

Harmony Solar ND, LLC
Harmony Solar Project
Docket No. PU-18-219

Late-Filed Exhibit No. 11 – Correspondence with North Dakota Department of Agriculture

At the public hearing, Mr. Shaun Quissell testified on behalf of the North Dakota Department of Agriculture (“Department”) regarding Harmony Solar ND, LLC’s (“Harmony Solar”) proposed Vegetation Management Plan (“Plan”) for the Harmony Solar Project. Following the public hearing, Harmony Solar provided a copy of the Plan to Mr. Quissell for the Department’s review. The Commissioner of the Department provided the following comments:

- “On page 6 item 2.7 Management during Establishment, [the Commissioner] recommends that you add the county specific noxious weed listings of invasive or weeds of concerns to the list. Also as the state list does change maybe including some language to add to your management plan to monitor the listing.”
- “On the seed listing, [the Commissioner] was pleased with the species you have included. One species to pay attention to is Black eyed Susan, this species seed looks extremely close to Palmer Amaranth, the species that we are worried about spreading in North Dakota. This is the reasoning behind asking seed to be sourced from North Dakota companies.”

Harmony Solar has revised Section 2.7 of the Plan to address the Commissioner’s comments. Copies of the correspondence with the Department, as well as the updated Plan, are provided herewith.

Smith, Mollie

From: Smith, Mollie
Sent: Tuesday, November 20, 2018 1:08 PM
To: 'Quissell, Shaun R.'
Cc: Melissa Schmit (Melissa@geronimoenergy.com)
Subject: RE: Harmony Solar Project: Vegetation Management Plan

Shaun:

Thank you very much for the update. We look forward to hearing from you, and please let us know if you have any questions as you review.

Thanks.

Mollie

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From: Quissell, Shaun R. [mailto:squissell@nd.gov]
Sent: Tuesday, November 20, 2018 1:06 PM
To: Smith, Mollie
Cc: Melissa Schmit (Melissa@geronimoenergy.com)
Subject: RE: Harmony Solar Project: Vegetation Management Plan

Mollie,

I am still waiting to get comments back from the commissioner. I am hoping today or tomorrow to have time with him so we can draft them and get back to you. If I would need any more time I will let you know.

Thanks,

Shaun Quissell
Director
Government Affairs Division

North Dakota Dept. of Agriculture

Office: 701-328-4761

<http://www.nd.gov/ndda>



From: Smith, Mollie <msmith@fredlaw.com>
Sent: Tuesday, November 20, 2018 1:03 PM
To: Quissell, Shaun R. <squissell@nd.gov>
Cc: Melissa Schmit (<Melissa@geronimoenergy.com>) <Melissa@geronimoenergy.com>
Subject: RE: Harmony Solar Project: Vegetation Management Plan

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Shaun:

We have our deadline to submit late-filed exhibits coming up soon, so I wanted to check in again to see if the Department of Agriculture has any comments regarding Harmony's Vegetation Management Plan. If the Department has not had a chance to review yet, could you please let me know when you anticipate that the Department will be able to do so?

Thanks.

Mollie

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From: Smith, Mollie
Sent: Wednesday, November 14, 2018 10:18 AM
To: 'Quissell, Shaun R.'

Cc: Melissa Schmit (Melissa@geronimoenergy.com)
Subject: RE: Harmony Solar Project: Vegetation Management Plan

Shaun:

I am just following up to see if the Department of Agriculture has any comments regarding Harmony's Vegetation Management Plan. Please let us know if you have questions, comments, or would like to discuss further.

Thank you.

Mollie

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From: Quissell, Shaun R. [<mailto:squissell@nd.gov>]
Sent: Tuesday, November 06, 2018 8:34 AM
To: Smith, Mollie
Cc: Melissa Schmit (Melissa@geronimoenergy.com)
Subject: RE: Harmony Solar Project: Vegetation Management Plan

Mollie,

Thank you for the email and the information. I will get it in front of the Commissioner right away. As for the list of seed dealers, the Department of Agriculture does not directly deal with seed dealers, I mentioned in my testimony that you will be able to get a list of North Dakota Seed dealers from the State Seed Commission. Their phone number is 701-231-5400. If you need anything additional please let me know I would be glad to assist.

