

Appendix G
Vegetation Management Plan
(Revised December 1, 2021)



Vegetation Management Plan

Sherco Solar, LLC

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Xcel Energy

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Introduction

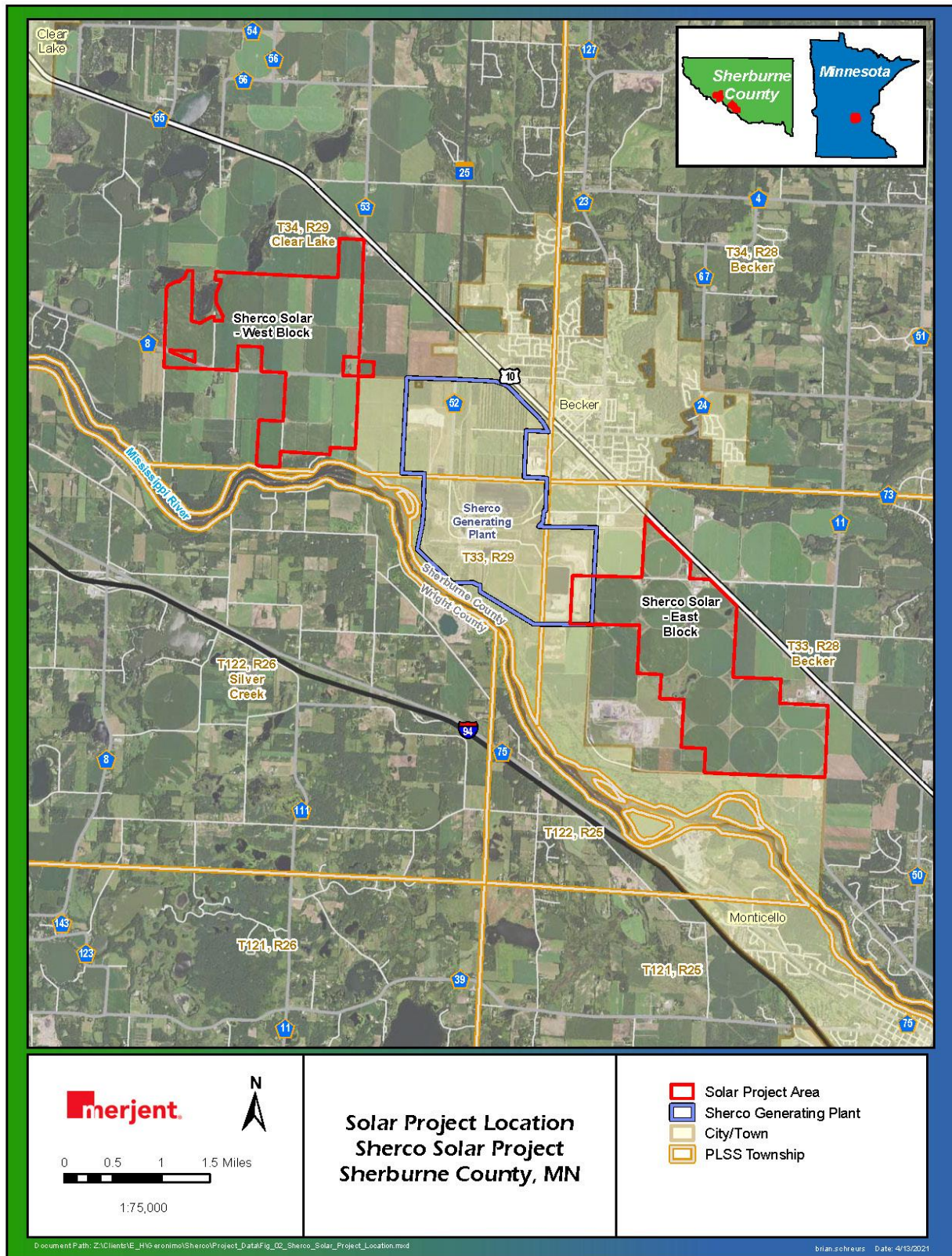
The Sherco Solar Project (Project) is a 460 megawatt (“MW”) solar project on an approximately 3,480 acre site (the site) in Sherburne County, MN (Figure 1). The size will make this the largest solar generation facility in Minnesota and one of the largest facilities in the United States.

Xcel Energy has developed this Vegetation Management Plan (“Plan”) to guide preparation, installation of prescribed seed mixes, management of invasive species and noxious weeds, and control of erosion/sedimentation within the Project site. This document is intended to be a working and “living” document. Revisions will be made as new information is obtained with respect to vegetation management, site characteristics, and availability of management practices at the time of procurement of services. The document will continue to be updated as more information is obtained throughout the Site Permit process, and in coordination with applicable agencies. As more detailed engineering steps are undertaken and information is gathered leading up to development, this document and its appendices will be further updated as the information comes available.

The overall goal of this Plan is to describe the steps and methodologies intended to establish cost effective, sustainable, diverse, perennial pollinator-friendly vegetation throughout the solar site based on the BWSR Habitat Friendly Solar Program that accommodates solar energy generation activities (BWSR, 2020). Xcel Energy will strive to meet the highest standard, the “gold standard,” established by the BWSR Habitat Friendly Solar Site Assessment Form (“assessment form”). Over the lifetime of the solar facility, Xcel Energy will monitor the vegetation and manage for diversity to meet the Habitat Friendly Solar standards. Additionally, invasive species will be treated to comply with all noxious weed requirements and to ensure the native vegetation is not impacted. Landscape screening areas will be monitored and replanted as needed to ensure adequate screening of nearby properties.

The goals and practices described in this plan are based on current environmental, regulatory, and economic conditions. Should conditions in the future no longer support the currently described goals, or provide opportunities to achieve alternative desirable goals, Xcel Energy will reevaluate the site and develop an updated Plan.

FIGURE 1 SOLAR PROJECT LOCATION



1. Vegetation Management Goals and Objectives

Xcel Energy seeks to develop pollinator-friendly habitats on Xcel Energy owned and managed lands. In support of these efforts, Xcel Energy has chosen to design this plan to meet Minnesota Board of Water and Soil Resources (“BWSR”) Habitat Friendly Solar standards, described in more detail below (BWSR, 2020). To carry out this Plan, Xcel Energy has established short- and long-term goals as well as objectives for vegetation management within the Project footprint.

For soil management techniques during construction, which will set up the success of this plan, refer to the Agricultural Impact Mitigation Plan (AIMP), in addition to the Stormwater Pollution Prevention Plan (SWPPP).

The goals identified below, and the subsequent techniques listed in the various Plan sections will be utilized by Xcel Energy, and those contractors (Contractors), who will be involved in the site prep, final stabilization and restoration for the Project as well as those completing the planting, monitoring and ongoing maintenance of the site. If this plan is followed, it should establish a path for success in implementation of the short-term goals, which will in turn set the stage for meeting the long-term goals as well. The Contractor/s will likely carry the restoration activities forward for a period of time, at which point a longer-term contract may be established for site management with the same or potentially a new Contractor/s. Xcel Energy may also elect to move long-term management activities in-house. The exact handoff by the Contractor/s from near term management to long term management is still to be determined.

1.1 Short-Term Goals

Within the first five years the goal is to install and establish native vegetative cover throughout the solar site based on the BWSR Habitat Friendly Solar Program (BWSR, 2020).

The primary short-term goals of the Plan are:

- Comply with permit conditions for site revegetation, per the Minnesota Pollution Control Agency Construction Stormwater General Permit.
- At the end of three full growing seasons, achieve uniform perennial native vegetative cover on 70 percent of the entire site, with 20 percent of the site dominated by native wildflowers and 20 or more native species well-dispersed across the site. (NOTE Cover has been adjusted for the sandy site conditions, as native vegetative cover is lower as compared to loamy sites).
- Establish landscaping/screening area within one year of installation and review during the establishment period to ensure that planting mortality remains within acceptable performance standards.
- Manage noxious weeds per Minn. Stat., Sections 18.75 to 18.78, and 18.86.
- Achieve noxious weed and problem plant control as outlined in Section 5.1.2 of this Plan.

- Complete annual reporting during the establishment phase that will provide recommendations and management techniques that can be carried out to set the site up for long term success.

1.2 Long-Term Goals

Following the first five years of operation, long-term goals have been established for maintenance of site vegetation throughout the remainder of facility operations. The long-term goals are maintaining pollinator/habitat-friendly native vegetation throughout the solar site and controlling new populations of noxious and invasive weeds.

The primary long-term goals of the Plan are:

- Maintain established vegetation that generally aligns with the “gold standard” established by BWSR in the Habitat Friendly Solar Site Assessment Form for Established Plantings:
 - Establish greater than 51 percent of the site dominated by native species cover.
 - At least 17 percent of the site dominated by wildflowers.
 - At least 10 species with >1 percent cover.
 - At least three blooming species in Spring, Summer, and Fall.
 - Continue to complete an annual report to support adaptive management efforts across the site.
 - Demonstrate achievement of the “gold standard” by completing the Assessment Form every three years and submitting supporting materials to BWSR for review.
- Manage fire risk onsite with site-wide mowing to reduce buildup of fine fuels.
- Identify new populations of noxious and invasive weeds onsite and treat effectively. All noxious weeds will be addressed with the goal of eradication and all other invasive species will not comprise more than 5 percent of the vegetative cover of the site.
- Develop a mature landscape screen that minimizes views of the solar array from adjacent target parcels.

2. Site Description

This document is a living document that will continue to be refined as new information comes available. This document was first developed to support Xcel Energy’s Site Permit Application for the Project. The document will continue to be revised as necessary as pertinent information is obtained.

2.1 Project Location and Size

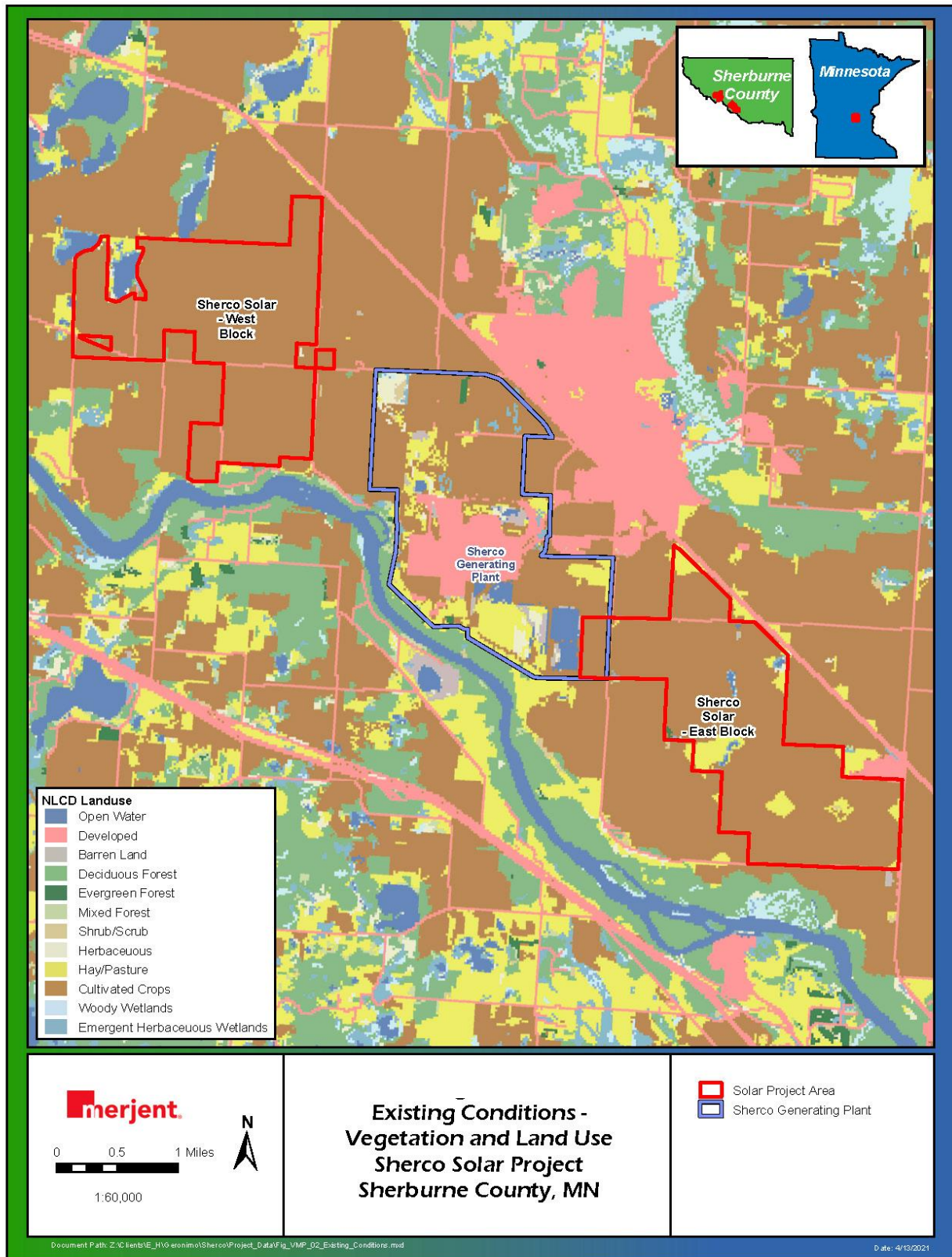
Xcel Energy is proposing to build the Project in Clear Lake Township, Becker Township, and the City of Becker in Sherburne County, Minnesota. The Solar Project is proposed in two distinct blocks, covering 3,479.4 acres. It is comprised of the West Block (1,653.7 acres), which is located on the west side of the Sherco Generating Plant and the East Block (1,825.7 acres), which is located on the east side of the Sherco Generating Plant. Based on preliminary design, Project facilities (solar arrays, inverters, collector substations, etc.) will cover approximately 3,013.5 acres of the site. The Solar Project is located within agricultural fields between U.S.

Highway 10 and the Mississippi River, on the east and west sides of the existing Sherco Generating Plant.

2.2 Existing Vegetation

Based on the 2016 National Land Cover Data, the Project would affect predominately agricultural cultivated cropland (96.3 percent; Figure 2). Hay/pasture, developed land, wetlands, and open water within the Project Footprint total 3.7 percent. Trees are present as windrows between agricultural fields and along some roads; there are no large tracts of forested land within the Project footprint. There are 15 wetlands within the Project footprint.

