

Exhibit L-1

Microgrid Energy Ziegler Solar Garden Site

Integrated Noxious Weed Management Plan

November 2017

Prepared By:



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1. Overview

The Colorado Department of Agriculture (CDA) and Garfield County requires all landowners to prevent the spread of State Listed Noxious Weeds. This Noxious Weed Management Plan for the Microgrid Energy Ziegler Solar Garden Site has been developed on behalf of Microgrid Energy as part of their application to develop the 5.4 acre site in Silt, Colorado. Prior to development of this plan, the project area was inspected to assess site conditions, presence of noxious weeds, and other factors relevant to the weed management process. This plan was prepared by Mark Ray, a Qualified Supervisor (License #32504) with Habitat Management, Inc., a Licensed Commercial Pesticide Applicator (License #11318).

The Ziegler Solar Garden Site is located east of 30985 US-6 in Silt, Colorado. The site is a former pasture with a diversion ditch running north-south through the center. Based on Habitat Managements survey on October 30, 2017 the vegetation at the site consists of primarily Smooth Brome (*Bromus inermis*), Western wheatgrass (*Pascopyrum smithii*), Rabbit Brush (*Ericameria* sp.), Russian Thistle (*Kali tragus*), Canada Thistle (*Cirsium arvense*), Bull Thistle (*Cirsium vulgare*), and Russian Olive (*Elaeagnus angustifolia*).

Canada Thistle, Bull Thistle, and Russian Olive are List B noxious weeds by the Colorado Department of Agriculture (CDA) and Garfield County.

Construction activities have the potential to introduce new noxious weed species to the site, or spread existing species. This management plan was developed to prevent further spread of noxious weeds. Microgrid Energy will comply with CDA and Garfield County regulations through implementation of this plan. Periodic reviews and updates to this plan will be completed as necessary to keep it current with noxious weed control issues.

2. Noxious Weed Rules and Regulations

The Colorado Noxious Weed Act designates noxious weed species for management and eradication as categorized on the Colorado Noxious Weed List. List “A” species are required by state law to be eradicated, and list “B” species are those for which the state has developed or is currently developing a management plan. List “C” species are widespread and known to be problematic, but management is not legally required. However, management of list “C” species may be beneficial to promote good native vegetation establishment and prevent other site problems.

Garfield County’s Noxious Weed Management Plans adopts the list designated by CDA. These lists allow prioritization of weed management activities on the Ziegler Solar Garden Site. The state and county weed list is provided in Appendix A. The Colorado Noxious Weed Act, rules pertaining to the Act, the state weed list, and state management plans can be found at:

http://www.colorado.gov/cs/Satellite/ag_Conservation/CBON/1251618780047).

3. Noxious Weed Management

An Integrated Pest Management (“IPM”) plan will be implemented for the control of noxious weed species on the Ziegler Solar Garden Site. Appropriate management actions will be implemented whenever noxious weed species are observed growing within the project area. The goals of weed management are to:

- 1) Identify and manage noxious weeds within and immediately adjacent to the project areas to be disturbed and after the area has been reclaimed. Conduct pre-treatment and post-treatment evaluations, and continue or modify treatment measures as necessary;
- 2) Minimize the potential for transportation and importation of noxious weed species; and
- 3) Educate field personnel to encourage compliance with weed management program goals and assist with identification and control efforts.

To prevent or minimize infestations and the spread of noxious weeds, periodic inspections of the project area will evaluate presence or absence, degree of invasion, and the response of previous treatments. Specific treatment methodologies and timetables will be developed based on species of concern, location and extent of the infestation(s), and other pertinent factors. A list of noxious weed species known to occur in Colorado and have potential to occur within the project area is contained in Appendix A.

3.1. Prevention

Noxious weeds are spread through dispersal of seed and/or transport of plant propagules (i.e. rhizomes, bulbs, roots and etc.). The most effective way to control noxious weeds is to prevent their introduction into the site in the first place. A combination of methods and practices will be employed to prevent the introduction of weed species and their regeneration within the project area.

