Exhibit-PSCW-SR-3.06-Response-Data Request-PSC-1
Revised Vegetation Management Plan

Saratoga Solar Project, LLC

Docket No. 9816-CE-100

Vegetation Management Plan

Saratoga Solar Project
Wood County, Wisconsin
PN: 193706930
PSC Docket No. 9816-CE-100

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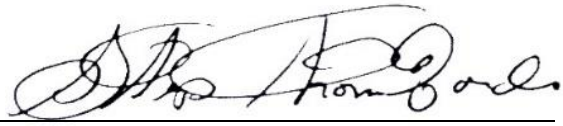
Prepared by 

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Executive Summary

Saratoga Solar Project, LLC (Saratoga Solar) is proposing a 150.5-megawatt (MW) alternating current (AC) photovoltaic (PV) solar project with a 50MW_{AC} Battery Energy Storage System (BESS) on approximately 1,900 acres of red pine (*Pinus resinosa*) plantation, commercial Christmas tree production and agricultural use in the Town of Saratoga, Wood County, Wisconsin (Project). A total of approximately 1,044 acres of land is being considered for potential placement of facilities, including primary and alternate arrays. If the primary array is ordered, the final footprint of facilities will be limited to approximately 825 acres. The Project includes a 138 kilovolt (kV) generation tie-in (gen-tie) line approximately 500 feet in length. The point of interconnection will be a new switchyard, constructed and owned by American Transmission Company (ATC), adjacent to an existing ATC 138 kV line.

Saratoga Solar has notified staff of the Wisconsin Department of Natural Resources (WDNR) and the Public Service Commission of Wisconsin (PSCW) of its intent to file for a Certificate of Public Convenience and Necessity for the Project. This Vegetation Management Plan (Plan) is intended for use alongside an Erosion Control and Stormwater Management Plan (ECSWMP) and provides further guidance on site seeding preparation, custom site-specific seed mixes, seed installation, and vegetation management activities over the 30-year lifespan of the facility.

Site preparation will consist of timber harvest, grading and grubbing activities. Topsoil will be preserved to create a seedbed to facilitates robust germination of compatible vegetation. Management of noxious and invasive plant species, if any, and other weedy species may also be conducted to reduce competition and improve establishment of permanent seed mixes. Temporary seed mixes consist of annual grasses for soil erosion control during or immediately after construction. Permanent seed mixes compatible with Project vegetation objectives and suitable to local environmental conditions are installed after construction and site preparation, and include:

- the **Graminoid Plus Seed Mix** which contains low growing graminoids (grasses and grass-like plants) supplemented with low-density wildflowers to be planted in the solar array areas and other areas outside fences and
- the **Pollinator Refuge Seed Mix** which is characterized by a high proportion of pollinator-friendly vegetation to be planted in select but, as of yet undetermined buffer areas.

Following permanent seeding, ongoing management of regulated noxious and invasive plant species, and other weedy species may be required for compliance with local weed ordinances and to maintain Project compatibility. Vegetation management activities typically consist of cutting (mowing) and targeted herbicide applications over the 30-year window. The custom designed seed mixes are also suitable for small ruminant grazing, (e.g. sheep), which is emerging as an alternative to mowing.

This proposed Plan is based on information to date and is subject to change based on final Project design and seed availability.

1.0 Project Overview

Saratoga Solar Project, LLC (Saratoga Solar) is proposing the Saratoga Solar Project (Project) in the Town of Saratoga, Wood County, Wisconsin. The Project is a 150.5 MW_{AC} solar facility that includes solar array blocks containing PV panels attached to a single-axis tracking system mounted to steel piles. The PV panels will track the sun during the day. Direct current (DC) electricity from the PV panels will be routed underground through collection wiring to Power Conversion Units (PCUs) located throughout the PV array areas. Each PV array area will be fenced and have gated access at the road entrances. Constructed access roads will be gravel and approximately 12 to 20 feet wide. Construction of the Project is anticipated to begin in 2022 and be completed in Q4 2024.

The total Project Area is approximately 1,900 acres, but facilities for the final Project are expected to encompass approximately 825 acres of land (the Primary Facility Area). The total potential land being considered for the Project also includes approximately 219 acres of additional alternate land for solar arrays (the Alternate Facility Area). For the purpose of this Vegetation Management Plan (Plan), Project Development Area will refer to only areas within the primary (825-acre) and alternate (219-acre) array fences. Areas that are disturbed for Project purposes will be re-vegetated per the Preliminary Erosion Control and Stormwater Management Plan (ECSWMP). This Plan supplements and does not replace the guidance provided in the ECSWMP.

The typical minimum leading-edge height between the PV panels and the ground is approximately 24 inches. Post-to-post spacing between rows is approximately 24 feet. Final spacing within the arrays will be determined once equipment selection is finalized and the detailed engineering plan is complete. The installation of low-growing plant species and performance of vegetation management practices within the PV panel areas will be conducted to minimize vegetation touching and overshadowing the panels.

