Attachment K

WOODRIDGE SOLAR FACILITY
VEGETATION MANAGEMENT PLAN

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1. Vegetation Management Goals and Objectives

The proper establishment, ongoing maintenance, and long-term management of vegetation in the landscape is key to soil stabilization, sustaining the ecological and aesthetic functions of the design, and reducing maintenance costs. To that end, this Vegetation Management Plan (VMP) has been prepared to guide successful stewardship of the Woodridge Solar Facility. It has been prepared in consultation with Monarch Vegetation Services, Inc. and Ernst Conservation Seeds.

Goals and Objectives

The Vegetation Management Plan for the Woodridge Solar Facility addresses the following project goals:

- **Mitigate the visual impact of the facility along its perimeter with a vegetative buffer** by retaining existing vegetation to the greatest extent possible and planting vegetative buffer where existing vegetation does not sufficiently screen the Facility from view.
- **Establish a robust groundcover layer that stabilizes the site, reduces erosion, and provides ecological benefits** by using native vegetation.
- **Ensure the long-term health of desirable vegetation and reduce long-term maintenance costs** through a proactive and timely approach to management, including the effective control and removal of invasive and other undesirable plant species.

Each of these goals is addressed in methodology described in the sections that follow.

VA Pollinator-Smart Scorecard

The Virginia Pollinator-Smart Solar program's Comprehensive Manual served as a reference for the vegetative management plan. The manual outlines site conditions and constraints that impact the suitability of a site for pollinator habitat and promotes best management practices for vegetative management to support pollinators. While a VMP is not required to achieve Pollinator-Smart Solar certification, an approved VMP is a significant component of the Scorecard solar site scoring and evaluation process. Further, as a blueprint for Pollinator-Smart re-vegetation activities, the information in the VMP can be used to streamline the remaining steps in the program (e.g., installation and monitoring). Therefore, the creation of this VMP is an important step in achieving certification under the Virginia Pollinator-Smart Solar program, if certification is pursued. This project commits to achieving VA Pollinator-Smart Certification, barring external market factors prohibiting the cost of plants and materials between approval and construction. See Appendix A for a draft Pollinator Scorecard indicating credit goals for VA Pollinator-Smart certification.

Project Overview

Location

The Woodridge Solar Facility (hereafter referred to as "the Facility") is a proposed utility-scale solar facility to be located south of Charlottesville and west of Woodridge in Albemarle County, Virginia. The project is situated in a rural, agrarian area of gently rolling hills and a mixed land cover of mostly agricultural fields interspersed with large patches of woodlands. The limits of disturbance, (hereafter referred to as "The Project Area") are bisected by Secretary's Road. They are bound on the east by Jefferson Mill Road and Black Branch Farm Road (private road), and on the west by Eyeland Drive and Courtenay Glen Way.

Project Area

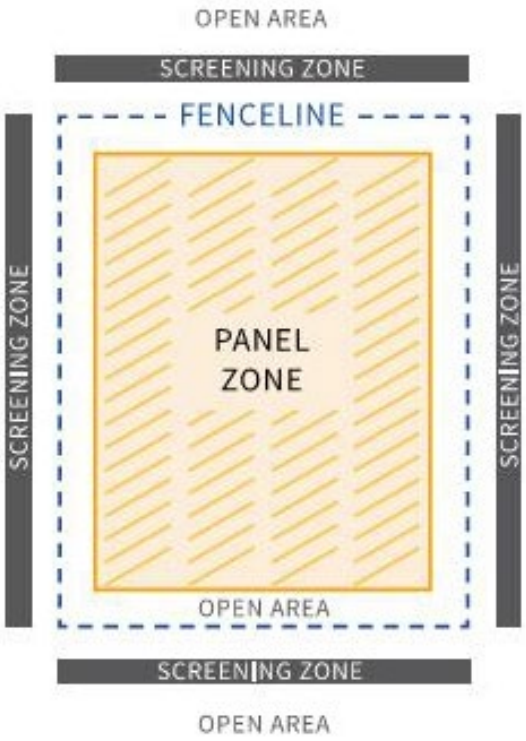
The Project Area is split into multiple large, contiguous sections that together total 1,515 acres. For the purposes of the Vegetation Management Plan, the Project Area is divided into three management zones: Open Area, Panel Zone (containing ground-mounted photovoltaic arrays), and Screening Zone. These areas are defined and illustrated below:

Open Area: Any area beyond the panel zone, within the property boundary.

Panel Zone: The area underneath the solar arrays, including inter-row spacing.

Project Area: Open Area + Panel Zone + Screening Zone.

Screening Zone: A vegetated visual barrier.



Source: Virginia Pollinator-Smart/Bird Habitat Scorecard

A portion of the Open Area will be designated as Conserved Open Space as defined under Virginia Stormwater Management Program. The maintenance of this area will fall under the same management practices as the Open Area, but the installation process will differ in order to meet Virginia Department of Environmental Quality (DEQ) requirements.

