Sample Specifications for the Establishment of Native Vegetation as Part of Habitat Friendly Solar Projects

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Developed by the Minnesota Board of Water and Soil Resources and the Minnesota Department of Natural Resources

Note: these specifications are suggestions for projects and should be adapted to meet specific site conditions and project goals.

CONTRACTOR QUALIFICATIONS

1. Seeding contractors must have at least three years of experience installing native seed and installing or maintaining prairie restoration projects or other similar types of projects.

PROPOSED CHANGES TO PROJECT SPECIFICATIONS

1. Once project specifications are approved by the local government unit (LGU) that is reviewing it for compliance with the Habitat Friendly Solar Standards they are considered final. Any changes to the project specifications after this point, need approval by the LGU responsible for compliance with the Habitat Friendly Solar Standards

SEED SPECIFICATIONS

1. Substitution of species in the specified seed mixes/species lists must be approved by the local government organization staff that are reviewing the project for compliance with the Habit Friendly Solar Standards.

2. All seed that is supplied for projects must be labeled according to the requirements of the Minnesota Seed Law, section 21.82, including limits on noxious weed seed.
3. The origin of seed is required to be listed on the seed tag for all species in a mix to provide verification of original (generation 0) seed source. The smallest known geographic area (township, county, ecotype region, etc.) shall be listed.
    - Information pertaining to purity, germination, and hard (dormant) seed of individual components in a mix is required on seed tags.
    - When submitting seed bids, seed vendors must list any *Amaranth* seeds that were found in official seed tests. If *Amaranth* species are found in the test results, the Minnesota Department of Agriculture (MDA) requires that the vendor pay for genetic testing to determine if the *Amaranth* seeds present are *Palmer amaranth.*
4. Seed must be cleaned to an extent sufficient to allow its passage through appropriate seeding equipment.
5. Seed must originate from within 175 miles of the project site. Follow the Minnesota Board of Water and Soil Resourced (BWSR) seed zone map and source sequence on page 8 of BWSR's Native Vegetation Establishment and Enhancement Guidelines for obtaining seed.

6. All seed delivered to sites must have a complete label and include information about individual component seed lots. Installers must allow MDA staff to take seed samples when they arrive for a random inspection.

7. The following are recommended design guidelines for pollinator seed mixes to be used for solar projects to help meet Habitat Friendly Solar standards. Multiple seed mixes may be used such as a grass-only mix under the panel and a pollinator seed mix between panels and on the edges of the site, however seed mixes must be designed with a sufficient percentage of fobs to meet the Habitat Friendly Solar Standards. Note, if projects are designed to meet Habitat Friendly Solar standards the planned seed mixes to be used must be included in the project plans for review.
    - Minimum seeding rate of 40 seeds/sq. ft.
    - At least 40% of the total seeding rate as determined by seeds per sq. ft. should be composed of perennial forbs.
    - 7 or more native grass/sedge species with at least 2 species of bunchgrass.
    - 20 or more native forbs with at least 3 species in each bloom period: Early (April-May), Mid (June-August), and Late (August-October).
    - Include species from multiple guilds and families including: cool season grasses; warm-season grasses; sedges/rushes; legume; and non-legume forbs
    - More information about seeding can be found in the DNR's Prairie Establishment and Maintenance Technical Guidance for Solar Projects.

SITE PREPARATION SPECIFICATIONS

1. Seeding can only be conducted after all grading, construction activities and site preparation are completed.

2. Treat any weeds located within the area to be seeded with Glyphosate herbicide or a similar non-chemical smothering technique if so desired. Conduct a second herbicide treatment if weeds continue growing after ten days. An herbicide that kills legumes may also be used if needed, but should only be applied on a case by case basis as these chemicals can often inhibit germination.

3. Prior to seeding, for any compacted areas prepare the soil surface to provide a smooth, moist, and evenly textured foundation. Use cultivating equipment such as disks, harrows, field diggers, or tillers capable of loosening the soil to a depth of at least 4 inches on all compacted areas. Till the soil surface to remove track imprints from wheeled or tracked equipment. Operate cultivating equipment on slopes at right angles to the direction of surface drainage. Soil clods, lumps, and tillage ridges 3 in. high or less may remain in place for seeding operations. Multiple passes of the equipment may be needed to meet these requirements. Avoid tilling areas that are not compacted to preserve the soil biology and prevent re-planting weed seeds.