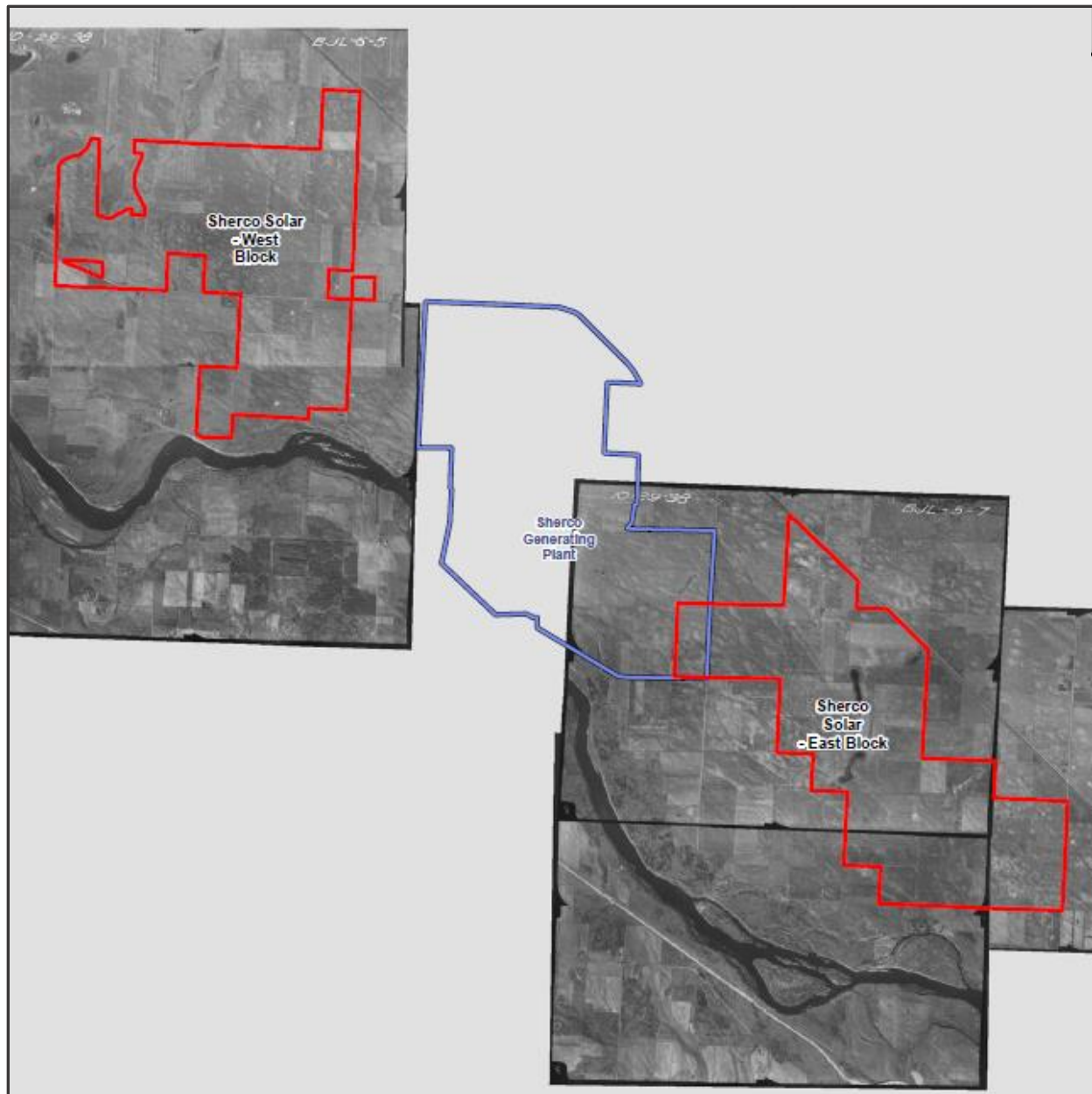
FIGURE 2: EXISTING CONDITIONS



2.3 Historic and Existing Land Use

Based on an air photo history, virtually all the site has been in agriculture since before 1938 (Figure 3). None of the soils are classified as prime farmland. Typically, high value crops such as corn and potatoes are grown in the area. Due to the sandy soils, discussions with landowners have confirmed there are no known drain tiles in the site. There are several center-pivot irrigation systems that are anticipated to be decommissioned during the Project's construction.

FIGURE 3: 1938 AERIAL IMAGERY- AGRICULTURAL USE



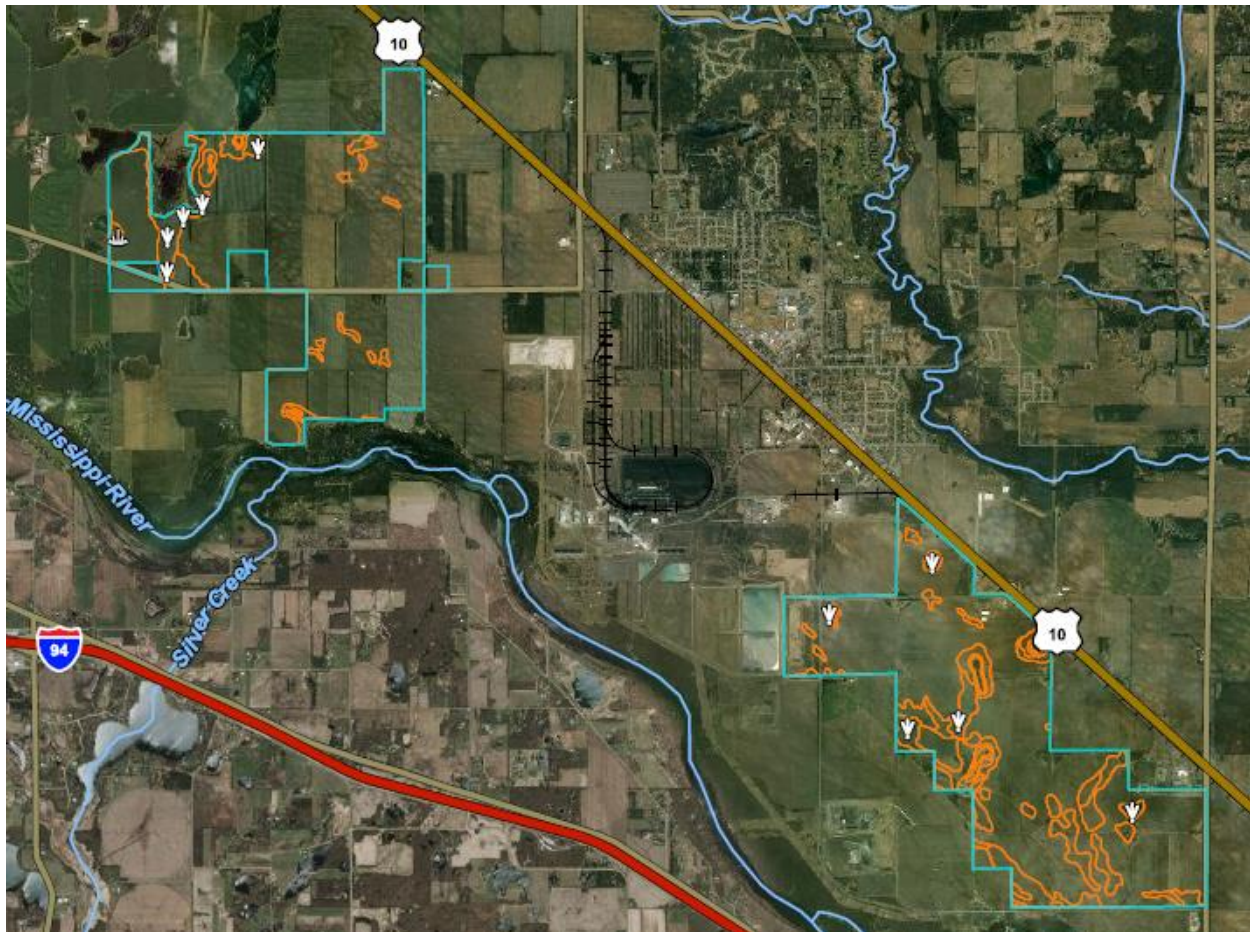
2.4 Soils

The Soil Survey Geographic Database (“SSURGO”) is the digitized county soil survey and provides Geographic Information System data relating soil map unit polygons to component soil characteristics and interpretations. Soil map unit polygons in the SSURGO database were clipped to the site boundaries, including the major pieces of infrastructure:

- Fenced area hosting solar panels, racks, and arrays
- Inverter locations
- Access roads
- Laydown areas
- Collector substations.

The vast majority of the site consists of Hubbard-Mosford complex, a sandy soil that is excessively drained to very well drained. Much cropland on this soil series is irrigated.

FIGURE 4 NRCS SOILS MAP AND TABLE



MAP LEGEND

Area of Interest (AOI)			Spoil Area
	Area of Interest (AOI)		Stony Spot
Soils			Very Stony Spot
	Soil Map Unit Polygons		Wet Spot
	Soil Map Unit Lines		Other
	Soil Map Unit Points		Special Line Features
Special Point Features		Water Features	
	Blowout		Streams and Canals
	Borrow Pit	Transportation	
	Clay Spot		Rails
	Closed Depression		Interstate Highways
	Gravel Pit		US Routes
	Gravelly Spot		Major Roads
	Landfill		Local Roads
	Lava Flow	Background	
	Marsh or swamp		Aerial Photography
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

Soil Survey Area: Sherburne County, Minnesota
Survey Area Data: Version 18, Jun 4, 2020

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

Date(s) aerial images were photographed: Apr 19, 2014—May 4, 2019

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

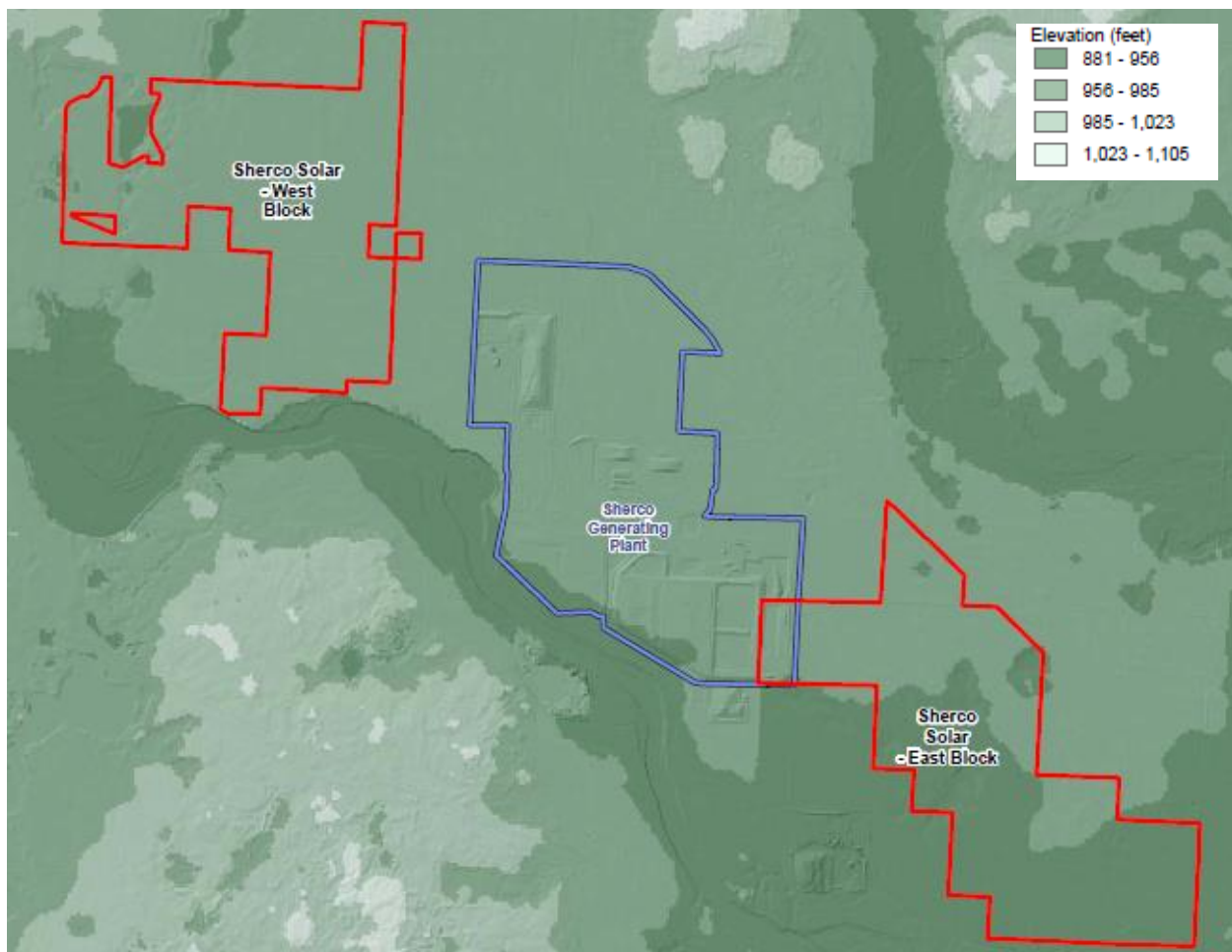
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
258B	Sandberg loamy sand, 1 to 6 percent slopes	47.5	1.4%
258C	Sandberg loamy sand, 2 to 12 percent slopes	11.9	0.3%
258E	Sandberg loamy coarse sand, 6 to 30 percent slopes	3.0	0.1%
260	Duelm loamy sand, 0 to 2 percent slopes	2.8	0.1%
261	Isan sandy loam, depressional, 0 to 1 percent slopes	19.3	0.6%
708	Rushlake coarse sand, 1 to 4 percent slopes	2.1	0.1%
768	Mosford sandy loam, 0 to 2 percent slopes	5.8	0.2%
1028	Udorthents-Pits, gravel, complex	3.7	0.1%
1223	Sandberg-Arvilla complex, 0 to 3 percent slopes	9.1	0.3%
1288	Seelyville-Markey complex, ponded, 0 to 1 percent slopes	16.3	0.5%
D20A	Isan-Isan, frequently ponded, complex, 0 to 2 percent slopes	1.3	0.0%
D62A	Hubbard-Mosford complex, Mississippi River Valley, 0 to 3 percent slopes	2,940.5	84.5%
D67A	Hubbard loamy sand, 0 to 2 percent slopes	52.4	1.5%
D67B	Hubbard loamy sand, 1 to 6 percent slopes	173.5	5.0%
D67C	Hubbard loamy sand, 2 to 12 percent slopes	192.6	5.5%
Totals for Area of Interest		3,481.8	100.0%

2.5 Topography

The site is located on a sandy glacial river floodplain terrace along the Mississippi River. The topography of the area is generally flat with elevations ranging from 925 to 985 feet above sea level and a depth to bedrock of typically less than 200 feet (Figure 5). The nearly-level topography combined with acceptable soil conditions, favorable moisture holding characteristics, and usually adequate supplies of moisture from precipitation are well suited to agriculture (although irrigation is a common practice), which is currently the dominant land use.