The following methods and practices may be employed, either singly or in combination, to prevent the introduction of weeds into the Ziegler Solar Garden Site:

- 1) A thorough cleaning of equipment will be conducted before entering the project area to prevent the introduction of seed and plant propagules from other sites.
- 2) Seed mixtures used for revegetation or temporary site stabilization will be free of noxious weeds.
- 3) Hay, straw, and/or other materials used for mulch or other purposes will be certified weed free.
- 4) A periodic inspection will be conducted to identify any new weed infestations that may have occurred. Any new infestations will be scheduled for management before they become well established and/or spread.
- 5) Communication and coordination with adjacent land holders whose property is infested with noxious weeds that may threaten the site should occur. Establishing partnerships for weed management within the local area is essential for successful long-term weed management.
- 6) Noxious and pest weed infestations that threaten natural and reclaimed areas will be treated with accepted Integrated Pest Management (IPM) methods. These methods are further discussed below.

3.2. Integrated Weed Management

An Integrated Pest Management (“IPM”) approach will be implemented for treatment of noxious weeds within the project area. An IPM approach enables selection of one or more weed management methods based on site specific environmental conditions and control needs. The following weed management methods will be considered for the project area:

- 1) Cultural- Planting acceptable aggressive native or desirable plant species for site colonization and promoting healthy vegetation communities in reclaimed areas. Prevent unnecessary disturbance through precise planning of construction projects and other activities. Prompt revegetation of disturbed areas.
- 2) Mechanical- Mowing, pulling, disking and plowing may be used on weedy species that can be controlled mechanically.
- 3) Biological- Introduction of insects or other biologic agents which are known to inhibit or prevent reproduction of noxious weed species. Biological controls will be coordinated with the Colorado Department of Agriculture Insectary in Palisade, CO.
- 4) Chemical- Application of appropriate herbicides by a licensed applicator. All herbicides will be applied in accordance with the manufacturer’s label and in accordance with Colorado state laws.

In some cases, only one control method may be warranted, while in other cases a combination of control methods may be appropriate. Control methods selected will be dependent upon species of concern, and location and extent of infestation.

The use of Integrated Pest Management methods will protect pollinators, reduce hazards to wildlife, reduce the possibility of herbicide resistance, and minimize persistence and mobility of herbicides in the soil. Weed control methods and practices will be applied at the appropriate time to maximize their effectiveness. When herbicides are used they will be applied in a manner that conforms to applicable federal, state and local laws.

3.2.1 Cultural Control

Germination and establishment of noxious weeds can be significantly reduced by following accepted revegetation and vegetation management techniques that favor the growth of desirable plants. These include prompt seeding and revegetation of disturbed areas with appropriate seed mixes, maintaining optimum fertility and moisture levels, planting at optimum density of pure live seed (“PLS”), minimizing use of fertilizers, and selecting suitable species for revegetation. Minimizing areas of disturbance and exposed soil prevents opportunities for aggressive species to establish.

A revegetation plan has been developed for the site that utilizes native and pasture grass species that are well-adapted to the site. Seeding native species in conjunction with other management practices will provide some level of competition with noxious weeds.

3.2.2 Mechanical Control

Mechanical control of noxious weeds can be an effective tool to physically disrupt noxious weed growth and seed development. A combination of mechanical methods may be used including tilling or disking, mowing, hand-held weed trimmers, mulching, hand-pulling, hoeing, or livestock grazing. Mechanical weed control practices must be applied with correct timing to maximize their effectiveness in preventing vegetation development or seed production.

Annual weedy species may be readily controlled with mowing or physical removal. Perennial species such as Dalmatian toadflax have extensive root systems with significant carbohydrate reserves. For such weed species mowing may only control seed production without seriously affecting the plant’s survival. Mowing after seed production has occurred may spread the plants. Disking or tilling areas containing Dalmatian toadflax or other noxious species may increase the area of infestation due to root sprouting. In most cases mechanical control methods used alone are not effective against hardy perennial weed species.