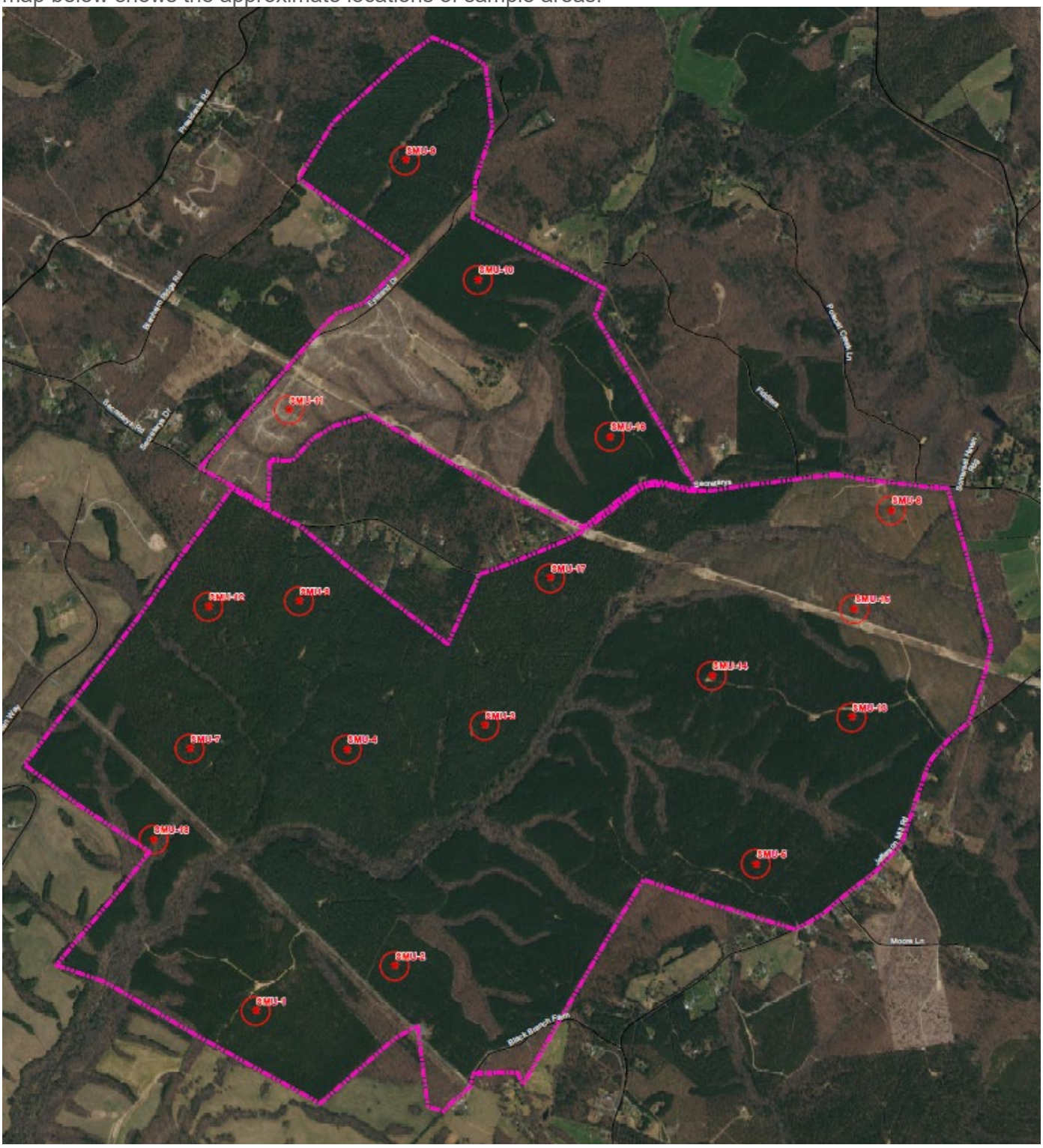
2. Existing Conditions

An existing conditions inventory and analysis has been compiled during the SUP application process for this project. The following is a concise summary of the site's context and existing conditions as of September 2022.

Topography, Hydrology, and Soils

The site's rolling terrain is indicative of its location in Virginia's Piedmont physiographic region. Small streams feed Turkey Run, which runs through the center of the site and drains into the Hardware River to the south, which then feeds the James River downstream. Soil types found on site are predominately silt loams of varying degrees of slope. The National Resources Conservation Service (NRCS) classifies this land as prime farmland, farmland of statewide importance (farmland that does not meet the criteria for prime farmland, but that may be farmed with high yields when managed according to acceptable farm methods), and areas that are not prime farmland. See sheets C3.1-C4.0 for location of existing natural features.

18 sample points (red dots) represent the approximate center of a sampled area. Each composite sample is made up of 10 combined soil cores from within each 200’ radius. Soils were sampled in September 2022. The map below shows the approximate locations of sample areas.



Soil tests found that the soil pH across the site ranged from 4.1 to 5.0, indicating that the soils are extremely to strongly acidic. In previously farmed areas, decaying organic matter and oxidation of fertilizers can contribute to acidic soils. These soils can have high concentrations of soluble minerals that can impair plants' nutrient uptake and thus establishment of new plant communities.

The CEC value (cation exchange capacity) is another indicator of soil health. CEC values below 12 indicate that the soil is considered "nutrient deficient" and will struggle to effectively uptake nutrients from fertilizer applications unless the soil is amended. The CEC values across the site ranged from 2.0-5.4. Strongly acidic soils typically have low CEC values.

Amending the soil through the application of lime is a simple and relatively inexpensive procedure that will raise the pH and thus CEC into ranges will promote nutrient uptake, allow for effective fertilizer treatment, and ultimately more successful plant establishment. See Appendix B for full soil test results and soil amendment recommendations.

Land Use and Existing Vegetation

The site's land use for the past 80 years has been dominated by industrial silviculture. Referencing aerial photography, land use in the Project Area appears to have remained consistent in the past 25 years. The wooded areas of the site are comprised of loblolly pines. Proposed land disturbance and grading necessitate stockpiling of topsoil and soil remediation prior to revegetation. Current conditions inform the methods for site preparation for the proposed groundcover.

Open Areas

A large portion of the open areas of the site has been in recent industrial silviculture production. It has been cleared for timber production. It is not unlikely that noxious weeds are present in these areas. Careful preparation of the topsoil stockpiled from these areas—namely removal of invasive species and noxious weeds before removal of the topsoil itself—is necessary for creating soil conditions conducive to establishing the desired groundcover and long-term management of the site.

Wooded Areas

The wooded areas of the site are comprised mostly of loblolly pines, serving as riparian buffers for existing hydrologic features and areas of pine plantation. This vegetation will be preserved 1) in wetland and buffers adjacent to streams and 2) in sections of the Screening Zone designated as "Retained Existing Vegetation." To count towards buffer requirements, a 100-foot wide swath of existing vegetation will be maintained where credited for screening. Careful preparation of the topsoil stockpiled from these areas—namely the removal of woody material like woodchips—is necessary for creating soil conditions conducive to establishing groundcover. Failure to remove woody refuse after tree removal threatens nitrogen levels critical to the establishment of proposed herbaceous vegetation.

3. Vegetation Management Methods

There are two types of plantings proposed on site—a vegetative buffer and groundcover—as well as preservation of existing vegetation for use in the buffer and areas of undisturbed groundcover in the Open Area and Screening Zone outside of the fenced areas. This section addresses the specific establishment and management required for these different vegetation types and general management methods. Schedules for maintenance and management activities are described in more detail in the "Project Schedule" section.

Establishment and Management

The landscaping will be established and managed to achieve its intended effect for the duration of the facility's operation. Particular attention is needed to the Establishment Period over the first three years following planting; this period is addressed in detail later in this section and in the "Project Schedule" section. The contractor will be responsible for ensuring the survival of plant material through the warranty period, and the buffer will be maintained in good condition until the facility has been decommissioned and removed. Plant material will be replaced as necessary.

