step-by-step instructions before making your determinations.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of "There are no listed species found within the vicinity of the project," then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **no effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.
2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see below) – then project proponents must determine if proposed activities will have **no effect** on or **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain Life History Information for Listed and Candidate Species on our office website. If no impacts will occur to a species on the IPaC species list (e.g., there is no habitat present in the project area), the appropriate determination is **no effect**. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.

3. Should you determine that project activities **may affect** any federally listed, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

Northern Long-Eared Bats
Northern long-eared bats occur throughout Minnesota and Wisconsin and the information below may help in determining if your project may affect these species.

Suitable summer habitat for northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥3 inches dbh for northern long-eared bat that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, northern long-eared bats could be affected. For bat activity dates, please review Appendix L in the Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines.

Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas,
- Trees found in highly developed urban areas (e.g., street trees, downtown areas),
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees, and
- A monoculture stand of shrubby vegetation with no potential roost trees.

If IPaC returns a result that northern long-eared bats are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** this species **IF** one or more of the following activities are proposed:

- Clearing or disturbing suitable roosting habitat, as defined above, at any time of year,
- Any activity in or near the entrance to a cave or mine,
- Mining, deep excavation, or underground work within 0.25 miles of a cave or mine,
- Construction of one or more wind turbines, or
- Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on the northern long-eared bat. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC

species list report for your records.

If any of the above activities are proposed, and the northern long-eared bat appears on the user's species list, the federal project user will be directed to either the northern long-eared bat and tricolored bat range-wide D-key or the Federal Highways Administration, Federal Railways Administration, and Federal Transit Administration Indiana bat/Northern long-eared bat D-key, depending on the type of project and federal agency involvement. Similar to the Minnesota-Wisconsin D-key, these d-keys helps to determine if prohibited take might occur and, if not, will generate an automated verification letter. Additional information about available tools can be found on the Service's northern long-eared bat website.

Whooping Crane

Whooping crane is designated as a non-essential experimental population in Wisconsin and consultation under Section 7(a)(2) of the Endangered Species Act is only required if project activities will occur within a National Wildlife Refuge or National Park. If project activities are proposed on lands outside of a National Wildlife Refuge or National Park, then you are not required to consult. For additional information on this designation and consultation requirements, please review "Establishment of a Nonessential Experimental Population of Whooping Cranes in the Eastern United States."

Other Trust Resources and Activities

Bald and Golden Eagles - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. It is the responsibility of the project proponent to survey the area for any migratory bird nests. If there is an eagle nest on-site while work is on-going, eagles may be disturbed. We recommend avoiding and minimizing disturbance to eagles whenever practicable. If you cannot avoid eagle disturbance, you may seek a permit. A nest take permit is always required for removal, relocation, or obstruction of an eagle nest. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed voluntary guidelines for minimizing impacts.

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to guidelines developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's Wind Energy Guidelines. In addition, please refer to the Service's Eagle Conservation Plan Guidance, which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

State Department of Natural Resources Coordination
While it is not required for your Federal section 7 consultation, please note that additional state endangered or threatened species may also have the potential to be impacted. **Please contact the Minnesota or Wisconsin Department of Natural Resources for information on state listed species that may be present in your proposed project area.**

Minnesota
Minnesota Department of Natural Resources - Endangered Resources Review Homepage
Email: Review.NHIS@state.mn.us

Wisconsin
Wisconsin Department of Natural Resources - Endangered Resources Review Homepage
Email: DNRERReview@wi.gov

We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

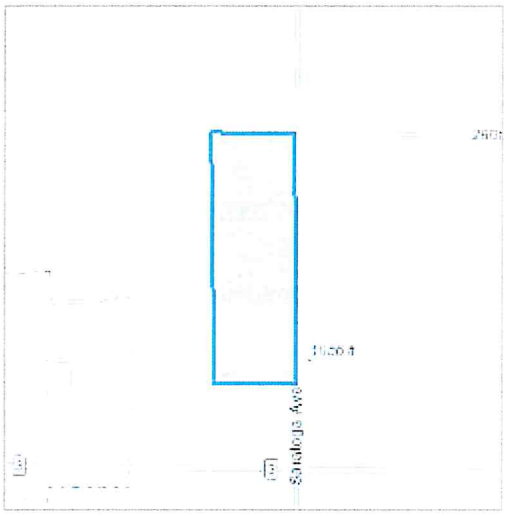
This species list is provided by:

Minnesota-Wisconsin Ecological Services Field Office
3815 American Blvd East
Bloomington, MN 55425-1659
(952) 858-0793

PROJECT SUMMARY

Project Code: 2023-0097402
Project Name: RedwoodSun Solar
Project Type: Power Gen - Solar
Project Description: Community solar garden
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.42162544999999,-94.9089381479296,14z



Counties: Redwood County, Minnesota

ENDANGERED SPECIES ACT SPECIES

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

CLAMS

NAME	STATUS
Salamander Mussel *Simpsonaias ambigua* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6208	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

THERE ARE NO BALD AND GOLDEN EAGLES WITHIN THE VICINITY OF YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Grasshopper Sparrow *Ammodramus savannarum perpallidus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8329	Breeds Jun 1 to Aug 20
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