FIGURE 5- SITE TOPOGRAPHY



2.6 Hydrology

The site is located in the Upper Mississippi-Crow-Rum Watershed (Figure 6). The potential for wetlands was initially identified by reviewing desktop resources data, followed by a formal wetland delineation within the Solar Project in Fall 2020. The wetland delineation identified 10 wetlands in the West Block and five wetlands in the East Block (Figure 7). Wetland complexes consisted of small and large isolated wetlands scattered throughout the Solar Project footprint.

Wetlands within West Block are primarily located within the northwest corner of the block and are associated with adjacent waterbodies, with a few small, isolated wetlands in other parts of the West Block. Wetlands within the East Block can be found in the center of the block and primarily consist of isolated basins. There are 3.6 acres of delineated wetlands in the West Block and 35.6 acres of delineated wetlands in the East Block. There are no streams within the site.

FIGURE 6: AREA HYDROLOGY

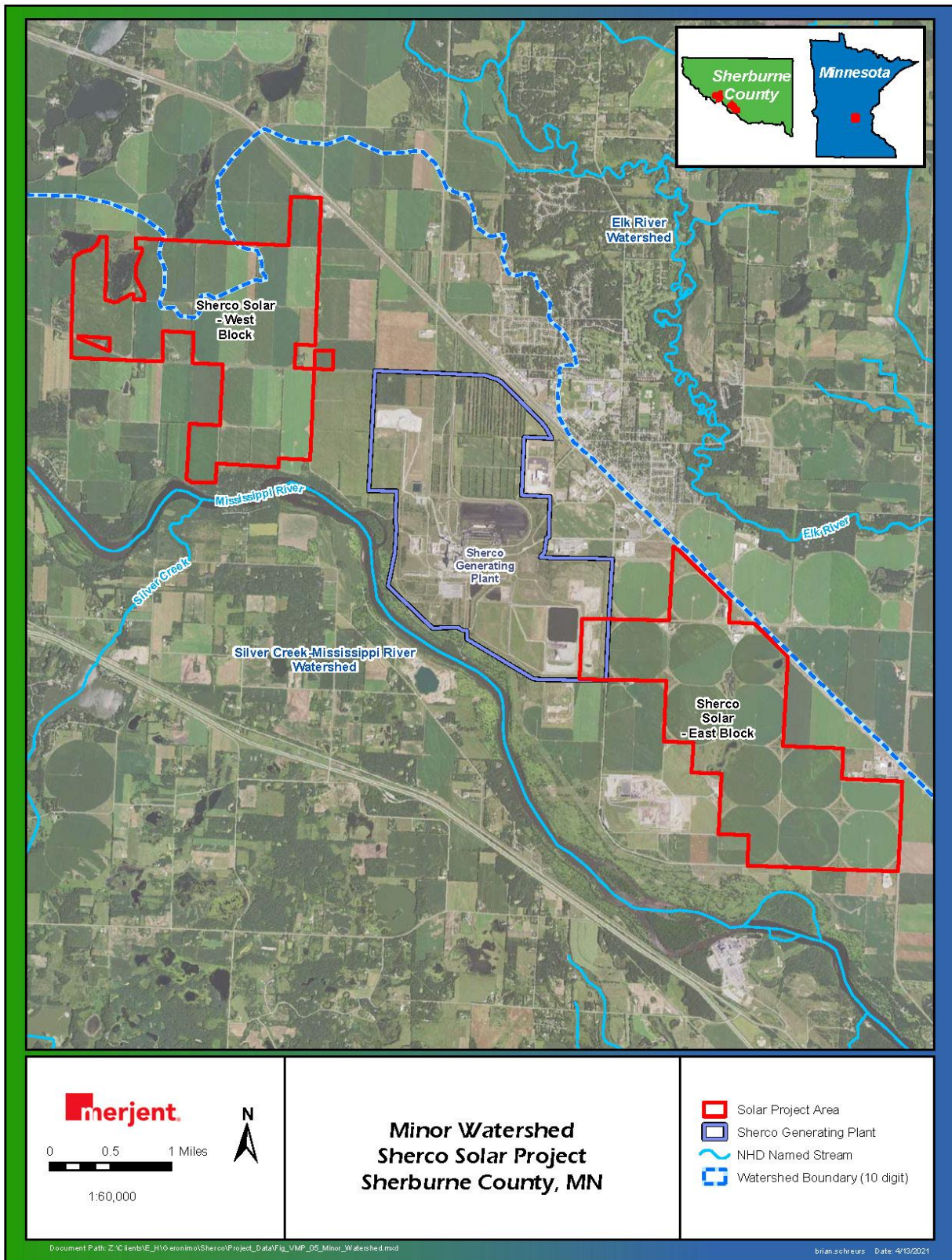
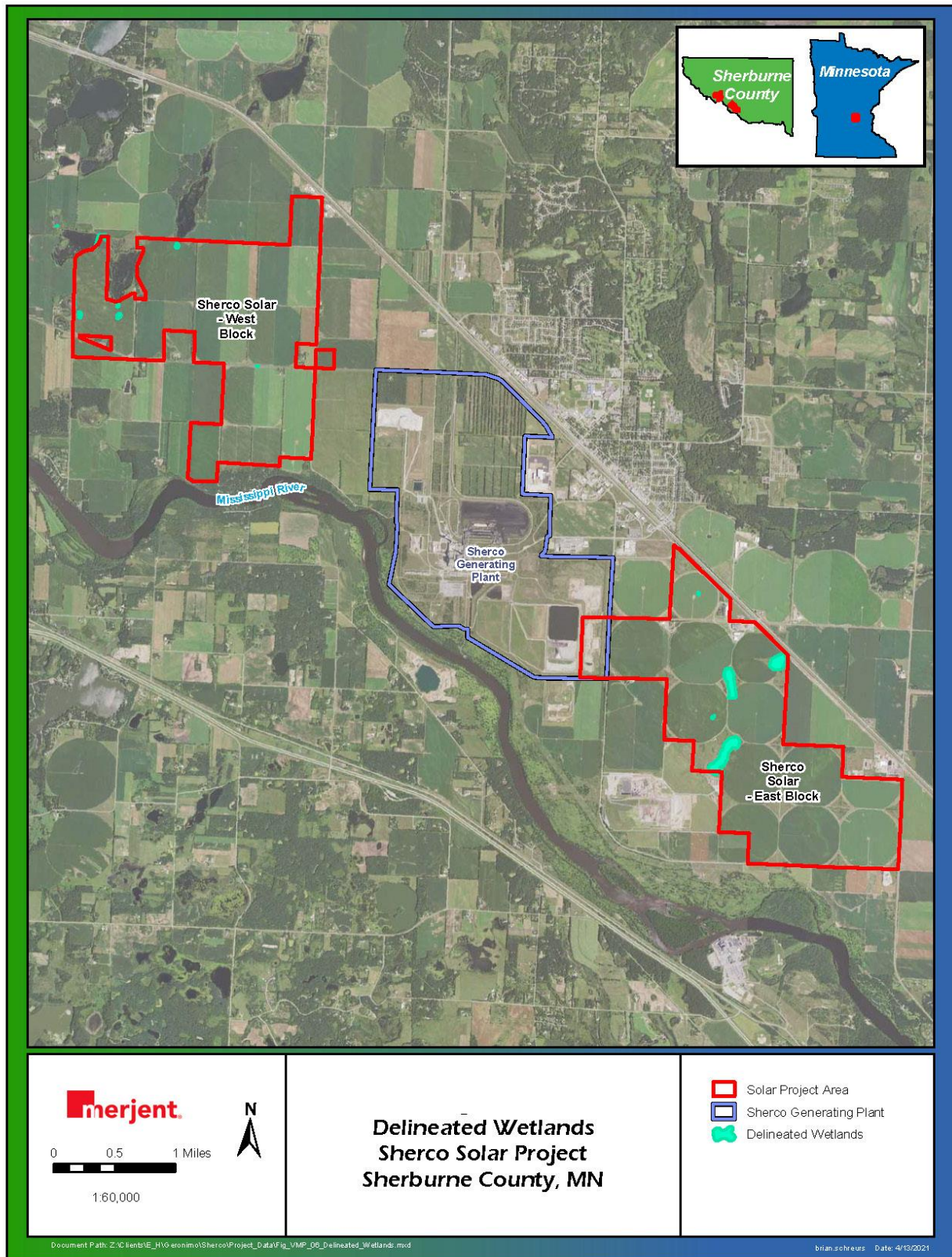


FIGURE 7: DELINEATED WETLANDS



3. Site Management During Construction

Xcel Energy has established practices for vegetation management during construction. These management activities can vary based on many variables and may be adjusted based on unforeseen circumstances or adjustments in overall Project schedule.

Because of its large size, the site is anticipated to be separated into smaller construction and management units. For ease of reference, the management units will likely be designated by the array block numbering system already established as a part of the final engineering process. Each array block, which consists of approximately 10-20 acre area of panels, is designated per the DC collection system from the solar modules to a common inverter. Utilizing an array block is a common point of understanding for onsite managers to quickly and effectively communicate the area undergoing final site stabilization, requiring noxious weed treatment, or other vegetation management needs. As restoration progresses, a more simplified set of management units may be established by aggregating array blocks into larger units. This will be determined by onsite managers based on site outcomes and monitoring reports. An example image of array block designations, in this case approximately 12 acres per block, is shown below (Figure 8). The Contractor/s will be supplied with the array block information and reference map prior to mobilization to site and as a common form of communication across the Project teams during construction and operation.

FIGURE 8: EXAMPLE OF ARRAY BLOCK DESIGNATION- APPROXIMATE 12 ACRE BLOCKS



Overall, the site will be highly dynamic, with varying stages of construction expected. Site prep, seeding, and management of each unit will take place at different times throughout

construction. Construction will generally be sequenced block by block, with multiple blocks sometimes completed at the same time. Utilizing blocks will help to simplify communication and restoration outcomes for the Project.

3.1 Site Preparation, Clearing, and Vegetation Removal

Most of the soil and vegetation disturbances will occur during the first phase of construction when the grading activities take place. To stabilize the soils, existing vegetation or plant material will be retained on the surface in areas that do not need to be graded. Any topsoil that is stripped or otherwise stockpiled during construction will be replaced and spread or otherwise stockpiled prior to seed bed preparation activities.

Early Season Construction Start

If construction begins prior to May 15, it is unlikely that site preparation activities, such as mowing or herbiciding agricultural weeds, will be employed. However, it may be advantageous to install a cover crop prior to construction. Cover crops assist in site stabilization during construction activities and are especially helpful in areas that do not require grading activities. Early season cover crop installation is typically seed oats (*Avena sativa*), but Xcel Energy will work with the Project Contractor/s to select the best option. A cover crop will not be planted prior to construction unless there is adequate time between the start of the growing season and the start of construction for the cover crop to grow to a sufficient height to provide soil surface protection during construction.

Mid-Late Season Construction Start

To limit spread of weeds onsite during construction, broadcast application of herbicide is recommended to treat agricultural weeds prior to the start of construction activities. For most weeds, including the majority of annual weed species, the essential treatment window is between mid-May and mid-June to prevent seed set for the growing season. Depending on the distribution of the species to be treated, targeted mowing may also be employed.

3.2 Noxious Weed and Problem Plant Management During Construction

During the growing season portions of the construction period (May to September), at least monthly evaluations of the site are recommended to determine if noxious weeds or problem plants develop during construction. The appropriate treatment techniques to use and the timing of those treatments will be determined based on the plants that are identified. If required, treatment for noxious weeds will be incorporated into other restoration activities. Management techniques for five categories of weeds are described below in Section 5.1.2 of this Plan.

4. Vegetation Installation

After the solar panels and other infrastructure are installed, native seed mixes (Tables 1-4) will be installed as shown in the proposed planting plan for the Project Site (Figure 9 and 10). These mixes are designed to meet the “gold standard” established by the BWSR Habitat Friendly Solar Site Assessment Form if properly installed and managed. Refer to the below section for additional seed mix information and recommendations for proper installation. Per Section 3, requests for restoration following array construction will generally be relayed to the Contractor/s via the applicable array block, or combined array blocks. The Contractor/s will make note of completed restoration activities on a block by block basis.

4.1 Seed Bed Preparation

Prior to application of the seed mixes to the Project Site, the seed bed will be prepared to ensure successful propagation and survival of the desired plants on the Project Site. Seeding of permanent vegetation can only occur after all grading, construction activities, and Project Site preparations are completed.

Weed Control

To prepare the site for effective native seeding, any listed weeds (Appendices 5 and 6) located within the area to be seeded should be treated with an approved herbicide (see Section 5.1.2). Areas of reed canary grass (*Phalaris arundinacea*) are limited to discreet wet areas at the site, and disturbance or treatment of these areas is not currently proposed. If plans change and treatment of areas of reed canary grass is necessary, the Wet-Mesic mix will be utilized following treatment. If an area of reed canary grass within the disturbance area is encountered, which is not currently anticipated, reed canary grass will be sprayed with herbicide, then mowed to remove existing dead biomass. A second herbicide treatment will likely be necessary after mowing to ensure all reed canary grass is killed prior to seeding. Soil disturbance activities in these wet areas should also be avoided after the spraying to minimize creating root-cuttings of the reed canary grass rhizomes or otherwise bringing reed canary grass seeds to the surface to germinate. Areas containing reed canary grass should be overseeded with the wet-mesic mix following treatment.