1.1 TOPOGRAPHY, SOILS, SHADE AND CURRENT VEGETATION

1.1.1 TOPOGRAPHY

The existing topography within the Project Area is relatively flat and minimal grading is anticipated to occur for Project installation. The Project Area is comprised of varying stands and age classes of red pine plantations, areas of natural dry-mesic to dry mixed coniferous-deciduous woodland, and large areas of cleared plantation that have revegetated as open, and upland grassland communities.

1.1.2 SOILS

Soils within the primary array areas are mapped by Natural Resource Conservation Service (NRCS) primarily as Plainfield Sand complex with 0-2%, 2-6%, and 6-12% slopes. This complex may contain loamy sand and sandy textures, is excessively drained, and is not considered prime farmland.

1.1.3 SHADE

Project area solar intensities at ground layer are currently in full sun. Solar array construction will create shade under the PV solar panels while full sun conditions will continue in areas outside PV panels. Hence, following construction, solar intensities at the ground layer will range between full sun, to partial shade, to full shade.

1.1.4 CURRENT VEGETATION

The Project is located in a predominately wooded rural landscape, much of which is dominated by an active pine plantation. The land cover is dominated by varying stands and age classes of predominantly red pine (*Pinus resinosa*) plantation, areas of natural dry-mesic to dry mixed coniferous-deciduous woodland, as well as large areas of cleared plantation or storm blow-down that has revegetated as more open upland grassland or shrubland communities.

Approximately 20 acres of the Project Area is used for commercial Christmas tree production, and approximately 60 acres of the Project Area are currently used for row crops planted to corn.

1.2 SITE PREPARATION

Site preparation for permanent vegetation requires a minimum of noxious weed suppression and soil tillage for a suitable seedbed. Weed suppression efforts increase with time following agriculture abandonment. The sooner site preparation activities occur following agriculture abandonment the less effort required to suppress weeds. Soil tillage to prepare a seedbed should occur immediately prior to seeding. Tilled soils are susceptible to erosion; therefore, soils should be planted immediately following seedbed preparation. Site preparation activities and schedules are covered in detail in section 3.

1.3 SEED MIXES

Seed mixes are constrained by site specific environmental attributes, including soil hydrological characteristics, soil compaction, and shade. Species selection is further constrained by Project height compatibility requirements and low maintenance objectives. These constraints limit vegetation selection to species that are low growing, thrive dry-mesic and dry soils, and are tolerant to a variety of solar intensities. Seed mix details are covered in section 4.

The seeding plan for this Project includes installation of permanent seed paired with quickly established temporary cover crop species.

1.4 VEGETATION INSTALLATION

There are two preferred seeding time periods. The best seeding time occurs from spring through early summer. A second seeding time period occurs in September. For best results, construction activities should facilitate seeding during these time periods. Different seeding procedures are recommended for

seeding within the solar array field and seeding outside the solar array field. Vegetation installation activities and schedules are covered in Section 4.

1.5 MONITORING AND MAINTENANCE

Properly timed mowing and spot herbicide treatments can reduce overall maintenance costs during the Project life cycle. Monitoring establishing vegetation during this period will facilitate proper timing and treatment activities to ensure early problems do not become larger issues. Vegetation monitoring and maintenance activities and schedules are discussed in Section 5.

2.0 Plan Goals

Specific goals of this Plan include guidance on the following:

- Maintaining compatibility and compliance with the Project preliminary ECSWMP;
- Maintaining compliance with PSCW requirements regarding revegetation after construction of the Project Area (limited to the area within and just outside the array fences);
- Maintaining soil health so that the land can be returned to productive land use after Project decommissioning;
- Managing populations of existing invasive species within the Project Development Area, as feasible, and reducing the spread of invasive species outside of the Project Area;
- Developing a permanent seed mix design that supports the following goals:
    - Low growth, low maintenance, shade tolerant graminoids for areas under panels and between panel rows that is supplemented with a component of wildflowers; and
    - Pollinator friendly plantings in upland areas near the fence line and substation complex where there is adjacent existing habitat outside of the array fences.
- Preparing seed bed and seed installation methods for seed and mulch installation; and
- Maintaining vegetation for the Project Development Area through the life of the facility.

3.0 Site Preparation

All site preparation activities shall maintain compliance with the ECSWMP. Prior to seed installation (following clearing and grading), the soils may be lightly disced or raked to loosen soils and reduce surface compaction. Excessive vegetation debris should be removed, or a small amount may be incorporated into soils. In general, thickness of wood chips and slash materials should be less than 2 inches thick for seed installation. Following soil preparation, bare soils may then be rolled, as needed, to prepare a firm, smooth seedbed.

4.0 Seed Mixes

The seeding plan for this Project includes installation of permanent seed paired with quickly established temporary cover crop species.

4.1 TEMPORARY SEED

Temporary cover crops will be used to assist with stabilization of disturbed soils to meet two primary objectives:

1. Compliance with the ECSWMP and
2. Assist with establishment of permanent vegetation.

Cover crops are composed of annual grasses that establish quickly, provide erosion control, build soil organic matter, and assist with weed suppression. Three annual grasses – winter wheat (*Triticum aestivum*), seed oats (*Avena sativa*), and annual rye grass (*Lolium multiflorum*) are utilized, depending on installation timing. Each of these species is listed on the Wisconsin Department of Natural Resources (WDNR) Technical Standard 1059 – Seeding for Construction Site Erosion Control and has a relatively wide tolerance of soil conditions.