Thanks,

Shaun Quissell
Director
Government Affairs Division
North Dakota Dept. of Agriculture
Office: 701-328-4761
<http://www.nd.gov/ndda>



From: Smith, Mollie <msmith@fredlaw.com>
Sent: Monday, November 05, 2018 4:48 PM
To: Quissell, Shaun R. <squissell@nd.gov>
Cc: Melissa Schmit (Melissa@geronimoenergy.com) <Melissa@geronimoenergy.com>
Subject: Harmony Solar Project: Vegetation Management Plan

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Shaun:

It was nice to meet you last Thursday at the North Dakota Public Service Commission's public hearing on the Harmony Solar Project. Attached for your Department's review is a copy of the Vegetation Management Plan for the Project, which includes proposed seed mixes. If you have questions or comments regarding the Plan, please feel free to contact Melissa Schmit with Geronimo Energy directly. Melissa is copied here, and her direct phone number is 612-259-3095.

You indicated during your testimony that you could provide a list of North Dakota-licensed seed dealers that includes native prairie restoration seed suppliers. Could you please e-mail to me the list you referenced?

We look forward to further discussions with your Department. If you have any questions, please do not hesitate to contact me.

Thank you.

Mollie

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Smith, Mollie

From: Smith, Mollie
Sent: Monday, November 26, 2018 6:00 PM
To: Quissell, Shaun R.
Cc: Melissa Schmit (Melissa@geronimoenergy.com)
Subject: RE: Harmony Solar Project: Vegetation Management Plan

Shaun:

Thank you for the feedback regarding the Vegetation Management Plan. Harmony plans to revise the Plan to address the comments noted in your e-mail.

Thanks.

Mollie

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From: Quissell, Shaun R. [<mailto:squissell@nd.gov>]
Sent: Monday, November 26, 2018 11:16 AM
To: Smith, Mollie
Cc: Melissa Schmit (Melissa@geronimoenergy.com)
Subject: RE: Harmony Solar Project: Vegetation Management Plan

Mollie,

Commissioner was able to review the materials and has a couple comments.

On page 6 item 2.7 Management during Establishment, he recommends that you add the county specific noxious weed listings of invasive or weeds of concerns to the list. Also as the state list does change maybe including some language to add to your management plan to monitor the listing.

On the seed listing, he was pleased with the species you have included. One species to pay attention to is Black eyed Susan, this species seed looks extremely close to Palmer Amaranth, the species that we are worried about spreading in North Dakota. This is the reasoning behind asking seed to be sourced from North Dakota companies.

Thank you for your patience while we review the management plan. If you need anything additional please let me know.

Shaun Quissell
Director
Government Affairs Division
North Dakota Dept. of Agriculture
Office: 701-328-4761
<http://www.nd.gov/ndda>



From: Smith, Mollie <msmith@fredlaw.com>
Sent: Monday, November 05, 2018 4:48 PM
To: Quissell, Shaun R. <squissell@nd.gov>
Cc: Melissa Schmit (Melissa@geronimoenergy.com) <Melissa@geronimoenergy.com>
Subject: Harmony Solar Project: Vegetation Management Plan

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Shaun:

It was nice to meet you last Thursday at the North Dakota Public Service Commission's public hearing on the Harmony Solar Project. Attached for your Department's review is a copy of the Vegetation Management Plan for the Project, which includes proposed seed mixes. If you have questions or comments regarding the Plan, please feel free to contact Melissa Schmit with Geronimo Energy directly. Melissa is copied here, and her direct phone number is 612-259-3095.

You indicated during your testimony that you could provide a list of North Dakota-licensed seed dealers that includes native prairie restoration seed suppliers. Could you please e-mail to me the list you referenced?

We look forward to further discussions with your Department. If you have any questions, please do not hesitate to contact me.

Thank you.

Mollie

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Vegetation Management Plan for the Harmony Solar Project



Harmony Solar ND, LLC

November 2018

Prepared by:



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Minneapolis, MN 55401



21938 Mushtown Road

Prior Lake, MN 55372

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Appendix A – Grazing and Mowing Vegetation Management Seed Mixes

1.0 GOALS AND OBJECTIVES

Harmony Solar ND, LLC (Harmony) is developing a 200 megawatt (MW) solar project located in Cass County, North Dakota. The Project will comprise approximately 1,600 acres in Harmony Township Sections 10, 11, and 16 (Township 140 North, Range 51 West) approximately 15 miles northwest of Fargo, North Dakota. Harmony has developed this Vegetation Management Plan (Plan) that will achieve the goals for operating the solar facility, promote pollinator habitat, establish stable ground cover, reduce erosion and runoff, and improve infiltration.