Soil Decompaction

Following soil disturbing activities, any compacted areas, such as the laydown areas, or heavily travelled corridors and portions of the access road corridors that were used as temporary roadbeds will be decompacted. Decompaction will be performed with chisel plows, rippers, or tillers depending on the depth and severity of the compaction. When necessary, decompaction will be followed by disking to prepare a smooth, evenly textured soil surface. Areas that are not compacted and areas that will be planted with the Wet and Wet-Mesic seed mixes should be avoided during decompaction activities to preserve the soil structure and biology and prevent re-planting weed seeds that remain on the soil surface.

4.2 Site Seeding

As shown below², 4 seed mixes have been developed for the site based on initial desktop analysis, updated in coordination with recommendations from state agencies, and further updated based on field site verification. Three of the seed mixes will primarily be used for the site, with the vast majority being planted in the dry-mesic mix. The remainder will be secondary and held in reserve should they be needed for the Project:

Primary Seed Mixes

- 1) Dry-Mesic Mix (Table 1) - To be almost universally applied onsite within the fenced boundary for both open and array (shaded) areas. Also to be used for seeding disturbed upland areas after establishment.
- 2) Wet Mix (Table 2) - Developed for stormwater basins.
- 3) Mesic Mix (Table 3) - Proposed for one small area in the Project's East Block. Also to be applied within the fenced boundary should ongoing monitoring after establishment determine that the dry-mesic mix did not establish due to unforeseen wet conditions.

Secondary Seed Mix

Wet areas across the site are anticipated to remain in their existing vegetative state. As the wetlands within the fenced boundary are relatively isolated, invasive cattails or reed canary grass are not anticipated to spread significantly within the fenced boundary. Should spread of invasive species from these areas become apparent during ongoing operations, herbicide treatment and seeding with the below mix can be employed.

- 1) Wet-Mesic Mix (Table 4)- Not currently anticipated to be utilized. A good indicator for this mix is that prior to any sort of herbicide treatment, reed canary grass is likely currently present. Currently, areas of reed canary grass are anticipated to be left in place, as they are not anticipated to expand significantly into other areas of the site.

A practicable effort will be made for genetic source origin of all native seed to be local, ideally from within a 200-mile radius of the Project Site, and plant species should be native to Sherburne County (considerations of range shifts due to climate change may modify this guidance). Species will be true to their scientific name as specified below. If planted in the spring, seeds will have been properly stratified and/or scarified to break seed dormancy. All legumes will be inoculated with proper rhizobia at the appropriate time prior to planting. In addition to the native seed mixes.

TABLE 1: DRY-MESIC MIX (FOR UPLAND ARRAY AREAS)

Scientific Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
<i>Bouteloua curtipendula</i>	Sideoats grama	24.00	1.50	18.8	3.3
<i>Bouteloua hirsuta</i>	Hairy grama	1.50	0.09	1.2	2.4
<i>Carex bicknellii</i>	Bicknell's sedge	1.00	0.06	0.8	0.4
<i>Carex brevior</i>	Short beak sedge	2.00	0.13	1.6	1.3
<i>Carex molesta</i>	Field oval sedge	1.75	0.11	1.4	1.0
<i>Elymus canadensis</i>	Canada wild rye	28.00	1.75	21.9	3.3
<i>Elymus trachycaulus</i>	Slender wheatgrass	20.00	1.25	15.6	3.2
<i>Festuca rubra</i> ssp. <i>rubra</i>	Red fescue	8.00	0.50	6.3	6.3
<i>Koeleria macrantha</i>	Junegrass	1.00	0.06	0.8	4.6
<i>Schizachyrium scoparium</i>	Little bluestem	12.00	0.75	9.4	4.1
<i>Sporobolus cryptandrus</i>	Sand dropseed	0.75	0.05	0.6	3.4
	Total Graminoids	100.00	6.25	78.1	33.4
<i>Achillea millefolium</i>	Yarrow	0.60	0.04	0.5	2.5
<i>Asclepias syriaca</i>	Common milkweed	5.75	0.36	4.5	0.6
<i>Chamaecrista fasciculata</i>	Partridge pea	7.50	0.47	5.9	0.5
<i>Dalea purpurea</i>	Purple prairie clover	2.50	0.16	2.0	1.0
<i>Drymocallis arguta</i>	Prairie cinquefoil	0.50	0.03	0.4	2.6
<i>Geum canadense</i>	White avens	1.00	0.06	0.8	0.6
<i>Monarda punctata</i>	Spotted beebalm	0.75	0.05	0.6	1.5
<i>Oligoneuron rigidum</i>	Stiff goldenrod	1.25	0.08	1.0	1.2
<i>Penstemon grandiflorus</i>	Large beardtongue	1.50	0.09	1.2	0.5
<i>Rudbeckia hirta</i>	Black-eyed Susan	2.50	0.16	2.0	5.3
<i>Solidago nemoralis</i>	Gray goldenrod	0.30	0.02	0.2	2.1
<i>Symphyotrichum ericoides</i>	Heath aster	0.25	0.02	0.2	1.1
<i>Symphyotrichum oolentangiense</i>	Sky-blue aster	0.60	0.04	0.5	1.1
<i>Verbena stricta</i>	Hoary vervain	1.50	0.09	1.2	1.0
<i>Zizia aurea</i>	Heart-leaved alexanders	1.50	0.09	1.2	0.4
	Total Forbs	28.00	1.75	21.9	21.9
	Total	128.00	8.00		55.3

Graminoid Substitutions*: *Bouteloua gracilis*, *Dichanthelium leibergii*, *Elymus villosus*, *Festuca subverticillata*, *Juncus tenuis*, *Sporobolus heterolepis*

Forb Substitutions*: *Allium canadense*, *Allium stellatum*, *Amorpha canescens*, *Anemone cylindrica*, *Asclepias tuberosa*, *Asclepias verticillata*, *Coreopsis palmata*, *Dalea candida*, *Echinacea angustifolia*, *Heuchera richardsonii*, *Lespedeza capitata*, *Liatris aspera*, *Liatris punctata*, *Lupinus perennis*, *Penstemon gracilis*, *Phlox pilosa*, *Ranunculus fasciculatus*, *Ratibida columnifera*, *Sisyrinchium campestre*, *Solidago missouriensis*, *Symphyotrichum leave*, *Tradescantia bracteata*, *Tradescantia occidentalis*, *Viola pubescens*

***NOTE- ANY AND ALL SUBSTITUTION SHOULD BE REVIEWED BY XCEL ENERGY TO ENSURE THAT THE SUBSTITUTION AND SEEDS PER SQUARE FOOT ARE IMPLEMENTED IN A MANNER THAT COMPLIES WITH THE GOALS AND OBJECTIVES OF THIS PLAN**

TABLE 2: WET MIX (FOR AREAS IN AND AROUND STORMWATER BASINS)

Scientific Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
<i>Bromus ciliatus</i>	Fringed brome	6.00	0.38	7.1	1.4
<i>Calamagrostis canadensis</i>	Bluejoint	0.50	0.03	0.6	3.2
<i>Carex hystericina</i>	Bottlebrush sedge	2.00	0.13	2.4	1.4
<i>Carex vulpinoidea</i>	Fox sedge	1.00	0.06	1.2	2.3
<i>Elymus virginicus</i>	Virginia wild rye	48.00	3.00	57.1	4.6
<i>Glyceria striata</i>	Fowl manna grass	0.90	0.06	1.1	3.3
<i>Juncus dudleyi</i>	Dudley's rush	0.10	0.01	0.1	7.3
<i>Juncus effusus</i>	Common rush	0.30	0.02	0.4	6.9
<i>Leersia oryzoides</i>	Rice cutgrass	2.50	0.16	3.0	2.0
<i>Poa palustris</i>	Fowl bluegrass	2.00	0.13	2.4	6.0
<i>Scirpus atrovirens</i>	Green bulrush	0.50	0.03	0.6	5.3
<i>Scirpus cyperinus</i>	Wool grass	0.20	0.01	0.2	7.8
Total Graminoids		64.00	4.00	76.2	51.4
<i>Anemone canadensis</i>	Canada anemone	2.00	0.13	2.4	0.4
<i>Asclepias incarnata</i>	Swamp milkweed	8.00	0.50	9.5	0.9
<i>Bidens cernua</i>	Nodding bur marigold	1.00	0.06	1.2	0.5
<i>Caltha palustris</i>	Marsh marigold	0.50	0.03	0.6	0.3
<i>Eupatorium perfoliatum</i>	Common boneset	0.75	0.05	0.9	2.8
<i>Euthamia graminifolia</i>	Grass-leaved goldenrod	0.50	0.03	0.6	4.0
<i>Eutrochium maculatum</i>	Spotted Joe Pye weed	0.50	0.03	0.6	1.1
<i>Lobelia siphilitica</i>	Great blue lobelia	0.25	0.02	0.3	2.9
<i>Lycopus americanus</i>	American bugleweed	1.00	0.06	1.2	3.0
<i>Mimulus ringens</i>	Allegheny monkeyflower	0.15	0.01	0.2	7.9
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	0.50	0.03	0.6	2.5
<i>Symphotrichum novae-angliae</i>	New England aster	0.85	0.05	1.0	1.3
<i>Symphotrichum puniceum</i>	Marsh aster	1.00	0.06	1.2	1.8
<i>Verbena hastata</i>	Blue vervain	1.00	0.06	1.2	2.1
<i>Zizia aurea</i>	Golden alexanders	2.00	0.13	2.4	0.5
Total Forbs		20.00	1.25	23.8	32.0
Total		84.00	5.25		83.4

Graminoid Substitutions*: *Dichanthelium leibergii*, *Elymus hystrix*, *Elymus villosus*, *Festuca subverticillata*, *Juncus tenuis*

Forb Substitutions*: *Agastache foeniculum*, *Anemone cylindrica*, *Asclepias tuberosa*, *Astragalus canadensis*, *Coreopsis palmata*, *Dalea candida*, *Desmodium canadense*, *Echinacea angustifolia*, *Heuchera richardsonii*, *Lespedeza capitata*, *Liatris pycnostachya*, *Osmorhiza claytonii*, *Osmorhiza longistylis*, *Ranunculus fasciculatis*, *Viola pubescens*, *Viola sororia*

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TABLE 3: MESIC MIX (FOR UPLAND ARRAY AREAS WITH INCREASED SOIL MOISTURE)

Scientific Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
<i>Bouteloua curtipendula</i>	Sideoats grama	24.00	1.50	17.6	3.3
<i>Carex bicknellii</i>	Bicknell's sedge	1.00	0.06	0.7	0.4
<i>Carex brevior</i>	Short beak sedge	2.00	0.13	1.5	1.3
<i>Carex molesta</i>	Field oval sedge	2.00	0.13	1.5	1.1
<i>Elymus canadensis</i>	Canada wild rye	30.00	1.88	22.1	3.6
<i>Elymus trachycaulus</i>	Slender wheatgrass	22.00	1.38	16.2	3.5
<i>Festuca rubra</i> ssp. <i>rubra</i>	Red fescue	8.00	0.50	5.9	6.3
<i>Koeleria macrantha</i>	Junegrass	1.00	0.06	0.7	4.6
<i>Schizachyrium scoparium</i>	Little bluestem	12.00	0.75	8.8	4.1
<i>Sporobolus heterolepis</i>	Prairie dropseed	2.00	0.13	1.5	0.7
Total Graminoids		104.00	6.50	76.5	29.0
<i>Achillea millefolium</i>	Yarrow	0.50	0.03	0.4	2.0
<i>Aquilegia canadensis</i>	Red columbine	1.00	0.06	0.7	0.9
<i>Asclepias syriaca</i>	Common milkweed	5.25	0.33	3.9	0.5
<i>Chamaecrista fasciculata</i>	Partridge pea	10.00	0.63	7.4	0.6
<i>Dalea purpurea</i>	Purple prairie clover	2.50	0.16	1.8	1.0
<i>Drymocallis arguta</i>	Prairie cinquefoil	0.50	0.03	0.4	2.6
<i>Geum canadense</i>	White avens	1.25	0.08	0.9	0.7
<i>Monarda fistulosa</i>	Wild bergamot	0.75	0.05	0.6	1.2
<i>Oligoneuron rigidum</i>	Stiff goldenrod	1.25	0.08	0.9	1.2
<i>Penstemon grandiflorus</i>	Large beardtongue	2.00	0.13	1.5	0.6
<i>Rudbeckia hirta</i>	Black-eyed Susan	2.50	0.16	1.8	5.3
<i>Solidago nemoralis</i>	Gray goldenrod	0.25	0.02	0.2	1.7
<i>Symphyotrichum ericoides</i>	Heath aster	0.25	0.02	0.2	1.1
<i>Symphyotrichum oolentangiense</i>	Sky-blue aster	0.50	0.03	0.4	0.9
<i>Verbena stricta</i>	Hoary vervain	1.50	0.09	1.1	1.0
<i>Zizia aptera</i>	Heart-leaved alexanders	2.00	0.13	1.5	0.6
Total Forbs		32.00	2.00	23.5	22.1
Total		136.00	8.50		51.1

Graminoid Substitutions*: *Bromus ciliatus*, *Carex bebbii*, *Carex cristatella*, *Juncus dudleyi*, *Juncus torreyi*, *Muhlenbergia frondosa*, *Muhlenbergia mexicana*, *Spartina pectinata*

Forb Substitutions*: *Agastache foeniculum*, *Amorpha fruticosa*, *Astragalus canadensis*, *Boltonia asteroides*, *Doellingeria umbellata*, *Galium boreale*, *Helenium autumnale*, *Helianthus grosseserratus*, *Impatiens capensis*, *Liatris pycnostachya*, *Lysimachia ciliata*, *Persicaria pensylvanica*, *Physostegia virginiana*, *Rudbeckia laciniata*, *Solidago flexicaulis*, *Symphyotrichum novae-angliae*, *Teucrium canadense*, *Thalictrum dasycarpum*, *Vernonia fasciculata*, *Veronicastrum virginicum*

***NOTE- ANY AND ALL SUBSTITUTION SHOULD BE REVIEWED BY XCEL ENERGY TO ENSURE THAT THE SUBSTITUTION AND SEEDS PER SQUARE FOOT ARE IMPLEMENTED IN A MANNER THAT COMPLIES WITH THE GOALS AND OBJECTIVES OF THIS PLAN**

TABLE 4: WET-MESIC MIX (FOR AREAS TREATED FOR REED CANARY GRASS- NOT CURRENTLY ANTICIPATED)