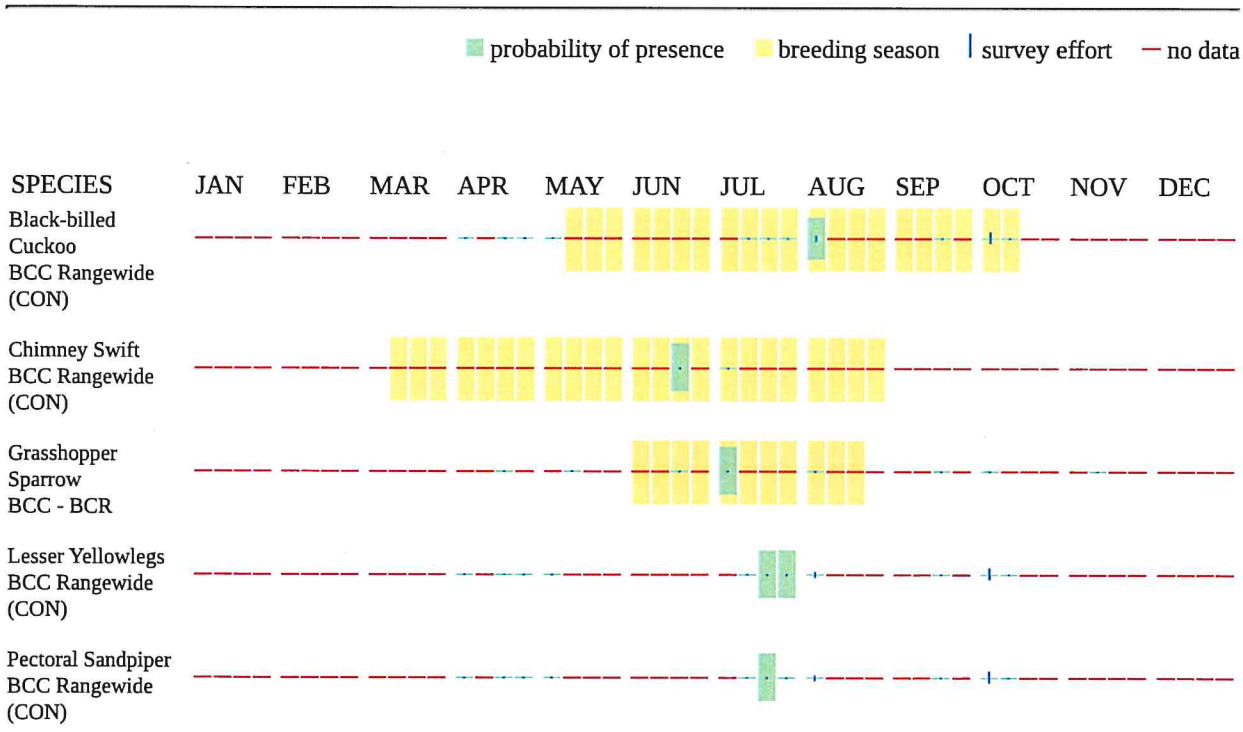
Probability of Presence ( )

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season ( )
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

IPAC USER CONTACT INFORMATION

Agency: WSB
Name: Lucas Wandrie
Address: 701 Xenia Ave S, Ste 300
City: Golden Valley
State: MN
Zip: 55416
Email lwandrie@wsbeng.com
Phone: 6124520540

Appendix D

Minnesota State Historic Preservation Office Correspondence

Shawn Williams

From: MN_MNIT_Data Request SHPO <DataRequestSHPO@state.mn.us>
Sent: Thursday, June 29, 2023 3:09 PM
To: Shawn Williams
Cc: Lucas Wandrie
Subject: RE: SHPO Database Search Request - RedwoodSun Solar
Attachments: History.xls

EXTERNAL EMAIL

Hello Shawn,

Please see attached. Our database has no archaeological records for the given project area.

Jim

DEPARTMENT OF ADMINISTRATION
STATE HISTORIC PRESERVATION OFFICE

SHPO Data Requests
Minnesota State Historic Preservation Office
50 Sherburne Avenue, Suite 203
Saint Paul, MN 55155
(651) 201-3299
datarequestshpo@state.mn.us

Notice: This email message simply reports the results of the cultural resources database search you requested. The database search is only for previously known archaeological sites and historic properties. **IN NO CASE DOES THIS DATABASE SEARCH OR EMAIL MESSAGE CONSTITUTE A PROJECT REVIEW UNDER STATE OR FEDERAL PRESERVATION LAWS –** please see our website at https://mn.gov/admin/shpo/protection/ for further information regarding our Environmental Review Process.
Because the majority of archaeological sites in the state and many historic/architectural properties have not been recorded, important sites or properties may exist within the search area and may be affected by development projects within that area. Additional research, including field surveys, may be necessary to adequately assess the area's potential to contain historic properties or archaeological sites.
Properties that are listed in the National Register of Historic Places (NRHP) or have been determined eligible for listing in the NRHP are indicated on the reports you have received, if any. The following codes may be on those reports:
NR – National Register listed. The properties may be individually listed or may be within the boundaries of a National Register District.
CEF – Considered Eligible Findings are made when a federal agency has recommended that a property is eligible for listing in the National Register and MN SHPO has accepted the recommendation for the purposes of the Environmental Review Process. These properties need to be further assessed before they are officially listed in the National Register.
SEF – Staff eligible Findings are those properties the MN SHPO staff considers eligible for listing in the National Register, in circumstances other than the Environmental Review Process.
DOE – Determination of Eligibility is made by the National Park Service and are those properties that are eligible for listing in the National Register, but have not been officially listed.
CNEF – Considered Not Eligible Findings are made during the course of the Environmental Review Process. For the purposes of the review a property is considered not eligible for listing in the National Register. These properties may need to be reassessed for eligibility under additional or alternate contexts.
Properties without NR, CEF, SEF, DOE, or CNEF designations in the reports may not have been evaluated and therefore no assumption to their eligibility can be made. Integrity and contexts change over time, therefore any eligibility determination made ten (10) or more years from the date of the current survey are considered out of date and the property will need to be reassessed.

If you require a comprehensive assessment of a project's potential to impact archaeological sites or historic/architectural properties, you may need to hire a qualified archaeologist and/or historian. If you need assistance with a project review, please contact Kelly Gragg-Johnson, Environmental Review Specialist @ 651-201-3285 or by email at kelly.graggjohnson@state.mn.us.
The Minnesota SHPO Archaeology and Historic/Architectural Survey Manuals can be found at https://mn.gov/admin/shpo/identification-evaluation/.

Please subscribe to receive SHPO notices for the most current updates regarding office hours, accessing research files, or changes in submitting materials to the SHPO.

To access historic resource information please visit our webpage on Using SHPO's Files.

From: Shawn Williams <SWilliams@wsbeng.com>
Sent: Monday, June 26, 2023 12:22 PM
To: MN_MNIT_Data Request SHPO <DataRequestSHPO@state.mn.us>
Cc: Lucas Wandrie <lwandrie@wsbeng.com>
Subject: SHPO Database Search Request - RedwoodSun Solar