Specific species and installation rates are selected based on installation timing, mechanism (drilled versus broadcast seeded), and whether cover crops are installed with or without permanent seed. Temporary cover installation rates are higher when the seed is not installed concurrently with permanent seed in order to provide adequate vegetative cover. Temporary cover (crop) species are provided in Table A.1 (Appendix A).

4.2 PERMANENT SEED

Permanent seed mixes will be used to establish permanent groundcover that is compatible with seeding objectives. Proposed seeding locations are dependent on the final design and construction (e.g., distance between panels, fence placement).

Two permanent seed mixes were designed for the Project Area as follows:

1. Graminoid Plus Seed Mix – Paneled Areas (Table A.2, Appendix A)
2. Pollinator Refuge Seed Mix – Select Buffer Areas (Table A.3, Appendix A)

These mixes are described in more detail below.

4.2.1 GRAMINOID PLUS SEED MIX – PANELED AREAS

This mix (Table A.2, Appendix A) consists of the following:

1. Perennial native graminoids (grasses, sedges, and rushes) to provide long-term cover.
2. One perennial, circumpolar fine fescue (*Festuca rubra* Variant *Borealis*) to assist with short-term revegetation and provide cover in shaded areas.
3. A supplemental component of perennial, native wildflowers to increase overall species diversity and composition.

None of the species in the Graminoid Plus Seed Mix are considered invasive or noxious under State of Wisconsin Noxious Weeds law (Chapter 66.0407) or the Wisconsin NR 40 Invasive Species Rule.

The Graminoid Plus Seed Mix is designed to provide permanent, low maintenance, low growth, shade and drought tolerant vegetative cover. This mix is designed to be cost-effective, while providing deep-rooted plant cover and. Once established, this seed mix will also support pollinator species. Many of the grasses and sedges are host plants for some pollinators (primarily lepidoptera species) in their larval stage. The supplemental component of native wildflowers also provides forage for pollinators in their adult stage.

This mix will be installed within the Paneled Areas where the establishment of permanent, low-growing (less than 24 inches in height), shade tolerant graminoids are needed, such as under and between the PV panel arrays. This mix may will also be installed around the inverters, as they may be subject to frequent disturbance, and within a five-foot buffer from the access roads in order to maintain low stature and green vegetative cover where there is adjacent vehicle traffic.

4.2.2 POLLINATOR REFUGE SEED MIX – SELECT BUFFER AREAS

The Pollinator Refuge Seed Mix contains native grasses and sedges and a large component of wildflowers. This mix includes a wide diversity and high proportion of wildflowers, with flowering occurring over each of the three blooming periods (spring, summer, and fall), along with native bunch grasses and sedges that are friendly to pollinators (Table A.3, Appendix A). The seed mix also provides host plants for butterflies. Long-term, this mix is also expected to improve soil health.

This mix may be installed in areas outside of a 20-foot buffer from the PV panel arrays in areas along the fence line that are near existing habitat; specifically, areas such as forested lands and tree lines.

4.3 SEEDING AREAS

4.3.1 SOLAR PRODUCTION AREA

The solar production area, referred to as Area A, is comprised of the area under and between the PV panel arrays. This area will be prepared and seeded differently than the Pollinator Habitat Area (below).

Soil Amendments

Soil testing results should be consulted to selected application rates of fertilizer or lime for areas seeded with the Graminoid Plus Seed Mix (Table A.2, Appendix A). This may consist of a starter fertilizer to

support growth of the turf grasses if necessary, although high amounts of nitrogen fertilizer is generally not recommended for native grasses.

Anticipated Seeding Phases

Seeding in this area is anticipated to be completed in phases, as follows:

- Phase 1 – Post-clearing and grading
    - Permanent seeding: the entire Solar Production Area is anticipated to be seeded with the permanent Graminoid Plus Seed Mix (Table A.2, Appendix A) following grading and soil preparation. There is expected to be an anticipated establishment period (2 weeds or more) following clearing and grading, and before active trafficking and construction, to allow for initial germination. Construction is expected to occur throughout the 2023 growing season which is anticipated to result in moderate disturbance to seeded areas.
    - Temporary seeding: a temporary cover crop seed mix will be installed concurrently with permanent seed to provide cover and assist with grow-in of permanent seed (i.e., to serve as a nurse crop). Temporary seeding may also be used to temporarily stabilize soils disturbed by Project construction prior to permanent seed installation. Species selection shall be based on timing and seeding rates based on installation method (Table A.1, Appendix A). If permanent seed is installed during fall through winter, the cover crop should consist of winter wheat and annual ryegrass. If permanent seeding occurs in the spring through summer, the cover crop should consist of oats and annual ryegrass. Cover crop is installed at a lower rate when combined with permanent seed.
- Phase 2 – Post-construction. Following construction, repair disturbed areas using the permanent Graminoid Plus Seed Mix paired with a temporary seed mix.