Scientific Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
<i>Carex molesta</i>	Field oval sedge	2.50	0.16	2.2	1.4
<i>Carex scoparia</i>	Broom sedge	1.00	0.06	0.9	1.9
<i>Carex vulpinoidea</i>	Fox sedge	1.00	0.06	0.9	2.3
<i>Elymus canadensis</i>	Canada wild rye	32.00	2.00	28.6	3.8
<i>Elymus villosus</i>	Silky wild rye	4.00	0.25	3.6	0.5
<i>Elymus virginicus</i>	Virginia wild rye	42.00	2.63	37.5	4.0
<i>Glyceria striata</i>	Fowl manna grass	1.00	0.06	0.9	3.7
<i>Leersia oryzoides</i>	Rice cut grass	2.00	0.13	1.8	1.6
<i>Muhlenbergia mexicana</i>	Leafy satin grass	1.00	0.06	0.9	4.0
<i>Poa palustris</i>	Fowl bluegrass	1.50	0.09	1.3	4.5
Total Graminoids		88.00	5.50	78.6	27.8
<i>Agalinis tenuifolia</i>	Slender false foxglove	0.10	0.01	0.1	1.8
<i>Ageratina altissima</i>	White snakeroot	0.50	0.03	0.4	1.7
<i>Anemone canadensis</i>	Canada anemone	1.00	0.06	0.9	0.2
<i>Asclepias incarnata</i>	Swamp milkweed	5.50	0.34	4.9	0.6
<i>Desmodium canadense</i>	Showy tick trefoil	3.00	0.19	2.7	0.4
<i>Eupatorium perfoliatum</i>	Common boneset	0.50	0.03	0.4	1.8
<i>Euthamia graminifolia</i>	Grass-leaved goldenrod	0.30	0.02	0.3	2.4
<i>Geum canadense</i>	White avens	2.00	0.13	1.8	1.1
<i>Lobelia siphilitica</i>	Great blue lobelia	0.25	0.02	0.2	2.9
<i>Mentha arvensis</i>	Field mint	0.25	0.02	0.2	1.7
<i>Monarda fistulosa</i>	Wild bergamot	1.50	0.09	1.3	2.4
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	0.60	0.04	0.5	3.0
<i>Rudbeckia hirta</i>	Black-eyed Susan	2.50	0.16	2.2	5.3
<i>Symphyotrichum lanceolatum</i>	Panicled aster	1.00	0.06	0.9	1.0
<i>Symphyotrichum lateriflorum</i>	Calico aster	0.25	0.02	0.2	1.4
<i>Verbena hastata</i>	Blue vervain	0.75	0.05	0.7	1.6
<i>Zizia aurea</i>	Golden alexanders	4.00	0.25	3.6	1.0
Total Forbs		24.00	1.50	21.4	30.5
Total		112.00	7.00		58.2

Graminoid Substitutions*: *Beckmannia syzigachne*, *Carex bebbii*, *Carex comosa*, *Carex crinita*, *Carex cristatella*, *Carex scoparia*, *Juncus torreyi*, *Muhlenbergia frondosa*, *Muhlenbergia mexicana*, *Spartina pectinata*

Forb Substitutions*: *Bidens frondosa*, *Boltonia asteroides*, *Doellingeria umbellata*, *Helenium autumnale*, *Helianthus grosseserratus*, *Impatiens capensis*, *Lysimachia ciliata*, *Lysimachia quadriflora*, *Physostegia virginiana*, *Rudbeckia laciniata*, *Solidago riddellii*, *Teucrium canadense*, *Thalictrum dasycarpum*, *Vernonia fasciculata*, *Veronicastrum virginicum*

*NOTE- ANY AND ALL SUBSTITUTION SHOULD BE REVIEWED BY RES AND XCEL ENERGY TO ENSURE THAT THE SUBSTITUTION AND SEEDS PER SQUARE FOOT ARE IMPLEMENTED IN A MANNER THAT COMPLIES WITH THE GOALS AND OBJECTIVES OF THIS PLAN

Planting Plan

Refer to the Planting Plan, Figures 9 and 10 below, denoting implementation of seed mixes onsite. GIS data of these planting areas will also be provided to the Contractor/s. Note that the planting plan utilizes existing vegetation whenever practicable, and areas outside of the fenced boundary are anticipated to remain in their current vegetative state or in agricultural use whenever practicable. Remaining areas that are not anticipated to remain in agricultural use will be seeded per the specifications of the planting plan. The Contractor/s should utilize their professional judgement to field verify seeding boundaries and are permitted to make small deviations from the planting plan provided should they encounter unexpected, localized variability in site conditions. As noted, the Contractor/s should record final restoration efforts on a block-by-block basis to assist in tracking of restoration efforts onsite.

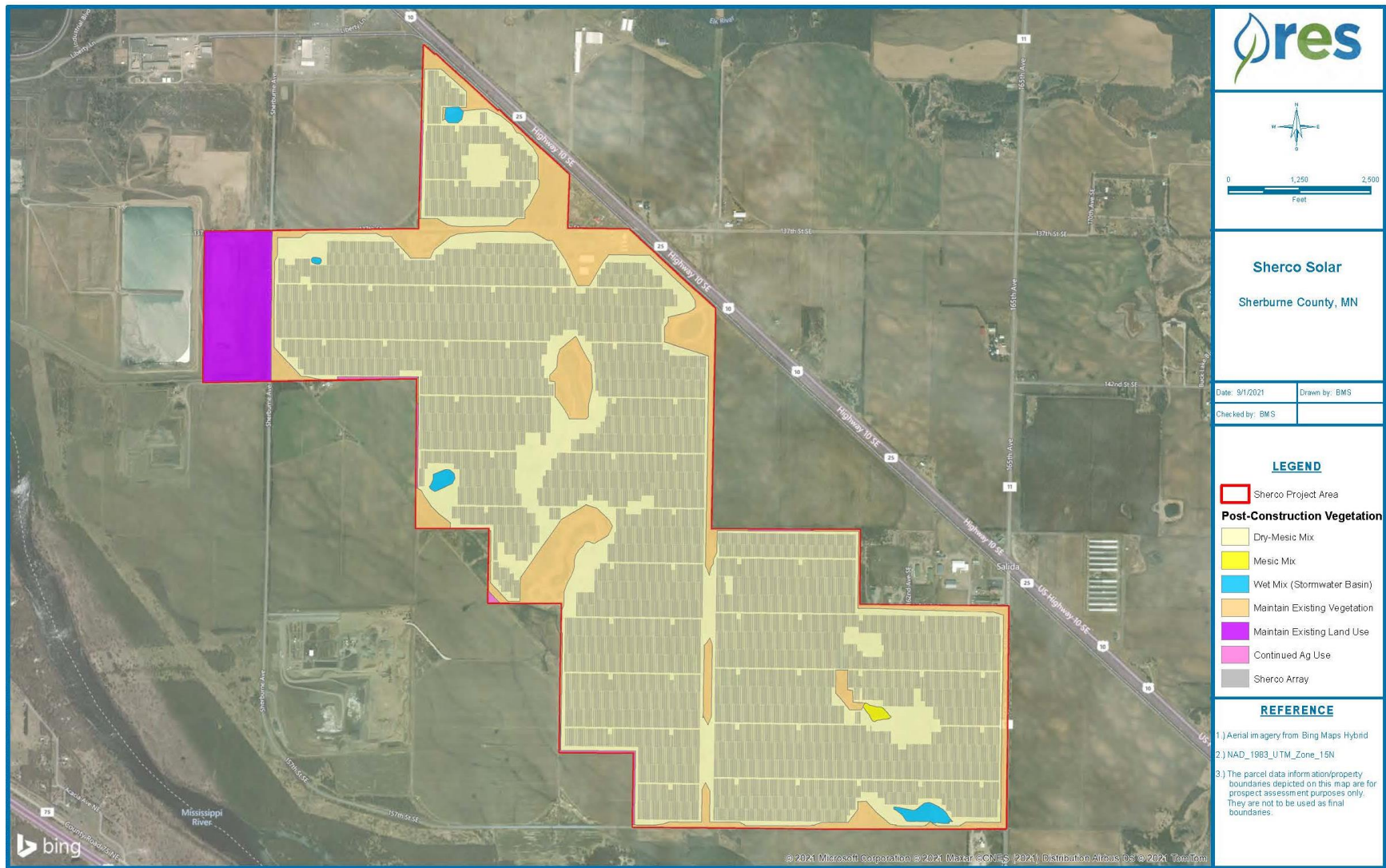


FIGURE 9: PLANTING PLAN- EAST BLOCK

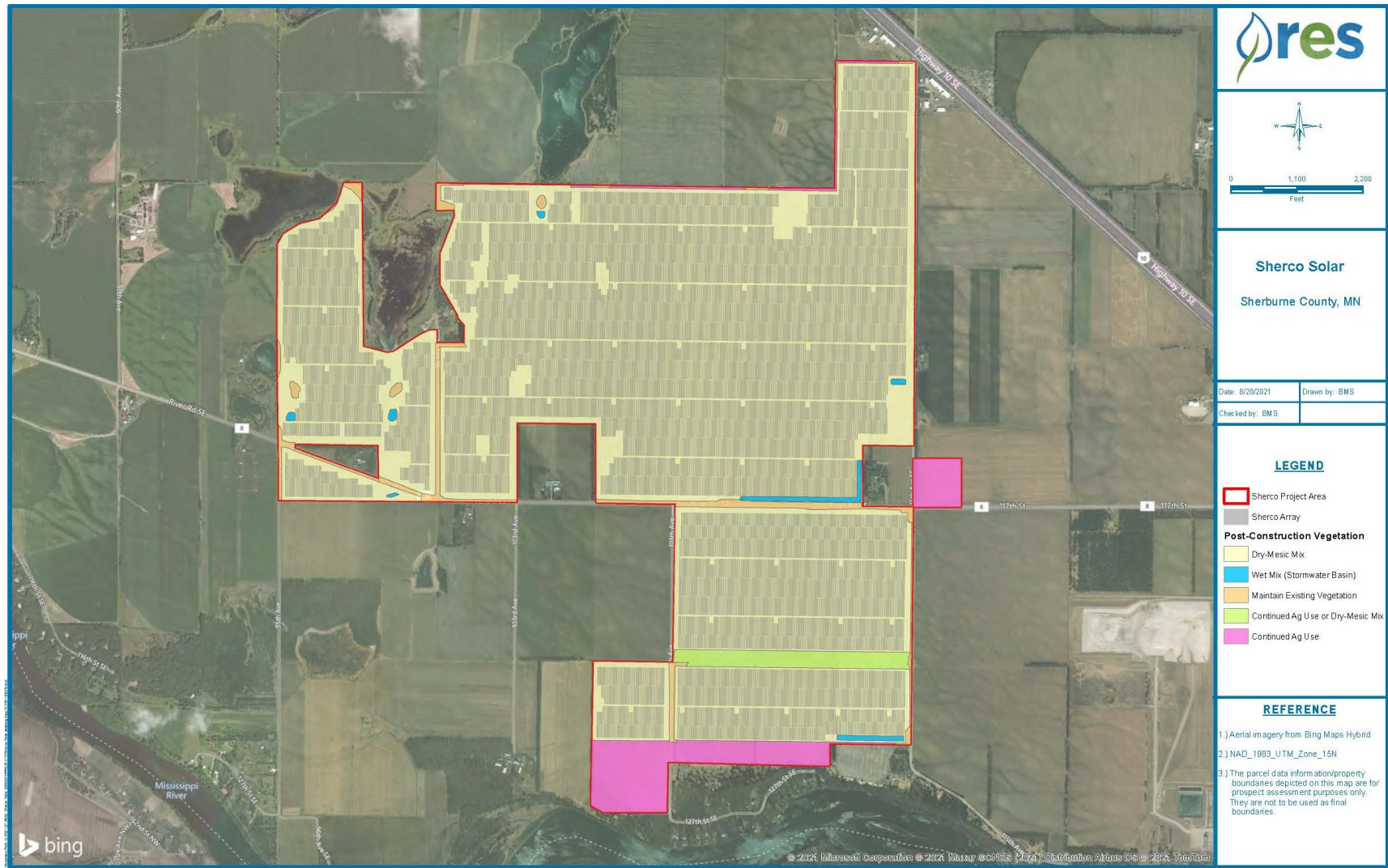


FIGURE 10: PLANTING PLAN- WEST BLOCK

Landscape Screening Areas

There are three landscape screening areas consisting of trees and shrubs. Screening should be applied so as to disrupt the direct line of site between the nearby residence and the solar array. See table 5 below for appropriate species to be implemented onsite. A screening area plan has also been provided per Figures 11, 12, and 13.

TABLE 5: REPRESENTATIVE WOODY PLANTS FOR SHERCO SOLAR SCREENING

DECIDUOUS & CONIFEROUS TREES*			
Scientific Name	Common Name	Size	Spacing
<i>Crataegus arnoldiana</i> 'Homestead'	Homestead Arnold Hawthorn	10# Cont.	14' o.c.
<i>Juniperus virginiana</i>	Eastern Red Cedar	10# Cont.	15' o.c.
<i>Picea glauca</i> 'Densata'	Black Hills Spruce	10# Cont.	15' o.c.
<i>Pinus banksiana</i>	Jack Pine	10# Cont.	15' o.c.
<i>Quercus macrocarpa</i>	Bur Oak	10# Cont.	15' o.c.
DECIDUOUS & CONIFEROUS SHRUBS			
Scientific Name	Common Name	Size	Spacing
<i>Amelanchier sanguinea</i>	Roundleaf Serviceberry	5# Cont.	6' o.c.
<i>Aronia melanocarpa</i>	Black Chokeberry	5# Cont.	6' o.c.
<i>Cornus racemosa</i>	Gray Dogwood	5# Cont.	6' o.c.
<i>Corylus americana</i>	American Hazelnut	5# Cont.	6' o.c.
<i>Juniperus communis</i>	Common Juniper	5# Cont.	6' o.c.
<i>Prunus americana</i>	American Plum	5# Cont.	6' o.c.
<i>Rhus glabra</i>	Smooth sumac	5# Cont.	6' o.c.

*Vegetation species are representative of species that provide adequate screening. Other species may be considered that provide similar screening outcomes based on sourcing needs.