Vegetative Buffer Types and Plant Selection

Buffer Types

A vegetative buffer will wrap the entire perimeter of the Project Area in order to mitigate the visual impact of the facility. There are two main types of screening:

- **Proposed Planting Strip** is planned in areas where the array may be most visible and where existing vegetation does not already exist to adequately screen the array in its own right. This screening type consists of a 20 foot wide planting strip. The planting strip contains two rows of evergreen trees and two rows of shrubs within the property setback. The rows are planted in a staggered formation for visual interest, and the species/cultivars of trees are varied every 100 linear feet to avoid a monotonous appearance along long stretches of the Project Area perimeter. See sheet C6.0 for location of proposed planting strip. See sheet C6.8 for vegetative buffer planting template and recommended buffer plant list.

- **Retained Existing Vegetation** will be used as a part of the buffer wherever it adequately screens the Facility from view from outside of the Project Area. The use of existing vegetation and natural screening is the preferred screening type and has been designated wherever possible. See sheet C6.0 for location of existing vegetation to be retained.

Plant Selection

The recommended species and cultivars were selected based on their suitability to meet the screening goal and their appropriateness for the site. Factors used to make these selections include:

- **Hardiness zone:** the selected vegetation is classified as hardy in USDA Hardiness Zone 7a, which is the designation for the project site.

- **Soil needs:** the selected vegetation will grow in the soil conditions as described in Appendix B
- **Drought tolerance:** the selected vegetation is expected to sustain temporary drought conditions.
- **Native or regionally adapted status:** the selected vegetation is identified as native to Albemarle County, Virginia (by the Virginia Department of Conservation and Recreation) or, if non-native, have been deemed to be regionally adapted and well-suited for the project growing conditions.
- **Availability:** the selected vegetation is generally available from regional nurseries and seed providers, including Monarch Vegetation Services and Ernst Conservation Seeds, in coordination with whom this plan was prepared.

- **Pollinator Suitability:** per the VA Pollinator-Smart Scorecard, the selected seed mixes for the screening, open, and panel zones includes Solar Native Plant Finder species

Groundcover Types and Seed Selection

Seed Mix Selection and Sources

Seed mixes were selected to meet the project goals and for suitability with the project infrastructure, namely the photovoltaic arrays. Other non-noxious, non-invasive species may be added to seed mixes if desired or required. Groundcover on site will comprise the following components:

- **Open Area:** The Open Area within the fenced area of the site, surrounding the Panel Zone, will be seeded with new groundcover since it will have been largely disturbed. A portion of the Open Area outside of the fence is designated as Conserved Open Space; it will not be graded, but it must be revegetated with new groundcover per DEQ requirements for stormwater runoff reduction. Most of the remaining portion of the Open Area outside of the fenced area will not be disturbed, except for temporary construction facilities—including a road and laydown area—which will be removed and reseeded. In any undisturbed areas, no new groundcover is planned (unless invasive species or noxious weeds are later discovered on site and specific areas need to be revegetated).

  The entirety of the Open Area to be seeded be seeded with a *Solar Pollinator Buffer Seed Mix.* Other non-noxious, non-invasive wildflowers may be added to this mix if desired or required.

- **Panel Zone:** The entirety of the Panel Zone will be seeded with a *Solar Farm Seed Mix* that contains native and naturalized grass species and provides some pollinator benefit. This mix can also support sheep grazing, if desired. Other non-noxious, non-invasive, low-growing wildflowers may be added to this mix if desired or required.

- **Screening Zone:** The Screening Zone will be primarily vegetated with retained existing vegetation or the proposed buffering screening types. Each tree will be mulched and most of the remaining groundcover within the landscape buffer will consists of the existing groundcover.

Seed mixes with their complete list of constituents are included on sheet C6.8.

Integrated Vegetation Management (IVM) and Adaptive Management

An overarching goal for management is reducing maintenance over time. Within the groundcover layer of native and naturalized grass species, the creation of a largely self-sustaining ecological community is optimal. Integrated Vegetation Management (IVM) is a useful approach to achieving this goal; it is "based on the assumption that proactive vegetation management using targeted herbicide treatment and/or mechanical removal is an activity that not only controls pest species, but also minimizes its own use over time."[1] Appropriate management of pests and invasive species and noxious weeds are key components of this approach and are described below. IVM incorporates adaptive management, which responds to "direct feedback from project performance to guide management decisions" over time.[2] Essentially, the practices described within this Vegetation Management Plan are the best estimation of the appropriate practices at the time of project planning and design, but ongoing maintenance and management, including monitoring the site regularly, will inform and guide modification of these practices. See Virginia DCR and DEQ's *Pollinator-Smart Comprehensive Manual* for more information on this approach.

Integrated Pest Management (IPM)

Integrated Pest Management (IPM) is an approach that establishes thresholds for acceptable pest pressure and using a hierarchy of preferred methods of control, prioritizing those that are less intensive or risky first—for

[1] Virginia DCR and DEQ, *Pollinator-Smart Comprehensive Manual*, (2020), 31.
[2] Ibid., 32.

instance, using beneficial predatory insects to control insect pests before resorting to chemical insecticide. An IPM approach should be employed to develop appropriate pest control strategies needed on site, minimize the overall use of chemical control methods, and reduce the maintenance effort needed to address pest pressure. Key to this approach is taking a regular inventory of pest pressure to remain aware of problematic species and the extents of their presence and risk to vegetation on site. The use of growing degree-days is recommended for scheduling the most effective intervention times for controlling pests.

Hand removal of pests and vegetation that is diseased or damaged is generally preferred to chemical applications. Appropriate biological controls, such as the use of beneficial predators, are also recommended. The use of herbicides for perimeter landscaping shall be minimized to the greatest extent practicable. Herbicides are recommended in this plan for the groundcover establishment and management, especially during the Establishment Period. For long-term management, all pesticides, including herbicides, should be used only to target specific problematic species as needed. See “Project Schedule” section for more information.

If assistance is needed in making a determination about a problem and the appropriate solution, consult a Virginia Certified Horticulturalist, ISA Certified Arborist, or Albemarle County’s office of the Virginia Cooperative Extension. Only VDACS Certified Commercial Pesticide Applicators should apply pesticides.

