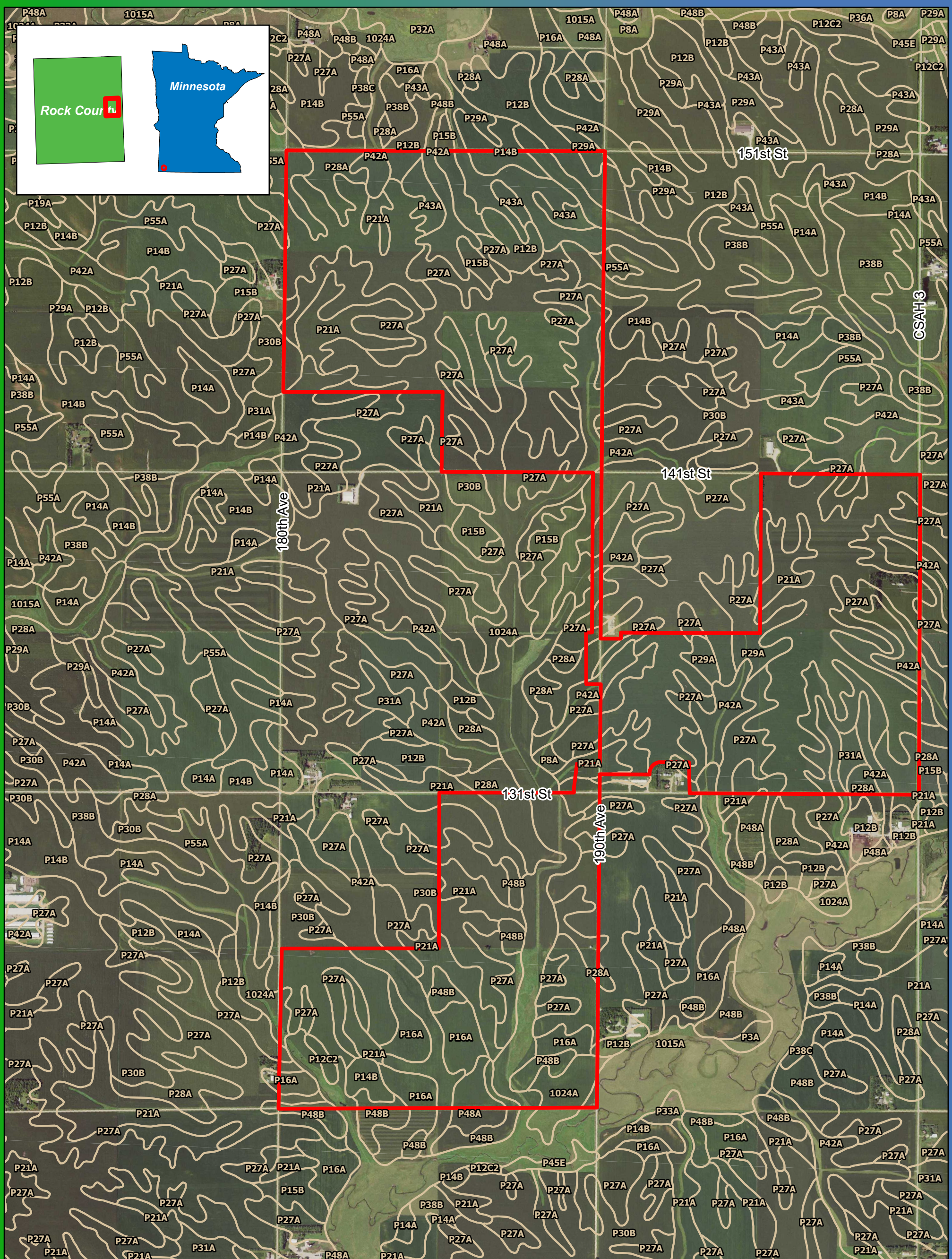


Appendix B

NRCS Soil Map for the Elk Creek Solar Project



1:18,000

Data Source: National Grid Renewables,
MN DOT, Rock County
Imagery Source: 2021 FS

Appendix B
NRCS Soil Map for the Project
Elk Creek Solar Project
Rock County, MN
43.67819, -96.09293

-  2023 Land Control Area
 SSURGO Soils

Appendix C

Vegetation Management Plan, Revised May 2023



Vegetation Management Plan

Elk Creek Solar, LLC

Prepared for
Elk Creek Solar, LLC

Prepared by
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EXECUTIVE SUMMARY

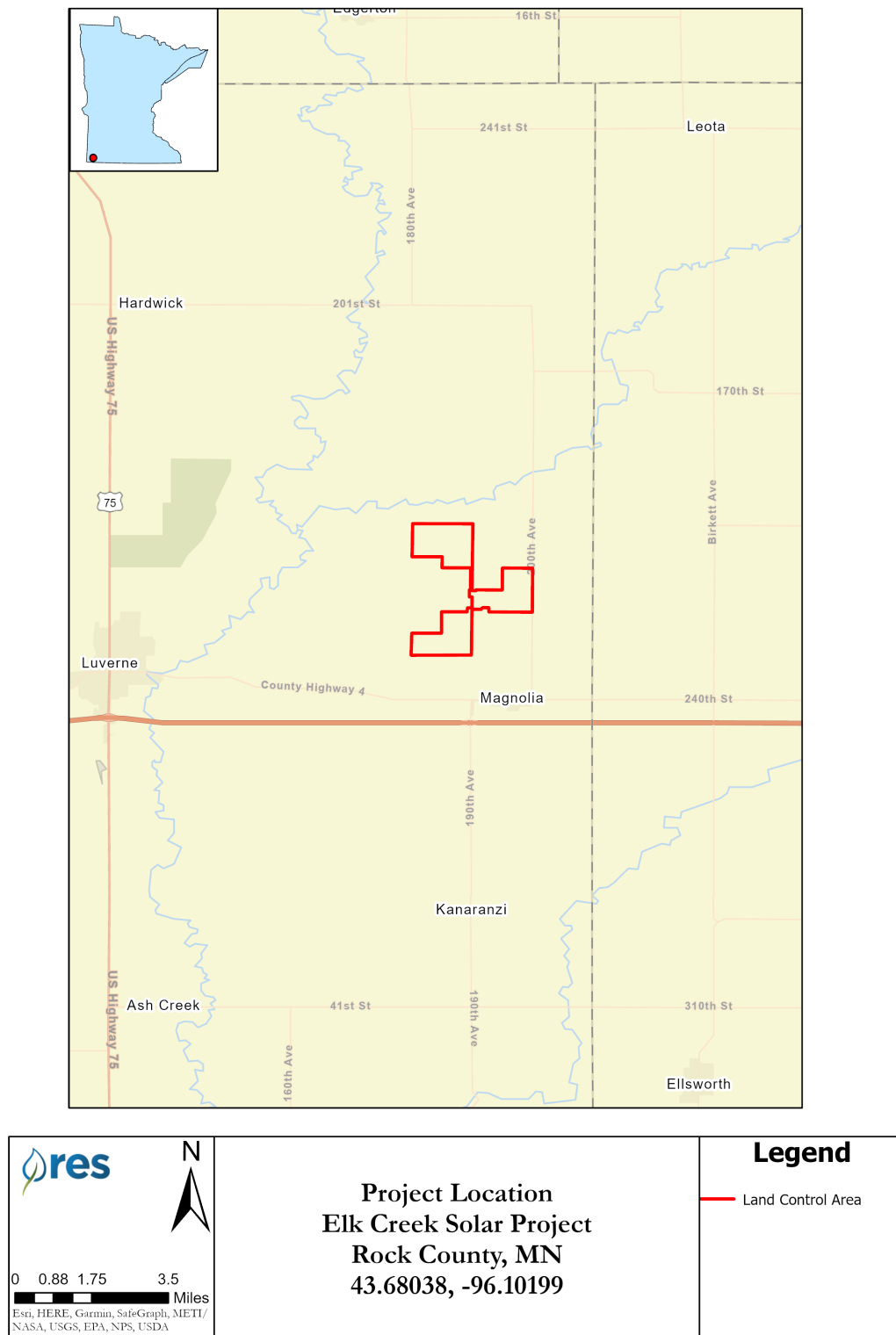
Elk Creek Solar, LLC (Elk Creek), has received a Site Permit to operate an 160 megawatt (MW) solar energy facility on approximately 1521 acres in Rock County, MN ("Site"). Elk Creek has developed this Vegetation Management Plan ("Plan") to guide Site preparation, installation of prescribed seed mixes, management of invasive species and noxious weeds, and control of erosion/sedimentation. During preparation of the Plan, MN State Agency Guidance for Developing a Vegetation Establishment and Management Plan for Solar Facilities was referenced¹.

This Plan will be used by the Contractor selected by Elk Creek and by Elk Creek for restoration of the Site ("Contractor"). The strategy outlined in this Plan consists of developing native vegetation cover within the footprint of the solar Project during operations. The mixes will achieve Elk Creek's goals for operating the Project, promote pollinator habitat, establish stable ground cover successfully, reduce erosion, reduce runoff, and improve infiltration.

This document is intended to be a working document. Revisions will be made as new information is obtained with respect to vegetation management, site characteristics, and availability of management practices evolve over time.

¹Guidance for Developing a Vegetation Establishment and Management Plan for Solar Facilities (<https://mn.gov/eera/web/project-file/11702/>. March 2021).

FIGURE 1 SOLAR PROJECT LOCATION



1. VEGETATION MANAGEMENT GOALS

To carry out this Plan, Elk Creek has established short- and long-term goals for vegetation management. The remainder of the plan lists various objectives (implementation strategies) to reach the desired goals.

1.1 Short-Term Goals

Short-term goals are goals applicable to the post-construction establishment phase of the Project in Years 1-5. The general goal is to establish a sustainable, diverse, perennial grassland community, appropriate to site conditions and safe operation, maintenance, and inspection that complies with all permits and regulations pertaining to the Site. The primary short-term goals are:

- Comply with permit conditions for Site revegetation, per the Minnesota Pollution Control Agency Construction Stormwater General Permit.
- After the first growing season, vegetate at least 70 percent of the site, and ideally 80 percent of the site.
- Establish sustainable, diverse, perennial grassland community, appropriate to site conditions on 70 percent of the site and comprised on 90 percent native vegetation by Year 5.
- Implement cover crops to effectively assist in establishment of native vegetation, if practicable.
- Manage invasive species and noxious weeds per Minn. Stat., Sections 18.75 to 18.78, and 18.86.
- Establish vegetative screening for the adjacent residence. The landscaping screening area should be established, with limited ongoing plant mortality, within one year of installation. At the end of the establishment phase, 80 percent of the installed shrubs and trees shall be present in the landscaping/screening area.

1.2 Long-Term Goals

Long-term goals are defined as goals beyond year 5, following implementation of the short-term goals. Elk Creek will implement adaptive management of vegetation cover, guided by strategic integration of site-specific environmental conditions to maintain a perennial grassland community that keeps the soils on the site stabilized, improves soil conditions and preserves the site for agricultural use in the future. The primary long-term goals include:

- Maintain 95 percent of the Project Site in a vegetated state, and at least 90 percent of the cover comprised of native species.
- Establish six or more species of planted native graminoids and 12 or more species of planted native forbs across the Project Site.
- Maintain a mature landscaped screen that minimizes views of the solar array from an adjacent target parcel over the life of the Project.
- Establish a site that is suitable for haying and/or sheep grazing during facility operations, if determined to be a viable management strategy following construction. Accommodate

vegetative management of the Project Site using traditional vegetative management methods for areas not managed by haying or sheep grazing. The vegetative seed mixes are the same regardless of the management technique(s) employed.