FIGURE 11: SCREENING OF WEST BLOCK ALONG RIVER ROAD SE (COUNTY ROAD 8)



Location 45.401787°, -93.959490°

FIGURE 12: SCREENING OF WEST BLOCK NEAR 100TH AVENUE SE



Location 45.407938°, -93.954091°

FIGURE 13: SCREENING OF EAST BLOCK NEAR SHERBURN AVENUE



Location 45.365142°, -93.867220°

4.2.1 Seed Mix Substitutions

Procurement of seeds can be difficult to obtain in quantities necessary for such a large site. Sourcing of proposed seed mixes should be done as soon as practicable. Substitutions to seed mixes will be completed by a qualified professional with sufficient botanical experience identifying native plants, native plant communities, invasive species, and non-native species typical of Minnesota. Any substitution will be approved by Xcel Energy prior to implementation, and substitutions will have no effect on Xcel Energy's long-term goal of establishing a "Gold Standard" BWSR Habitat Friendly Solar Program Site and this plans stated goals and objectives.

For consistency in management across the site, it is desired that the uniform seed mix recommended in the plan be utilized. However, should sourcing issues arise, Xcel Energy has developed alternative species to utilize should procurement be problematic. Alternative seed mixes are listed beneath each seed mix shown above. Approval by Xcel Energy, who will coordinate with RES to ensure that proper substitutions are being implemented, is required to ensure adherence to the goals and objectives of this Plan.

4.2.2 Seeding of Array and Border Areas

As noted above, site visits have determined that the dry-mesic mix can be almost applied across the site within the fenced boundary, with only one small area proposed as mesic mix. Refer to the planting plan (Appendix 3) for additional details.

Seeding may be conducted with a seed drill and/or by broadcast seeding; the Seeding Contractor will evaluate the site and determine which technique will produce the best results given site conditions and the timing of seeding relative to the construction schedule. If broadcast seeding is used, the Seeding Contractor is responsible for ensuring good seed-to-soil contact. Such a large site will be in various stages of final site stabilization, and thus the following recommendations should be considered before planting occurs depending on time of final restoration. Guidance is provided below on the timing of seeding and cover cropping. Pounds per acre may be adjusted based on soil conditions and site assessments at the time of planting.

Fall Planting

If construction of an area is completed in fall, the best method for establishment of native seed mixes is fall dormant seeding (approximately after November 1 but before the soil starts to freeze). It is recommended that native seed mixes should include 30 pounds per acre pure live seed (“PLS”) winter wheat (*Triticum aestivum*) to provide a cover crop for the following year while native vegetation establishes. MNDNR recommends that a fall dormant seeding occur after soil temperatures fall below 50 degrees Fahrenheit for a consistent period of time.

If a cover crop is already present at the time of planting (likely as means of construction erosion control), the native seed mixes will be installed per the fall recommendation less the addition of cover crop seed specified above.

Spring Planting

If construction is completed in spring, and with sufficient time for seeding to occur from the time when the soil is free of frost and in a workable condition to June 30, it is recommended that native seed mixes should include 20 pounds per acre PLS of seed oats as a cover crop. MNDNR recommends that a spring seeding occur after the soil temperature is 60 degrees Fahrenheit or higher.

Summer Planting

If construction is completed in summer, allowing for seeding between July 1 and August 15, it is recommended that the Project Site should be seeded immediately with 15 pounds per acre PLS of oats and 15 pounds per acre PLS of spring wheat (*Triticum aestivum*) to stabilize the soil and prevent erosion. Following a summer cover crop planting, the native seed mixes will be installed as a fall dormant seeding with no additional cover crop added.

Late Summer Planting

If construction is completed in late summer or early fall, with sufficient time for seeding between August 16 and October 31, it is recommended the Project Site should be seeded immediately with 20 pounds per acre PLS of winter wheat to stabilize the soil and prevent erosion. Following a late summer cover crop planting, the native seed mixes will be installed as a fall dormant seeding with no additional cover crop added.

4.3 Seeding of Stormwater Basins

Xcel Energy will install stormwater basins as needed to meet stormwater best management practice requirements per NPDES regulations for the Project. Once constructed, these basins will be vegetated, following the same timing protocol as described in 4.2.2. Dry stormwater basins will be seeded throughout the basin using the dry-mesic or wet-mesic seed mixes, depending on the predicted volume of water and length of inundation expected for the basin. Wet stormwater basins will be seeded from the top of the basin to one foot below the anticipated water line using the wet mix. In most cases, it is recommended that stormwater basins will be installed with a seed drill. If broadcast seeding is used, the Seeding Contractor is responsible for ensuring good seed to soil contact and timing the seeding so that the seed is not washed away by precipitation events. Remediation seeding may be required if the seeding is compromised by unexpected precipitation.

4.4 Limiting Pesticide Drift

Prior to or shortly after the planting of native species, Xcel Energy will contact each owner of land surrounding the site that is not separated from the site by a public road right-of-way to inform them of the native plants planted pursuant to this Plan, the likely use of the vegetation by wildlife and pollinators and the need to avoid and minimize pesticide drift from adjacent land. No buffer zone of varying vegetation is proposed. Any pesticide drift will reduce the variety of species in the area impacted, but other species in the mix will remain and be reinforced by seed from neighboring planted areas over time.

4.5 Implementing Pollinator Friendly Signage

Once construction of the facility is complete, signage will be placed at site entrances denoting pollinator friendly plantings. Design of signage is still under development and will be installed by the applicant or contractor following completion of construction.

4.6 Creating Nesting Features

In the first 3 years of operation, Xcel Energy, or an assigned contractor will install nesting features in select portions of the site, primarily focused on wetland areas and wider border areas within the site in order to minimize nest disturbance from solar maintenance activities between the arrays. While the exact types, numbers, and locations features to be installed are still being identified they will include native grasses and shrubs as well as constructed features such as bee blocks, bat houses, and bird houses. Nesting elements will be installed throughout the site by the end of the first year of Project operations. Xcel Energy will install or provide final nesting feature information to the contractor for installation, once determined.

5. Vegetation Management

During initial seed establishment after final planting, a range of invasive plants are anticipated to spread. In this Plan, “invasive plants” refers to both non-native species and native species that grow in an invasive manner or have the potential to negatively affect success (Tables 6 and 7). This list also includes noxious weeds designated in statute by the State of Minnesota. These invasive plants must be managed effectively during the establishment phase to ensure that the planted native species are given the opportunity to flourish. The initial period of work onsite is referred to as the “establishment phase,” while management after that period is called the “perpetual maintenance phase.”

5.1 Vegetation Management During Establishment (Short-Term Goals)

The first approximately three years of vegetation management will require a concerted effort to remove invasive vegetation from the site while also helping the planted native vegetation to establish. Alternative methods may be employed should Xcel Energy and the contractor mutually agree that the methods will successfully meet NPDES, BWSR pollinator assessment form goals, and weed control.

5.1.1 Re-seeding Bare Soil

Areas of bare soil are detrimental to the successful establishment of native vegetation. Bare soil provides opportunities for the common invasive species described above to colonize and spread. Bare soil also contributes to soil loss by sheet erosion and may prevent Xcel Energy from discharging its Stormwater Pollution Prevention Plan (“SWPPP”) permit in a timely fashion. If areas of bare soil greater than 75 square feet are found onsite, each area will be

assessed to determine if an alternative seed mix is required, or if it should be overseeded with the same seed-mix as previously applied, depending on site conditions observed.

5.1.2 General Tasks for Managing Vegetation

Establishment Year 1

The first year of establishment is focused on consistent invasive plant control on a site-wide basis. Mowing during the first year should prevent invasive plants from adding new seeds to the soil and begin to exhaust the soil seed bank (a process that often requires several years to complete). Beginning June 1 of the first establishment year, it is recommended that developing vegetation be mowed to a height of 6-9 inches after vegetation reaches an initial height of approximately 18-24 inches. Mowing in wet areas will also be limited to periods when the wet areas are not susceptible to rutting or compaction. Spot-spraying, use of a swing arm, brush saws, weed whips or similar equipment may be used in wet areas as necessary to prevent soil damage when the soils are wet.

Repeated mowing may produce a buildup of organic thatch, which discourages the development and persistence of diverse native vegetation. To help prevent thatch buildup onsite, mowing may be conducted with a flail-type mower to mulch the cut vegetation, or the site may be hayed so that cut vegetation is removed. A swing arm specifically designed for mowing under solar panels can make for efficient mowing of the site. Spot-mowing with brush saws, weed whips, and similar equipment could also be successfully implemented. Alternative mowing techniques may also be approved by Xcel Energy prior to the start of work if they also minimize thatch buildup. Mowing equipment will be cleaned prior to use onsite to prevent the introduction and spread of invasive and non-native species.

It is recommended that weeds in the landscape screening areas be spot sprayed, weed whipped or hand weeded during the establishment phase to control invasive plants because attempting to mow between the landscaping plants will likely be difficult and may lead to unanticipated damages to the new plants.

Establishment Year 2

The second year of establishment continues invasive plant control but generally employs more targeted techniques. It is recommended that vegetation be mowed to a height of 6-9 inches occur when vegetation height reaches approximately 18-24 inches.

Spot-mowing may also be employed to treat specific problem areas as needed. Noxious and perennial weeds will be treated with spot-herbicides necessary to achieve performance standards. It is recommended that mowing in wet areas be limited to those periods of time when the areas are not susceptible to rutting or compaction. Spot-spraying, use of a swing arm,

brush saws, weed whips or similar equipment may be used in wet areas as necessary to prevent soil damage when the soils are wet.

The landscape screening areas may be spot sprayed, weed whipped or hand weeded during the establishment phase to control invasive plants because mowing between the landscaping plants will likely be difficult and may lead to unanticipated damages to the new screening.

Establishment Year 3

In the third year of the establishment phase, invasive plant control should consist of spot-herbicide treatment to control the remaining small patches of persistent weeds. Efforts should be focused on achieving the required performance standards (described below). Additional onsite treatment with spot-mowing or hand weeding may be employed at the discretion of the Contractor.

Mowing to a height of 6-9 inches is recommended in fall when native plants have gone dormant. Mowed vegetation may be raked, baled, and removed to prevent the buildup of organic thatch, which will discourage the development and persistence of diverse native vegetation. If vegetation removal is not achievable, mowing should be conducted with a flail-type mower to finely chop plant material and accelerate decomposition.

Establishment Years 4-5

It is anticipated that vegetation will have met the establishment goals by this time. If so, refer to Section 5.2, Perpetual Maintenance Phase. If additional establishment treatment is necessary, implementing the process laid out for year 3 is recommended.

5.1.3 Prescribed Treatment for Common Invasive Species

Invasive plant species may be present based on the makeup of the seed bank and the seed inputs from the surrounding environment, so management must be flexible and respond to the specific needs of the site. This Plan describes common techniques to manage a variety of invasive plants and common weeds growing in Minnesota, but not every technique will be required. In the establishment period, regular evaluations of the plantings will be conducted, during the growing season (May to September) to determine the appropriate treatment techniques prior to such plants flowering or producing seeds. Management techniques for five categories of weeds are described below. Recommended techniques include mowing, cutting, and spot-spraying.

The Contractor will be required to have the botanical expertise to correctly identify plant species described below and know the difference between species that must be removed and similar-looking native species being established.

Annual Weeds

Annual weeds include all unwanted species that grow for a single year, set seed, and die.

Common annual weeds include grasses like barnyard grass (*Echinochloa crus-galli*), witchgrass (*Panicum capillare*), fall panicum (*P. dichotomiflorum*), and foxtails (*Setaria* spp.), and broadleaf weeds like lambsquarters (*Chenopodium* spp.), velvetleaf (*Abutilon theophrasti*), Pennsylvania smartweed (*Polygonum pensylvanicum*), and black nightshade (*Solanum nigrum*) (University of Minnesota, 2018).

Mowing as prescribed in Section 5.1.1 prior to the setting of seeds is the recommended method for annual weed control.

Minnesota Department of Agriculture Noxious Weeds

The Minnesota Department of Agriculture (“MDA”) maintains a list of noxious weeds in the state which must be controlled (Table 6; MDA, 2021).

Mowing as prescribed in Section 5.1.1 and identification of a problematic species and spot treatment with herbicide, with reapplication as needed. All treatments should occur prior to setting of seeds or spreading by rhizomes, stolons, or other vegetative means.

Perennial Weeds

Perennial weeds include all unwanted species that persist for two or more years after germination, from biennials to those that live for many years. Especially aggressive species that may require special attention include grasses like Kentucky bluegrass (*Poa pratensis*), reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites australis*), and several species of bromes, especially smooth brome (*Bromus inermis*). Broadleaf weeds in this category include sweet clovers (*Melilotus alba*, *M. officinalis*), crown vetch (*Securigera varia*), birdsfoot trefoil (*Lotus corniculatus*), Canada thistle (*Cirsium arvense*), and spotted knapweed (*Centaurea stoebe*). A list of common Minnesota perennial weeds that colonize former cropland and compete with native vegetation (in addition to the listed noxious weeds) is provided in Appendix 6.

Mowing as prescribed in Section 5.1.1 and identification of a problematic species and spot treatment with herbicide, with reapplication as needed. All treatments should occur prior to setting of seeds or spreading by rhizomes, stolons, or other vegetative means.