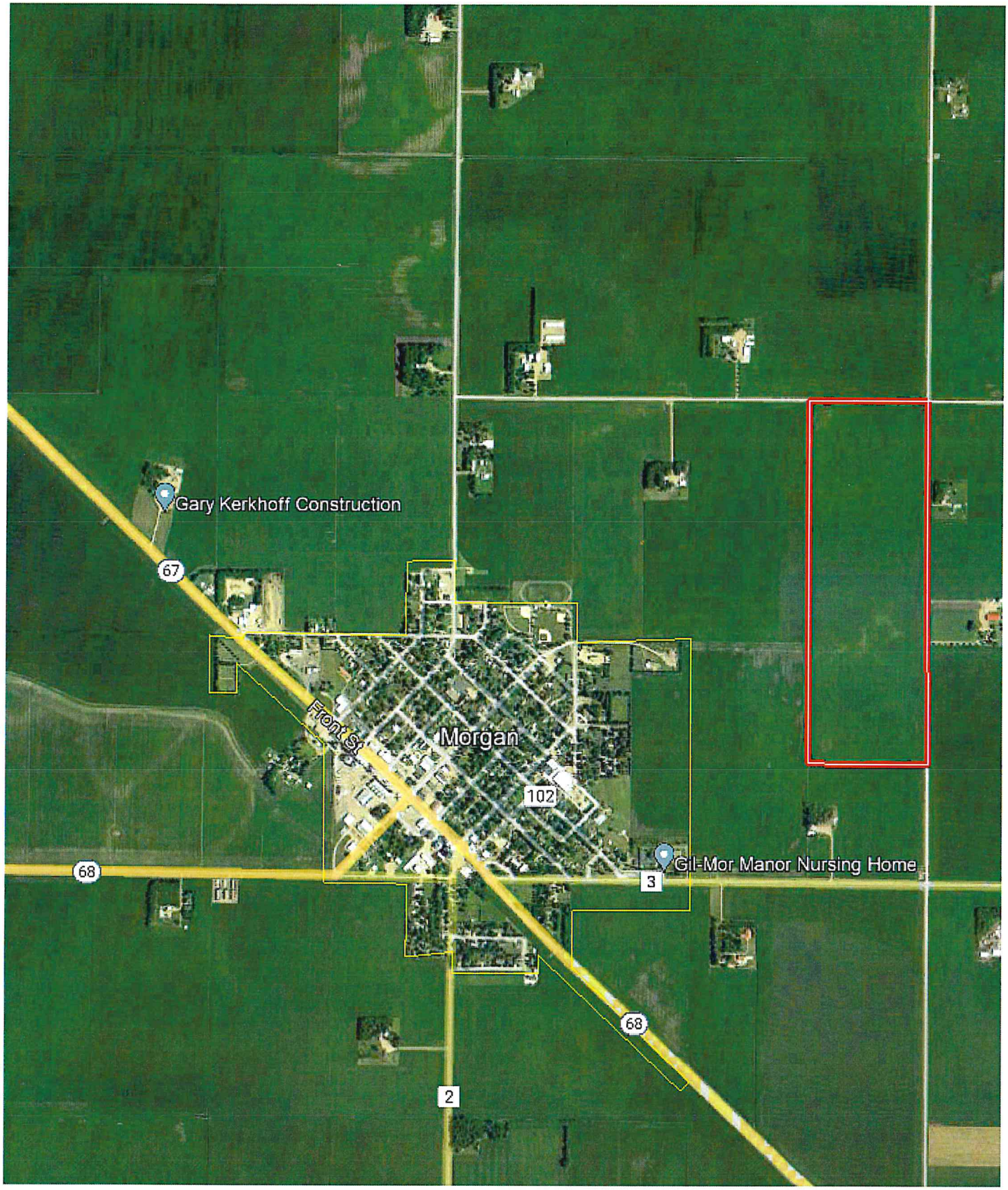
Good afternoon

On behalf of SunShare, we are requesting a database search for the proposed RedwoodSun solar project.

Thank you

The project is located near Morgan, MN in: NE ¼ Section 15, T111N, R34W

Location Map:



Shawn Williams , CMWP
Sr. Environmental Scientist
612.360.1305 (o)
WSB | wsbeng.com

For a list of WSB employee licenses and certifications visit here.

Appendix F: Decommissioning Plan

Appendix F: Decommissioning Plan

RedwoodSun Solar Project
Decommissioning Plan
Phase 1

WSB

Project No. 026704-000

Engineer Certification

I hereby certify that this Decommissioning Plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Jared D. Dummer

Jared D. Dummer, P.E.	59621 MN Registration No.	December 11, 2024 Date

Dakota Sun Solar Project, SunShare LLC Decommissioning Plan, Phase 1

I) Introduction

All decommissioning and restoration activities will adhere to the requirements of appropriate governing authorities, and in accordance with all federal, state and local permits. The decommissioning and restoration process comprises the removal of above and below ground structures and restoration of topsoil.

II) Procedures For Decommissioning After Ceasing Operation

The Project consists of numerous recyclable materials, including glass, semiconductor material, steel, wood, aluminum, copper, and plastics. When the Project reaches the end of its operational life, the component parts can be dismantled and recycled. The Project components will be dismantled and removed using minimal impact conventional construction equipment and recycled or disposed of safely.

III) Deconstruction of Commercial Solar Energy Facilities

A. The Commercial Solar Energy Facility Owner shall, at its expense, complete Deconstruction of a Commercial Solar Energy Facility within 90 days after the end of the Useful Life of the Commercial Solar Energy Facility or they system's discontinued use. If a system does not generate energy for a period of 12 consecutive months, it is deemed to be a discontinued use.

B. Deconstruction of a Commercial Solar Energy Facility shall include the removal/disposition of all solar related equipment/facilities, including the

following utilized for operation of all Commercial Solar Energy Facility and located on Landowner property:

1. Solar Panels, cells and modules;
2. Solar panel mounts and racking, including any helical piles, ground screws, ballasts, or other anchoring systems;
3. Solar panel foundations, if used (to depth of 5 feet);
4. Transformers, inverters, energy storage facilities, or substations, including all components and foundations; however, electrical collection cables at a depth of 5 feet or greater may be left in place;
5. Overhead collection system components;
6. Operations/maintenance buildings, spare parts buildings and substation/switching gear buildings unless otherwise agreed to by the Landowner;
7. Access Roads(s) unless Landowner requests in writing that the access road is to remain;
8. Operation/maintenance yard/staging area unless otherwise agreed to by the Landowner; and
9. Debris and litter generated by Deconstruction and Deconstruction crews.

IV) Table 1: Equipment Dismantling and Removal

Structures	Activity
Above Ground	
PV Arrays	• Disconnect all above ground wirings, cables and electrical interconnections. • Remove PV modules from racks, temporarily store on-site in delineated area before removal by truck to appropriate facility(ies). • Dismantle and remove all racks and support structures, including extraction of in-ground support structures (see below). Temporarily store on-site before removal by truck to recycling facility.
Inverter units and transformers	• Disconnect and remove all electrical equipment. • Remove inverters and associated components including combiners, low voltage switchgear and medium voltage transformers and transport off-site to appropriate facility.