- Prioritize the implementation of all required vegetation management activities for safe and efficient operations support including woody species control, height control of herbaceous species, wet area management, and landscape/screening management.

2. SITE DESCRIPTION

Understanding the existing site characteristics is the foundation of developing the management methods and seed mixes proposed. This section provides context of the existing site conditions to familiarize the Contractor with the Project setting.

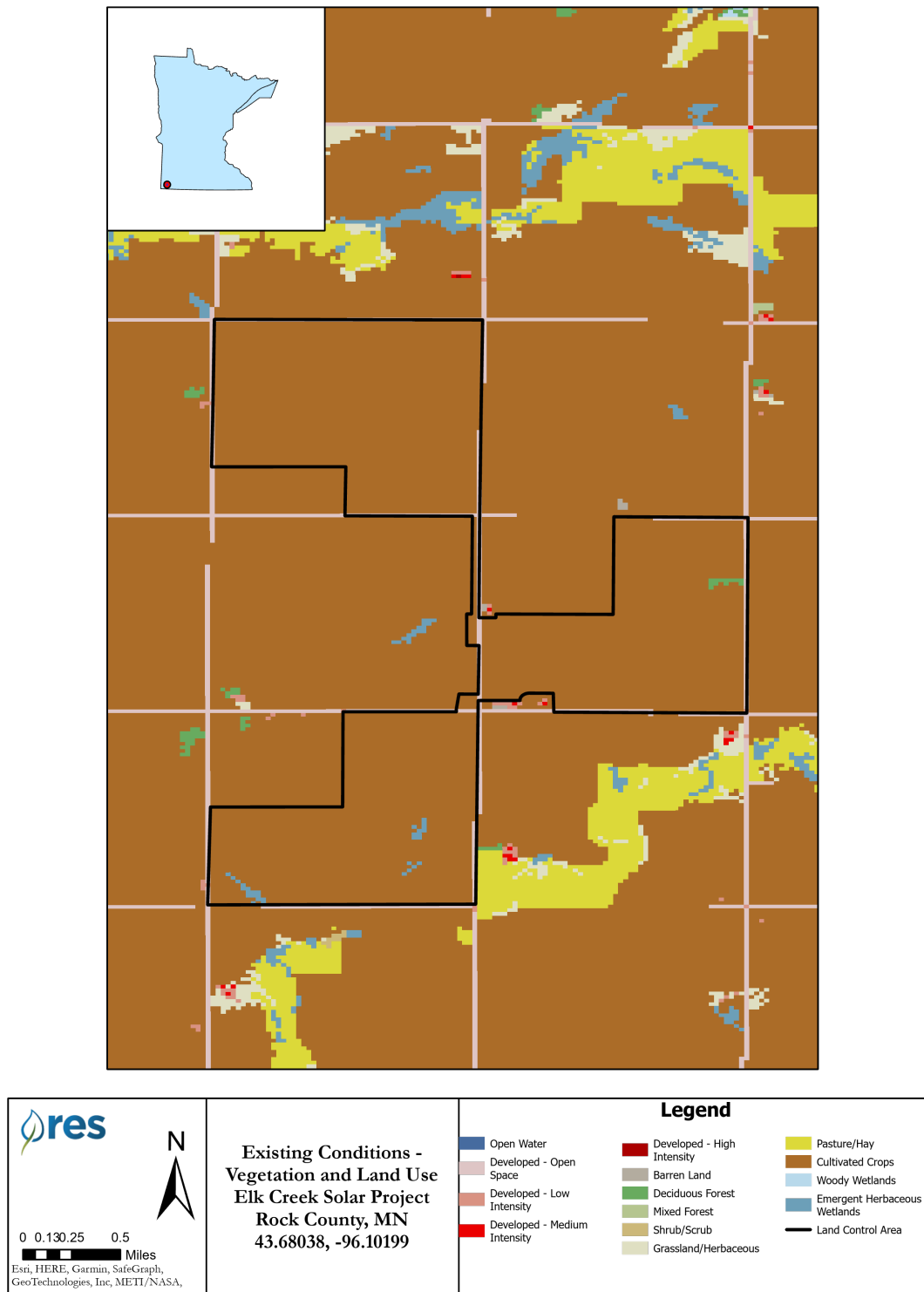
2.1 Project Location and Size

The Project will be located on approximately 1521 acres of land in Magnolia Township, Sections 27 and 35, Township 103 North, Range 44 West, Rock County, Minnesota (Figure 1). Approximately 1,165 acres will be affected by Project facilities. The Project lies north of Interstate 90 between County State Aid Highways (CSAH) 8 and 9, approximately three miles north of the Town of Magnolia and 6 miles northeast of the City of Luverne.

2.2 Existing Vegetation

Based on the USGS GAP landcover data, the Site consists of predominately agricultural land (Figure 2). Review of aerial photography confirms that the vast majority of the land is agricultural. Developed land and forest account for approximately 1.13 percent of the Site. Forested land consists of an isolated block of trees serving as a shelter belt or wind break around a farmstead. Additionally, based on surveys of the site, one wetland was identified, which will be avoided by Project construction and operation.

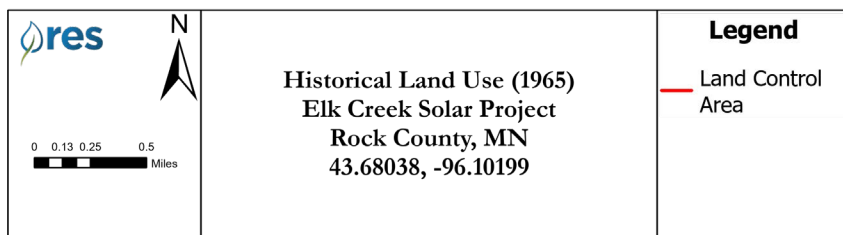
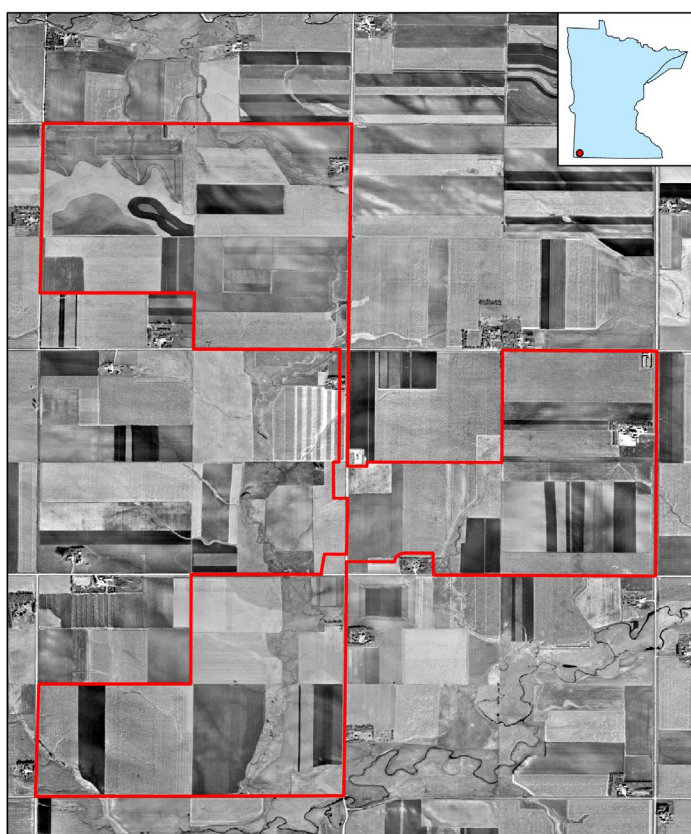
FIGURE 2 LAND USE



2.3 Existing Land Use

Based on Minnesota historic aerial imagery, virtually all of the Site (“Land Control Area”) has been in agriculture starting prior to 1965 (Figure 3). Most of the agricultural land is prime farmland or prime farmland if drained. Typically, high value crops such as corn and soybean rotations are grown in the area.

FIGURE 3 HISTORICAL LAND USE (1965 IMAGERY)

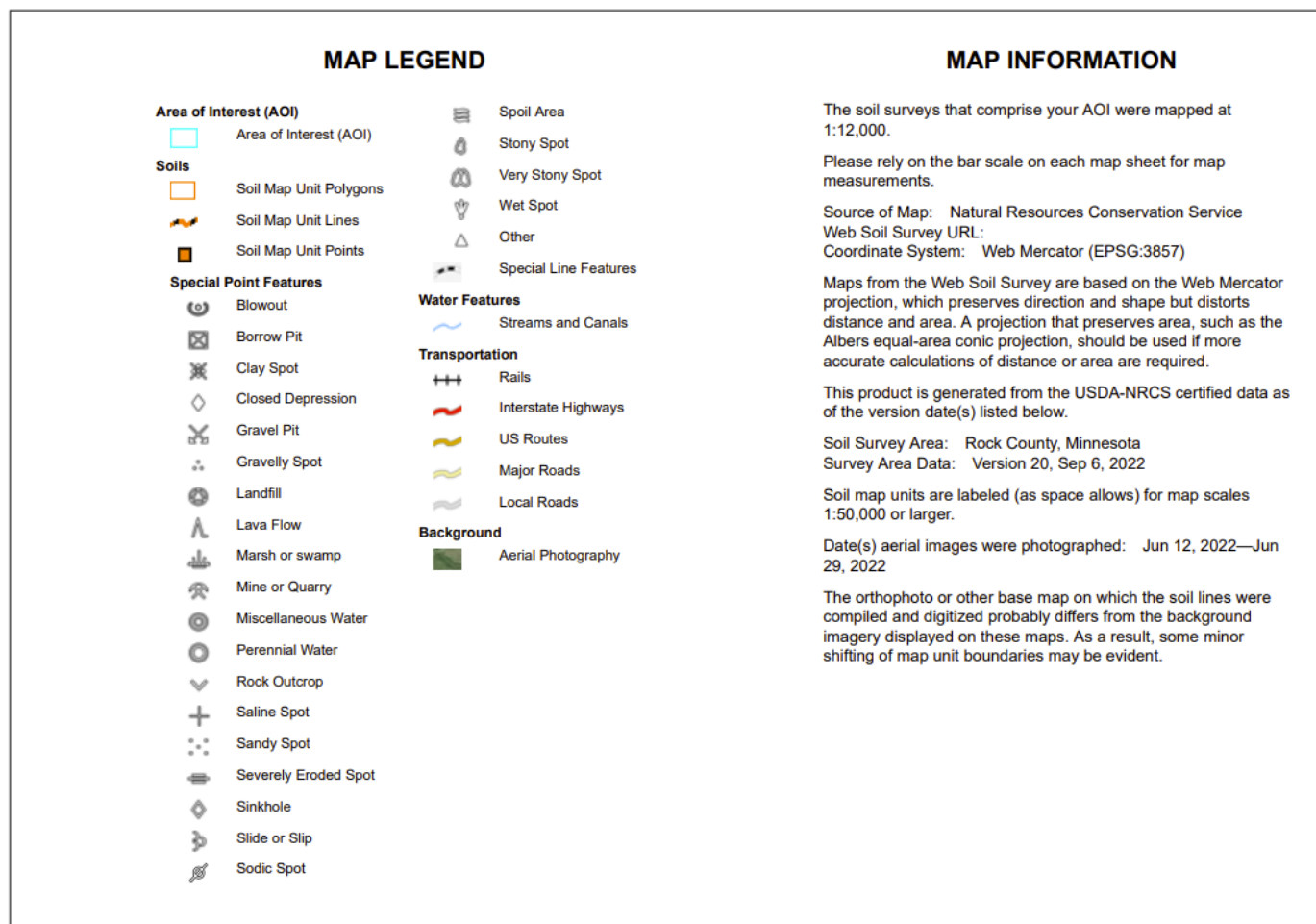


2.4 Soils

The Soil Survey Geographic Database (“SSURGO”) is the digitized county soil survey and provides a GIS relating soil map unit polygons to component soil characteristics and interpretations. Soil map unit polygons in the SSURGO database were clipped to the site.