3.2.3 Biological Control

Biological control of noxious weeds can be an effective tool to physically disrupt plant growth and seed development. A combination of biological methods may be used including introduction of insect weed predators and species-specific plant diseases. Biological weed control methods and practices will be applied with appropriate timing to maximize their effectiveness in preventing seed production. It must be noted that the use of biological controls normally does not eradicate an infestation of weeds; rather they will reduce weed species vigor and reproduction. The Colorado Department of Agriculture’s Biological Pest Control Program has on-going biological control programs several noxious weed species. More information is available from the Palisade Insectary at (970) 464-7916.

3.2.4 Chemical Control

Chemical control of noxious and pest weeds can be an effective tool to disrupt plant growth and seed development. Herbicides must be applied at the appropriate time to maximize their effectiveness in preventing seed production or for disrupting plant establishment and growth. To avoid development of resistance to an herbicide through repeated use over prolonged periods of time, herbicides and plant growth regulators with varying modes of action should be used. Also, herbicides will be applied according to the manufacturer’s label recommendations (i.e. application rate, method, and timing) to prevent development of plant resistance.

3.3. Pesticide Safety

Successful IPM begins with an understanding of the target plant species and the environment within which it grows. Next, the physiologic effects of an herbicide on plant growth and development must be understood. Understanding a pesticide's chemical nature is also important in minimizing impacts to non-target species, the applicator, endangered species, and pollinators, as well as surface water runoff hazards and leaching into groundwater.

All pesticides will be handled with care, and applied by qualified personnel. *Product labels will be read before use, and handling and application directions followed.* Properly identifying the weed problem and the most effective chemical control method for use during the plant growth cycle is critical to effective weed control. Equipment will be properly calibrated before herbicides are applied. Special protective clothing is usually specified on the label and appropriate Personal Protective Equipment (PPE) will be used. Empty containers will be disposed of promptly, safely and accordance with product labeling.

Herbicides vary in the amount of time after an application before it is safe to re-enter the treated area without protective clothing and equipment. The Restricted Entry Interval ("REI") is affected by the rate of application, size of the area treated and the amount of time to be spent in the field. For the safety of Microgrid's employees and contractors, the REIs listed on the herbicide's label will be followed. Appropriate herbicide application records will be maintained as specified by the CDA. Records must be retained by the applicator for three years from the date of application.

4. Monitoring and Follow-up

Even with effective weed management strategies, it often takes several seasons to eradicate or bring weed populations to an acceptable level. With well-established infestations it is likely that a seed bank has developed in the soil capable of producing new plants for several years. An infestation of weeds can easily re-invade treated areas in one growing season if control and treatment activities are prematurely curtailed. Weed management efforts should be carried out over an adequate number of growing seasons to realize effective weed management within the target area.

As with all weed management, this multi-season effort is best served by effective documentation of control efforts and continued vigilance in successive seasons of management. Information can be used to modify treatment priorities and weed management strategies over time. Vigilance is required against new infestations that may be moving into the site. These new sources of infestation may be worked into prevention and management plans as necessary. This weed management plan will be modified over time as site conditions change. Weed management strategies and priorities can be modified as weed infestations change in response to continued control efforts.

5. Existing Infestations

Noxious weeds occurring on site include Canada Thistle (*Cirsium arvense*), Bull Thistle (*Cirsium vulgare*), and Russian Olive (*Elaeagnus angustifolia*).

Canada Thistle is a perennial forb that reproduces by seed and root sprouts from extensive root systems. Plants should be treated with appropriate herbicides during active growth periods to prevent seed production. Treatment in the fall is critical to ensure translocation of herbicides to the extensive root systems. Canada Thistle infestations can be found at the north and south boundaries around the site. The larger infestations are found near the irrigation ditches.

Bull Thistle is a biennial forb that reproduces by seed. Plants should be treated with appropriate herbicides during the active growing periods to prevent seed production. Bull Thistle individuals can be found sporadically throughout the site, most are near the disturbed path, that runs north to south through the middle of the site.

Russian Olive is a perennial tree or shrub that reproduces through seed or through root suckers from the plants extensive root system. A foliar herbicide application can be done to younger Russian Olive individuals, but a cut-stump treatment is more effective for the larger individuals. Russian Olives can be found sporadically throughout the site, a large infestation can be found just north of the site.