	• Unbolt substation transformer and remove from the foundation with a crane. • If concrete foundations have been used for inverter units or substation, they will be removed (see below).
Access roads and other components	• Consult with landowner(s) to determine if access roads should be left in place for their continued use. • If one or more access roads are removed after consultation with the landowner(s), the aggregate materials will be excavated by a backhoe/front-end loader, along with any underlying geotextile fabric. • All compacted areas will be tilled in a manner adequate to restore the sub-grade material to the proper density and depth, consistent with the surrounding fields. Clean, compatible subgrade material, followed by topsoil will be applied as necessary. • Above ground lines and poles will be removed along with associated equipment (isolation switches, fuses, metering) and holes will be filled in with clean fill or onsite fill. • Removal of the perimeter fencing, followed by removal of fence pole foundations will be completed.
Below-ground Structures	
Underground cables	• Underground electrical lines running between inverters and the substation will be removed.
Equipment foundations	• The substation, inverter units and steel racking for the solar modules will have foundations that require removal. These foundations will likely consist of steel piles but may also include concrete. Other underground infrastructure requiring removal may include concrete protective electrical structures. It is anticipated that structures will be fully removed from the ground and that the affected area shall be backfilled as necessary.

	• In the event that a structure breaks during excavation, all broken portions will be removed by the EPC contractor. Waste concrete will be recycled off-site by a concrete recycler or crushed on-site and used as backfill material. • All foundation materials will be removed from the site via truck and managed at appropriate facilities.

V) Table 2: Management of Excess Material and Waste

Material/Waste	Activity
PV panels	• If there is no possibility for reuse of panels will either be returned to the manufacturer for appropriate recycling/disposal or will be transported to a recycling facility where the glass, metal and semiconductor materials will be separated and recycled. Panels will be managed as per best management practices that may be in effect at the time of decommissioning.
Metal array mounting racks and steel supports	• These materials will be recycled off-site at an approved facility.
Transformers and substation components	• Oil from the transformers will be removed on-site to reduce the potential for spills and will be transported to an approved facility for disposal. The substation transformer and step-up transformers in the inverter units will be transported off-site to be sent back to the manufacturer, recycled, reused, or safely disposed off-site in accordance with current standards and best practices.
Inverters, fans, fixtures	• The metal components of the inverters, fans and fixtures will be recycled, where possible. Remaining components will be disposed of in accordance with the standards of the day.
Concrete inverter/transformer foundations	• Concrete foundations will be broken down and transported by certified and licensed contractor to an approved recycling disposal facility.
Cables and wiring	• The electrical line that connects the substation to the point of common coupling will be disconnected and recycled, if possible,

	or disposed of at an approved facility. Support poles, if made of untreated wood, will be chipped for reuse. Associated electronic equipment (isolation switches, fuses, metering) will be transported off-site to be sent back to the manufacturer, recycled, reused, or safely disposed off-site in accordance with current standards and best practices.
Fencing	• Fencing will be removed and recycled at a metal recycling facility.
Debris	• Any remaining debris on the site will be separated into recyclables/residual wastes and will be transported from the site and managed as appropriate.

VI) Decommissioning Notification

During the Jurisdiction permit process, the Commercial Solar Energy Facility Owner shall file with the Jurisdiction, a Deconstruction Plan. A second Deconstruction Plan shall be filed with the Jurisdiction on or before the end of the tenth year of the Commercial Operation Date.

VII) Financial Framework and Estimated Cost for Decommissioning

A. The Commercial Solar Energy Facility Owner shall provide the Jurisdiction with Financial Assurance to cover the estimated costs of Deconstruction of the Commercial Solar Energy Facility. Provision of this Financial Assurance shall be phased in over the first 25 years of the Project's operation as follows:

1. On or before the tenth anniversary of the Commercial Operation Date, the Commercial Solar Energy Facility Owner shall provide the Jurisdiction with Financial Assurance to cover twenty-five (25) percent of the estimated costs of Deconstruction of the Commercial Solar Energy Facility as determined in the Deconstruction Plan provided during the Jurisdiction permit process.
2. On or before the fifteenth anniversary of the Commercial Operation Date, the Commercial Solar Energy Facility Owner shall provide the Jurisdiction with Financial Assurance to cover fifty (50) percent of the estimated costs of Deconstruction of the Commercial Solar Energy Facility as determined in the Deconstruction Plan provided during the Jurisdiction permit process.
3. On or before the twentieth anniversary of the Commercial Operation Date, the Commercial Solar Energy Facility Owner shall provide the Jurisdiction with Financial Assurance to cover seventy-five (75) percent of the estimated costs of Deconstruction of the commercial Solar Energy Facility as determined in the Deconstruction Plan provided during the tenth year of the

Commercial Operation Date.

4. On or before the twenty-fifth anniversary of the Commercial Operation Date, the Commercial Solar Energy Facility Owner shall provide the Jurisdiction with Financial Assurance to cover one hundred (100) percent of the estimated costs of Deconstruction of the commercial Solar Energy Facility as determined in the Deconstruction Plan provided during the tenth year of the Commercial Operation Date.
5. The Financial Assurance shall not release the surety from liability until the Financial Assurance is replaced. The use of salvage value as a setoff is dependent upon an agreement by the Commercial Solar Facility Owner that all interests in the salvage value are subordinate to that of the Jurisdiction if Abandonment occurs.
6. Any cost incurred by the county for the decommissioning of a discontinued system, as a result of an inadequate financial surety, shall be assessed back to the landowner under Subd, of Minnesota Statue 375.18, as amended.

B. The Jurisdiction may - but is not required to - reevaluate the estimated costs of Deconstruction of any Commercial Solar Energy Facility after the fifth anniversary and every five years thereafter, of the Commercial Operation Date. Based on any reevaluation, the Jurisdiction may require the changes in the level of Financial Assurance used to calculate the phased coverages described in Section VII, A. required from the Commercial Solar Energy Facility Owner. If the Jurisdiction is unable to its satisfaction to perform the investigations necessary to approve the Deconstruction Plan filed by the Owner, then the Jurisdiction may select a separate Professional Engineer independent of the Owner to conduct any necessary investigations. The Owner shall be responsible for the cost of any such investigations.

C. Upon Abandonment, the Jurisdiction may take all appropriate actions for Deconstruction, including drawing upon the Financial Assurance.

Site specific decommissioning costs for the RedwoodSun Solar Project Phase 1, RedwoodSun LLC site located in Redwood County, MN is estimated as follows:

Tasks	Estimated Cost ($)
Mobilization	$15,200
SWPPP Prep and Permit	$5,000
Remove Foundation Posts	$3,500
Remove Panels	$12,450
Dismantle Racks	$6,600
Remove Electrical Equipment	$5,600
Remove Racks	$3,640
Remove Cable	$7,500
Remove Poles	$9,000
Remove Fencing	$25,300
Remove Service Roads	$105,400
Site Restoration	$10,300
Estimated Total (2024 Dollars)	$209,890

RedwoodSun Solar Project
Decommissioning Plan
Phase 2

WSB

Project No. 026704-000

Engineer Certification

I hereby certify that this Decommissioning Plan was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Jared D. Dummer

59621	December 11, 2024
Jared D. Dummer, P.E.	MN Registration No.	Date

RedwoodSun Solar Project, RedwoodSun LLC Decommissioning Plan, Phase 2

I) Introduction

All decommissioning and restoration activities will adhere to the requirements of appropriate governing authorities, and in accordance with all federal, state and local permits. The decommissioning and restoration process comprises the removal of above and below ground structures and restoration of topsoil.