4.3.2 POLLINATOR REFUGE AREA

The Pollinators Refuge Areas, referred to as Area B, are designated areas that will be used for the establishment of high a wide diversity and high proportion of native perennials plants that provide pollinator forage with plants blooming in spring, summer, and fall. These locations will be determined after the final site design is complete but, in general, will be located in open blocks away from panels where little disturbance is anticipated.

Seeding Phases

Depending on sequencing for clearing, native seeding may be conducted in phases:

- Phase 1 – if areas are bare, temporary stabilization with a temporary cover crop following clearing and site preparation. Species selection shall be based on timing and seeding rates based on installation method (Table A.1, Appendix A). These areas will be maintained in temporary cover until permanent seeding is done following site preparation and during an appropriate native

seeding window. If areas are exhibiting growth of existing desirable vegetation or from seedbank, then temporary cover crops may not be needed.

The Graminoid Plus Seed Mix seed mix should not be used in the designated Pollinator Refuge Areas.

- Phase 2 – evaluate areas prior to seeding and conduct additional site preparation, as needed, to prepare areas for native seed installation. This may include mowing and herbicide application to reduce weedy species (Section 3 below). Depending on the site evaluation, more than one round of mowing or herbicide application may be needed if invasive or noxious species are present.
- Phase 3 – Permanent seed will be installed after weedy and invasive species of concern have been managed and a suitable seedbed is prepared. Install the Pollinator Refuge Seed Mix (Table A.3, Appendix A) following site preparation. The preferred native seeding window is late fall through winter (November – March).

5.0 Vegetation Installation

Permanent seed will be installed following clearing and seedbed preparation. Prior to PV panel installation, seed may be installed with a drill or broadcaster.

5.1 DRILLING

Drilling is preferred for mixes with native grasses, especially during the growing season. Drilling is also preferred in areas where vegetation residues or debris are present. Acceptable native seed drills are manufactured by Truax or Great Plains, and are generally equipped with the following:

- Disk (furrow) openers, individually springed-row units, packer assembly, and seed boxes for 1) small seed for hard flowable seeds, 2) native grass box for large, bearded (“fluffy”) seeds, and 3) main grain box.
- The drill shall accurately meter seed release and keep all seed uniformly mixed. Inert filler may be used to assist with mixing.
- When drilling into residual plant cover, rippers that break through the residual plant cover to make a furrow in the soil adequate for seed placement and final burial. Furrows shall be directly aligned with seed delivery apparatus and shall be closed with a press wheel. Seed shall be placed just below the soil surface (no greater than ¼ inch).

5.2 BROADCASTING

Broadcasting may be utilized for installing seed on mostly bare soils where seed-soil contact can be achieved. Mechanical broadcasters are acceptable for sowing native seed mixes if the device manufacturer specifies use for evenly concurrently spreading seeds that are very small as well as

bearded grass seeds (those with attached appendages such as awns, pappus, hulls, etc.). These may include:

- Three-point hitch mounted spreader suitable for pulling behind an agricultural tractor or light footprint vehicle.
- Hand push or pull-type spreaders.
- Trillion broadcast seeders are an acceptable method of installing native seed on loose, bare soil.

Inert filler may be used to assist with mixing in spreader hoppers. Increase seeding rates by 20% for broadcasting.

5.2.1 MULCHING

Given the sandy and droughty nature of the soils, it is recommended that mulch be applied following permanent seeding to assist with seed germination. Local sources of clean, seed-free hay or straw mulch is acceptable. Certified weed-free hay or straw is preferred. Marsh hay should not be used. Hydromulch is a suitable substitute for hay or straw mulch. Hydromulch and tackifiers should be selected from the WisDOT Erosion Control Product Acceptability List (PAL) and should be applied at the manufacturer's recommended rate.

A 2-step process is recommended for hydromulching in combination with native seed:

1. Broadcast combined permanent and temporary seed at the recommended rate (increase seeding rate by 20% for broadcast seeding), then
2. Cover with a suitable hydromulch following manufacture rates and recommendations.

All mulching shall follow WDNR conservation practice standard 1058, including provisions for materials, anchoring, and product selection. Other stabilization methods, such as erosion control blanket, mats or other material that prevents erosion from occurring may be used as appropriate based on site-specific conditions. Requirements in the ECSWMP and/or permit conditions should take precedent over the recommendations of this section.

The Pollinator Refuge Seed Mix does not need mulching if installed in the dormant season with an appropriate temporary cover crop.

6.0 Monitoring and Maintenance

Vegetation may require maintenance at various phases to prepare areas for permanent seed installation, to assist with grow-in maintenance of permanent seed, and to manage for invasive and noxious weeds.

6.1 INVASIVE AND WEED SPECIES MANAGEMENT

For the purpose of this Plan, invasive and weed species will be defined under the following two categories:

1. Compliance - includes species covered under State of Wisconsin Noxious Weeds law (Chapter 66.0407) and the Wisconsin NR 40 Invasive Species Rule. These species will be referred to as 'invasive species.'

2. Compatibility – includes species that are not legally defined as noxious or 'invasive' but may interfere with the solar panels due to plant height, may interfere with ecological goals and the establishment of native species, or may pose vegetation management concerns. These species will be referred to as 'weeds.'