A cut-stump treatment is used to treat trees and shrubs. Cut-stump treatments integrate mechanical and chemical control to eliminate the plant. To perform a cut-stump treatment one will cut the tree down leaving a small stump that will be treated with the proper herbicide at the correct rate in order to translocate herbicide to the remaining roots. If the stump isn't treated with herbicide, it is possible for the roots to develop more suckers.

Due to the high level of seed and shoot production of these noxious species, multiple herbicide applications are necessary to capture plants growing at various times throughout the season. The site should be visited multiple times during the growing season to treat new plants emerging from the seed bank and underground roots. It is expected that multiple years of treatment will be required to reduce weed infestations on the site. It is likely that repeated infestations will occur due to infestations in the surrounding area.

6. References

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- Colorado Weed Management Association, Noxious Weeds of Colorado, 10th Edition. 2009.
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Appendix A
Noxious Weed List

Appendix A - Noxious Weed List

Common Name	Scientific Name	State List	CDA Mandate	Known to Exist in Garfield County	Present on Ziegler Solar Garden Site*	Biology
African rue	<i>Peganum harmala</i>	List A	Yes			Perennial
Bohemian knotweed	<i>Polygonum xbohemicum</i>	List A	Yes			Perennial
Camelthorn	<i>Alhagi pseudalhagi</i>	List A	Yes			Perennial
Common crupina	<i>Crupina vulgaris</i>	List A	Yes			Winter Annual
Cypress spurge	<i>Euphorbia cyparissias</i>	List A	Yes			Perennial
Dyer's woad	<i>Isatis tinctoria</i>	List A	Yes			Perennial
Elongated mustard	<i>Brassica elongata</i>	List A	Yes			Perennial
Giant knotweed	<i>Polygonum sachalinense</i>	List A	Yes			Perennial
Giant reed	<i>Arundo donax</i>	List A	Yes			Perennial
Giant salvinia	<i>Salvinia molesta</i>	List A	Yes			Annual/Perennial
Hydrilla	<i>Hydrilla verticillata</i>	List A	Yes			Perennial
Japanese knotweed	<i>Polygonum cuspidatum</i>	List A	Yes			Perennial
Meadow knapweed	<i>Centaurea pratensis</i>	List A	Yes			Perennial
Mediterranean sage	<i>Salvia aethiopsis</i>	List A	Yes			Biennial
Medusahead	<i>Taeniatherum caput-medusae</i>	List A	Yes			Annual
Myrtle spurge	<i>Euphorbia myrsinites</i>	List A	Yes			Biennial/Perennial
Orange hawkweed	<i>Hieracium aurantiacum</i>	List A	Yes			Perennial
Purple loosestrife	<i>Lythrum salicaria</i>	List A	Yes			Perennial
Rush skeletonweed	<i>Chondrilla juncea</i>	List A	Yes			Perennial
Squarrose knapweed	<i>Centaurea virgata</i>	List A	Yes			Perennial
Tansy ragwort	<i>Senecio jacobaea</i>	List A	Yes			Perennial
Yellow starthistle	<i>Centaurea solstitialis</i>	List A	Yes			Winter Annual
Absinth wormwood	<i>Artemisia absinthium</i>	List B				Perennial
Black henbane	<i>Hyoscyamus niger</i>	List B				Annual/Biennial
Bouncingbet	<i>Saponaria officinalis</i>	List B				Perennial