II) Procedures For Decommissioning After Ceasing Operation

The Project consists of numerous recyclable materials, including glass, semiconductor material, steel, wood, aluminum, copper, and plastics. When the Project reaches the end of its operational life, the component parts can be dismantled and recycled. The Project components will be dismantled and removed using minimal impact conventional construction equipment and recycled or disposed of safely.

III) Deconstruction of Commercial Solar Energy Facilities

A. The Commercial Solar Energy Facility Owner shall, at its expense, complete Deconstruction of a Commercial Solar Energy Facility within 90 days after the end of the Useful Life of the Commercial Solar Energy Facility or the system's discontinued use. If a system does not generate energy for a period of 12 consecutive months, it is deemed to be a discontinued use.

B. Deconstruction of a Commercial Solar Energy Facility shall include the removal/disposition of all solar related equipment/facilities, including the following utilized for operation of all Commercial Solar Energy Facility and located on Landowner property:

1. Solar Panels, cells and modules;
2. Solar panel mounts and racking, including any helical piles, ground screws, ballasts, or other anchoring systems;
3. Solar panel foundations, if used (to depth of 5 feet);
4. Transformers, inverters, energy storage facilities, or substations, including all components and foundations; however, electrical collection cables at a depth of 5 feet or greater may be left in place;
5. Overhead collection system components;
6. Operations/maintenance buildings, spare parts buildings and substation/switching gear buildings unless otherwise agreed to by the Landowner;
7. Access Roads(s) unless Landowner requests in writing that the access road is to remain;
8. Operation/maintenance yard/staging area unless otherwise agreed to by the Landowner; and
9. Debris and litter generated by Deconstruction and Deconstruction crews.

IV) Table 1: Equipment Dismantling and Removal

Structures	Activity
Above Ground	
PV Arrays	• Disconnect all above ground wirings, cables and electrical interconnections. • Remove PV modules from racks, temporarily store on-site in delineated area before removal by truck to appropriate facility(ies). • Dismantle and remove all racks and support structures, including extraction of in-ground support structures (see below). Temporarily store on-site before removal by truck to recycling facility.
Inverter units and transformers	• Disconnect and remove all electrical equipment. • Remove inverters and associated components including combiners, low voltage switchgear and medium voltage transformers and transport off-site to appropriate facility.

	• Unbolt substation transformer and remove from the foundation with a crane. • If concrete foundations have been used for inverter units or substation, they will be removed (see below).
Access roads and other components	• Consult with landowner(s) to determine if access roads should be left in place for their continued use. • If one or more access roads are removed after consultation with the landowner(s), the aggregate materials will be excavated by a backhoe/front-end loader, along with any underlying geotextile fabric. • All compacted areas will be tilled in a manner adequate to restore the sub-grade material to the proper density and depth, consistent with the surrounding fields. Clean, compatible subgrade material, followed by topsoil will be applied as necessary. • Above ground lines and poles will be removed along with associated equipment (isolation switches, fuses, metering) and holes will be filled in with clean fill or onsite fill. • Removal of the perimeter fencing, followed by removal of fence pole foundations will be completed.
Below-ground Structures	
Underground cables	• Underground electrical lines running between inverters and the substation will be removed.
Equipment foundations	• The substation, inverter units and steel racking for the solar modules will have foundations that require removal. These foundations will likely consist of steel piles but may also include concrete. Other underground infrastructure requiring removal may include concrete protective electrical structures. It is anticipated that structures will be fully removed from the ground and that the affected area shall be backfilled as necessary.

	• In the event that a structure breaks during excavation, all broken portions will be removed by the EPC contractor. Waste concrete will be recycled off-site by a concrete recycler or crushed on-site and used as backfill material. • All foundation materials will be removed from the site via truck and managed at appropriate facilities.

V) Table 2: Management of Excess Material and Waste

Material/Waste	Activity
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Metal array mounting racks and steel supports	• These materials will be recycled off-site at an approved facility.
Transformers and substation components	• Oil from the transformers will be removed on-site to reduce the potential for spills and will be transported to an approved facility for disposal. The substation transformer and step-up transformers in the inverter units will be transported off-site to be sent back to the manufacturer, recycled, reused, or safely disposed off-site in accordance with current standards and best practices.
Inverters, fans, fixtures	• The metal components of the inverters, fans and fixtures will be recycled, where possible. Remaining components will be disposed of in accordance with the standards of the day.
Concrete inverter/transformer foundations	• Concrete foundations will be broken down and transported by certified and licensed contractor to an approved recycling disposal facility.
Cables and wiring	• The electrical line that connects the substation to the point of common coupling will be disconnected and recycled, if possible,

	or disposed of at an approved facility. Support poles, if made of untreated wood, will be chipped for reuse. Associated electronic equipment (isolation switches, fuses, metering) will be transported off-site to be sent back to the manufacturer, recycled, reused, or safely disposed off-site in accordance with current standards and best practices.
Fencing	• Fencing will be removed and recycled at a metal recycling facility.
Debris	• Any remaining debris on the site will be separated into recyclables/residual wastes and will be transported from the site and managed as appropriate.

VI) Decommissioning Notification

During the Jurisdiction permit process, the Commercial Solar Energy Facility Owner shall file with the Jurisdiction, a Deconstruction Plan. A second Deconstruction Plan shall be filed with the Jurisdiction on or before the end of the tenth year of the Commercial Operation Date.

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1. On or before the tenth anniversary of the Commercial Operation Date, the Commercial Solar Energy Facility Owner shall provide the Jurisdiction with Financial Assurance to cover twenty-five (25) percent of the estimated costs of Deconstruction of the Commercial Solar Energy Facility as determined in the Deconstruction Plan provided during the Jurisdiction permit process.
2. On or before the fifteenth anniversary of the Commercial Operation Date, the Commercial Solar Energy Facility Owner shall provide the Jurisdiction with Financial Assurance to cover fifty (50) percent of the estimated costs of Deconstruction of the Commercial Solar Energy Facility as determined in the Deconstruction Plan provided during the Jurisdiction permit process.
3. On or before the twentieth anniversary of the Commercial Operation Date, the Commercial Solar Energy Facility Owner shall provide the Jurisdiction with Financial Assurance to cover seventy-five (75) percent of the estimated costs of Deconstruction of the commercial Solar Energy Facility as determined in the Deconstruction Plan provided during the tenth year of the

Commercial Operation Date.