2.0 VEGETATION MANAGEMENT

2.1 Schedule

Planting will occur post-construction of the solar panels and tracking system. Planting after grading but before post and panel installation would result in poor seed germination due to equipment maneuvering. Growing season plantings should occur from May 1 - July 1 when the soil temperature is at least 60 degrees Fahrenheit or higher. However, the ideal timeframe for an early spring seeding is May 1 – June 15. Dormant seeding can be conducted after October 31 or after soil temperatures fall below 50 degrees Fahrenheit for a consistent period of time, but before soils freeze. Seeding rates may need to be increased by 25 percent for frost seeding due to lower germination rates and loss of seed that is consumed by wildlife over the winter months. If the planting is not successful, reseeding must be addressed when appropriate.

If seeding cannot be accomplished within the specified dates above, a temporary cover crop may be planted and then tilled under prior to permanent seeding, or a nurse crop may be planted with the planned seed mix. Nurse and cover crop guidance is provided below in Section 2.5.

2.2 Seedbed Preparation

The primary goals of seedbed preparation are to: 1) control weed species and 2) to provide ideal growing conditions for the seed to be established. If undesirable weed vegetation is present, it must be removed prior to seeding. An herbicide application may be appropriate provided a U.S. Environmental Protection Agency approved formulation is used consistent with labeled instructions by a licensed applicator. Herbicide should be selected and applied sufficiently in advance of seeding so as not to inhibit germination and growth of planted species. If glyphosate is used, seeding should be conducted at least 14 days after herbicide application.

Areas to be seeded will be prepared to produce a friable, smooth, firm seedbed. Conventional tillage should result in a clean tilled, smooth seedbed. Soil particles should be half an inch or smaller in the top inch of soil. Compacted soil prevents the seed from being planted at a proper depth and inhibits root penetration of new seedlings severely reducing the establishment of the planted seed. Decompaction will be conducted by tilling the site to loosen the upper four inches of soil followed by harrowing the site using a drag harrow or similar equipment.

Use of a no-till seed drill requires a firm seedbed before seeding. The seedbed is considered firm when you can walk on it without sinking more than ½ inch (sole of shoe). Firming of the seedbed after tillage operations can be achieved by rolling or cultipacking prior to planting. However, if a broadcast seeder is used for seeding, the site should be cultipacked only after seeding.

2.3 Planting Method

Native grass and forbs may be planted by seed drill or broadcast. Use of a seed drill designed specifically to plant prairie grasses and forbs typically achieves greater stand success due to maximized seed to soil contact during planting. Guidance for both planting methods are provided below.

2.3.1 Seed Drill

Native seeding is best achieved by use of a seed drill equipped with a double disc or coulter furrow openers with depth bands and press wheels, cultipacker, or drag chains. Seed should be planted ⅛ to ½ inch deep. Application in two sweeps, with the second sweep being applied at a right angle to the first, will promote even distribution of the seed. When seeding in two sweeps, calibrate the drill to apply seed at half of the required seeding rate. This method should also blend a nurse crop seed with the native seed to help distribute small, fine textured native seed evenly across the site (see nurse crops in Section 2.5.1).

When using a seed drill, the operator should always operate the drill at the recommended speed (consult manual for model specifications). Excessive ground speed will cause the drill to plant the seed improperly. The seed drill operator should inspect the drill while operating it and avoid drilling in wet conditions. If mud builds up on the depth bands it should be cleaned off because seed box feeder tubes can become clogged. Should this happen, the operator can squeeze or shake the tubes to remove lodged seed.

If the seed level drops below the agitators in the seed boxes, seed doesn't feed as efficiently, resulting in uneven seeding. The drill operator should insert additional seed into the seed boxes as necessary. Towards the end of seeding the site, if the seed level drops below the agitators, filler material similar in size to the seed can be added to the seed box to increase the volume; however, this may necessitate adjusting the seeding rate. Vermiculite, cat litter or cracked corn can be used as filler.

2.3.2 Broadcast

If the broadcast seeding method is employed, native-seed broadcasters such as a Vicon, EZEE Flow spreader, or Brillion seeder should be used as they are adapted to spread mixes with different sized seeds. Broadcast application should be performed in two sweeps of alternate directions applying half the seed in each sweep to ensure even distribution of the seed. This method should also blend a nurse crop seed with the native seed to help distribute small, fine textured native seed evenly across the site (see nurse crops in Section 2.5.1). After the seed is broadcast, it should be incorporated into the soil by using a drag harrow, dragging a piece of heavy chain, or raking in the seed with a garden rake before packing the soil with a cultipacker or lawn roller. Seeds should be planted ⅛ to ½ inch deep. Brillion seeders are equipped with both a soil conditioning implement and a cultipacker.