A soils map is below. For additional information regarding soils, best practices for segregation of topsoil and subsoil, as well as decompaction methods that will foster long term soil health and vegetative outcome success, refer to the Agricultural Impact Mitigation Plan (AIMP). The contractor is encouraged to visit the NRCS web soil survey to review detailed information about the soils across the site in more detail.

FIGURE 4 SOILS INFORMATION



Map Unit Legend

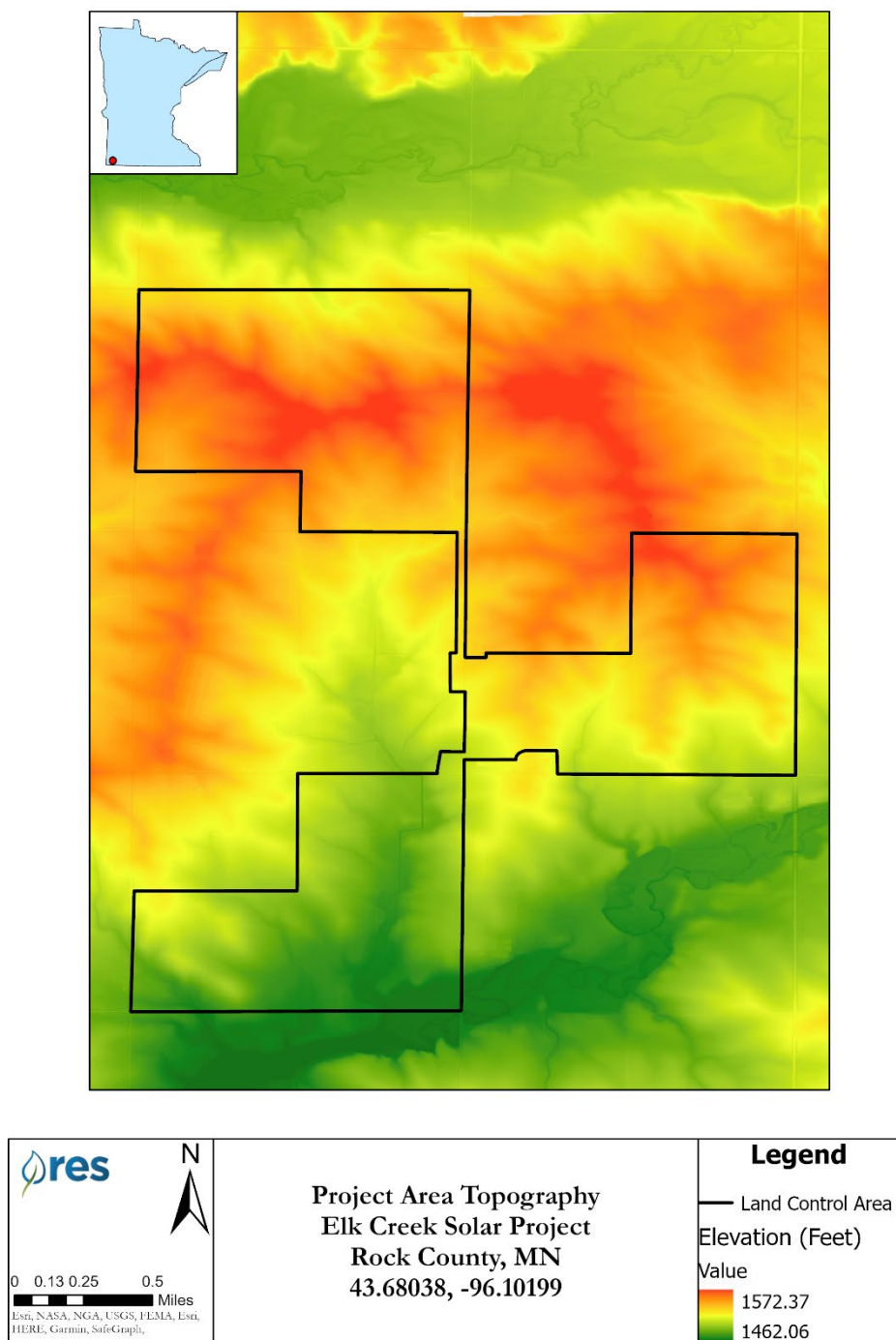
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1015A	Havelock clay loam, 0 to 2 percent slopes, frequently flooded	72.1	4.7%
1024A	Havelock clay loam, 0 to 2 percent slopes, occasionally flooded	17.9	1.2%
P12B	Everly silty clay loam, 2 to 6 percent slopes	26.7	1.8%
P12C2	Everly silty clay loam, 6 to 12 percent slopes, eroded	4.0	0.3%
P14B	Flandreau silt loam, 2 to 6 percent slopes	87.0	5.7%
P15B	Galva silty clay loam, 2 to 5 percent slopes	17.3	1.1%
P16A	Graceville silty clay loam, 0 to 2 percent slopes	52.1	3.4%
P21A	Marcus silty clay loam, 0 to 2 percent slopes	118.9	7.8%
P27A	Primghar silty clay loam, 1 to 3 percent slopes	304.9	20.0%
P28A	Ransom silty clay loam, 1 to 3 percent slopes	56.5	3.7%
P29A	Rushmore silty clay loam, 0 to 2 percent slopes	54.8	3.6%
P30B	Sac silty clay loam, loam substratum, 2 to 5 percent slopes	471.4	31.0%
P31A	Spicer silty clay loam, 0 to 2 percent slopes	6.0	0.4%
P38B	Thurman sandy loam, 2 to 6 percent slopes	9.2	0.6%
P42A	Whitewood silty clay loam, 0 to 2 percent slopes	152.6	10.0%
P43A	Wilmington silty clay loam, 1 to 3 percent slopes	20.3	1.3%
P48A	Allendorf silty clay loam, 0 to 2 percent slopes	9.1	0.6%
P48B	Allendorf silty clay loam, 2 to 6 percent slopes	30.3	2.0%
P55A	Kato silty clay loam, 0 to 2 percent slopes	9.7	0.6%
Totals for Area of Interest		1,520.7	100.0%

2.5 Topography

The Project will be constructed on a nearly-level to gently rolling loess-mantled glacial till plain consisting of gray, calcareous pre-Wisconsin-aged till covered by a thin to thick mantle of Wisconsin-age loess. The area is generally flat with elevations ranging from 1460 to 1570 feet above sea level (Figure 5). The nearly-level topography combined with highly fertile soils, favorable moisture holding characteristics, and usually adequate supplies of moisture from precipitation are well suited to agriculture, which is currently the dominant land use for the

Project Area. Some grading will be necessary to accommodate the solar array, but generally topography across the site is anticipated to remain similar to existing site condition.

FIGURE 5 TOPOGRAPHY



2.6 Hydrology

The Project is located in the Elk Creek Watershed (Figure 6). The potential for wetlands within the Land Control Area was identified by reviewing desktop resources data followed by a formal wetland delineation within the Land Control Area in May 2019 and May 2023. National Wetlands Inventory (NWI) data identifies 5 palustrine emergent wetlands (“PEM”) totaling 20.95 acres and one 0.37-acre freshwater pond within the Project boundary. Additionally, a network of swales and depressions runs through the Land Control Area. These swales and depressions were historically wet and have been converted by subsurface drainage to highly productive farmland.

FIGURE 6 WATERSHEDS AND HYDROLOGY

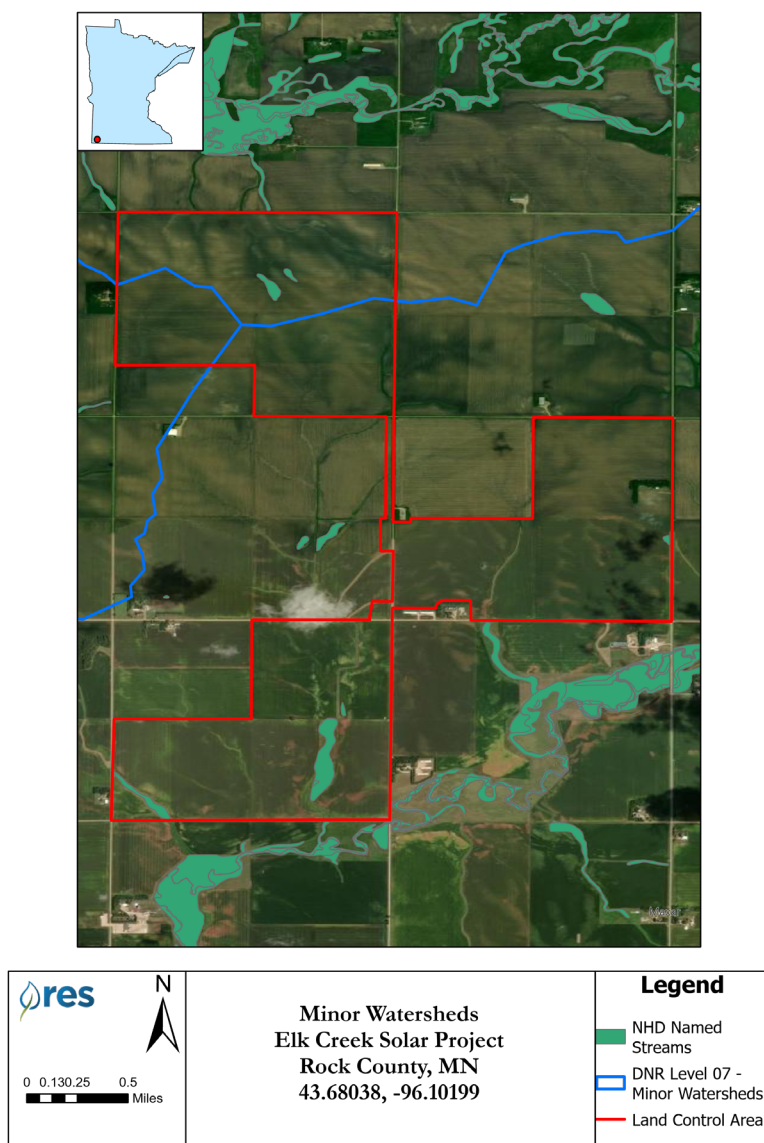
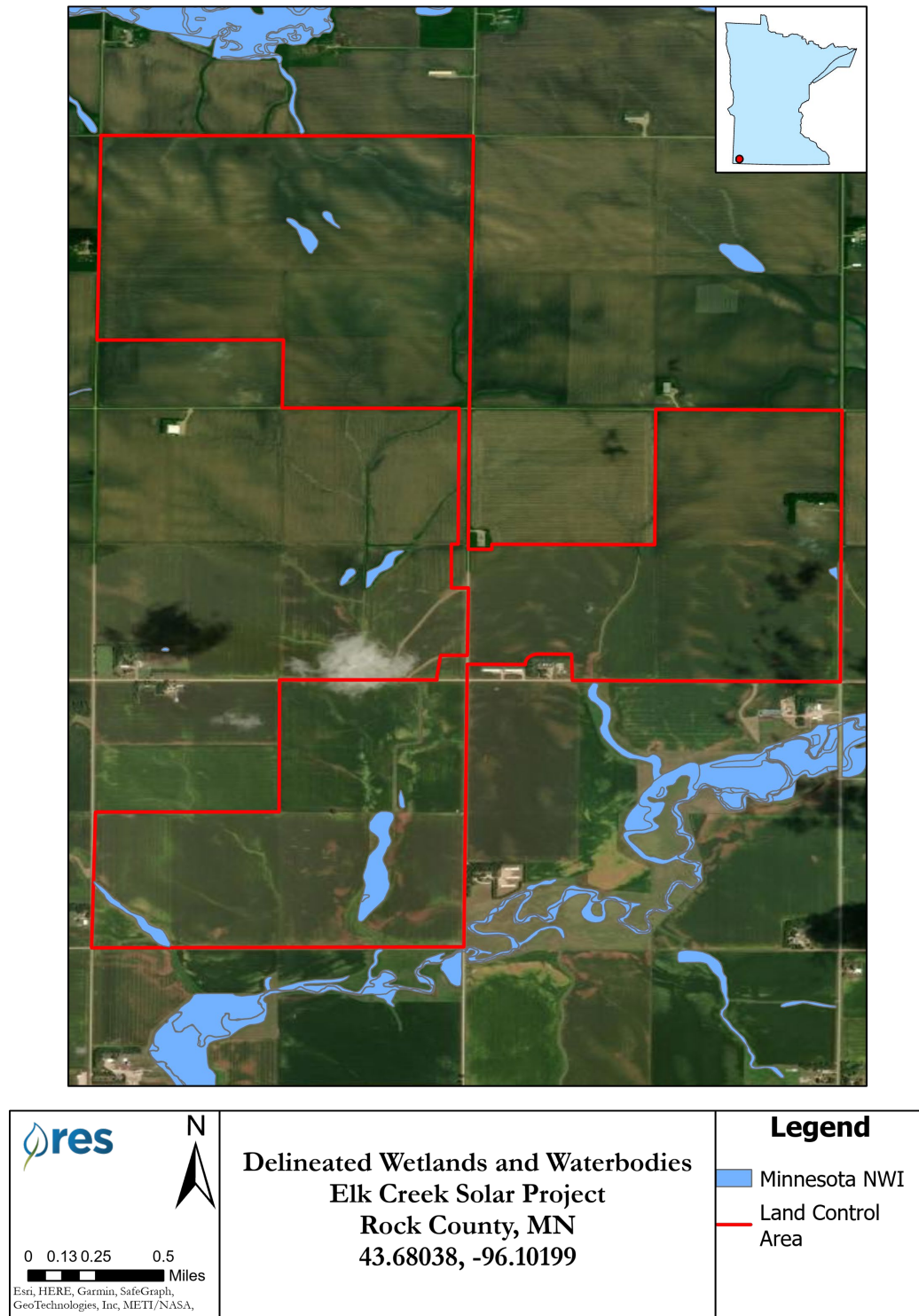