Appendix A - Noxious Weed List

Common Name	Scientific Name	State List	CDA Mandate	Known to Exist in Garfield County	Present on Ziegler Solar Garden Site*	Biology
Bull thistle	<i>Cirsium vulgare</i>	List B		Yes	Present	Biennial
Canada thistle	<i>Cirsium arvense</i>	List B		Yes	Present	Perennial
Chinese clematis	<i>Clematis orientalis</i>	List B				Perennial
Common tansy	<i>Tanacetum vulgare</i>	List B				Perennial
Common teasel	<i>Dipsacus fullonum</i>	List B				Biennial
Corn chamomile	<i>Anthemis arvensis</i>	List B				Annual
Cutleaf teasel	<i>Dipsacus laciniatus</i>	List B				Biennial
Dalmatian toadflax- broad leaved	<i>Linaria dalmatica</i>	List B		Yes		Perennial
Dalmatian toadflax- narrow leaved	<i>Linaria genistifolia</i>	List B				Perennial
Dame's rocket	<i>Hesperis matronalis</i>	List B				Biennial/Perennial
Diffuse knapweed	<i>Centaurea diffusa</i>	List B		Yes		Biennial
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	List B				Perennial
Hoary cress	<i>Cardaria draba</i>	List B		Yes		Perennial
Houndstongue	<i>Cynoglossum officinale</i>	List B		Yes		Biennial
Leafy spurge	<i>Euphorbia esula</i>	List B		Yes		Perennial
Mayweed chamomile	<i>Anthemis cotula</i>	List B				Annual
Moth mullein	<i>Verbascum blattaria</i>	List B				Biennial
Musk thistle	<i>Carduus nutans</i>	List B		Yes		Biennial
Oxeye daisy	<i>Chrysanthemum leucanthemum</i>	List B		Yes		Perennial
Perennial pepperweed	<i>Lepidium latifolium</i>	List B				Perennial
Plumeless thistle	<i>Carduus acanthoides</i>	List B		Yes		Biennial
Quackgrass	<i>Elytrigia repens</i>	List B				Perennial
Russian knapweed	<i>Acroptilon repens</i>	List B		Yes		Perennial
Russian-olive	<i>Elaeagnus angustifolia</i>	List B		Yes	Present	Perennial
Salt cedar	<i>Tamarix ramosissima</i>	List B		Yes		Perennial
Scentless chamomile	<i>Matricaria perforata</i>	List B				Annual

Appendix A - Noxious Weed List

Common Name	Scientific Name	State List	CDA Mandate	Known to Exist in Garfield County	Present on Ziegler Solar Garden Site*	Biology
Scentless chamomile	<i>Matricaria perforata</i>	List B				Annual
Scotch thistle	<i>Onopordum acanthium</i>	List B		Yes		Biennial
Spotted knapweed	<i>Centaurea maculosa</i>	List B		Yes		Biennial
Spurred anoda	<i>Anoda cristata</i>	List B				Annual
Sulfur cinquefoil	<i>Potentilla recta</i>	List B				Perennial
Venice mallow	<i>Hibiscus trionum</i>	List B				Annual
Wild caraway	<i>Carum carvi</i>	List B				Biennial/Perennial
Yellow nutsedge	<i>Cyperus esculentus</i>	List B				Perennial
Yellow toadflax	<i>Linaria vulgaris</i>	List B		Yes		Perennial
Jointed goatgrass	<i>Aegilops cylindrica</i>	List B		Yes		Annual
Bulbous bluegrass	<i>Poa bulbosa</i>	List C				Perennial
Chicory	<i>Cichorium intybus</i>	List C		Yes		Biennial/Perennial
Common burdock	<i>Arctium minus</i>	List C		Yes		Biennial
Common mullein	<i>Verbascum thapsus</i>	List C				Biennial
Common St. Johnswort	<i>Hypericum perforatum</i>	List C				Perennial
Downy brome	<i>Bromus tectorum</i>	List C				Annual
Field bindweed	<i>Convolvulus arvensis</i>	List C				Perennial
Halogeton	<i>Halogeton glomeratus</i>	List C				Annual
Johnsongrass	<i>Sorghum halepense</i>	List C				Perennial
Perennial sowthistle	<i>Sonchus arvensis</i>	List C				Perennial
Poison hemlock	<i>Conium maculatum</i>	List C				Biennial
Puncturevine	<i>Tribulus terrestris</i>	List C				Annual
Redstem filaree	<i>Erodium cicutarium</i>	List C				Annual/Biennial
Velvetleaf	<i>Abutilon theophrasti</i>	List C				Annual
Wild proso millet	<i>Panicum miliaceum</i>	List C				Annual

* Based on October 30, 2017 observation