2.4 Seed Source and Quality

Seed and planting materials will meet state of North Dakota quality standards. All seed analyses must be conducted in accordance with the North Dakota Seed Law and Rules which specify the kind and amount of weed seed permitted, the requirements for a current analysis report and labeling of all seed to show its purity, germination, date of last germination test, and weed content.

Seed will be obtained from a local seed supplier who can verify that the seed is best adapted to the topography, hydrology, soil, and climate conditions of the site and will provide genetic compatibility with native vegetation in proximity to the Harmony Solar Project. Genetic source origin of all native seed should be from within a 200-mile radius of the site. Species should be true to their scientific name as specified. Contractor must provide Owner with seed tags or nursery confirmation of seed order prior to installing seed. The Owner will review and must approve in writing any species eliminations, substitutions, or source origin exceptions. Seeds should have proper stratification and/or scarification to break seed dormancy if planting in spring. All legumes shall be inoculated with proper rhizobia at the appropriate time prior to planting. The seed mixes selected for this site do not contain species considered noxious by federal, state, or local regulations (see Appendix A).

2.5 Seeding Mixtures

The seed mixes to be used for the Project have been developed in consultation with the Cass County Soil Conservation District. Harmony has developed two sets of native seed mixes for the Project which include a short prairie, tall prairie, and wet prairie seed mix for each set. One seed mix set is designed to be used with a vegetation management practice of traditional mowing. The other seed mix set is designed to be used with a vegetation management practice that uses sheep or lambs as grazers. Research has shown that legumes have poor survivorship under grazing pressure (they are preferred forage), so legumes in the tall and short grazing mixes are reduced to one hardy native species (partridge pea, *Chamaecrista fasciculata*) and eliminated from the wet grazing mix entirely. Tables for each seed mix are provided in Appendix A. The maintenance method has yet to be determined for the Project and will be selected prior to seed selection.

A short prairie mix will be established within the panel footprint, the tall prairie seed mix will be established in the open space between the fence and the array, and a wet prairie seed mix will be used in wet areas or areas anticipated to hold water. Both warm-season and cool-season native grasses and forbs were selected to promote pollinator habitat, enhance the diversity of native vegetation, and reduce the presence of non-native vegetation occurring in the Project Area.

2.5.1 Nurse Crop

A nurse crop should be planted with the planned seed mix to control erosion and suppress weeds. Seeding guidance is as follows:

- Spring (May 1 to July 1): 10 pounds per acre pure live seed (PLS) oats
- Fall (after October 31): 10 pounds per acre PLS winter wheat

Mowing the nurse crop before it forms a dense canopy and before it produces a seedhead will promote the growth of the native species. Winter wheat nurse crops must be mowed two or three times the following spring prior to seedhead emergence to prevent seed production and reduce long-term persistence.

2.5.2 Cover Crop

When cover crops are planted alone, pending a more favorable time to establish natives, they are called temporary cover crops. Seeding recommendations are as follows.

- Summer – 35 pounds per acre PLS oats, and one of the following warm-season species:
 - 5 pounds per acre PLS piper sudan,
 - 10 pounds per acre PLS millet (Japanese or Pearl variety), or
 - 30 pounds per acre PLS sorghum.
- Fall – 25 pounds per acre PLS winter wheat.

Cover crops should be destroyed the following spring with herbicides, tilled, or mowed two or three times to prevent seed production and competition with the native seed.

2.6 Mulching

Preventive measures should be taken to prevent soil erosion, which can wash away seed and smother new seedlings. If temporary cover crops are not used and if sufficient crop stubble is not present, MClA Certified Weed-Free mulch should be applied at two tons per acre in upland areas. The mulch should be disk-anchored to prevent movement.

2.7 Management During Establishment

Prairie establishment in the first 2-3 years must focus on control of noxious weeds and other invasive vegetation. There are 12 species currently listed as noxious in North Dakota that should be eradicated; 11 of those species are listed as noxious weeds in Cass County (Table 1). Harmony will monitor the state and county lists for changes. Based on information from the North Dakota Department of Agriculture, the agency is concerned about the spread of Palmer amaranth, which looks similar to Black-eyed Susan, a native species included in the short prairie mix for both the grazing and mowing management styles (Appendix A). Harmony will ensure seeds are tested by an independent lab certified by the Association of Official Seed Certifying Agencies (AOSCA). Results from an AOSCA lab will verify Palmer amaranth is not present in the seed mix used at Harmony.