Invasive and weed species management will be conducted as needed to reduce the spread of invasive species from existing populations into adjacent forest lands, improve establishment and success of the permanent seed mixes, and reduce vegetation impacts to the PV panels and solar facility infrastructure. Flowering non-native species that are not considered invasive and do not have heights that would interfere with the Project operations will not be actively managed.

Invasive species management at this Project may consist of cutting and herbicide treatments. Vegetation management may be conducted during construction and/or the year following construction to prepare the Project Area for permanent seed installation.

6.1.1 HERBICIDE

Herbicide treatments are recommended for management of perennial invasive and noxious species as mowing alone is not typically sufficient for eradication. Ongoing management of invasive and noxious species is required for compliance. Herbicides are also used to remove undesirable vegetation to prepare for permanent seed installation.

6.1.1.1 Herbicide Types

There are three general types of herbicides that would be applicable for use in the Project Area: non-selective, broadleaf-selective, and grass-selective.

Non-Selective Herbicides

Non-selective herbicides injure or kill all types of natural vegetation, including broadleaves, grasses, sedges, rushes, and woody plants. Glyphosate is commonly used to remove vegetation and prepare areas for seeding.

Broadleaf-Selective Herbicides

Broadleaf-selective herbicides are intended to injure or kill only broadleaf plants. There are many types of broadleaf herbicides. Two types commonly used in natural settings include 2,4-D and triclopyr. 2,4-D is

often used to remove broadleaf plants from grass-stands. These types of herbicides may be appropriate for controlling weeds within the PV panel arrays where only graminoid species will be installed. Extra caution should be taken to avoid injury to desirable graminoid species by waiting to apply herbicides after desirable grasses, sedges, and rushes have matured and flowered. Triclopyr is effectively used to target woody species.

Grass-Selective Herbicides

Grass-selective herbicides are intended to injure or kill only grasses. The most commonly used grass-selective herbicide is clethodim. It is used to selectively target undesirable grasses growing among desirable broadleaf plants. This herbicide may be appropriate for controlling certain grasses in areas with pollinator-friendly vegetation.

6.1.1.2 Herbicide Application Methods and Timing

There are two primary methods to apply herbicides, low volume/spot applications and broadcast applications. Methods and timing should be based on target species and adjacent vegetation.

Low Volume/Spot Applications

This method utilizes a hand-held sprayer mounted to small (3.5 to 25 gallon) tanks to selectively deliver herbicide to individual plants or small clumps of plants. Backpack sprayers are suitable for small areas while pistol sprayers mounted to an all-terrain vehicle or utility terrain vehicle (UTV) are suitable for larger areas. Wicks may also be used for ultra-low volume delivery of herbicide to undesirable plants growing in sensitive areas. This method may be appropriate for managing discrete populations of weedy and invasive species before and during construction.

Broadcast Applications

This method utilizes a boom or boomless sprayer tanks mounted to a UTV or tractor to broadcast herbicide to large areas. This method is appropriate for large-scale site preparation to remove weedy and invasive vegetation from large areas using a non-selective herbicide.

6.1.1.3 Proposed Herbicides

The herbicides that may be used on the Project are listed below in Table 1. Herbicides were selected that are frequently used in natural area settings to assist with management of the species listed on Table B.1 (Appendix B). These herbicides have a relatively short half-life and moderate to very unlikely potential to reach shallow groundwater. Other herbicides that are often used in natural areas but that are deemed to have unacceptable reported half-life and/or high likelihood of reaching shallow groundwater will not be used on the Project.

Table 1. Environmental Information for Proposed Herbicides

Active Ingredient	Herbicide Type	Potential Uses	Environmental Fate[1,2]			
			Water Solubility	Soil Half-life	Mineral Soil Sorption Coefficient K_{OC} / FAO Mobility Classification[3]	Groundwater Ubiquity Score (GUS)[4] / Potential to Reach Shallow Groundwater
Glyphosate	Non-selective systemic foliar	Non-selective treatment of grasses and broadleaf plants	Very soluble	3.6 days	33,025 / Immobile	-0.29 / Very unlikely
2,4-D	Broadleaf systemic foliar	Selective treatment of weedy and invasive broadleaf plants	Moderately soluble	2.9 days	73 / Mobile	0.99 / Unlikely
Triclopyr	Broadleaf selective foliar	Selective treatment of woody plants	Moderately soluble	13 days in unknown soil	93.6 in unknown soil / Mobile	2.26 in unknown soil / Moderate potential
Clethodim	Grass-selective systemic foliar	Selective treatment of weedy and invasive grasses	Very soluble	3 days in unknown soil	137.5 in unknown soil / Moderately mobile	0.89 in unknown soil / Unlikely

[1] Information from Herbicide Properties Tool at the National Pesticide Information Center – Oregon State University. Accessed online on 2/13/2020 at http://npic.orst.edu/HPT/#.

[2] Reported for sandy soils unless otherwise stated in the Herbicide Properties Tool search results.