4. On or before the twenty-fifth anniversary of the Commercial Operation Date, the Commercial Solar Energy Facility Owner shall provide the Jurisdiction with Financial Assurance to cover one hundred (100) percent of the estimated costs of Deconstruction of the commercial Solar Energy Facility as determined in the Deconstruction Plan provided during the tenth year of the Commercial Operation Date.
5. The Financial Assurance shall not release the surety from liability until the Financial Assurance is replaced. The use of salvage value as a setoff is dependent upon an agreement by the Commercial Solar Facility Owner that all interests in the salvage value are subordinate to that of the Jurisdiction if Abandonment occurs.
6. Any cost incurred by the county for the decommissioning of a discontinued system, as a result of an inadequate financial surety, shall be assessed back to the landowner under Subd, of Minnesota Statue 375.18, as amended.

B. The Jurisdiction may - but is not required to - reevaluate the estimated costs of Deconstruction of any Commercial Solar Energy Facility after the fifth anniversary and every five years thereafter, of the Commercial Operation Date. Based on any reevaluation, the Jurisdiction may require the changes in the level of Financial Assurance used to calculate the phased coverages described in Section VII, A. required from the Commercial Solar Energy Facility Owner. If the Jurisdiction is unable to its satisfaction to perform the investigations necessary to approve the Deconstruction Plan filed by the Owner, then the Jurisdiction may select a separate Professional Engineer independent of the Owner to conduct any necessary investigations. The Owner shall be responsible for the cost of any such investigations.

C. Upon Abandonment, the Jurisdiction may take all appropriate actions for Deconstruction, including drawing upon the Financial Assurance.

Site specific decommissioning costs for the RedwoodSun Solar Project Phase 2, RedwoodSun LLC site located in Redwood County, MN is estimated as follows:

Tasks	Estimated Cost ($)
Mobilization	$13,900
SWPPP Prep and Permit	$5,000
Remove Foundation Posts	$13,100
Remove Panels	$57,740
Dismantle Racks	$26,400
Remove Racks	$4,160
Remove Cable	$7,500
Remove Service Roads	$25,200
Site Restoration	$33,700
Estimated Total (2024 Dollars)	$186,800

Conditions for Permit No. 1-25 (RedwoodSun – Green Site)

1. The permit holder shall comply with all applicable laws, rules, and regulations, including but not limited to Redwood County Ordinance, as hereafter amended from time to time.

2. The permit holder shall allow the Redwood County Environmental Office to inspect the site of the project for all purposes permitted by law whenever deemed necessary by the Redwood County Environmental Office.

3. The construction, maintenance, operation, and decommissioning of the project will conform to the Application for a Conditional Use Permit submitted by Colin O'Neil on behalf of RedwoodSun, LLC, and property owners Richrad and Lynn Green, as attached to the Conditional Use Permit.

4. All obsolete or unused solar panels and accompanying accessory structures and equipment, etc. shall be removed within 12 months of the cessation of the operations at this site.

5. The permit holder shall contact all relevant local, state, and federal authorities/entities and inquire as to whether a permit and/or license is required. If a permit and/or license is required, the permit holder shall apply for and obtain any and all required permits and/or licenses. A copy of all such permits and/or licenses shall be provided to the Redwood County Environmental Office upon request.

6. The permit holder shall take appropriate and reasonable measures to assure that all surface water runoff satisfies all applicable local, state, and federal discharge standards.

7. The permit holder shall not allow the conditional use to be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted.

8. The permit holder shall not allow the conditional use to impede the normal and orderly development and improvement of surrounding vacant property for uses predominant to the area.

9. Prior to beginning construction of any type on the property, the permit holder shall have the county tile line located at the permit-holder's expense. The portions of the county tile that are located under the proposed road shall be replaced, at permit-holder's expense, with non-perforated pipe of a material, length, and weight approved by the Drainage Inspector. The setback from the tile line shall be reduced to a minimum of 40 feet on one side of the tile line, as long as the minimum 100-foot setback is maintained on the opposite side of the tile line. The permit holder shall sign the setback waiver prepared by the Redwood County Environmental Office.

10. The permit holder is responsible for the control of all noxious weeds on the permitted site. The permit holder must keep the permitted site clean and free of debris on a regular basis.

11. Adequate utilities, access roads, drainage, and other necessary facilities will be provided and continue to be provided by the permit holder now and in the future.

12. The permit holder shall plant and maintain a vegetative screen on the east side of the permitted site (along the public road right-of-way) in order to screen the site from the public view. The vegetative screen shall consist of native tall grass. The seed mix, location, and size of the vegetative screen must be approved by the Zoning Administrator.

13. The Redwood County Planning Commission shall review the conditional use permit and shall be authorized to take any and all necessary action(s), including but not limited to revoking the conditional use permit and/or requiring the permit holder to reapply for a conditional use permit, if: 1) The Redwood County Environmental Office acquires information previously unavailable that indicates the terms and conditions of the permit do not accurately represent the actual circumstances of the permitted facility or the conditional use; 2) It is discovered subsequent to the issuance of the permit the permit holder failed to disclose all facts relevant to the issuance of the permit or submitted false or misleading information to the Redwood County Environmental Office, the Redwood County Planning Commission, or the Redwood County Board of Commissioners; 3) The Redwood County Environmental Office determines the permitted facility or conditional use endangers human health or the environment; and/or (4) The permit holder violates any of the herein described conditions.

COUNTY TILE LINE SETBACK WAIVER
REDWOODSUN, LLC /GREEN SITE
SECTION 15, MORGAN TOWNSHIP

Southwest Minnesota
Redwood County
Environmental

Date:_____

Redwood County Code of Ordinances, Title XV, Section 153.281(C)(1) requires a minimum 100-foot setback between a public tile line and any structure. Section 153.337 (A)(1) establishes that solar energy systems shall be subject to the structure setbacks in respect to county tile lines. Sections 153.281(C)(4) and 153.337(A)(2) allow the Zoning Administrator to waive or reduce the 100-foot setback on review and approval of the Drainage Inspector.

The Redwood County Zoning Administrator and the Redwood County Drainage Inspector have agreed to grant a tile line setback waiver on a tract of land, owned by Richard C. Green and Lynn M. Green, located in the East Half of the Northeast Quarter (E1/2 NE1/4) and the Northeast Quarter of the Southeast Quarter (NE1/4 SE1/4), Section 15, Morgan Township (parcel #59-015-1040), for purposes of the construction of a community solar garden, pursuant to Conditional Use Permit #1-25.