Invasive Plant and Noxious Weed Management

Invasive plants typically refer to undesirable non-native species that grow quickly and disrupt other plant communities and ecosystems. Noxious weeds typically refer to plants that can directly or indirectly injure or cause damage to agricultural or natural resources. If left unmanaged, noxious weeds and invasive plants can impede on the establishment and long-term viability of native plantings. Invasive species and noxious weeds should be monitored and removed and controlled within the entirety of the Project Area, but priority should especially be given to all newly planted areas on the site.

The appropriate means for management is dependent on a combination of factors: the species present, the volume of plants, the habitat where they are located, any functions that these species are currently providing (such as slope stabilization), the potential damage to the surrounding native and non-invasive/noxious species that certain management strategies pose, the maintenance season, the acceptable thresholds for certain species on site, and the proposed frequency of control measures. Timing of removal and control measures is included in the “Project Schedule” section. Removal and control strategies will be implemented to begin management prior to seeding proposed groundcover. General recommendations are provided on sheet C6.8. The following includes the general recommendations provided on sheet C6.8 as well as additional recommendations for invasive plant and noxious weed management.

General Recommendations

General recommendations include the following:

- For new tree plantings, remove invasive plants and noxious weeds by hand, in a circle at least three feet in diameter, to make room for planting pits.
- If a weed or invasive plant is providing a functional value such as slope stabilization, replace it with a plant that will provide functional value equal to or greater than that of the existing plant.
- Use the proper equipment for the type of control measure. These include but are not limited to:

  - Tractor mounted bush hog for heavy mowing (minimum plant height equal to or greater than three (3) to four (4) inches) and high mowing (minimum plant height equal to or greater six (6) to eight (8) inches).
  - Tractor-mounted, truck-mounted, trailer-counted, or ATV-mounted sprayer for broadcast applications.
  - Backpack style sprayer or other device for spot spraying, appropriate to the class of pesticide.
  - Areas under and directly adjacent to solar arrays may require use of hand-held equipment.
  - Grazing by ruminants (usually goats or sheep) where practical and appropriate to plant species present. Areas where Fuzz and Buzz seed mixes are specified are designed to be suitable for sheep grazing.

- Mechanical methods:
  - Mowing and mechanical means should be used as the primary method of managing vegetation growth. Hand removal and seasonal cutbacks are the preferred methods for controlling problematic species. The specific means of removing (e.g. pulling, cutting) must factor in what is most effective but also least disruptive to the site, particularly when the location is on a slope.
  - The use of a pull-behind brush hog or hand-held string trimmer can be used for high-mowing of grasses and forbs at 6 to 8 inches height to effectively control weeds without negatively impacting the growth of the native plants.
  - If and where possible, shrubs and woody vines should be removed by their root systems. Alternatively, these plants can be pruned at ground level.
  - If possible, problematic plants with flowers or seeds will be removed and disposed of properly.

- Chemical methods:
  - The use of herbicides for perimeter landscaping shall be minimized to the greatest extents practicable. Herbicides must be used in accordance with their approved label, and the quantity of herbicides expected to be used annually for the Facility will be less than the amounts that generally were used in the open areas hosting the Facility during the 12 months prior to the start of construction.
  - Herbicides are recommended in this plan for the groundcover establishment and management, especially during the Establishment Period, in order to successfully establish the proposed groundcover. During long-term management, all pesticides, including herbicides, should be used only to target specific problematic species as needed.
  - The class of herbicide to be used will depend on problematic species in question.
  - Herbicide must not be applied when rainfall is expected within 48 hours or wind speeds exceed 10 mph.
  - Only VDACS Certified Commercial Pesticide Applicators or Registered Technicians working under direct supervision of a Commercial Applicator should apply chemical control treatments.

- Consult the reputable sources listed in the “Resources” section for specific tool and herbicide product selection for each plant targeted.

- Conduct regular inspections during site visits to monitor the presence of problematic species.

If assistance is needed in making a determination about a problematic species and the appropriate solution, consult a Virginia Certified Horticulturalist, ISA Certified Arborist, or the Albemarle County's office of the Virginia Cooperative Extension. Consult the latest USDA recommendations and resources for control measures, including the National Invasive Species Information Center (NISIC) and "A Management Guide for Invasive Plants in Southern Forests" from the U.S. Forest Service.

4. Monitoring

Monitoring procedures should be implemented to sustain and modify maintenance and management practices over time. Virginia DCR and DEQ's *Pollinator-Smart Comprehensive Manual* Chapter 6 and the *Pollinator-Smart Monitoring Plan* provides a detailed basis for monitoring best practices that can be used. The use of sample plots as described in the Pollinator-Smart Program manuals is an effective means of monitoring for utility-scale solar sites.

At a minimum, the following monitoring practices must be implemented on an annual or biennial basis:

- An inventory of health of buffer and groundcover plantings
- An inventory and mapping of invasive plants and noxious weeds
- A site assessment of current conditions and a report on appropriate action needed to address any issues affecting the health of the plantings and modifications needed to maintenance activities and management practices.
- Submission of the assessment and report to the Albemarle County Department of Planning and Zoning. This will include an updated inventory of invasive plants and noxious weeds.

Monitoring should be conducted over the lifetime of the project in order to effectively manage the control of invasive plant and noxious weed species.

Re-Vegetation Protocol

The best time to reseed and replant is generally in the fall and spring per the planting periods included in the planting specifications for the project. Replacement planting should match the original plantings or be approved by the project designers and consultants. If all of one species dies, consider an alternate plant selection, taking into consideration what plants have done well.

5. Project Schedule

The project schedule should be approached from the perspective of both long-term management covering the life of the project as well as ongoing seasonal maintenance activities that will evolve over the life of the facility. This section sorts the management of the project into phases—site preparation, planting, initial establishment and management, and long-term management—and includes guidance for regular maintenance.

General planting, establishment, and maintenance guidance are included in the specifications and planting notes and details that are a part of the project construction documents. This plan references and builds on those directions. The overall goal for maintenance is to implement more intensive maintenance procedures during the Planting Period and Establishment Period (one to three years after planting) in order to reduce long-term maintenance requirements.

Site Preparation

Prior to planting, it is best to complete an inventory of invasive plants and noxious weeds and develop a plan to manage these species. Remove and eradicate these species to the greatest extents possible prior to seeding or planting anything on site. See the “Invasive Plant and Noxious Weed Management” section for more detailed information.

Vehicles and other equipment will be excluded from those areas that have been prepared for planting to avoid soil compaction.