TABLE 6. MINNESOTA PROHIBITED NOXIOUS WEEDS

Eradicate. <i>All above- and below-ground parts of the plant must be destroyed.</i>	
Common Name	Scientific Name
Tree of heaven	<i>Ailanthus altissima</i>
Palmer amaranth	<i>Amaranthus palmeri</i>
Oriental bittersweet	<i>Celastrus orbiculatus</i>
Diffuse knapweed	<i>Centaurea diffusa</i>
Brown knapweed	<i>Centaurea jacea</i>
Yellow star thistle	<i>Centaurea solstitialis</i>
Meadow knapweed	<i>Centaurea x moncktonii</i>
Poison hemlock	<i>Conium maculatum</i>
Black swallow-wort	<i>Cynanchum louiseae</i>
Grecian foxglove	<i>Digitalis lanata</i>
Common teasel	<i>Dipsacus fullonum</i>
Cut-leaved teasel	<i>Dipsacus laciniatus</i>
Giant hogweed	<i>Heracleum mantegazzianum</i>
Japanese hops	<i>Humulus japonicus</i>
Dalmatian toadflax	<i>Linaria dalmatica</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Control. <i>Effort must be made to prevent the spread, maturation, and dispersal of any propagating parts.</i>	
Common Name	Scientific Name
Common barberry	<i>Berberis vulgaris</i>
Narrowleaf bittercress	<i>Cardamine impatiens</i>
Plumeless thistle	<i>Carduus acanthoides</i>
Spotted knapweed	<i>Centaurea stoebe</i>
Canada thistle	<i>Cirsium arvense</i>
Leafy spurge	<i>Euphorbia esula</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Wild parsnip	<i>Pastinaca sativa</i>
Non-native phragmites	<i>Phragmites australis</i>
Bohemian knotweed	<i>Polygonum x bohemicum</i>
Giant knotweed	<i>Polygonum sachalinense</i>
Japanese knotweed	<i>Polygonum cuspidatum</i>
Common tansy	<i>Tanacetum vulgare</i>

TABLE 7. PROBLEM WEEDS TO REMOVE

Plant Group & Priority	Common Name	Scientific Name
Top Priority Grasses to Remove	Smooth brome grass	<i>Bromus inermis</i>
	Reed canary grass	<i>Phalaris arundinacea</i>
	Giant reed	<i>Phragmites australis</i>
	Kentucky bluegrass	<i>Poa pratensis</i>
Top Priority Forbs to Remove	Garlic mustard	<i>Alliaria petiolata</i>
	Musk thistle	<i>Carduus nutans</i>
	Bull thistle	<i>Cirsium vulgare</i>
	Crown vetch	<i>Securigera varia</i>
	Birds-foot trefoil	<i>Lotus corniculatus</i>
	White sweet clover	<i>Melilotus alba</i>
	Yellow sweet clover	<i>Melilotus officinalis</i>
Second Priority Grasses to Remove	Amur silver grass	<i>Miscanthus sacchariflorus</i>
Second Priority Forbs to Remove	Creeping Charlie	<i>Glechoma hederacea</i>
	Butter and eggs	<i>Linaria vulgaris</i>
	Japanese knotweed	<i>Polygonum cuspidatum</i>
	Perennial sow thistle	<i>Sonchus arvensis</i>
	Cow vetch	<i>Vicia cracca</i>
	Hairy vetch	<i>Vicia villosa</i>
Any Tree, Shrub, or Vine Outside the Screening Plantings		

Problematic Native Plants

Several native species that are present in the soil seed bank or enter the site by seed rain from neighboring properties have the potential to interfere with the functioning of the solar panels. The following techniques are recommended for their removal:

- Giant ragweed (*Ambrosia trifida*) grows tall enough to shade the panels. Several native vines have the potential to overgrow installations, including wild grape (*Vitis riparia*), wild cucumber (*Echinocystis lobata*), bur cucumber (*Sicyos angulatus*), and woodbine/Virginia creeper (*Parthenocissus* spp.). Giant ragweed, or any other native species shading the arrays, should be controlled by mowing (see above).

- If growing under or near the solar panels, wild cucumber and bur cucumber can be pulled and removed manually.
- Woody vines such as wild grape and woodbine/Virginia creeper should be cut to within one inch of the ground and the stump treated with glyphosate, triclopyr, or a comparable herbicide by a licensed applicator, following instructions provided by the manufacturer.

Woody Species

Almost all woody species can shade or otherwise interfere with the operation of solar panels. During the establishment phase, all woody plants potentially interfering with solar energy generation will be removed. Recommended removal techniques include mowing, applying herbicide, or a combination of both methods. All pertinent woody plants over 0.5 inches diameter at breast height ("DBH;" about 4.5 feet) will be cut to within 1 inch of the ground and the stump treated with triclopyr or a comparable herbicide by a licensed applicator, following instructions provided by the manufacturer. Cut brush will be removed from the site.

5.1.4 Herbicide Specifications

All herbicide treatments will be restricted to those pesticides and methods of application approved by the MDA, MNDNR, and the U.S. Environmental Protection Agency. Spraying will be conducted by certified applicators holding all necessary permits and licenses. All herbicides will be applied in accordance with the applicable regulations and the label requirements in a safe and cautious manner to avoid damaging adjacent properties. Herbicide will be applied selectively where applicable in order to avoid damaging existing native vegetation. Pre-emergent herbicides include indaziflam (trade name Esplanade) and aminopyralid/metsulfuron-methyl (trade name Opensight) or equivalent. Additionally, pre-emergent formulations are recommended to include an adjuvant such as trade name Grounded or equivalent. Approved foliar herbicides include glyphosate (trade name Aquaneat), triclopyr (trade name Garlon), and aminopyralid (trade name Milestone) or equivalent.

Pre-emergent herbicides are recommended to be applied in the spring once the temperature is above 55°F. Foliar herbicides will be applied during the growing season as a control measure to prevent noxious weeds and invasive species from flowering or setting seed. The Contractor will have knowledge of the phenology of species to treat on site to conduct herbicide treatments at the appropriate time and will submit a schedule of planned visits each year prior to May 1.

5.2 Vegetation Management During Perpetual Maintenance (Long-Term Goals)

Following the end of the Establishment Phase of vegetation management, yearly management is still necessary to promote and maintain the desired vegetation community, control the re-

establishment and spread of invasive species, combat the establishment of undesirable and invading trees and shrubs, and reduce biomass/fuel load onsite. The primary tool for this management will be annual mowing. Some degree of hand weeding, spot-mowing, and/or spot-herbicide treatment may be warranted thereafter to maintain vegetation quality and achieve the VMP goals (see Section 6).

The landscape screening will be managed separately from the general mowing areas. To keep invasive plants under control and ensure the full development of the landscape screen, inspections should be made (see Section 6) to identify the presence of noxious weeds and invasive plant species, and those species will be controlled using standard weed control techniques described in Section 5.

Landscape screens will be monitored for indications of stress and, if necessary, actions will be taken to increase the vigor of the planted trees and shrubs. This may include hand-mowing competing herbaceous vegetation within the drip line of a stressed woody plant, replenishing mulch, and watering.

5.2.1 Mowing for Perpetual Maintenance

Annual mowing to a height of 6-9 inches is recommended each fall when native plants have gone dormant. Mowed vegetation may be raked, baled, and removed to prevent the buildup of organic thatch, which will discourage the development and persistence of diverse native vegetation. If vegetation removal is not achievable, mowing should be conducted with a flail-type mower to finely chop plant material and accelerate decomposition. At the discretion of Xcel Energy, and assuming that vegetation is not hindering solar energy production, each solar array will be mowed on a rotational basis to allow overwintering insects to complete their life cycles and provide winter cover for other wildlife. This rotation will generally be assigned based on Array Block assignments (See Section 3). Implementation of rotational mowing will depend on the rate of weed and woody plant invasion detected during annual inspections, and if it is determined that vegetation height is not a hindrance to solar energy production.

5.2.2 Noxious Weeds and Problem Plants

All Minnesota prohibited noxious weeds and other problem plants (See tables in Section 5.1) will be treated repeatedly with herbicide and mowed where appropriate at a frequency sufficient to prevent seed set and remove target weeds over time. Each treatment will show evidence of at least 90 percent of the target vegetation having been affected by herbicide or removed. Two weeks after treatment, at least 95 percent of all herbicide-treated plants will be dead or dying within any 100 square foot area.

All prohibited noxious and other problem plants will not exceed 5 percent aerial cover within any 100 square foot area across the site.

5.2.3 Re-seeding Bare Soil

A variety of factors can result in the formation of areas of bare soil over time. If areas of bare soil greater than 75 square feet are found onsite, each area will be assessed to determine if it should be overseeded with the same seed mix as previously applied or if an alternative seed mix is required, depending on site conditions observed.

6 Monitoring and Adaptive Management

6.1 Targets and Projected Outcomes

Projected outcomes are established via the BWSR Project Planning Assessment Form (Figure 14) and Established Project Assessment Form (Figure 15), below, and the short- and long-term goals established in section 1.1, which were formulated to match the selected criteria of the BWSR program based on the forms. Figure 15, while not final, identifies the anticipated outcomes of this plan should it be successfully implemented. Adherence to the methods identified in this plan should set the contractor up to realize or exceed the score listed.

At year 3, Xcel Energy anticipates reaching the “gold standard” established in the BWSR Established Project Assessment Form. Monitoring of these targets is essential to ensure the short and long term success of the site, and monitoring recommendations will be made based on the short and long term goals of this plan. The following section lays out monitoring duration and reporting.

FIGURE 14: BWSR PROJECT PLANNING ASSESSMENT FORM- BASED ON SEED MIXES PREPARED FOR SHERCO SOLAR PROJECT



Habitat Friendly Solar Site Assessment Form for Project Planning

For solar companies and local governments to meet Habitat Friendly standards
5-26-2020

1) PLANNED % OF SITE DOMINATED BY NATIVE SPECIES COVER (wildflowers, grasses, sedges, shrubs, trees)

- ☐ 26-50% +5 points
☒ 51-75% +10 points
☐ 76% and above +15 points

Total points **10**

2) PERCENT OF PROPOSED SITE VEGETATION COVER TO BE DOMINATED BY WILDFLOWERS (not grasses and sedges)

- ☐ 10-20% +5 points
☐ 21-30% +10 points
☒ 31% and above +15 points

Total points **15**

Note: Projects may have "array" mixes and diverse border mixes; forb dominance should be averaged across the entire site. The dominance should be calculated from total numbers of forb seeds vs. grass seeds based on seeds per square foot (from all seed mixes to be planted).

3) PLANNED COVER DIVERSITY (# of species in seed mixes; numbers from upland and wetland mixes can be combined)

- ☐ 10-19 species +5 points
☐ 20-25 species +10 points
☒ 26 or more species +15 points

Total points **15**

4) PLANNED SEASONS WITH AT LEAST 3 BLOOMING SPECIES PRESENT (check/add all that apply)

- ☒ Spring (April - May) +10 points
☒ Summer (June - August) +5 points
☒ Fall (September - October) +5 points

Total points **20**

See BWSR [Pollinator Toolbox](#) about bloom season.

5) AVAILABLE HABITAT COMPONENTS WITHIN SITE OR WITHIN .25 MILES (check/add all that apply)

- ☒ Native bunch grasses for nesting +3 points
☒ Native flowering shrubs +4 points
☒ Clean, perennial water sources +3 points
☒ Created nesting feature/s (bee blocks, etc.) +4 points

Total points **14**

6) SITE PLANNING AND MANAGEMENT

- ☒ Detailed establishment and management plan (see notes) developed with funding/contract to implement. +15 points

- ☒ Signage legible at forty or more feet stating pollinator friendly solar habitat (see notes for number of signs). +5 points

Total points **20**

7) SEED MIXES

- ☒ Mixes are composed of at least 40 seeds per square foot. +5 points

- ☐ All seed genetic origin within 175 of site (see notes). +8 points

- ☒ At least 1% milkweed cover to be established from seed/plants. +10 points

Total points **15**

8) INSECTICIDE RISK

- ☐ Planned on-site insecticide use or pre-planting seed/plant treatment (excluding buildings/electrical boxes, etc.). -40 points

- ☒ Communication with local chemical applicators/neighbors about need to prevent drift from adjacent areas (see notes). +10 points

Total points **10**

Grand Total **119**

Gold Standard - Provides Exceptional Habitat **85+**

Meets Pollinator Standards **70**

Project Name: Sherco Solar
 Vegetation Consultant: Resource Environmental Solutions, Inc.
 Project County: Sherburne
 Project Size: 3480 acres
 Projected Seeding Date: TBD

See notes related to the question on the back side of this form.

Notes:

Estimates of percent “cover” should be based on “absolute cover” (the percent of the ground surface that is covered by a vertical projection of foliage as viewed from above).

All project plans must include detailed vegetation establishment and management specifications to ensure the success of projects (see sample specifications on [BWSR's Habitat Friendly Solar Webpage](#)).

Seed mixes provided for projects need to show seeds per square foot for each species in the mix.

Question 1 - Native plant species provide benefits to a wide range of pollinators and other wildlife species. The [Minnesota DNR List](#) should be used to determine if a species is native. Native species include wildflowers, graminoids (grasses, sedges, rushes), shrubs and trees. The percent areal cover of native vs. non-native species should be estimated based on the seeds per square foot of all species to be used across all seed mixes.

Question 2 - There is a focus on wildflowers on this assessment form to maximize benefits to the approximately 450 species of native bees in Minnesota, honeybees and other pollinators. Wildflowers in question 2 refer to “forbs” (flowering plants that are not woody or graminoids such as grasses and sedges) and can include introduced clovers and other non-native species beneficial to pollinators. No noxious weeds or invasive plants can be included in the total.

Question 3 - Plant diversity adds to wildlife benefits, as well as the resiliency of projects. For this question, planned native and non-native species from all seed mixes can be combined for the total. Species must be planned to be used in a seed mix that will cover at least two acres at the site to be used for the total.

Question 4 - Having blooming species throughout the season helps support pollinator species. See BWSR's [Pollinator Toolbox](#) for a listing of bloom seasons for species.

Question 5 - The planting of native bunch forming prairie grasses, as well as native flowering shrubs is promoted as part of projects to increase nesting opportunities. If bunch grasses are included as part of plantings it is important that they are not mowed below four inches as part of yearly maintenance to ensure that they are not damaged. Habitat components must be within sites or within .25 miles of the site for this question.

Question 6 -

To meet requirements for a long-term management plan projects must provide information about:

- Timing of yearly inspections,
- Evidence of funding and a contract for management for at least the first three years.
- A detailed native vegetation establishment plan with detailed instructions for contractors.
- A detailed maintenance schedule for the first three years of the project listing timing of establishment mowing/trimming, spot herbicide application, prescribed grazing or other management actions.
- Proposed maintenance schedule for year four and beyond.
- List of weed species that may become problematic at the site how they will be managed if needed.
- Maintenance needs for any constructed nest habitat for the project.

Visible signage can play an important role in communicating the multiple benefits of Habitat Friendly Solar. Signs must be legible at forty or more feet in locations where the public can view the signs and state that the project is a Habitat Friendly Solar project. At least one sign is recommended every 20 acres up to a maximum of 5 signs.