[3] Based on FAO Mobility Classification in *Guidance for Reporting on the Environmental Fate and Transport of the Stressor Concern in Problem Formulations*. Accessed online on 2/13/2020 at https://www.epa.gov/pesticide-science-and-assessing-pesticide-risks/guidance-reporting-environmental-fate-and-transport#II_C.

[4] Potential to Reach Shallow Groundwater based on discussion in the Herbicide Properties Tool search results.

Herbicide Adjuvants

Adjuvants are typically added to herbicide mixes to improve herbicide performance. Adjuvants typically used for natural areas management include hard water treatment additives, surfactants, and penetrants. Herbicide labels should be consulted for recommendations on the types of adjuvants to add to a mix. In general, aquatic-approved adjuvants should be used to minimize potential impacts on wildlife, including pollinators. Aquatic-approved adjuvants should always be used in and near areas of standing water.

6.1.1.4 Herbicide Best Management Practices

Herbicides are a valuable vegetation management tool when used according to manufacturer's instructions and following industry Best Management Practices (BMPs). The Project will endeavor to employ the following BMPs when herbicides are used to manage undesirable vegetation:

1. Vegetation managers will apply principles of integrated vegetation management. Herbicides will be used as one of several available tools in the toolbox to manage vegetation and habitats in an ecologically-sensitive manner in addition to cutting, engineering controls, and cultural controls.
2. Low volumes of herbicides and adjuvants will be used to target undesirable plants. When practicable, herbicide applicators will utilize targeted application techniques and properly calibrated equipment to limit environmental effects.
3. The lowest concentrations of herbicides and adjuvants as recommended by product labels will be used to achieve intended outcomes.
4. Selective herbicides will be used to limit effects on non-target plants.
5. Herbicide applications will be conducted during favorable weather conditions to minimize off-site drift. Large-scale applications will not be conducted within 48 hours of a significant rainfall (defined as 0.5-inch or greater).
6. Herbicide labels and Safety Data Sheets should be read prior to mixing and application.

Additional BMPs may be developed, as needed, based on site conditions.

6.1.1.5 Herbicide Permitting

Herbicide treatments shall be performed by individuals with a current Commercial Pesticide Applicator certification and license issued through Wisconsin Department of Agricultural, Trade, and Consumer Protection, and in accordance with all applicable laws, regulations, and herbicide label instructions. Herbicide impacts on wetlands will be avoided due to lack of wetlands within the construction area. Selective herbicides (grass-selective or broadleaf-selective) may be used where appropriate to minimize impacts to non-target species and reduce the creation of bare areas.

6.1.1.6 Preliminary Schedule of Activities

Table 2 provides a preliminary schedule of activities that will occur up to permanent seed installation.

Table 2. Preliminary Schedule of Vegetation Management Activities

Activity	Timeframe[1]
Contract with nursery to procure native seeds	2022
Start of clearing and grubbing	May 2023

Activity	Timeframe[1]
Grading and site preparation	June – September 2023
Install Graminoid Plus Seed Mix and a suitable temporary cover crop, with mulching	June – September 2023
Construction	June 2023 – June 2024
As-needed additional seeding to stabilize soils impacted by construction	Growing season 2023 and spring 2024
Project COD, start of 30-year facility life period	Fall 2024
Evaluate and prepare Pollinator Areas for seeding. Install Pollinator Refuge Seed Mix with a suitable cover crop.	September 2023 – March 2024
Maintain permanent vegetation	May 2024 – life of project

[1] Timing for vegetation management activities may be based on construction sequencing. Actual schedules for temporary seed installation, seed bed preparation, and permanent seeding may be based on construction timing within each array area.

6.1.2 VEGETATION CUTTING

Cutting, by mowing or hand-trimming, is the primary management tool used to establish desirable vegetation. It is done to reduce height, reduce flowering of undesirable vegetation, and maintain light at the ground surface to encourage germination and growth of desirable species. Mowing using a deck (rotary or flail) mower is applicable in areas that are accessible with a small tractor and mower, such as buffer areas and potentially between rows of panels depending on final row spacing. A 3-point side-mounted trimmer mower attached to a small tractor may also be used to cut vegetation around steel piles and under panels if areas are accessible with equipment.

6.1.2.1 Mowing Frequency and Timing

Establishment Phase

Frequent cutting is required in all seeding areas during the establishment phase (post-seeding years 1 and 2) to reduce fast-growing (annual and biennial) weeds, minimize vegetation height under the PV panels, and assist growth of desirable species. Following permanent seeding, anticipate establishment mowing to occur 4 weeks following seeding and about every 4-6 weeks thereafter from mid-spring to mid-fall. A minimum of three mowings should occur during the first establishment year and a minimum of 2 mowings should occur during the second establishment year.

Transition Phase

By the third growing season, desirable vegetation should be established. Years 3-5 represent a transition phase where desirable vegetation becomes increasingly established but remains susceptible to weed invasion. The frequency of cutting is reduced, and in the best-case scenario, mowing targets only specific areas of weed growth and to reduce incompatible height of vegetation under the PV panels.