FIGURE 7 DELINEATED WETLANDS AND WATERBODIES



Elk Creek has secured drain tile maps for a majority of the Project area and will continue to coordinate for mapping on remaining parcels (Figure 8). Generally, the drain tile appears to be functioning based on the conditions found across the site. In the event the remaining drain tile mapping cannot be identified, Elk Creek will utilize other sources, including infrared aerial photographs, LiDAR data, and, if necessary, a site-specific tile locate survey. Continued site drainage fosters efficient operation of the Project. Site drainage is anticipated to generally remain in place during operation of the Project, with limited impacts from construction on the current drainage pattern. Elk Creek plans to repair any subsurface and surface drainage systems damaged during construction and will maintain all such systems while the Project is operational. Soil moisture levels are anticipated to be materially similar to what is found currently across the site.

FIGURE 8 KNOWN DRAIN TILE LOCATIONS



3. Description of Management Units

The Site is anticipated to be separated into smaller construction and management units for a common point of communication in management. 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.

Generally, three distinct types of management are possible on the Site. These include the possibility of haying, mowing, or grazing, and these methods are laid out in more detail later in the plan. This Plan has been drafted to allow a 'scaling' of each management measure based upon availability at the time such management measure could be deployed. The goals and objectives for each management unit are the same and are provided above in this Plan.

4. VEGETATION INSTALLATION Vegetation Installation

4.1 Site Preparation, Clearing and Vegetation Removal

Prior to vegetation installation, management techniques can be utilized that will lead to more successful vegetation establishment for the short- and long-term goals. Most of the soil and vegetation disturbances will occur during the first phase of construction when the grading activities take place. The construction contractor will follow the recommendations of the AIMP to ensure that best practices are utilized during construction and to prepare the site for final stabilization. Additionally, 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. Recommendations for weed control, and implementation of cover crops to assist in site stabilization prior to construction are below:

Early Season Construction Start

If construction begins prior to May 15, it is unlikely that site preparation activities, such as mowing or applying herbicide to agricultural weeds, will be employed. However, it may be advantageous to install a cover crop prior to construction or following site grading activities. 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 Elk Creek 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 the spread of weeds onsite during construction, broadcast application of herbicide may be necessary to treat agricultural weeds prior to the start of construction activities. Refer to Tables 7 and 8 for lists of target weeds. 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.

4.2 Noxious Weed and Problem Plant Management Prior to Final Stabilization

Noxious weeds can be problematic for long term success if not controlled leading up to and during construction. Noxious weeds can outcompete native plants or spread to neighboring properties. During the growing season (May to September) portions of the construction period, a qualified professional with sufficient botanical experience identifying native plants, native plant communities, invasive species, and non-native species typical of Minnesota, and employed by the Contractor shall conduct monthly evaluations of the Project area to determine if noxious weeds or problem plants develop during construction. Refer to Tables 7 and 8 for lists of target weeds to identify and control.

Control of noxious weeds is essential to propagation of seed mixes. Recommendations for noxious weed control preceding and during seeding are listed below:

- Any listed weeds located within the area to be seeded should be treated with an approved herbicide (see Section 5.1.3).
- Reed canary grass (*Phalaris arundinacea*) should be sprayed with herbicide prior to any seeding activities, then mowed to remove existing dead biomass. A second herbicide treatment should occur in these areas after mowing, once the regrowth has reached 8-12 inches in height, to ensure all reed canary grass is killed prior to seeding. Soil disturbance activities in wet areas should also be avoided after the spraying to minimize cutting of the reed canary grass rhizomes or bringing reed canary grass seeds to the surface to germinate.

The appropriate treatment techniques to use and the timing of those treatments will be determined by the Contractor based on the plants that need to be treated, the construction activities occurring in the area to be treated and the length of time between the inspection and when seed bed preparation and other restoration activities will occur. If restoration activities are anticipated prior to noxious weed propagation, then treatment may not occur until after restoration activities are completed.

4.3 Seed Bed Preparation for Final Stabilization and Seeding

Seeding of the permanent vegetation will occur after all construction activities and site preparation are complete. Prior to seeding, per the AIMP, the soil will be decompacted to ensure good seed to soil contact and proper establishment. The soil will be prepped with the required methods and amendments if deemed necessary by the contractor.

4.3.1 Decompaction

Laydown areas and heavily travelled corridors and portions of the access road corridors that were used as temporary roadbeds must be decompacted to a depth of at least 6 inches. Refer to the AIMP for detailed guidance prior to implementation of the seeding plan.

4.4 Seed Mixes

Four seed mixes have been developed for the site. The first mix is a mesic graminoid mix to be installed in and around the solar arrays. The second mix is a mesic pollinator mix to be installed in the upland areas of the supplemental pollinator planting zone. The third mix is a wet-mesic mix for transitional areas between hydric and nonhydric soils. The fourth mix is a wet mix to be installed around stormwater basins and at locations that are predicted or known to hold surface water for part or most of the growing season (i.e., seasonally inundated ground). Seed mixes are provided in Tables 1-4, below. These seed mixes will ensure short-term and long-term establishment throughout the life of the project. The seed mixes chosen will help achieve the goals and objectives listed above.

All seed mixes must adhere to the specifications described in the Plan. Genetic source origin of all native seed shall be local, preferably from within a 200-mile radius of the Project Site, and the plant species should be native to Rock County (considerations of range shifts due to climate change may modify this guidance). Species shall be true to their scientific name as specified in Tables 1-4. Seed tags or nursery confirmation of the order must be provided to Elk Creek prior to installation². Any species eliminations, substitutions, or source origin exceptions must be approved by Elk Creek prior to installation. If necessary, seeds shall be properly stratified and/or scarified to break seed dormancy. If applicable, all legumes shall be inoculated with proper rhizobia at the appropriate time prior to planting.

The completion date of construction affects both the type of cover crop installed and whether the cover crop is installed prior to the native seed mixes as temporary stabilization or concurrently with the native seed mixes. Instructions for seeding are presented in Section 4.6, with a summary table included at the end.

TABLE 1 MESIC ARRAY MIX

Scientific Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
<i>Bouteloua curtipendula</i>	Sideoats grama	30.00	1.88	18.3	4.1
<i>Carex bicknellii</i>	Bicknell's sedge	1.50	0.09	0.9	0.6
<i>Carex brevior</i>	Short beak sedge	2.00	0.13	1.2	1.3
<i>Carex molesta</i>	Troublesome sedge	2.00	0.13	1.2	1.1
<i>Carex vulpinoidea</i>	Fox sedge	1.00	0.06	0.6	2.3
<i>Elymus canadensis</i>	Canada wild rye	34.00	2.13	20.7	4.1
<i>Elymus trachycaulus</i>	Slender wheatgrass	26.00	1.63	15.9	4.1

² Seed of *Sporobolus heterolepis* and some *Carex* species must not have been stored longer than six months after the time of harvest or must have been frozen at the time of harvest and stored for no more than two years in a frozen state.