Based on soil test results from Waypoint Analytical, soil amendments are recommended prior to seeding in order to ensure establishment of proposed seed mixes. For both seeding and planting, the Planting Period is the time to apply fertilizer (such as compost), lime, and other soil amendments. See Appendix B for soil test results and soil amendment recommendations.

Planting Period

Detailed information on planting is included in the landscape specifications and notes and details in the project construction documents.

Key maintenance tasks include the following:

General

- Conduct invasive plant and noxious weed removal per instructions in the “Invasive Plant and Noxious Weed Management” section.
- Hand weed or spot spray herbicide to remove competition to new plantings.

Woody Vegetation

- For trees, remove top one-third of burlap and all wiring. Remove tags and labels from plants.
- Prune trees at planting to remove dead, diseased, or damaged branches.
- In addition to topsoil preparation, amend plantings per planting details.
- Mulch within two days of planting using a minimum of two-inch thickness at a two-and-a-half-foot radius around the tree trunk.
- Water adequately.

Groundcover

- Following initial implementation of noxious weed and invasive species management plan, prepare site soil conditions for seeding.
- Seed disturbed areas with a temporary mixture as needed to meet state regulations for erosion and sediment control (see C6.8 for recommended seed mixes). Seed promptly following completion of construction in order to reduce invasive species and weed growth and sediment run-off.1
- During the next suitable seeding period (spring or fall), sow groundcover to establish permanent vegetative cover. Optimal seed germination occurs after October 15 and before April 15. If seeding is conducted outside of optimal seed germination period, pair a seasonally appropriate temporary cover crop with the seeding to support erosion and sediment control, soil stabilization, and weed suppression during seed establishment. The seed mixture shall adhere to the acceptable mixtures specified on sheet C6.8 or Table 3.31-b of the Virginia Erosion and Sediment Control Handbook. Areas to be

seeded with primarily a fescue mix—the Solar Farm Seed Mix—should not require a cover crop at the time of permanent seeding unless permanent seeding is to take place in the fall to stabilize soils over the winter months.

- Use recommended seeding rates (specific to mixture) and proper seed packing for optimal germination and seed establishment. Drilling is recommended for seeding on most areas of the site, but areas beneath the panels will need to be broadcasted (which will require scarification of the soil as much as the panel construction allows access for). A warm season no-till drill is specified for drilling.
- Water adequately.
- Instructional signage should be placed around newly planted areas outside the fenced area as needed to keep visitors or maintenance staff from traversing over or mowing the seeded areas. Place the signs at 50-foot intervals around the perimeter of the planted areas.
- Only biodegradable soap and water, and no other chemicals, may be used to clean the surface of the solar panels in order to protect the soil and plantings.

Establishment Period – 1 to 3 years

This period is crucial to the long-term success of the plantings and will require the most active management. Particular attention to the site during this phase of management will provide for successful implementation of the landscaping plan and generally reduces requirements for intervention over time.

Key maintenance tasks include the following:

General

- Complete tasks as described in the “Annual Maintenance Schedule” section.
- Continue seasonal watering for the first year and as needed during periods of drought. Use of a watering truck is highly recommended.
- Hand weed regularly to remove competition to native plantings.
- Conduct invasive plant and noxious weed control per instructions in the “Invasive Plant and Noxious Weed Management” section.
- Soil testing and amending: Test every few seasons and respond according to the recommendations. This may include the addition of lime to adjust soil pH (this should be applied lightly as needed) and fertilizer (which should be applied lightly if at all).

Woody Vegetation

- Monitor trees support systems (staking) monthly to ensure correct placement in order to ensure proper tree growth. As tree mature and outgrow the staking, remove it. Remove any remaining tags and labels from plants within one year.
- Remulch seasonally or as needed.

Groundcover

- Monitor seeded areas to ensure that they are filling in over time. This is particularly important after the first full year of growth. Observe whether the plantings have weathered the first summer and have rooted in well. Seed, propagate or add additional plantings as needed to fill in patches without plants to avoid weeds filling the voids.
- Mowing and Spraying:

- Do not mow, prune, or deadhead except as described in the mowing schedule below and in the "Annual Maintenance Schedule" section.
- Mow and spot spray seeded areas seasonally to manage weeds and competition with the other plantings as well as spur the growth of the vegetation. This will expose the soil to more sunlight, prompting invasive and weed species found in the seed bank to germinate, which can then be spot sprayed before they reach a mature height.
- As the planting matures, it is best to mow outside of typical nesting periods for any wildlife present on site (typically between April and September).
- Mowing is recommended when vegetation has reached 2 to 2.5 feet tall. Per Woodridge Solar's operational standards for areas beneath the solar panels, 18 inches is the maximum vegetation height desired where the leading edge of the panels is 2 feet from the ground and 24 inches is the maximum vegetation height desired where the leading edge of the panels is 3 feet from the ground.
- Mow using a tractor-pulled or push-behind brush hog, depending on the location (beneath versus not beneath the panels).
- The yearly mowing and spraying regimen during the Establishment Period is as follows:
  - **Year 1: Mow twice (2x) and spot spray once (1x).** The first mowing will take place when much of the site has reached a height of 1.5 to 2 feet tall at which point it can be mowed down to about 1 foot tall. The second mowing can be done later in the growing season when temperatures cool down and before cool season invasive and weed species can produce seed.
  - **Year 2: Mow once (1x) and spot spray twice (2x).** Mowing will take place when much of the site has reached a height of 1.5 to 2.5 feet tall at which point it can be mowed down to about 1 foot tall. The seeded areas will begin to fill in after this point to shade out new invasive and weed species.
  - **Year 3: Mow twice (2x) and spot spray once (1x).** Mowing will take place when much of the site has reached a height of 1.5 to 2.5 feet tall at which point it can be mowed down to about 1 foot tall. A second spot spray will be scheduled in the second half of the growing season to kill invasive and weed species that may still try to germinate before the new vegetation can smother those weeds out.
- Include inspections of weed pressure during regularly scheduled site visits
- Additional mowing may be needed for invasive plant and weed control, but spot spraying of any weed clusters is preferred should issues arise.

- Only biodegradable soap and water, and no other chemicals, may be used to clean the surface of the solar panels in order to protect the soil and plantings.

Long-term Management – 3 years onward

Continue ongoing maintenance and management, including the tasks described in the "Annual Maintenance Schedule" section. For the long-term, the grasses and perennials in the groundcover layer should be allowed to naturalize with minimal to no management.