Long-Term Maintenance

Over the long-term (years 6-30), mowing should occur on an annual or biennial basis. Annual or biennial mows should preferably occur during the dormant season late fall or early spring, or, if necessary, in mid-summer. The goal of annual / biennial mows is to reduce thatch, encourage lateral growth, encourage root development, and minimize the establishment of woody vegetation. Actual mowing frequency is dependent upon soil moisture; wet areas and wet weather requires more frequent mowing while dry areas and dry weather reduces mowing frequency. Mowing will occur at a frequency of once every 2-3 years as site conditions allow.

Ground-nesting birds and animals could be impacted by vegetation management at the facilities after construction is complete. During operation, and after initial ground vegetation establishment, management of array vegetation should avoid mowing from May 15 through August 1 of each year. Saratoga Solar will schedule mowing activities outside this avoidance period to the extent feasible. If mowing is required during the avoidance period, personnel will be trained to look for sensitive wildlife before engaging in such activities to avoid impacts.

6.1.2.2 Mowing Height

Specific recommendations for mowing height vary by seed mix.

Graminoid Plus Seed Mix for PV Panel and Perimeter Areas

During the establishment phase (post-seeding years 1 and 2), areas seeded with this mix should be mowed when vegetation reaches a height of 8-12 inches and be cut back to a height of 4-6 inches. Installed species within this mix will likely stay below 18 inches in height (typically 8-12 inches) at maturity. Mowing this mix to the height of 4-6 inches will help invigorate the grasses and clover while discouraging weeds and trees.

Areas planted to the Graminoid Plus Seed Mix (primarily within and between the PV panel rows) should be mown when vegetation reaches a height of 18-24 inches and be cut to a height of 6-10 inches. This seed mix can be maintained at a height of 6-10 inches for the life of the facility. Installed species within the mix will likely stay below 30 inches in height (typically 12-24 inches) and mowing will primarily be conducted to reduce weed species during the establishment phase.

Pollinator Refuge Seed Mix – Select Perimeter Areas

In general, areas planted with the Pollinator Refuge Mix should be mowed when vegetation reaches a height of 8-12 inches. Vegetation in Pollinator Refuge Mix plantings should be cut to a height of 6-8 inches during the first growing season.

During the second growing season, Pollinator Refuge plantings should be mowed to a height of 6-8 inches.

During the third growing season (Transition Phase), as native plants mature, mowing height should be raised to 10-12 inches.

Long-term maintenance mowing should be conducted on an annual or biennial basis, during the dormant season, March-April, and September–November, and vegetation should be cut back to 8-10 inches. Targeted summer mowing can be conducted to maintain Project vegetation compatibility if necessary. Summer mowing should maintain 8-10 inch mower height, and not exceed one mowing per-growing season.

6.1.3 HERBICIDE APPLICATIONS

Herbicides may be used for long-term maintenance of areas planted with each seed mix. Herbicide type and method of application are highly dependent on target species and vegetation maintenance goals. The herbicides listed in Table 1 may be used throughout the life of the Project. Low volume / spot applications are appropriate for use in all areas during the establishment period (years 1 and 2) to spot treat invasive and incompatible species. Beyond the establishment period, this method is also appropriate for use in areas planted with the Pollinator Refuge Seed Mix to minimize impacts on desirable vegetation and wildlife. Broadcast applications are generally not appropriate in areas planted with the Graminoid Plus Seed Mix (to avoid spraying the panels), and the Pollinator Refuge Seed Mix. Vegetation management should be based on existing conditions in any given area.

A combination of herbicides and application techniques is typically required to manage large areas. Herbicide use will be minimized to the extent practicable and will be conducted by trained and licensed personnel in accordance with label rates.

7.0 Summary

This Vegetation Management Plan was prepared to outline revegetation tasks after construction of the Project Area. This plan provides guidance to Saratoga Solar on 30 years of maintenance following the installation of permanent vegetation. The planting plan includes the installation of the Pollinator Refuge Seed Mix, where feasible, that includes a high proportion and wide diversity pollinator friendly wildflowers, bunch grasses, and sedges. The Graminoid Plus Seed Mix was selected for installation under and between the PV panels that is anticipated to be compatible with minimum leading-edge height 24 inches and shading from the panels, as well as provide low maintenance and hardy vegetative cover. The implementation and maintenance tasks provided in this plan will assist Saratoga Solar in maintaining

compliance with PSCW requirements for Project revegetation. It is anticipated that the planting plan will result in improved plant species diversity and soil health compared to the pre-construction silvicultural land use conditions.

APPENDICES

APPENDIX A SEED MIX TABLES

Table A-1: Area A & B – Temporary Cover Crop Seed Mix[1,2,3]

Nomenclature		Installation Timing
Scientific Name	**Common Name**	
Avena sativa	Common Oats	Mid-April-August
Lolium multiflorum	Annual Rye	Year Round[4]
Triticum aestivum	Winter Wheat	August-April[4]

[1] Select appropriate species from table above based on timing of installation and select appropriate rates based on whether temporary cover is being installed with or without permanent seed.

[2] Suitable for use with Area A Graminoid Plus Seed Mix and Area B Pollinator Refuge Seed Mix.

[3] Spring (April - May) and late summer (August-early September) preferred but may be established in summer or used with native dormant seeding.