<i>Elymus virginicus</i>	Virginia wild rye	42.00	2.63	25.6	4.0
<i>Festuca rubra</i> ssp. <i>rubra</i>	Red fescue	6.30	0.39	3.8	5.0
<i>Juncus interior</i>	Inland rush	0.05	0.00	0.0	3.2
<i>Juncus tenuis</i>	Path rush	0.15	0.01	0.1	3.4
<i>Schizachyrium scoparium</i>	Little bluestem	14.00	0.88	8.5	4.8
<i>Sporobolus compositus</i>	Composite dropseed	2.50	0.16	1.5	1.7
<i>Sporobolus heterolepis</i>	Prairie dropseed	2.50	0.16	1.5	0.9
Total		164.00	10.25		40.8

Recommended substitutions: *Bouteloua gracilis*, *Bouteloua hirsuta*, *Buchloe dactyloides*, *Elymus villosus*, *Muhlenbergia cuspidata*

TABLE 2 MESIC POLLINATOR MIX

Scientific Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
<i>Bouteloua curtipendula</i>	Sideoats grama	32.00	2.00	22.2	4.4
<i>Carex bicknellii</i>	Bicknell's sedge	1.45	0.09	1.0	0.6
<i>Carex brevior</i>	Short beak sedge	2.00	0.13	1.4	1.3
<i>Carex molesta</i>	Troublesome sedge	2.00	0.13	1.4	1.1
<i>Carex vulpinoidea</i>	Fox sedge	1.00	0.06	0.7	2.3
<i>Elymus canadensis</i>	Canada wild rye	36.00	2.25	25.0	4.3
<i>Elymus trachycaulus</i>	Slender wheatgrass	28.00	1.75	19.4	4.4
<i>Juncus interior</i>	Inland rush	0.05	0.00	0.0	3.2
<i>Schizachyrium scoparium</i>	Little bluestem	14.00	0.88	9.7	4.8
<i>Sporobolus compositus</i>	Composite dropseed	1.50	0.09	1.0	1.0
<i>Sporobolus heterolepis</i>	Prairie dropseed	2.00	0.13	1.4	0.7
Total Graminoids		120.00	7.50	83.3	28.3
<i>Achillea millefolium</i>	Yarrow	0.25	0.02	0.2	1.0
<i>Agastache foeniculum</i>	Blue giant hyssop	0.50	0.03	0.3	1.0
<i>Aquilegia canadensis</i>	Red columbine	1.00	0.06	0.7	0.9
<i>Asclepias syriaca</i>	Common milkweed	3.00	0.19	2.1	0.3
<i>Dalea candida</i>	White prairie clover	1.50	0.09	1.0	0.7
<i>Dalea purpurea</i>	Purple prairie clover	2.00	0.13	1.4	0.8
<i>Lespedeza capitata</i>	Round-headed bush clover	2.00	0.13	1.4	0.4
<i>Monarda fistulosa</i>	Wild bergamot	1.00	0.06	0.7	1.6
<i>Oligoneuron rigidum</i>	Stiff goldenrod	1.50	0.09	1.0	1.4
<i>Penstemon grandiflorus</i>	Large-flowered beardtongue	2.50	0.16	1.7	0.8
<i>Potentilla arguta</i>	Prairie cinquefoil	0.25	0.02	0.2	1.3
<i>Ratibida pinnata</i>	Yellow coneflower	1.50	0.09	1.0	1.0
<i>Rudbeckia hirta</i>	Black-eyed Susan	2.00	0.13	1.4	4.2
<i>Solidago missouriensis</i>	Missouri goldenrod	0.50	0.03	0.3	1.4
<i>Symphyotrichum ericoides</i>	Heath aster	0.25	0.02	0.2	1.1
<i>Symphyotrichum laeve</i>	Smooth blue aster	0.75	0.05	0.5	0.9

<i>Tradescantia bracteata</i>	Long-bracted spiderwort	1.00	0.06	0.7	0.2
<i>Verbena stricta</i>	Hoary vervain	1.00	0.06	0.7	0.6
<i>Zizia aptera</i>	Heart-leaved alexanders	1.50	0.09	1.0	0.4
Total Forbs		24.00	1.50	16.7	20.3
Total		144.00	9.00		48.6

Recommended substitutions: *Bouteloua gracilis*, *Bouteloua hirsuta*, *Buchloe dactyloides*, *Elymus villosus*, *Muhlenbergia cuspidata*; *Amorpha canescens*, *Allium stellatum*, *Anemone cylindrica*, *Artemisia ludoviciana*, *Asclepias verticillata*, *Coreopsis palmata*, *Heliopsis helianthoides*, *Liatris aspera*, *Oenothera biennis*, *Sisyrinchium campestre*, *Solidago nemoralis*

TABLE 3 WET-MESIC MIX- TRANSITIONAL MIX

Scientific Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
<i>Carex bebbii</i>	Bebb's sedge	2.00	0.13	1.8	1.6
<i>Carex tetanica</i>	Mead's stiff sedge	1.00	0.06	0.9	0.4
<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	4.50	0.28	4.0	0.6
<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	26.4
<i>Anemone canadensis</i>	Canada anemone	1.50	0.09	1.3	0.3
<i>Asclepias incarnata</i>	Swamp milkweed	2.50	0.16	2.2	0.3
<i>Bidens frondosa</i>	Common beggar's ticks	2.25	0.14	2.0	0.3
<i>Eupatorium perfoliatum</i>	Common boneset	0.50	0.03	0.4	1.8
<i>Euthamia graminifolia</i>	Grass-leaved goldenrod	0.25	0.02	0.2	2.0
<i>Helenium autumnale</i>	Sneezeweed	0.50	0.03	0.4	1.5
<i>Heliopsis helianthoides</i>	False sunflower	8.00	0.50	7.1	1.2
<i>Lobelia siphilitica</i>	Blue lobelia	0.25	0.02	0.2	2.9
<i>Lycopus americanus</i>	American water horehound	0.50	0.03	0.4	1.5
<i>Mimulus ringens</i>	Allegheny monkeyflower	0.05	0.00	0.0	2.6
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	0.50	0.03	0.4	2.5
<i>Scutellaria lateriflora</i>	Blue skullcap	1.00	0.06	0.9	1.5
<i>Solidago gigantea</i>	Late goldenrod	0.25	0.02	0.2	1.4
<i>Symphyotrichum lanceolatum</i>	Panicked aster	1.00	0.06	0.9	1.0
<i>Symphyotrichum novae-angliae</i>	New England aster	0.80	0.05	0.7	1.2
<i>Verbena hastata</i>	Blue vervain	1.00	0.06	0.9	2.1
<i>Veronicastrum virginicum</i>	Culver's root	0.15	0.01	0.1	2.8
<i>Zizia aurea</i>	Golden alexanders	3.00	0.19	2.7	0.8

Total Forbs	24.00	1.50	21.4	27.6
Total	112.00	7.00		54.0

Recommended substitutions: *Carex cristatella*, *Juncus torreyi*, *Panicum virgatum*, *Spartina pectinata*; *Agalinis tenuifolia*, *Helianthus grosseserratus*, *Liatris pycnostachya*, *Lysimachia ciliata*, *Mentha arvensis*, *Rumex britannica*

TABLE 4 WET MIX

Scientific Name	Common Name	Oz/Acre	Lbs/Acre	% by Wt	Seeds/Sq Ft
<i>Beckmannia syzigachne</i>	American slough grass	4.00	0.25	4.2	4.6
<i>Calamagrostis canadensis</i>	Bluejoint	0.75	0.05	0.8	4.8
<i>Carex tetanica</i>	Mead's stiff sedge	1.50	0.09	1.6	0.6
<i>Carex vulpinoidea</i>	Fox sedge	1.35	0.08	1.4	3.1
<i>Elymus virginicus</i>	Virginia wild rye	50.00	3.13	52.1	4.8
<i>Glyceria striata</i>	Fowl manna grass	1.00	0.06	1.0	3.7
<i>Juncus torreyi</i>	Torrey's rush	0.15	0.01	0.2	5.5
<i>Panicum virgatum</i>	Switch grass	16.00	1.00	16.7	5.1
<i>Poa palustris</i>	Fowl bluegrass	1.50	0.09	1.6	4.5
<i>Scirpus atrovirens</i>	Green bulrush	0.50	0.03	0.5	5.3
<i>Spartina pectinata</i>	Prairie cord grass	3.25	0.20	3.4	0.5
Total Graminoids		80.00	5.00	83.3	42.5
<i>Anemone canadensis</i>	Canada anemone	1.00	0.06	1.0	0.2
<i>Asclepias incarnata</i>	Swamp milkweed	2.00	0.13	2.1	0.2
<i>Boltonia asteroides</i>	False aster	0.50	0.03	0.5	1.8
<i>Eupatorium perfoliatum</i>	Common boneset	0.50	0.03	0.5	1.8
<i>Euthamia graminifolia</i>	Grass-leaved goldenrod	0.25	0.02	0.3	2.0
<i>Eutrochium maculatum</i>	Spotted Joe Pye weed	0.75	0.05	0.8	1.6
<i>Helenium autumnale</i>	Sneezeweed	0.50	0.03	0.5	1.5
<i>Helianthus grosseserratus</i>	Sawtooth sunflower	1.50	0.09	1.6	0.5
<i>Lobelia siphilitica</i>	Great blue lobelia	0.20	0.01	0.2	2.3
<i>Mimulus ringens</i>	Blue monkey flower	0.05	0.00	0.1	2.6
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	0.40	0.03	0.4	2.0
<i>Rudbeckia triloba</i>	Brown-eyed Susan	1.50	0.09	1.6	1.2
<i>Symphyotrichum novae-angliae</i>	New England aster	0.75	0.05	0.8	1.1
<i>Symphyotrichum puniceum</i>	Red-stemmed aster	0.75	0.05	0.8	1.4
<i>Verbena hastata</i>	Blue vervain	0.75	0.05	0.8	1.6
<i>Vernonia gigantea</i>	Tall ironweed	1.50	0.09	1.6	0.6
<i>Veronicastrum virginicum</i>	Culver's root	0.10	0.01	0.1	1.8
<i>Zizia aurea</i>	Golden alexanders	3.00	0.19	3.1	0.8
Total Forbs		16.00	1.00	16.7	25.2

	Total	96.00	6.00		67.7
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Recommended substitutions: *Carex hystericina*, *Carex interior*, *Carex stipata*, *Carex stricta*, *Eleocharis acicularis*; *Alisma triviale*, *Bidens cernua*, *Desmodium canadense*, *Epilobium coloratum*, *Sagittaria latifolia*, *Scutellaria lateriflora*, *Vicia americana*

4.5 Seed Mix Substitutions

Procurement of seeds can be difficult to obtain in quantities necessary for large solar sites. 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 Elk Creek prior to implementation, and substitutions will have no effect on the short- and long-term goals of this Plan.

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, Elk Creek has developed alternative species to utilize should procurement be problematic. Seed mix substitutions are listed beneath each seed mix shown above.

4.6 Seed Mix Application

Seeding shall be applied based on the locations specified in the Planting Plan (Figure 9). Seeding of the site may be conducted with a seed drill (preferred) and/or by broadcast seeding; the Contractor shall evaluate the site and determine which technique will produce the best results. Drill seeding typically produces higher observed plant density, so broadcast seeding may require an increased seeding rate or overseeding during the establishment period to achieve performance standards. Seed installed into a previous cover crop or other vegetation must be installed with a seed drill. Prior to installation, seed shall be divided into two equal parts. The first half shall be installed in one pass, and the second half installed in a second pass (perpendicular to the first pass, where possible). In areas where broadcast seeding is employed, raking, harrowing, or culti-packing of seeded areas shall be used to ensure good seed-to-soil contact.

Spring

If construction is completed in spring, allowing for seeding between the time when the soil is free of frost and in a workable condition but no later than June 30, native seed mixes shall be installed as specified and include 20 pounds per acre pure live seed (PLS) of oats (*Avena sativa*) as a cover crop.

Summer

If construction is completed in summer, allowing for seeding between July 1 and August 15, the site shall be seeded immediately with a cover crop consisting of 20 pounds per acre PLS of oats and 20 pounds per acre PLS of spring wheat (*Triticum aestivum*) to stabilize the soil and prevent erosion. In that same year, native seed shall be installed as

a fall dormant seeding, after November 1 but before the soil starts to freeze, with no additional cover crop added (see below).

Late Summer/Early Fall

If construction is completed in late summer or early fall, allowing for seeding between August 16 and October 31, the site shall be seeded immediately with a cover crop consisting of 20 pounds per acre PLS of winter wheat (*Triticum aestivum*) to stabilize the soil and prevent erosion. In that same year, the native seed mixes shall be installed as a fall dormant seeding with no additional cover crop added. (see below).