Key maintenance tasks include the following:

- Maintain the buffer and groundcover layer actively as needed until plants have matured and the buffer and groundcover layer have reached fully functional condition.
- Evaluate plant survival on an annual basis.

- Monitor the overall composition of the plantings as they naturalize to ensure that they represent the general species composition originally intended. Manage, remove, and replace vegetation as needed to sustain the buffer and groundcover layer.
- Mow seeded areas once annually in late winter or early spring or late fall after vegetation has gone dormant following the same protocol as during the Establishment Period. The vegetation can be chopped to prevent thatch and ground smothering. Additional mowing may be needed for invasive plant and weed control, but spot spraying of any weed clusters is preferred should issues arise.
- Repair damage as needed to prevent irreparable harm to plants, and in the case of trees, reduce hazards to people if plants are located adjacent to where people would be accessing site facilities.
- Conduct invasive plant and noxious weed control per instructions in the "Invasive Plant and Noxious Weed Management" section.
- Only biodegradable soap and water, and no other chemicals, may be used to clean the surface of the solar panels in order to protect the soil and plantings.

This plan is suitable for the lifespan of the project with reasonable modifications as needed based on ongoing management activities and changes that occur on site, incorporating Integrated Vegetation Management goals and Adaptive Management principles.

Annual Maintenance Schedule

Establish regular maintenance inspections on either a minimum of a quarterly/seasonal basis or a bimonthly basis. This should include an assessment of pest, disease, and weed pressure. Use a checklist or inspection form to complete maintenance tasks. Maintenance inspection forms or reports should be shared with the Albemarle County Department of Planning and Zoning.

Maintenance tasks have been listed here by season given the optimal times for planting, pruning, and other activities. This list draws on the "Sample Conservation Landscaping Calendar" for seasonal maintenance in the Chesapeake Conservation Landscaping Council's "Conservation Landscaping Guidelines: The Eight Essential Elements of Conservation Landscaping."

Winter

Key maintenance tasks include the following:

- Review and revise management plans for the upcoming year based on observations from the prior year.
- Prune as necessary and seasonally appropriate.
- During the Establishment Period, Years 1, 2, and 3: During late winter or early spring, mow seeded areas when vegetation grows to 18 inches beneath the panels or 2 to 2.5 feet elsewhere. Mow to a height of 12 inches. After the Establishment Period, this should become the once-a-year mowing or an as needed mowing.

Spring

Key maintenance tasks include the following:

- Weed manually or spot spray to treat weeds, ideally once per month.
- During the Establishment Period, Years 1, 2, and 3: *If not done in winter*, mow seeded areas when vegetation grows to 18 inches beneath the panels or 2 to 2.5 feet elsewhere. Mow to a height of 12 inches.
- Water as needed, especially during periods of drought.

- Remove and dispose of diseased and damaged plant material, particularly those that contain or could contain pests.

Summer

Key maintenance tasks include the following:

- Weed manually or spot spray to treat weeds, ideally once per month.
- Water as needed, especially during periods of drought.
- Remove and dispose of diseased and damaged plant material, particularly those that contain or could contain pests.

Fall

Key maintenance tasks include the following:

- During the Establishment Period, Years 1 and 3: *if not done in winter*, mow seeded areas when vegetation grows to 18 inches beneath the panels or 2 to 2.5 feet elsewhere. Mow to a height of 12 inches. The second or last mowing should be in October.
- Remove and dispose of diseased and damaged plant material, particularly those that contain or could contain pests.
- Leave groundcover alone for the purposes of creating seasonal interest in the landscape and winter habitat and food sources for wildlife. Do not dead-head or cut down standing vegetation, including grasses and forbs. An exception is any species that seeds aggressively; in that case, deadheading can prevent these plants from self-sowing. If a decision is made to cut down any vegetation, lay the clippings on the ground to serve as mulch (except for aggressive, noxious, or invasive plants, which should be properly removed from the site).
- Identify problem areas and challenges from the prior growing season to incorporate into maintenance and management plans for the upcoming season. Plan out and schedule specific maintenance tasks.

These seasons overlap as far as timing for different maintenance tasks. The timing for various tasks differs between plant species based on their individual phenology—when they bud, flower, leaf out, and so on. The following calendar shows when these seasonal tasks should generally take place, but attention should be paid to the best time to complete specific tasks, such as pruning, for individual species.

General Seasonal Maintenance Calendar

Month	Season			
	Winter	Spring	Summer	Fall
January				
February				
March				
April				
May				
June				
July				
August				
September				
October				

November				
December				

6. Resources

Websites

Ernst Seeds Resource Center – https://www.ernstseed.com/resources/

USDA National Invasive Species Information Center (NISIC) – https://www.invasivespeciesinfo.gov/

Virginia Invasive Plant List – https://www.dcr.virginia.gov/natural-heritage/invsppdflist

Virginia Noxious Weed List – https://law.lis.virginia.gov/admincode/title2/agency5/chapter317/section20/

Virginia Pollinator-Smart Program – https://www.dcr.virginia.gov/natural-heritage/pollinator-smart

Publications

"A Management Guide for Invasive Plants in Southern Forests," U.S. Forest Service, 2015. https://www.srs.fs.fed.us/pubs/gtr/gtr_srs131.pdf

"USDA-NRCS Conservation Practice Standard: Herbaceous Weed Treatment," USDA Natural resources Conservation Service, 2017 – https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1254947.pdf

Virginia Pollinator-Smart Program materials – https://www.dcr.virginia.gov/natural-heritage/pollinator-smart

- *Pollinator-Smart Comprehensive Manual*
- *Pollinator-Smart Program Monitoring Plan*
- *Virginia Pollinator-Smart/Bird Habitat Scorecard*

7. Appendix A: Draft VA Pollinator-Smart Scorecard (See attached)

8. Appendix B: Soil Analysis Report (See attached)

VERSION 2.0b

VIRGINIA POLLINATOR-SMART/ BIRD HABITAT SCORECARD

Established Solar Sites

VEGETATION

PANEL ZONE

1. Percent of overall existing cover in the panel zone vegetated with Solar Native Plant Finder species (**max 15 pts**)
   - ○ <5 percent (0)
   - ◉ 5-25 percent (5)
   - ○ 26-50 percent (8)
   - ○ 51-75 percent (10)
   - ○ greater than 75 percent (15)
2. Native grass diversity in panel zone (**max 5 pts**)
   - ◉ 1 or fewer species (0)
   - ○ 2 species (2)
   - ○ 3 or more species (5)