The structural setback to a judicial tile line will be waived from 100' to 40' on one side of the tile line, in respect to the judicial tile line known as JD 17 Branch 12-A and the solar panels and solar panel structures in said community solar garden. The 100' setback shall be maintained on the opposing side of the tile line, so that at all times, a 140' strip of land is available for repairs and maintenance of the tile line. Due to the layout of the proposed solar garden, it is expected that the southern portion of the solar garden will have a 100' setback on the west side of the tile line and a 40' setback on the east side of the tile line, while the northern portion will have a 100' setback on the east side of the tile line and a 40' setback on the west side of the tile line. This waiver applies only to the community solar garden to be constructed under Conditional Use Permit #1-25, available for review in the Redwood County Environmental Office.

By reducing the minimum setback requirement, the project will not negatively affect the structure or utility of the tile and will not create problems for the future maintenance or relocation of the tile. The County is not responsible for any damage to any structure, building or other property occurring due to the waiver of the tile line setback.

RedwoodSun, LLC accepts all liability for all structures that RedwoodSun, LLC places within 100 feet of JD 17 Judicial Branch 12-A.

There shall be no setback required between the county tile line and any fence or access road constructed on the property, provided that the fence and road do not interfere with the performance of the tile line, and the county shall not be liable for the cost of removal or replacement of any portion of the fence or road needing to be moved in order to conduct tile maintenance or repair. The portions of the tile line that are located under the proposed access road shall be replaced, at the sole expense of RedwoodSun, LLC, with a non-perforated pipe of a material, length, and weight approved by the Drainage Inspector.

In the event that it is necessary for the maintenance or relocation of the tile line, RedwoodSun, LLC agrees to remove the relevant sections of the perimeter fence and/or access road at its sole expense and to hold harmless and indemnify Redwood County against any and all claims and actions by or through RedwoodSun, LLC arising from Redwood County's actions to fix and maintain JD 17 Branch 12-A.

This agreement is binding upon, and inures to the benefit of, the parties and their respective successors and assigns.

_____

Nick Brozek
Redwood County
Zoning Administrator

_____

Brent Lang
Redwood County
Drainage Inspector

RedwoodSun, LLC

By:_____

Its:_____

AFFIDAVIT OF SERVICE VIA U.S. MAIL

STATE OF MINNESOTA)
) ss
COUNTY OF REDWOOD)

RE: ***Application for Conditional Use Permit*** **submitted by Colin O' Neil of RedwoodSun, LLC, o/b/o landowners Richard & Lynn Green; Permit Application No. 1-25**

I, Lali Ortega, a person not less than eighteen (18) years of age, being first duly sworn upon oath, hereby state a copy of the following:

1. **Written Notice of Public Hearing on Application for Conditional Use Permit; and**
2. **Notice of Public Hearing**

was duly served upon:

-SEE ATTACHED-

by enclosing a copy of the same in an envelope, with postage prepaid, and depositing said envelope in a United States Postal Service mailbox located at Redwood Falls, Minnesota on the 10th day of January, 2025.

Lali Ortega
Environmental Administrative Assistant

Subscribed and sworn to before me, a Notary Public, on this 10th day of January, 2025, by Lali Ortega.

Notary Public

NICHOLAS W BROZEK
NOTARY PUBLIC - MINNESOTA
My Comm. Exp. Jan. 31, 2029

PID	NAME	C/O	Address	Address2	CITY	STATE	ZIP
590232040	CHRISTENSEN/KEITH O & DEBRA R		44158 CO HWY 3		MORGAN	MN	56266
590113020	DRUSCH/DEAN		44465 260 ST		MORGAN	MN	56266
590151040	GREEN/RICHARD C & LYNN M		43569 260 ST		MORGAN	MN	56266
590154020	HUIRAS/GERALD J		PO BOX 427		MORGAN	MN	56266
590221010	IFFERT/ARNOLD V/FT ETAL	% LORI HAMAN	38 CAPRI DR		MANKATO	MN	56001
590151020	KERKHOFF/LORRAINE M/ETAL	% MARY LEE DALLMAN	21595 BEACH RD		DEERWOOD	MN	56444
590142020	LUND/WILLIAM H & KIMBERLY J		25781 SARATOGA AVE		MORGAN	MN	56266
590103060	MAURER/JOEL ROBERT		PO BOX 383		LORETTO	MN	55357-0383
590142040	MAURER/RICHARD J & KIMBERLY R		25501 SARATOGA AVE		MORGAN	MN	56266
590143040	PETERSON/DUWAYNE A/TRUST ETAL		611 GARDEN ST		SPRINGFIELD	MN	56087
590142030	RADDATZ/RONALD M & JANET A	ETAL	45261 260 ST		MORGAN	MN	56266
590154040	NORTHERN STATES POWER	ATTN: PROPERTY TAX DEPT	414 NICOLLET MALL		MINNEAPOLIS	MN	55401-1993
	MARY TAUER	MORGAN TOWNSHIP CLERK	41564 CO HWY 4		MORGAN	MN	56266
	LISA STEFFL	MORGAN CITY CLERK	PO BOX 27		MORGAN	MN	56266
APPLICANT	COLIN O'NEIL	REDWOODSUN, LLC	202 N CEDAR AVENUE STE 1		OWATONNA	MN	55060

TO: **Whom It May Concern**

FROM: **Jeanette Pidde**
Land Use and Zoning Supervisor
Redwood County Environmental Office

DATE: **January 10th, 2024**

RE: **Notice of Public Hearing on Application for Conditional Use Permit**

Please find enclosed a *Notice of Public Hearing* regarding an *Application for Conditional Use Permit* submitted by Colin O'Neil, as agent for RedwoodSun, LLC o/b/o landowners Richard and Lynn Green, pursuant to Redwood County Code of Ordinances, Title XV, Sections 153.330-153.338. RedwoodSun, LLC, is proposing to construct a five (5) megawatt solar array facility (community solar garden), in two phases, on the following described property:

> Part of the East Half of the Northeast Quarter and the Northeast Quarter of the Southeast Quarter, Section 15, Township 111 North, Range 34 West, Morgan Township, Redwood County, Minnesota.

A public hearing thereon will be held before the Redwood County Planning Commission at the regularly scheduled Planning Commission meeting starting at 1:00 p.m. on Tuesday, the 28th day of January, 2025. The meeting will be held in the Board Room of the Redwood County Government Center, 403 South Mill Street, Redwood Falls, MN 56283.

Pursuant to Redwood County Zoning Ordinance, all property owners of record within five hundred (500) feet of the incorporated areas and/or one-quarter (1/4) of a mile of the affected property or the ten (10) properties nearest to the affected property, whichever would provide notice to the greatest number of landowners in the unincorporated areas, the township in which the affected property is located, and all municipalities within two (2) miles of the property are required to be notified in writing of the time and place of the public hearing.