Late Fall

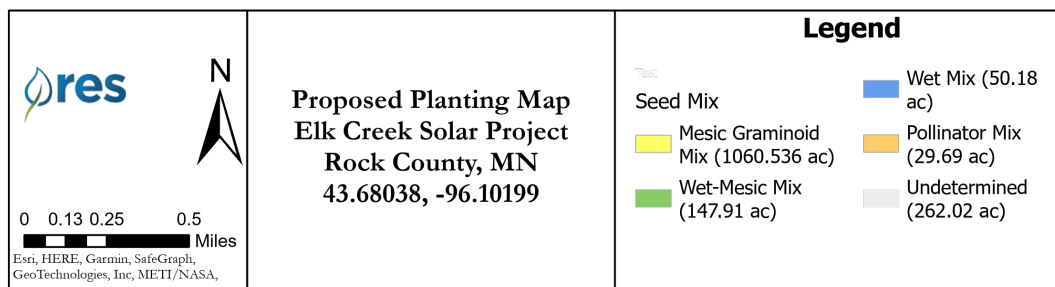
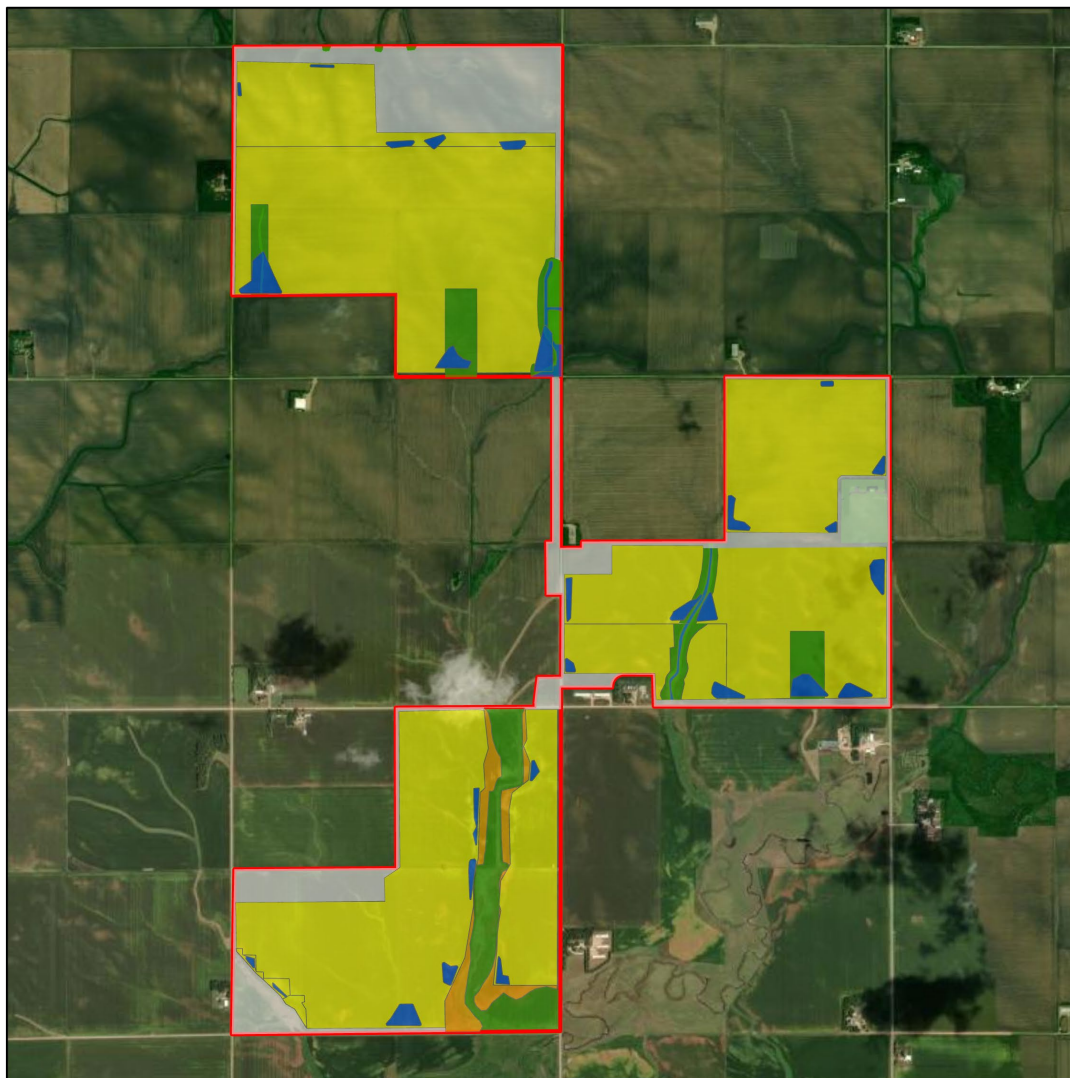
If construction is completed in late fall, allowing for seeding after November 1 but before the soil starts to freeze, native seed mixes shall be installed as specified and include 20 pounds per acre PLS winter wheat to provide a cover crop for the following year. If agreed to by both the Owner and the Contractor, a spring seeding in the following year can be substituted for a fall dormant seeding.

If a cover crop has been installed at any time during the calendar year, native seed mixes must be installed the same year with a fall dormant seeding, unless the Owner gives permission to the Contractor for a spring seeding. Prior to seeding into a cover crop, the Contractor shall evaluate the planting area and determine if any preparation is required prior to installation. Mowing may be required if the cover crop is too dense/robust. All native seeding into a cover crop must be completed by drill seeding.

TABLE 5. SEEDING INSTRUCTIONS BY SEASON

Timing of Seeding	Seed Type	Cover Crop Seeding Rate
January 1 – May 15	Do Not Plant	N/A
May 15 (or when soil thaws) – June 30	Seed Oats (<i>Avena sativa</i>) plus native seed mixes (see Section 4.4)	20 lbs. / acre
July 1 – August 15	Seed Oats Spring Wheat (<i>Triticum aestivum</i>)	20 lbs. / acre 20 lbs. / acre
August 16 – October 31	Winter Wheat (<i>Triticum aestivum</i>)	20 lbs. / acre
November 1 – November 21 (or when soil freezes)	Winter Wheat plus native seed mixes (see Section 4.4), or only native seed mixes if cover crop previously installed	20 lbs. / acre
November 28 – December 31	Do Not Plant	N/A

FIGURE 9 PLANTING PLAN



All seeds mixes for this Project are designed to be used with a vegetation management practice of traditional mowing but may also be managed by sheep grazing and or haying. All plant material must be installed as instructed, with regard for the time of installation, as described below. Any exceptions must be discussed with the Owner, and the Contractor shall receive written authorization for any changes prior to the start of work. In addition to the native seed mixes, a landscaping /screening area consisting of trees and shrubs shall also be installed in accordance with the proposed landscaping /screening plan proposed for the site (Appendix 4).

4.7 Undetermined Planting Areas

Project areas inside the parcel boundary but outside the fence line are marked “Undetermined” on the planting plan in Figure 10. Some of these areas may be returned to the landowner to be farmed. The rest of these areas will remain under the control of Elk Creek Solar; these areas will be prepared for seeding as described in Sections 4.1-4.3 and seeded with the Graminoid Array Mix presented in Table 2.

4.8 Visual Screening Area Planting

As per the agreement with the landowners, a vegetation screen will be installed on the east side of the project area just south of the intersection of 180th Avenue and 151st Street (Figure 10). The visual screen will extend approximately 600 linear feet along the exterior fence. To create an effective screen, woody plants will be installed in staggered double rows for the length of the screen. Prior to installation, the Contractor shall mark the location of all woody plants to be installed for approval from Elk Creek. In marking the location of trees and shrubs to be planted, the Contractor should not place shrubs and light-requiring trees in the direct shadow of tall, densely crowned trees. The quantities, sizing, and spacing of trees and shrubs to be installed is shown on Figure 10 and in Table 6. All live woody plants shall be transported and stored in such a manner as to insure adequate protection against desiccation, wind damage, and other physical damage. Before planting, biodegradable pots shall be split, and non-biodegradable pots or burlap shall be removed. Excess soil shall be removed to expose the top of the first woody root. Encircling woody roots shall be mechanically loosened to decompact the root ball. To avoid girdling the trunk at the root crown, the Contractor will loosen and straighten roots that are growing in a circular manner around the root ball.

TABLE 6 WOODY PLANT LIST FOR ELK CREEK SCREENING

DECIDUOUS & CONIFEROUS TREES				
QTY	Scientific Name	Common Name	Size	Spacing
6	<i>Crataegus arnoldiana</i> ‘Homestead’	Homestead Arnold Hawthorn	10# Cont.	14' o.c.
7	<i>Picea glauca</i> ‘Densata’	Black Hills Spruce	10# Cont.	15' o.c.
DECIDUOUS SHRUBS				
QTY	Scientific Name	Common Name	Size	Spacing
5	<i>Cornus sericea</i> ‘Isanti’	Isanti Red Osier Dogwood	5# Cont.	6' o.c.
5	<i>Corylus americana</i>	American Hazelnut	5# Cont.	6' o.c.
6	<i>Prunus americana</i>	American Plum	5# Cont.	6' o.c.

FIGURE 10 PROPOSED LANDSCAPING / SCREENING AREA PLANTING PLAN



Woody plants should be installed in holes that are twice as wide as the width of the root ball and as deep as the distance from the bottom of the root ball to the top of the first woody root. After checking to ensure the stem/trunk is vertical and the first woody root is even with ground level, the hole shall be backfilled to the top of the first woody root, with care taken to prevent air pockets in the soil and a final root position that could result in girdling of the trunk. All installed woody plants shall be well-watered before and after back-filling and protected with 2-4" of mulch, with care taken to keep mulch well away from the stem/trunk. Depending on the weather following installation, additional watering may be required to prevent desiccation.

Following installation of plant material within the Visual Screening Area, areas of disturbed soil shall be seeded with the Mesic Array Mix (Table 1) as described in Section 4.6. Broadcast application of seed is the expected installation method, so seeding rates may be increased to ensure germination and establishment. Cover crop shall be added to the native seed mix according to the schedule in Table 5. Areas of intact vegetation within the Visual Screening Area will remain undisturbed and no additional seed will be installed.

4.9 Pesticide Drift

During the establishment phase, Elk Creek will contact each owner of land surrounding the Site to inform them of the native plants planted pursuant to this Plan, the likely use of the vegetation by pollinators and the need to avoid and minimize pesticide drift from adjacent land on the Land Control Area. The installation of access roads on the periphery of the entire SEF will operate as a buffer from potential pesticide spraying adjacent to the Land Control Area.

5. VEGETATION MANAGEMENT

After the land is cleared, the panels are installed, and final site stabilization is in process, a range of invasive plants will take advantage of the open soil and abundant light and germinate across the Project Site. For the purpose of 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 the

success of the Project (Tables 7 and 8). This list also includes noxious weed designated in statute by the State of Minnesota. These invasive plants must be managed effectively during the first three years to ensure that the planted native species are given the opportunity to flourish. The care taken in the first three years after installation strongly determines the quality of the resulting plantings. 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 Establishment Phase (Short Term Goals)

The first five years of vegetation management are a concerted effort to remove invasive vegetation from the Project Site while also helping the planted native vegetation establish. General tasks described below will be applied as directed, while other management techniques will be used only if required by the unique conditions at the Elk Creek facility.

5.1.1 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 the grassland areas 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). From June 1 of the first establishment year, site-wide mowing to a height of 6-9 inches shall occur whenever vegetation reaches a height of 18-24 inches. The landscaped / screening area shall be spot sprayed during the establishment phase to control invasive plants. Attempting to mow between the landscaping plants will likely be difficult and may lead to unanticipated damages to the new plants. Mowing in wet areas will also be limited to those periods of time when the wet areas are not susceptible to rutting or compaction (*i.e.* frozen or dry conditions). 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.