Question 7 - All mixes being used for the project must include at least 40 seeds per square foot to receive points for the first category. Please refer to pages 7-8 of [BWSR's Native Vegetation Establishment and Enhancement Guidelines](#) for more information about appropriate seed sources. To obtain points for including milkweed in projects at least 1% must be in seed mixes based on seeds per square foot, or a combination of seed and containerized plugs could be used with a plan to cover 1% of the ground surface with milkweed.

Question 8 - It is important that seeds treated with insecticides are not used at project sites and that insecticides are not being sprayed at the site. To meet requirements for communication/registration with local landowners/applicators about the need to prevent drift from adjacent areas, information provided can be in the form of email communication or copies of letters. Communication must be provided to all landowners adjacent to the property including municipalities.

Send completed forms, project plans, seed mixes (showing seeds per square foot for each species) and any communications with pesticide applicators to local government staff with decision making authority for the project or BWSR at Paul.Erdmann@state.mn.us if local government staff are not involved in reviewing the project.

FIGURE 15: BWSR ESTABLISHED PROJECT ASSESSMENT FORM- ANTICIPATED OUTCOMES



Habitat Friendly Solar Site Assessment Form for Established Plantings (after year 3)

For solar companies and local governments to meet Habitat Friendly Standards

5-07-2021

1) % OF SITE DOMINATED BY NATIVE SPECIES COVER (wildflowers, grasses, sedges, shrubs, trees)

- ☐ 5-25% +5 points
- ☐ 26-50% +15 points
- ☒ 51-75% +20 points
- ☐ 76+ +25 points

Total points **20**

2) PERCENT OF SITE DOMINATED BY WILDFLOWERS (not grasses and sedges)

- ☐ 5- 8 % +10 points
- ☐ 9-16 % +15 points
- ☒ 17-25 % +20 points
- ☐ 26-34 % +25 points
- ☐ 35+ +30 points

Total points **20**

3) COVER DIVERSITY (# of plant species with >1% cover)

- ☐ 1-9 species +5 points
- ☒ 10-19 species +15 points
- ☐ 20-25 species +25 points
- ☐ 26 or more species +30 points

Total points **15**

Exclude invasive/noxious weeds from species totals.

4) SEASONS WITH AT LEAST 3 BLOOMING SPECIES PRESENT (check/add all that apply)

- ☒ Spring (April-May) +10 points
- ☒ Summer (June-August) +5 points
- ☒ Fall (September-October) +5 points

Total points **20**

See BWSR [Pollinator Toolbox](#) for Information about bloom season.

5) AVAILABLE HABITAT COMPONENTS WITHIN SITE OR WITHIN .25 MILES (check/add all that apply)

- ☒ Native bunch grasses for nesting +3 points
- ☒ Native flowering shrubs +4 points
- ☒ Clean, perennial water sources +3 points

Total points **10**

6) AVAILABLE HABITAT COMPONENTS ON-SITE (check/add all that apply)

- ☐ At least 1% milkweed cover +5 points
- ☒ Detailed management plan developed (see notes) with funding/contract to implement +15 points
- ☒ Signage legible at forty or more feet stating pollinator friendly solar habitat (see notes for sign numbers) +5 points
- ☒ Constructed and maintained nesting habitat feature/s (bee blocks, etc.) +5 points

Total points **30**

7) INSECTICIDE RISK

- ☐ Planned on-site insecticide use. (excluding buildings/electrical boxes, etc.) -25 points
- ☒ Communication with local chemical applicators/neighbors about need to prevent drift from adjacent areas. +10 points

Total points **10**

Grand Total **120**

Gold Standard - Provides Exceptional Habitat 85+
Meets Pollinator Standards 70

Project Name: Sherco Solar
Vegetation Consultant: TBD
Project County: Sherburne County
Project Size: 480 MW
Evaluation Date: TBD

See notes related to the questions on the back side of this form.

Notes:

Estimates of percent “cover” should be based on “absolute cover” (the percent of the ground surface that is covered by a vertical projection of foliage as viewed from above). To measure cover diversity use plots, and/or transects in addition to meander searches. Surveys can be conducted April through October, though the highest diversity will be visible during the summer.

All project plans must include detailed vegetation establishment and management specifications (and detailed long-term management planning is encouraged) to ensure the success of projects (see sample specifications on [BWSR's Habitat Friendly Solar Webpage](#)).

Question 1 - The [Minnesota DNR List](#) should be used to determine if a species is native. Native species can include wildflowers, graminoids (grasses, sedges, rushes), shrubs and trees.

Question 2- Wildflowers in question 2 refer to “forbs” (flowering plants that are not woody or graminoids such as grasses and sedges) and can include introduced clovers and other non-native species (that are not noxious weeds or invasive species) beneficial to pollinators and located anywhere across the state.

Question 3- Plant diversity adds to wildlife benefits as well as the resiliency of projects. For this question native and non-native species (that are not noxious weeds or invasive species) that establish at the site and have greater than one percent cover can be combined for the total.

Question 4- See BWSR's [Pollinator Toolbox](#) for a listing of bloom seasons for species. Non-native clovers can be counted as either spring or summer species but not both.

Question 5- The planting of native bunch forming prairie grasses, as well as native flowering shrubs is promoted as part of projects to increase nesting opportunities. It is important that planted bunch grasses are not mowed lower than four inches as part of maintenance activities to prevent damaging them. Any of the habitat components must be within the site or .25 miles of the project for obtaining points.

Question 6- Estimates of milkweed percent cover should be based on milkweed present across the entire site.

To meet requirements for a long-term management plan projects must provide information about:

- *Timing of yearly inspections.*
- *Evidence of funding and a contract for management for at least the first three years.*
- *A detailed native vegetation establishment plan with detailed instructions for contractors.*
- *Detailed maintenance schedule for the first three years of the project listing timing of establishment.*
- *Mowing/trimming, spot herbicide application, prescribed grazing or other management actions.*
- *Proposed maintenance schedule for years four and beyond.*
- *List of weed species that may become problematic at the site and how they will be managed if needed.*
- *Maintenance needs for any constructed nest habitat for the project.*

Visible signage can play an important role in communicating the multiple benefits of Habitat Friendly Solar. Signs must be legible at forty or more feet in locations where the public can view the signs and state that the project is a Habitat Friendly Solar project. At least one sign is required every 20 acres, up to a maximum of 5 signs.

Question 7- It is important that seeds treated with insecticides are not used at project sites, or that sites are not sprayed with insecticides. To meet requirements for communication/registration with local landowners/applicators about the need to prevent drift from adjacent areas, information provided can be in the form of email communication or copies of letters. Communication must be provided to all landowners adjacent to the property including municipalities.

Submit completed form and a sufficient number of images to represent the vegetation across the site. At least three images are recommended for projects under 50 acres. Establishing photo reference points is also recommended. Submit the materials to local government staff with decision making authority for the project or BWSR at dan.shaw@state.mn.us. If points are awarded for communication about insecticide risk (see question 7 above) include copies of the communication to pesticide applicators. If points are awarded for a long-term management plan include a copy of the plan that lists the required information (see question 6 above) unless the plan is already on file with the agency reviewing this information.

6.1.1 Native Vegetation Targets

All seeded areas will have at least 70 percent cover by native species by the end of the third growing season after installation. In addition, at least 20 of the installed species will be present with 1 percent or greater cover during the third growing season. Wildflowers will cover at least 20 percent of the site and at least three blooming species will be present in each growing season (spring, summer and fall). If necessary, the Contractor will remediate areas failing to meet the targets by installing additional seed or plugs to ensure native cover and diversity requirements are met.

6.1.2 Noxious Weeds and Problem Plants

By the end of the third growing season following the completion of construction, all prohibited noxious and other problem plants will not exceed 5 percent aerial cover within any 100 square foot area across the site.

6.2 Third Party Monitor

The third party monitor will begin site assessments in year 1 of operation, regardless of SWPPP status. During construction activities, the SWPPP inspector will be the primary inspector responsible for ensuring compliance with construction stormwater compliance onsite. Per the AIMP, an additional inspector will be onsite during construction to monitor for appropriate soil preservation efforts as well.

As noted throughout the Plan, a third-party monitor will complete certain reporting activities to assist in long term management successes. The third party monitor will be a qualified professional with sufficient botanical experience identifying native plants, native plant communities, invasive species, and non-native species typical of Minnesota. The monitor will be responsible for the following:

- 1) Completion of an annual monitoring report during the establishment phase of the site, beginning in year 1 of operations.
- 2) Completion and evaluation based on the BWSR *Established Project Assessment Form (updated 05-2020)* beginning at year 3 of operations and every 3 years thereafter, to determine current compliance with the BWSR program.

A more detailed description of reporting content is identified in the section below.

6.3 Monitoring Protocol

As noted throughout this plan, regular monitoring is necessary in years 1-3 and will occur to ensure the initial establishment of native vegetation and control of weedy species across the site. Prior to SWPPP closure, weekly inspection and monitoring following rain events is already

required per NPDES requirements. Contractors will be prepared to address issues noted by the SWPPP inspector, which will include monitoring for vegetation establishment.

On-site staff will report noxious weeds as they are encountered. Additionally, a qualified monitor will inspect the site annually to evaluate the site vegetation and plan management activities for the upcoming year and create a report as identified in Section 6.3, below.

At the end of the third year of vegetation establishment (by December 31), and every three years afterwards, a qualified professional will complete the Minnesota Board of Water and Soil Resources *Established Project Assessment Form (updated 05-2020)*. Monitoring will be coordinated with BWSR staff and will likely include a mixture of fixed monitoring points and random walk monitoring. Site images showing the current vegetation at fixed points will be collected throughout the duration of the solar Project.

Section 5.2 provides a basic blueprint for long term success of the VMP. The annual report will provide additional context, adaptive management techniques, and necessary steps to assist Xcel Energy in maintaining the goals and objectives of this plan.

6.4 Reporting and Adaptive Management

Xcel Energy is committed to achieving Habitat Friendly Solar status, and specific reporting requirements are necessary for the program via the BWSR *Established Project Assessment Form (updated 05-2020)*. The form, along with photo-point records, will be submitted to local government staff who have approval responsibilities or other BWSR-designated representatives. By submitting these materials, the site will remain on the list for meeting habitat friendly solar requirements and will enable the facility to be promoted as such. If significant issues arise, Xcel Energy will coordinate with BWSR to determine if the Project can remain on the list of sites meeting the standards.

The Habitat Friendly Solar reporting will include:

- A completed Habitat Solar Site Assessment Form.
- A summary of site conditions and management activities to meet management objectives by management area/unit.
- Description of adaptive management actions implemented to meet management objectives.
- Description of management challenges (inclement weather events, staffing, etc.) and how these management challenges hindered establishment of the species in the seed mix for the site.
- Description of any barriers or challenges that may influence success.
- Monitoring images as noted above.

Separately, an annual report will be generated which will assess progress toward the goals and objectives of this plan, as well as an assessment of the current site characteristics to ensure

ongoing compatibility with the BWSR program. The annual report will summarize the status of the vegetation established on site and should identify hazards encountered during the year. This report will address problem areas and plan targeted remediation efforts for the upcoming growing season, including altering the timing or extent of mowing or herbicide application, adjusting the rate or formulation of herbicide applied, or conducting targeted overseeding of appropriate seed mixes as needed. The report will also record the presence and location of any noxious or invasive weeds to be treated, which will both guide the Contractor and document changes in the vegetation establishment and management approach over time. This protocol will ensure that timely management activities reflect reporting from the previous growing season and address small issues before they become more serious or extensive. The report will utilize the management units across the site (either individual or combined blocks) to quickly and easily identify areas that require additional management measures.

Should the recommendations of the report be implemented, it is anticipated that the Plan's goals will be met. Should onsite managers disagree with a recommendation, or are unable to practicably complete a recommendation, they will confirm deviations from the recommendations in coordination with Xcel Energy and the third party monitor.

The goals and practices described in this plan are based on current environmental, regulatory, and economic conditions. Should conditions in the future no longer support the currently described goals, or provide opportunities to achieve alternative desirable goals, Xcel Energy will reevaluate the site and develop an updated Plan.

6.5 Project Administration

Administrative responsibilities under this Plan will be undertaken by the following individuals and companies prior to initiation of construction. The Field Representative for Xcel Energy has primary responsibility for the activities associated with this Plan. All communications associated with this Plan should be directed to the Field Representative. The qualified inspector is solely serving the role of a monitor and reporter under this Plan and has no authority to direct the work of the Contractor or any others working on the Project. Any issues or concerns noted by the inspector should be directed to the Field Representative and the Contractor.

The Field Representative for Xcel Energy is:

Name: _____

Title: _____

Phone: _____

Address: _____

E-mail: _____

The Contractor that will complete and oversee the installation and management activities prescribed in this Plan is: _____ and its Project Manager is:

Name: _____

Title: _____

Phone: _____

Address: _____

E-mail: _____

6.6 Construction Plan Specifications.

Final Detailed civil construction plans will also be provided to the contractor prior to mobilizing onsite.

6.7 Agency Consultation

Upon submittal of the initial Vegetation Management Plan, EERA staff provided a comprehensive list of feedback from EERA, DNR, MDA, and BWSR on May 12th, 2021. The plan was subsequently updated and provided to agencies in September of 2021. Upon receipt of agency feedback at a virtual meeting session on September, 23, 2021, additional updates were made based on feedback obtained. An updated draft was provided to the agencies on XXX.

References

- Minnesota Board of Water and Soil Resources (“BWSR”). 2020. Minnesota Habitat Friendly Solar Program. Accessed March 2021 at <https://bwsr.state.mn.us/minnesota-habitat-friendly-solar-program>.
- BWSR. 2021. Minnesota Habitat Friendly Solar Program, List of Project that Meet the Standards, March 2021. Accessed March 2021 at [List of HFS Sites 2 25 2021.pdf \(state.mn.us\)](#).
- Minnesota Department of Agriculture (“MDA”). 2021. Minnesota Noxious Weed List. Accessed March 2021 at <https://www.mda.state.mn.us/sites/default/files/docs/2021-02/2021NoxiousWeedListFactsheetV2.pdf>.
- Minnesota Department of Commerce, Division of Energy Resources, Energy Environmental Review and Analysis. 2021. Guidance for Developing a Vegetation Establishment and management Plan for Solar Facilities. Accessed March 2021 at <https://mn.gov/eera/web/project-file/11702/>.
- University of Minnesota. 2018. Common annual weeds. Accessed February 2021 at <https://extension.umn.edu/weed-management/weed-identification>