4. Seeding should be conducted within a week after tilling to minimize weed competition. If it's not possible to seed the final native seed mix within this timeframe a temporary cover crop such as oats or barley can be used to prevent erosion. Prairie seeds can be planted directly into the area planted with the temporary cover provided a reduced rate of cover crop (20lb per acre) is used and no additional cover crop will be included as part of the native seed mix.

SEEDING SPECIFICATIONS

5. Seeding of prairie vegetation can be initiated once soil temperatures reach 50 degrees Fahrenheit in the spring (generally around May 15th). Spring seeding can be conducted through June 30th. Fall dormant seeding can also be conducted from October 15th until frozen ground in the fall. Frost seeding can be conducted during November or March when there is less than four inches of snow on the ground and temperatures are above freezing. Project planning and design staff must provide written approval to conduct seeding outside of the recommended time periods.

6. The seeding contractor is responsible for distributing seed across the entire project area as specified in the project plan.

7. A native seed drill with boxes for different sized seed (such as a Truax or Trillion type seeder) or a broadcast seeder should be used for seed installation. If a broadcast seeder is used, the contractor must ensure an even distribution of seed across the entire site and follow the application by raking, rolling or other methods to ensure that there is sufficient seed to soil contact.

8. If hydroseeding will be conducted where broadcast seeding is required conduct seeding by applying seed with only water first before placing Hydraulic Erosion Control Products (hydro-mulching). The solar arrays must be protected using methods including appropriate shields, covers and avoidance measures. Accidental overspray must be cleaned up at the time of installation.

9. Apply certified weed free straw mulch (type 3) over the seeded areas and disc anchor where possible except where erosion control blanket or other erosion control devices are used as defined in the erosion control specifications.

10. Use temporary erosion control devices (sediment logs, silt fence) as needed to prevent erosion prior to and during seed establishment.

11. If a companion cover crop is not included with specified seed mixes for the project include a cover crop of oats at a rate of 20lb. per acre.

MANAGEMENT SPECIFICATIONS

1. Monitoring of the site's vegetation is required three times a year during the first three years (June, July, August) of the project as vegetation establishes and then twice a year (June and September) each year in following years to determine maintenance needs beyond those included in these specifications.

2. Year 1 Maintenance - During the first growing season vegetation in the seeded areas must be mowed at a raised height (>5") every two weeks or as vegetation reaches one foot tall until September 30th with a flail type mower or stalk chopper that will help prevent the smothering of native plant seedlings. Mowing to a height shorter than 5" can damage native vegetation. Hand held trimming equipment may be needed for areas under solar arrays. Herbicide should

be used minimally and only as a spot-treatment during the first year as native plant seedlings will be susceptible to overspray.

3. Year 2 Maintenance - Spot treat or hand pull any invasive species or noxious weeds that are starting to establish. In some cases it may be beneficial to spot mow weeds to prevent them from developing seed and then treating them with herbicide later in the season after they have a chance to re-grow.

4. Year 3+ Maintenance - Spot treat or hand pull any invasive species or noxious weeds that are starting to establish. In some cases it may be beneficial to spot mow weeds to prevent them from developing seed and then treating them with herbicide later in the season after they have a chance to re-grow. After two growing seasons flail mow (or mow by using hand held equipment as needed) native vegetation in May each season. Do not mow earlier as mowing may impact pollinators that overwinter in plant stems or at the base of vegetation.

5. Use spot-herbicide treatments only for treatment of invasive species and noxious weeds. Avoid overspray of herbicide, and only use herbicide for targeting noxious weeds or non-native plants that will inhibit the growth of native species.

6. Any areas over 100 square feet with sparse establishment (less than one native plant every 1.5 feet on average) after the first full growing season will require re-seeding using the original seed mixes specified for the project.

7. The seeding will be successfully established when the area has a 90% aerial coverage of native plant species.

8. If wildflower diversity decreases over time and the project is no longer meeting Habitat Friendly Solar standards use inter-seeding of wildflowers to reestablish forb diversity. Grazing with an approved management plan or prescribed burning with an approved burn plan and experienced contractors can also be used as a way to maintain flower diversity.