OPEN AREA

3. Percent of overall existing cover within the open area vegetated with Solar Native Plant Finder species used by pollinators (**max 15 pts**)
   - ○ <5 percent (0)
   - ○ 5-25 percent (5)
   - ○ 26-50 percent (8)
   - ○ 51-75 percent (10)
   - ◉ greater than 75 percent (15)
4. Total *number* of Solar Native Plant Finder species found within the open area (**max 15 pts**)
   - ○ 9 or fewer species (0)
   - ○ 10-19 species (5)
   - ◉ 20-29 species (8)
   - ○ 30-39 species (10)
   - ○ 40 or greater species (15)
5. Within the open area, seasons with at least three (3) Solar Native Plant Finder species in flower (**max 10 pts**) **[CHECK ALL THAT APPLY]**
   - ☐ Spring (March-May) (2)
   - ☑ Early Summer (June-July 15) (2)
   - ☑ Late Summer (July 15-August) (4)
   - ☑ Fall (September-November) (2)

SCREENING ZONE

6. Percent of overall existing cover in the screening area vegetated with Solar Native Plant Finder species (**max 15 pts**)
   - ○ <5 percent (0)
   - ○ 5-25 percent (5)
   - ○ 26-50 percent (8)
   - ○ 51-75 percent (10)
   - ◉ greater than 75 percent (15)

SITE MANAGEMENT

PLANNING AND MAINTENANCE PRACTICES

7. **[CHECK ALL THAT APPLY]** (**max 25 pts**)
   - ☑ Site has an Approved[1] Vegetation Management Plan (15)
   - ☑ Vegetation monitoring[2] conducted annually (5)
   - ☑ Invasive species mapping and control conducted annually (5)
   - ☐ On-site use of insecticide (excluding safety/hazard spot treatment around buildings/electrical boxes, etc.) (-40)

INVASIVE SPECIES RISK

8. **[CHECK ALL THAT APPLY]** (**-20 pts possible**)
   - ☐ Combined cover of tall fescue across all three zones >10 percent (-10)
   - ☐ Combined cover of species on DNH Virginia Invasive Plant Species List across all three zones >10 percent (-10)

PUBLIC ENGAGEMENT AND RESEARCH

9. **[CHECK ALL THAT APPLY]** (**max 10 pts**)
   - ☐ 2 or more legible and accessible signs identifying pollinator and bird habitat present on-site (2.5)
   - ☐ Accessible bench and educational display present on-site (2.5)
   - ☐ Research collaboration with college, university, school, or research institute (5)

POLLINATOR/BIRD NESTING HABITAT ON-SITE

10. **[CHECK ALL FEATURES THAT ARE PRESENT ON-SITE]** (**20+ pts**)
    - ☐ Existing bare ground patches one square foot or larger, with undisturbed and well-drained soil (2)
    - ☑ Preserved upland forested communities or forest edge habitat that includes native flowering shrubs and young trees (8)
    - ☐ Cavity nesting sites (e.g. dead trees, snags, fallen logs, shrubs, plants with pithy-stemmed twigs such as native sumacs, roses, or blackberries) (2)
    - ☐ Created bee/bird nesting habitat features (e.g., boxes, tunnels, etc.) (0.2 pts per feature)[3] # feature: **x 0.2 = 0 pts.**
    - ☑ Preserved wetlands communities/presence of clean water source(s) (8)

[1] See guidelines for development of a Vegetation Management Plan here. Vegetation Management Plans for solar sites are approved by the Virginia Pollinator-Smart Solar Industry Review Board. Vegetation Management Plans may be submitted here.

[2] Vegetation monitoring should be conducted in accordance with the methods described here. For the purposes of compliance, monitoring is only required every two years; therefore, annual monitoring is incentivized with additional points in the Scorecard.

[3] Up to a maximum of 10 points (50 features)

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SOIL ANALYSIS REPORT

Analytical Method(s): SMP Buffer pH Mehlich 3 Loss On Ignition Water pH

Date Received: 09/06/2022 **Date Of Analysis:** 09/07/2022 **Date Of Report:** 09/09/2022

Sample ID / Field ID	Lab Number	OM	W/V	ENR	Phosphorus			Potassium	Magnesium	Calcium	Sodium	pH		Acidity	C.E.C
		% Rate	Soil Class	lbs/A	M3 ppm Rate	ppm Rate	ppm Rate	K ppm Rate	Mg ppm Rate	Ca ppm Rate	Na ppm Rate	Soil pH	Buffer Index	H meq/100g	meq/100g
SMU-1	20207	4.3 M		131	10 VL			50 L	47 M	244 L		4.7	6.76	1.7	3.4
SMU-2	20208	4.4 M		135	5 VL			50 L	29 M	174 L		4.8	6.82	1.1	2.3
SMU-3	20209	4.1 M		127	8 VL			74 M	52 M	296 L		4.9	6.77	1.6	3.7
SMU-4	20210	3.5 M		117	3 VL			35 VL	22 L	116 VL		4.5	6.81	1.2	2.1
SMU-5	20211	3.1 M		109	3 VL			43 L	23 L	99 VL		4.3	6.77	1.6	2.4

Sample ID / Field ID	Percent Base Saturation					Nitrate	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Soluble Salts		
	K %	Mg %	Ca %	Na %	H %	NO_3 N ppm Rate	S ppm Rate	Zn ppm Rate	Mn ppm Rate	Fe ppm Rate	Cu ppm Rate	B ppm Rate	SS ms/cm Rate		
SMU-1	3.8	11.5	35.9		50.0										
SMU-2	5.6	10.5	37.8		47.8										
SMU-3	5.1	11.7	40.0		43.2										
SMU-4	4.3	8.7	27.6		57.1										
SMU-5	4.6	8.0	20.6		66.7										

Values on this report represent the plant available nutrients in the soil. Rating after each value: VL (Very Low), L (Low), M (Medium), H (High), VH (Very High). ENR - Estimated Nitrogen Release. C.E.C. - Cation Exchange Capacity.

Explanation of symbols: % (percent), ppm (parts per million), lbs/A (pounds per acre), ms/cm (milli-mhos per centimeter), meq/100g (milli-equivalent per 100 grams). Conversions: ppm x 2 = lbs/A, Soluble Salts ms/cm x 640 = ppm.

This report applies to sample(s) tested. Samples are retained a maximum of thirty days after testing.