Monthly evaluations of the plantings shall be conducted by a botanist employed by the Contractor, during the growing season (May to September) to determine the appropriate treatment techniques to use and the timing of those treatments based on the presence and development stage of both invasive plants and the native plantings. Invasive species should be treated prior to such plants flowering or seeding, with the goal of preventing seed set by noxious and invasive species.

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 shall be conducted with a flail-type mower to mulch the cut vegetation, or the Project Site shall be hayed so that cut vegetation is removed. A swing arm specifically designed for mowing under solar panels is recommended for cutting beneath panels, but spot-mowing with brush saws, weed whips, and similar equipment is also permitted. It may be possible to coordinate with Elk Creek to adjust the orientation of the panels to increase the ease of mowing, but the Contractor should not depend on this coordination to complete its work. Any other techniques must be approved by Elk Creek prior to the start of work. Mowing equipment shall be cleaned prior to use onsite to prevent the introduction and spread of invasive and non-native species. This mowing

regime will prevent annual and perennial weeds from flowering and setting seed, prevent weeds from shading out the solar panels, and help control woody plant growth onsite. Additionally, noxious and perennial weeds shall be treated by spot-herbicide treatment, as described below, to prevent roots from resprouting.

Establishment Year 2. The second year of establishment continues invasive plant control but generally employs more targeted techniques. Site-wide mowing to a height of 6-9 inches shall occur when vegetation height reaches 18-24 inches.

Spot-mowing may be employed to treat specific problem areas as needed. Noxious and perennial weeds shall be treated with spot-herbicide during the growing season, typically in late May/early June and late July/early August, with the focus on preventing seed set and achieving the required performance standards (described below).

The landscaped/screening area shall be spot sprayed during the establishment phase to control invasive plants. Attempting to mow between the landscaping plants will likely be difficult and may lead to unanticipated damages to the new plants. Mowing in wet areas will also be limited to those periods of time when the areas are not susceptible to rutting or compaction. Spot-spraying or use of brush saws, weed whips, or similar equipment may be employed in wet areas as necessary to prevent soil damage when the soils are wet.

Monthly evaluations of the plantings shall be conducted by a qualified botanist, during the growing season (May to September) to determine the appropriate treatment techniques to use and the timing of those treatments based on the presence and development stage of both invasive plants and the native plantings. Invasive species should be treated prior to such plants flowering or seeding, with the goal of preventing seed set by noxious and invasive species.

Establishment Years 3-5. In the third, fourth, and fifth years 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).

Site-wide mowing to a height of 6-9 inches shall occur when vegetation height reaches 18-24 inches. Spot-mowing should be employed as needed to prevent vegetation interference with energy generation and infrastructure. Additional onsite treatment with spot-mowing or hand weeding may be employed at the discretion of the Contractor.

5.1.2 Prescribed Treatment for Common Invasive Species

Every SEF will express a suite of invasive plant species determined by 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 Project 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, monthly evaluations of the plantings shall be conducted by a botanist employed by the Contractor, during the growing season (May to September) to determine the appropriate treatment techniques to use and the timing of those

treatments based on the presence and development stage of both invasive plants and the native plantings. In any event, invasive species should be treated prior to such plants flowering or seeding. Management techniques for five categories of weeds are described below.

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

5.1.2.1 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 pennsylvanicum*), and black nightshade (*Solanum nigrum*) (University of Minnesota, 2018).

The most important purpose and result of treating annual weeds is to prevent seed production. Beginning around June 1, the Project Site shall be mowed as described above to prevent annual weeds from flowering and setting seed. Repeated mowing, however, may produce a buildup of organic thatch, which discourages the development and persistence of diverse native vegetation by changing soil nutrient composition and keeping the soil cool. Thatch favors cool-season forage and turf grasses and many species of agricultural weeds. Use of a flail-type mower or raking, baling, and removing cut vegetation can reduce thatch build-up.

5.1.2.2 Minnesota Department of Agriculture Noxious Weeds

The Minnesota Department of Agriculture maintains a list of noxious weeds in the state which must be controlled (Table 7). All species of noxious weeds present at Elk Creek shall be treated by mowing, herbicide, or a combination of both methods, with the intention of preventing the weeds from setting seed or spreading by rhizomes, stolons, or other vegetative means.

TABLE 7 MINNESOTA PROHIBITED NOXIOUS & INVASIVE WEEDS

Eradicate. <i>All above- and below-ground parts of the plant must be destroyed.</i>	
Common Name	Scientific Name
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>
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>
Common tansy	<i>Tanacetum vulgare</i>

5.1.2.3 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. Many of these weeds greatly diminish during the establishment phase with proper maintenance, but several require special attention due to their highly competitive behavior. These 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*), cow vetch (*Vicia cracca*), 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 Table 8.

TABLE 8 ADDITIONAL 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		

Mowing is important to prevent invasive (and otherwise non-desirable plants) seed production (as described above), but herbicide is generally required to prevent the spread of perennial weeds. Perennial grasses shall be treated by spot-spraying, as warranted, with glyphosate or comparably effective herbicide, or the aquatic formulation of the same if near open water. Perennial broadleaf weeds shall be treated by spot-spraying, as warranted, with glyphosate, triclopyr, aminopyralid, or comparably effective herbicides. All herbicides shall be applied by a licensed applicator, following instructions provided by the manufacturer.

5.1.2.4 Problematic Native Plants

Several native species that are present in the soil seed bank or enter the Project Site by seed rain from neighboring properties have the potential to interfere with the functioning of the solar panels. 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, but woody vines such as wild grape and Woodbine/Virginia creeper shall 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.

5.1.2.5 Woody Species

Almost all woody species on Project Site can shade or otherwise interfere with the operation of solar panels. During the establishment phase, all woody plants must be removed. This can be done by mowing, applying herbicide, or a combination of both methods. All woody plants over 0.5 inches DBH (diameter at breast height, about 4.5 feet) shall 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 shall be removed from the Project Site.

5.1.3 Herbicide Specifications

All herbicide treatments shall be restricted to those pesticides and methods of application approved by the Minnesota Department of Agriculture, MNDNR, and the U.S. Environmental Protection Agency. Spraying should be conducted by certified applicators holding all necessary permits and licenses. All herbicides shall be applied in accordance with the applicable regulations and the label requirements and in a safe and cautious manner to avoid damaging adjacent properties. Herbicide shall be applied selectively where applicable to avoid damaging existing native vegetation.

Approved 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. The Contractor shall submit a list of all herbicides to be used on the project to Elk Creek for written approval prior to the start of work.

Pre-emergent herbicides are recommended to be applied in the spring once the temperature is above 55°F. Foliar herbicides shall be applied during the growing season as a control measure to prevent noxious weeds and invasive species from flowering or setting seed. The Contractor shall

have knowledge of the phenology of species to treat on site to conduct herbicide treatments at the appropriate time and shall submit a schedule of planned visits each year prior to May 1.

The landowner shall be contacted at least 14 days prior to any application of herbicide on their property. Apiaries known by Elk Creek to be present within three miles of the Project should be notified of any herbicide spraying at least 14 days prior to such application. The herbicide applicator must keep documentation of location and timing of herbicide use, weather conditions on site during application, type of herbicide used, volume of herbicide used, number of acres treated, and species of plants treated, and submit a copy of all herbicide records to Elk Creek to be included in an annual report.

5.1.4 Re-seeding Bare Soil

Generally large areas of bare soil, being those areas that may cause erosion concerns, or that allow for significant invasive or noxious weeds to establish, can be problematic to long term establishment of native vegetation. Large areas of bare soil provide 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 Elk Creek from discharging its Stormwater Pollution Prevention Plan (“SWPPP”) permit in a timely fashion. If areas of bare soil greater than 100 square feet are found onsite, the Contractor shall remedy the issue at its own expense by re-seeding the area, using the seed mix previously installed and following the timing instructions laid out in Section 2 (Vegetation Installation Plan). If the seeding has not been successful at the bare soil area due to compaction, the area shall be decompacted, as provided in this Plan, prior to reseeded.

5.2 Maintenance Phase (Long-Term Goals)

Following the end of the Establishment Phase of vegetation management, yearly management is still required 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. This yearly management may take the form of mowing, haying or grazing, depending on Elk Creek’s preference, site feasibility and whether partnerships can be formed with local farmers or management vendors who can harvest and use hay from the facility or otherwise utilize sheep to maintain SEF vegetation. Regardless of the general maintenance practices, some degree of hand weeding, spot-mowing, and/or spot-herbicide treatment may be warranted thereafter to maintain vegetation quality and achieve the Project goals (see Section 6.3).

The landscaped/screening portion of the Project will be managed separately from the general haying, grazing or mowing areas. To keep invasive plants under control and ensure the full development of the vegetation screen, inspections should be made (see Section 6.2) to identify the presence of noxious weeds and invasive plant species, and those species shall be controlled using standard weed control techniques described in Section 4. Since at least 80 percent of the installed shrub and trees shall be present in the landscaping/screening area after the establishment period, the Contractor shall monitor for indications of stress and take action 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

In any portion of the Project that is not being managed by haying or grazing (as described below), annual mowing to a height of 6-9 inches shall occur each Spring, prior to the start of the growing season. No more than one-third of the Project Site shall be mowed in any year. Where feasible, mowed vegetation shall 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 shall be conducted with a flail-type mower to finely chop plant material and accelerate decomposition.

5.2.2 Haying

Elk Creek may elect to use haying as a long-term management technique in a portion of the Project that is not otherwise occupied by the solar array. These areas are primarily located around the periphery of the facility (within the fence) and in areas that were utilized as laydown areas during construction. Annual haying to a height of 6-9 inches shall occur each September prior to prairie plants going dormant to maximize forage value of the hay crop.

5.2.3 Grazing

Elk Creek may decide to use grazing with sheep as a long-term vegetation management technique in portions of the Project occupied by the solar array or those areas surrounding the arrays. Well-managed grazing can restrict woody vegetation and non-native species encroachment into grasslands, prevent excessive litter accumulation, improve forage production, and accelerate decomposition and nutrient cycling. Should grazing be selected as a management technique for some or all of the Project Site, the following methodologies will be followed.

After the start of the third growing season after installation, vegetation management within the portion of the Project occupied by the array may be performed by grazing the Project Site with sheep. This management approach would allow the Project Site to remain in agricultural use while generating power. This approach would also prevent vegetation biomass from accumulating onsite over time; a thatch layer favors non-native over native plant species and poses a fire hazard in dry weather conditions. Grazing SEFs using livestock is a developing management approach; therefore, the instructions in this Plan should be considered a guide, and actual practices must adapt year-to-year to the specific vegetation conditions at the Project Site. This Plan describes the grazing methods to be used on a small unit of the overall portion of the Project occupied by the array. These specifications can be scaled appropriately to accommodate grazing in larger or smaller portions of the array depending on the availability of sheep and appropriate partners to conduct the grazing operations. Any area that is not grazed can be managed using mowing or haying management techniques as outlined above.

Grazing will be utilized if Elk Creek is able to identify and form a partnership with a local sheep farmer that is willing and able to utilize a portion of the Project Site for grazing in accordance

with this Plan. The chosen partner must be able to comply with Project Site security requirements and site management process outlined in this Plan. The partner must have sufficient insurance to cover any damages caused during grazing of the Project Site. The seed mix has been formulated to be utilized for sheep grazing and to also function well if sheep grazing is not utilized.