If you have any comments or questions regarding this matter, please contact the Redwood County Environmental Office by telephone at (507) 637-4023, via email at Environmental@co.redwood.mn.us, or by mail at *Redwood County Environmental Office, P.O. Box 130, Redwood Falls, MN 56283*, and/or attend the public hearing at the time and date set forth in the *Notice of Public Hearing*.

enclosure

cc: Colin O'Neil
Richard & Lynn Green

Southwest Minnesota
Redwood County
Environmental

NOTICE OF PUBLIC HEARING

An *Application for Conditional Use Permit* has been filed by Colin O'Neil, as agent for RedwoodSun, LLC o/b/o landowners Richard and Lynn Green, pursuant to Redwood County Code of Ordinances, Title XV, Sections 153.330-153.338. RedwoodSun, LLC, is proposing to construct a five (5) megawatt solar array facility (community solar garden), in two phases, on the following described property:

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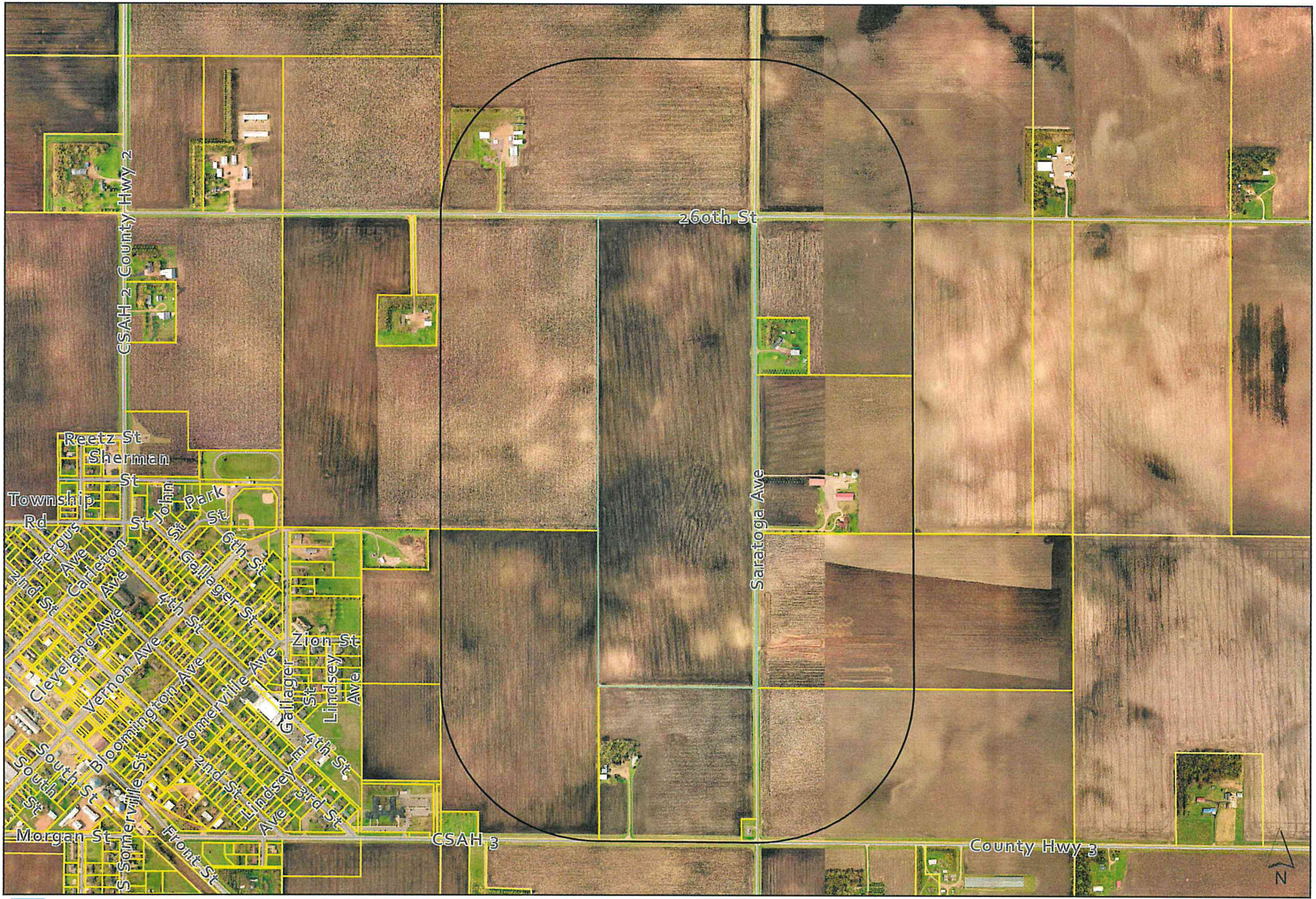
If you have any comments or questions regarding this matter, please contact the Redwood County Environmental Office by telephone at (507) 637-4023, via email at Environmental@co.redwood.mn.us, or in writing at Redwood County Environmental Office, P.O. Box 130, Redwood Falls, MN 56283.

DATED: January 9, 2025

Jeanette Pidde
Land Use & Zoning Supervisor
Redwood County Environmental Office



Selected Parcel
Notification Area
Parcels
Municipal Boundaries
Sections
Roads

CUP Notification Area:
0.25 miles from selected parcel

Parcel ID: 59-015-1040

0 1,000 2,000 Feet

REDWOOD COUNTY PLANNING COMMISSION

RedwoodSun LLC – Richard and Lynn Green
Conditional Use Permit Application #1-25
January 28, 2024

FINDINGS OF FACT

ORDINANCE CRITERIA – The Planning Commission may recommend the granting of a Conditional Use Permit in any district provided the proposed use is listed as a conditional use for the district and upon a showing that the standards and criteria stated in this Ordinance will be satisfied and that the use is in harmony with the general purposes and intent of this Ordinance and the Comprehensive Plan.

In determining whether the proposed use is in harmony with the general purposes and intent of the Ordinance and the Comprehensive Plan, the Planning Commission shall consider and make findings on the following questions:

1) What potential health safety and welfare impacts were raised at the hearing and why will they, or why won't they, impact the neighboring residents?

_____

_____

_____

_____

2) What potential impacts on area property uses were raised at the hearing and why will they, or why won't they, impact the use and enjoyment of other property in the area?

_____

_____

_____

_____

3) What potential impacts on property values or future development were raised at the hearing, and why will they, or why won't they, impact the neighboring properties?

4) What infrastructure is needed to support the proposed use and how will it be provided?

5) How do the goals, purpose and policies of the Zoning Ordinance and Comprehensive Plan apply to the proposed project?

NAME: _____ DATE: _____