Analysis prepared by: Waypoint Analytical Virginia, Inc.

by: Pauric Mc Groary

Pauric Mc Groary Ph.D., CPAg

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Grower: Woodridge Solar

Farm: Woodridge

Date Received: 09/06/2022
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SOIL FERTILITY RECOMMENDATIONS

Sample ID Field ID	Intended Crop	Yield Goal Optimum	Lime Tons/A	Nitrogen N lb/A	Phosphate P_2O_5 lb/A	Potash K_2O lb/A	Magnesium Mg lb/A	Sulfur S lb/A	Zinc Zn lb/A	Manganese Mn lb/A	Iron Fe lb/A	Copper Cu lb/A	Boron B lb/A
SMU-1	CRP	1	1.5	30	100	100	14						
SMU-2	CRP	1	1.0	30	130	100	21						
SMU-3	CRP	1	1.5	30	130	60	12						
SMU-4	CRP	1	1.0	30	150	140	24						
SMU-5	CRP	1	1.5	30	150	120	24						

Comments:

"The recommendations are based on research data and experience, but NO GUARANTEE or WARRANTY expressed or implied, concerning crop performance is made."

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		% Rate	Soil Class	lbs/A	M3 ppm Rate	ppm Rate	ppm Rate	K ppm Rate	Mg ppm Rate	Ca ppm Rate	Na ppm Rate	Soil pH	Buffer Index	H meq/100g	meq/100g
SMU-6	20212	7.1 VH		150	4 VL			62 L	41 L	279 L		4.6	6.70	2.3	4.2
SMU-7	20214	5.0 H		146	4 VL			59 L	31 L	141 VL		4.4	6.75	1.8	2.9
SMU-8	20215	3.3 M		113	3 VL			48 L	31 M	109 VL		4.6	6.82	1.1	2.0
SMU-9	20216	3.6 M		118	10 VL			89 M	43 M	247 L		5.0	6.80	1.3	3.1
SMU-10	20217	8.0 VH		150	4 VL			50 L	30 L	172 VL		4.4	6.73	2.0	3.2

Sample ID / Field ID	Percent Base Saturation					Nitrate	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Soluble Salts		
	K %	Mg %	Ca %	Na %	H %	NO_3 N ppm Rate	S ppm Rate	Zn ppm Rate	Mn ppm Rate	Fe ppm Rate	Cu ppm Rate	B ppm Rate	SS ms/cm Rate		
SMU-6	3.8	8.1	33.2		54.8										
SMU-7	5.2	8.9	24.3		62.1										
SMU-8	6.2	12.9	27.3		55.0										
SMU-9	7.4	11.6	39.8		41.9										
SMU-10	4.0	7.8	26.9		62.5										

Values on this report represent the plant available nutrients in the soil. Rating after each value: VL (Very Low), L (Low), M (Medium), H (High), VH (Very High). ENR - Estimated Nitrogen Release. C.E.C. - Cation Exchange Capacity.

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SMU-6	CRP	1	1.8	30	150	80	15						
SMU-7	CRP	1	1.5	30	150	100	19						
SMU-8	CRP	1	1.0	30	150	120	19						
SMU-9	CRP	1	1.0	30	100	40	14						
SMU-10	CRP	1	3.0	30	150	100	20						

Comments:

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		% Rate	Soil Class	lbs/A	M3 ppm Rate	ppm Rate	ppm Rate	K ppm Rate	Mg ppm Rate	Ca ppm Rate	Na ppm Rate	Soil pH	Buffer Index	H meq/100g	meq/100g
SMU-11	20218	6.2 H		150	6 VL			58 L	53 M	211 VL		4.6	6.73	2.0	3.6
SMU-12	20219	10.5 VH		150	6 VL			50 L	46 M	292 L		4.9	6.78	1.5	3.5
SMU-13	20220	6.2 H		150	4 VL			57 L	40 L	214 VL		4.5	6.72	2.1	3.6
SMU-14	20221	5.8 H		150	3 VL			52 VL	36 VL	198 VL		4.1	6.53	4.0	5.4
SMU-15	20222	9.0 VH		150	5 VL			43 VL	36 VL	226 VL		4.2	6.57	3.6	5.1

Sample ID / Field ID	Percent Base Saturation					Nitrate	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Soluble Salts		
	K %	Mg %	Ca %	Na %	H %	NO_3 N ppm Rate	S ppm Rate	Zn ppm Rate	Mn ppm Rate	Fe ppm Rate	Cu ppm Rate	B ppm Rate	SS ms/cm Rate		
SMU-11	4.1	12.3	29.3		55.6										
SMU-12	3.7	11.0	41.7		42.9										
SMU-13	4.1	9.3	29.7		58.3										
SMU-14	2.5	5.6	18.3		74.1										
SMU-15	2.2	5.9	22.2		70.6										

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SMU-11	CRP	1	1.8	30	130	100	12						
SMU-12	CRP	1	3.0	30	130	100	14						
SMU-13	CRP	1	1.8	30	150	100	15						
SMU-14	CRP	1	2.6	30	150	100	22						
SMU-15	CRP	1	3.0	30	130	120	22						

Comments:
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		% Rate	Soil Class	lbs/A	M3 ppm Rate	ppm Rate	ppm Rate	K ppm Rate	Mg ppm Rate	Ca ppm Rate	Na ppm Rate	Soil pH	Buffer Index	H meq/100g	meq/100g
SMU-16	20223	7.8 VH		150	2 VL			42 L	28 L	170 VL		4.4	6.73	2.0	3.2
SMU-17	20225	5.2 H		149	3 VL			105 H	44 M	235 L		4.8	6.77	1.6	3.4
SMU-18	20226	4.8 M		143	2 VL			99 H	33 M	149 L		4.8	6.82	1.1	2.4

Sample ID / Field ID	Percent Base Saturation					Nitrate	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Soluble Salts		
	K %	Mg %	Ca %	Na %	H %	NO_3 N ppm Rate	S ppm Rate	Zn ppm Rate	Mn ppm Rate	Fe ppm Rate	Cu ppm Rate	B ppm Rate	SS ms/cm Rate		
SMU-16	3.4	7.3	26.6		62.5										
SMU-17	7.9	10.8	34.6		47.1										
SMU-18	10.6	11.5	31.0		45.8										

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SMU-16	CRP	1	1.8	30	150	120	21						
SMU-17	CRP	1	1.5	30	150	0	14						
SMU-18	CRP	1	1.0	30	150	20	18						

Comments:
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