5.2.3.1 Site Setup for Grazing

If a grazing partner is identified to provide sheep grazing, portions of the Project Site will be managed with rotational grazing, wherein animals are moved periodically among the four paddocks within each grazing unit, with the aim of maintaining a vegetation height of 10-12 inches across the portions of the Project Site that are grazed. The area of the Project Site to be grazed will be divided into grazing units of approximately 16 acres each in preparation for grazing, although grazing unit size may change with input from the grazing partner. The number of grazing units utilized in any given year will be determined at the beginning of each growing season based on either the number of acres to be grazed and the number of sheep available for grazing. For best outcomes for pollinator species, it is recommended that no more than 50% of the available forage be removed by grazers. The preferred method for dividing the Project Site is poly-wire or net electric fencing with plastic step-in poles; the grazing operator shall consult with the Elk Creek before other options are installed. Sensitive areas will also be fenced off to avoid inadvertent disturbance. The electric fencing shall be grounded independently of the SEF infrastructure, with the grounding stakes at least 66 ft from the SEF's grounding systems. The grazing operator shall consult Gopher State One Call before siting the grounding stakes and take underground utilities and travel corridors into consideration when placing the grounding stakes. The energizing unit for the electric fence must be independent of the solar facility infrastructure. The energizer can run on 110 V electrical current or be charged from a battery. The grazing operator shall be responsible for any damage to the solar facility infrastructure due to improper setup or maintenance of the electric fence. Fencing for sheep will not be greater than 5 feet in height, which should not significantly impact wildlife movement.

The grazing rotation in each 16-acre grazing unit will be managed by dividing the unit into four four-acre paddocks (e.g., unit 1, paddocks A-D), which will be grazed over the course of one month. For the first week of the month, the sheep in each unit will graze Paddock A. For the second week, the sheep will graze Paddock B, and so on. This pattern will result in each paddock being grazed for one week and rested for three weeks each month. Grazing will continue for the entire growing season (approximately May 15 – September 15).

When sheep are grazing each unit, they will need to be provided with drinking water. The method of watering the flock will be left to the grazing operator, with approval from Elk Creek. A mobile watering trough, especially one that does not kill vegetation while it remains in place, is preferred. Moving the watering trough from paddock to paddock as the flock moves will reduce damage to the vegetation under the trough and prevent areas of dead vegetation from forming. Watering shall occur as near to the center of the

paddock as possible; water is an attractant, and a trough set too far to a paddock side or corner can lead to uneven grazing of the paddock.

5.2.3.2 Stocking Rate and Management

The number of sheep in a grazing unit at any time is the stocking rate. The standard way to describe the stocking rate, or grazing pressure, is animal unit month (“AUM”). One animal unit is 1,000 lbs. of livestock, and one AUM is 1,000 lbs. of livestock grazing for one month. AUM is usually calculated on a per acre basis, so the final unit for stocking rate is AUM/acre. Depending on the variety of sheep used, 1 animal unit is approximately six ewes. The Natural Resources Conservation Service recommends that stocking on solar energy facilities start at 0.5 AUM/acre (J. Duchene, personal communication, December 27, 2018). If grazing units are 16 acres each (as described previously), this would mean an initial stocking rate of about 50 sheep per unit. Each 16-acre grazing unit would start with 50 sheep grazing Paddock A for one week, then all 50 sheep will be moved to Paddock B for the second week, then Paddock C in the third week, then Paddock D in the fourth week, and then back to Paddock A to start the rotation over again. Since the Elk Creek Project is anticipated to cover approximately 1100 acres, grazing the entire site would require approximately 69 grazing units and 3450 sheep. The actual number of sheep utilized will depend on the amount of forage present and will be adjusted by the grazing partner throughout the growing season.

The grazing partner shall be responsible for monitoring the response of the vegetation to grazing. The management goal is to have an average vegetation height of 10-12 inches when the sheep are first moved into a paddock and remove the sheep when the vegetation is an average of 6-8 inches. If grazing does not achieve the desired vegetation height and is shading the arrays, the Contractor shall immediately contact Elk Creek and be responsible for mowing the paddock to a uniform height of 4-6 inches. The Contractor shall determine with Elk Creek a change in stocking rate to improve the effect of grazing in the future. The grazing partner shall have access to additional livestock in case the stocking rate needs to be increased to achieve the vegetation management goal. Should the entire site be found to have met the vegetation height and forage removal, the sheep will be relocated offsite until grazing management is once again necessary.

If maintenance by grazing is no longer feasible or desired, vegetation height can be managed by mowing as outlined in Section 5.2.1 of this Plan.

6. MONITORING AND ADAPTIVE MANAGEMENT

6.1 Monitoring Team

An independent third-party inspector (Monitor), qualified to conduct native plant inspections and assessments, retained by Elk Creek shall conduct monitoring activities under this Plan. The independent third-party inspector shall be selected by Elk Creek prior to seed bed preparation activities outlined in this Plan. This Plan shall be updated with the name and contact information for the third-party inspector upon selection.

6.2 Monitoring Protocol

Vegetation monitoring at Elk Creek shall occur three times per year during the establishment phase (Years 1-5) and annually thereafter over the lifetime of the Project. During the establishment phase, inspections shall occur three times in the growing season to accurately document the presence of installed native species: late May/early June, mid-July, and late August/early September. After the establishment phase has concluded, inspections shall occur once per year, in mid-July. Once every five years during the management phase, inspections shall occur three times during the year, on the same schedule as the establishment phase, to record the continued presence of native species across the growing season.

The monitoring protocol shall include both microplots and a meander survey. Microplots provide accurate data for the Project Site but cover a small area. Vegetation can be patchy due to microtopography and other factors, so scattered microplots have the potential to miss species assemblages or new invasive species populations. For this reason, a meander survey shall also be conducted to provide a broad assessment of vegetation across the Project Site.

Microplot surveys shall be conducted during each inspection in the establishment phase. During the management phase, surveys should be undertaken at a time when spring- and fall-blooming species can be identified, usually July; the Monitor should assess the best timing for microplot surveys based on the advancement of the growing season. 50 microplots of 1m x 1m each shall be distributed at locations that represent conditions across the Project Site. For instance, lowland and upland areas should be sampled in proportion to their acreage. Microplots will be first selected using available maps and air photos, with the final location selected in the field on the day of sampling to represent the general area of the microplot. Before entering the field, the Monitor will provide Elk Creek with a map of the general locations of the 50 microplots. In each microplot all plant species present shall be recorded and assessed using a 1-10 scale (1 = $\leq 10\%$, 2 = $>10\%$ but $\leq 20\%$, etc.), based on the percent cover of the species in the microplot. The total percentage of vegetative cover and bare ground will also be recorded.

While traversing the site from microplot to microplot, the Monitor will follow a meandering path, recording all plants species seen. Upon completing the meander survey, each plant species recorded will be assessed on a 1-4 scale (1 = $\leq 10\%$, 2 = $>10\%$ but $\leq 30\%$, 3 = $>30\%$ but $\leq 50\%$, 4 = $>50\%$) based on the percent cover of the species across the entire site along the meander path.

After each survey event, the percent cover of native and noxious plant species in microplots and along the meander survey, the total native and invasive vegetation cover and the total native species richness will be entered in an Excel spreadsheet. Each survey event's data will be compared to past survey event data to detect positive, negative, or neutral trends. A positive trend would be decreasing cover by invasive plants and increasing cover by native plants from one survey event to the next.

Each monitoring visit shall also conduct a hazard assessment. While on site and during the meander survey, the Monitor shall record the location of noxious weeds/invasive species, adventive trees/shrubs, large areas of bare soil, areas of significant erosion, and damage to the vegetative screening area. Any observed significant erosion or damage to the vegetative

screening area should be reported to the Owner immediately. The remaining hazards will be compiled in an annual report (see Section 6.4). Hazard assessments should also be conducted by the Contractor any time they are on site performing vegetation management. The Contractor hazard assessments should be submitted to the Monitor for review and inclusion in the annual report.

6.3 Targets and Projected Outcomes

Vegetation management should result in a diverse plant community dominated by native species, as envisioned in the planting plans. Permits and regulations impose additional requirements on the final quality and performance of native plantings.

6.3.1 Native Vegetation Targets

As noted in the short- and long-term goals, by the end of the first growing season of the vegetation establishment phase, at least 80 percent of the Project Site shall be vegetated. In order to discharge the SWPPP permit for the Project Site, at least 70 percent of the Project Site must be covered with uniform perennial vegetation; the contractor shall endeavor to achieve this by the end of the first growing season and must achieve this in the second growing season. By the end of the vegetation establishment phase (approximately 36-60 months after vegetation installation), at least 95 percent of the Project Site shall be vegetated, and at least 90 percent of the cover shall be comprised of native species. Six or more species of planted native graminoids and 12 or more species of planted native forbs shall be well-established across the Project Site. In the visual screening area, woody plant survival at the end of the establishment phase shall be at least 80%.

6.3.2 Noxious Weeds and Problem Plants

All Minnesota prohibited noxious weeds and other problem plants (Tables 7 and 8) shall 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 shall 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 shall be dead or dying within any 100 square foot area.

By the end of the vegetation establishment phase (approximately 36-60 months after vegetation installation), all prohibited noxious and other problem plants shall not exceed 5 percent areal cover within any 100 square foot area across the Project Site. This will be determined as a portion of the annual report prepared for the Project, based on the observations made during the site walk inspection.

Although they are small narrow strips at the top of a subwatershed, areas seeded with the Wet Mix or the transitional Wet-mesic Mix will be susceptible to invasion by reed canary grass. As part of an adaptive management approach, regular monitoring may detect persistence of or gradual increase in reed canary grass over time, despite active invasive species management activities. Should this occur, the Owner may choose to discontinue managing areas where reed

canary grass cannot be effectively controlled. Reed canary grass control will, however, continue in areas seeded with the Mesic Array or Mesic Pollinator Mix.

6.4 Reporting

An independent third-party inspector, qualified to conduct native plant inspections and assessments and retained by Elk Creek shall prepare a report documenting the status of the established vegetation and hazards encountered during such year (i.e., a report every year for years 1-5 and a report for every fifth year thereafter). The report shall include the results of inspection and monitoring activities during the prior year and shall report how the vegetation on the Project Site has achieved or is achieving the goals and objectives set forth in this Plan. The report shall be submitted by February 1 of the following year in order to provide sufficient time to review the recommended actions for the upcoming growing season.

In addition to the above report content requirements, the reports shall also include descriptions of adaptive management actions to be completed in the upcoming year to meet management objections and management challenges encountered during the reporting period. These recommended actions may include, but are not limited to, mowing, spot-mowing, targeted herbicide application, or overseeding bare soil.

6.5 Adaptive Management

Every year during years 1-5 and every fifth year thereafter, a third-party independent monitor retained by Elk Creek will produce a report summarizing the status of the vegetation established on site and identifying hazards encountered during the reporting period. This report will address any areas of noncompliance and plan targeted remediation efforts for the upcoming reporting period, 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. 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 reporting period and address small issues before they become more serious or extensive.

6.6 Project Administration

Administrative responsibilities under this Plan will be undertaken by the following individuals and companies. Contact information for each person and entity will be updated prior to initiation of this Plan and will be revised as necessary. The Field Representative for Elk Creek has primary responsibility for the activities associated with this Plan. All communications associated with this Plan should be directed to the Field Representative. The third-party independent inspector is solely serving the role of an independent 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 third-party inspector should be directed to the Field Representative and the Contractor.

6.7 Construction Plan Specifications.

Detailed civil construction plans will be provided to the Contractor prior to the start of construction.

7. REFERENCES

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REVISION LOG

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