[4] August-September preferred but may be used with native dormant seeding.

Table A-2: Area A, Graminoid Plus Seed Mix

Scientific Name	Common Name
Agrostis perennans	Autumn Bent
Bouteloua curtipendula	Side Oats Gramma Grass
Bouteloua gracilis	Blue Grama Grass
Carex brevior	Plains Sedge
Carex molesta	Filed Oval Sedge
Danthonia spicata	Poverty Oats
Eragrostis spectabilis	Love Grass
Festuca rubra (variant 'Boreal')*	Red Fescue
Elymus trachycaulus	Slender Wheat Grass
Koeleria macrantha	June Grass
Muhlenbergia mexicana	Upland Timothy
Pascopyrum smithii	Western Wheat Grass
Schizachyrium scoparium	Little Blue Stem
Sporobolus compositus	Rough Drop Seed
Sub-total	14 Species
Achillea millefolium	Yarrow
Chamaecrista fasciculata	Partridge Pea
Coreopsis lanceolata	Lance Leaf Coreopsis
Dalea candida	White Prairie Clover
Dalea purpurea	Purple Prairie Clover
Drymocallis arguta	Prairie Cinquefoil
Gentiana flavida	Cream Gentiana
Monarda punctata	Spotted Bee Balm
Pseudognaphalium obtusifolium	Sweet Everlasting
Rudbeckia hirta	Black-eyed Susan
Solidago nemoralis	Old-field Goldenrod
Sub-total	11 species
Total	**25**

**Festuca rubra* is considered a circumpolar species per the USDA Plant Database (https://plants.usda.gov/home/plantProfile?symbol=POPR) which means it is native around the northern hemisphere. The variant 'Boreal' is the closest to a wildtype genome commercially available by seed.

Table A.3: Area B - Pollinator Refuge Seed Mix

Nomenclature		Blooming Period						
Scientific Name	**Common Name**	**A**	**M**	**J**	**J**	**A**	**S**	**O**
Grasses and Sedges								
Bouteloua curtipendula	Side-oats Grama					A	S	
Carex brevior	Fescue Sedge			J	J			
Elymus trachycaulus	Slender Wheat Grass				J	A		
Eragrostis spectabilis	Purple Love Grass				J	A	S	
Juncus tenuis	Path Rush			J	J	A	S	
Koeleria macrantha	June Grass		M	J				
Muhlenbergia mexicana	Leafy Satin Grass					A	S	
Schizachyrium scoparium	Little Bluestem				J	A	S	O
Sporobolus heterolepis	Prairie Dropseed					A	S	O
Forbs								
Spring Bloomers (April-May)								
Aquilegia canadensis	Columbine	A	M	J				
Baptisia bracteata	Cream Wild Indigo		M	J				

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Nomenclature		Blooming Period						
Scientific Name	**Common Name**	**A**	**M**	**J**	**J**	**A**	**S**	**O**
Heuchera richardsonii	Prairie Alumroot		M	J	J			
Lupinus perennis	Wild Lupine		M	J	J			
Tradescantia ohiensis	Ohio Spiderwort		M	J	J			
Zizia aurea	Golden Alexanders	A	M	J				
Summer Bloomers (June-August)								
Amorpha canescens	Leadplant			J	J	A		
Anemone cylindrica	Thimbleweed			J	J			
Aslepias syriaca	Common Milkweed			J	J	A		
Asclepias tuberosa	Butterfly Weed			J	J	A		
Agastache foeniculum	Blue Giant Hyssop			J	J	A	S	
Astragalus canadensis	Canadian Milk Vetch			J	J	A		
Chamaecrista fasciculata	Partridge Pea				J	A	S	
Coreopsis lanceolata	Lanceleaf Coreopsis			J	J			
Coreopsis palmata	Prairie Coreopsis			J	J	A		
Dalea candida	White Prairie Clover				J	A		
Dalea purpurea	Purple Prairie Clover				J	A	S	
Drymocallis arguta	Prairie Cinquefoil			J	J	A	S	
Echinacea pallida	Pale Purple Coneflower			J	J			

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Nomenclature		Blooming Period						
Scientific Name	**Common Name**	**A**	**M**	**J**	**J**	**A**	**S**	**O**
Euphorbia corollata	Flowering Spurge			J	J	A		
Liatris aspera	Rough Blazing Star					A	S	
Monarda punctata	Dotted Mint				J	A	S	
Oligoneuron album	Upland White Goldenrod				J	J	A	S
Psuedognaphalium obtusifolium	Sweet Everlasting				J	A	S	
Solidago juncea	Early Goldenrod				J	A	S	
Solidago nemoralis	Old-field Goldenrod					A	S	
Solidago speciosa	Showy Goldenrod					A	S	
Rudbeckia hirta	Black-eyed Susan			J	J	A	S	O
Verbena stricta	Hoary Vervain			J	J	A	S	
Fall Bloomers (September-October)								
Symphyotrichum ericoides	Heath Aster					A	S	O
Symphyotrichum oolentangiense	Sky Blue Aster					A	S	O
Symphyotrichum laeve	Smooth Blue Aster					A	S	O