Table 1: Noxious Weeds Listed in North Dakota and Cass County

Species	Common Name	State ¹	Cass County ²
<i>Artemisia absinthium</i>	Absinth Wormwood	X	X
<i>Cirsium arvense</i>	Canada Thistle	X	X
<i>Linaria genistifolia</i>	Dalmatian Toadflax	X	X

Table 1: Noxious Weeds Listed in North Dakota and Cass County

Species	Common Name	State ¹	Cass County ²
<i>Centaurea diffusa</i>	Diffuse Knapweed	X	X
<i>Euphorbia esula</i>	Leafy Spurge	X	X
<i>Carduus nutans</i>	Musk Thistle	X	X
<i>Lythrum salicaria</i>	Purple Loosestrife	X	X
<i>Acroptilon repens</i>	Russian Knapweed	X	X
<i>Tamarix chinensis</i> , <i>T. parviflora</i> , <i>T. ramosissima</i>	Saltcedar	X	X
<i>Centaurea maculosa</i>	Spotted Knapweed	X	X
<i>Linaria vulgaris</i>	Yellow Toadflax	X	X
<i>Cynoglossum officinale</i> L.	Houndstongue	X	

¹ Lym, R.G. 2018. *A Guide to North Dakota Noxious and Troublesome Weeds*.

<https://www.ag.ndsu.edu/publications/crops/a-guide-to-north-dakota-noxious-and-troublesome-weeds/w1691.pdf>

² Cass county Noxious Weed Identification <https://www.casscountynynd.gov/our-county/weed-control/noxious-weed-identification>

The primary establishment management tasks are site-wide mowing (to reduce shading of native seed and prevent invasive weeds from developing seed) and control of invasive weeds and all trees/shrubs that may be present by spot-mowing, hand weeding, or spot-spraying.

2.7.1 Site-Wide Mowing

During the first two growing seasons after planting, the Contractor should mow all native seeded areas to a height of 8-12” after vegetation in said areas reaches a height of approximately 30” but before non-native, invasive species go to seed. Mowing below the recommended height can damage the long-term health of the planting. Mowed vegetation should be bagged and removed off site to prevent smothering new growth. Mowing equipment should be cleaned prior to use on site to prevent the spread of non-native and invasive species into the planting. Mowing should occur two times during the first year and two times during the second year, or as necessary to achieve project goals.

2.7.2 Spot-Mowing

Spot-mowing areas where invasive or noxious weeds become established can stress these aggressive and fast growing invasive plants and prevent production of weed seed, which can allow the native species to become established. Spot-mowing should be conducted in weedy areas at a height between five and eight inches before seed is allowed to set. Spot-mowing can be done every year to ensure planting health, even following establishment years.

2.7.3 Hand Weeding

Hand weeding can be an effective method of controlling small populations of weeds. Hand weeding should be done when soils are moist, and care should be taken to avoid disturbing the root systems of desirable plants. It is also important that proper pulling technique is used to avoid injury. Tools such as Weed Wrenches and Weed Talons can be used for pulling woody plants such as buckthorn and non-native honeysuckles.

2.7.4 Spot-Spraying

Spot-spraying should target only noxious or invasive weed species. A licensed herbicide applicator should be hired to apply the appropriate herbicide(s). The Midwest Invasive Plant Control Database provides a compilation of control methods for many common invasive plants. To prevent inadvertent broadcast spraying of the planted prairie by others, it may be advantageous to place the prairie on the local “do not spray” list.

2.8 Perpetual Management

From Year 4 onwards, yearly management is required to control the establishment and spread of invasive species, combat the establishment of woody growth (trees and shrubs), and reduce biomass/fuel load onsite. This management may take the form of mowing (or haying) or grazing, depending on Owner preference and in coordination with the seed mixes selected and installed. Some degree of hand weeding and/or spot-spraying (discussed above) may continue to be warranted to maintain prairie quality and achieve project goals.

2.8.1 Mowing/Haying

Annual site-wide mowing should be done in the month of October or when prairie plants have gone dormant. Mowed vegetation should be bagged and removed off site to prevent smothering new growth; similarly, haying practices can be used. Spot-mowing may be required during the growing season if invasive species become an issue in localized areas (see above). Care should be taken during nesting season (April 1-August 1) to protect grassland birds. Mowing equipment should be cleaned prior to use on site to prevent the spread of non-native and invasive species into the planting.

2.8.2 Grazing

Harmony may use sheep or lambs as grazers to manage vegetation. Well-managed grazing can restrict woody vegetation and non-native species encroachment into grasslands, prevent excessive litter accumulation, improve forage production, and accelerate decomposition and nutrient cycling. A grazing plan should be developed defining factors such as timing, potential disturbance, herd size, water sources, and grazing objectives if this management technique is used.

Livestock should be quarantined for two days and fed with weed free hay prior to their introduction onto the prairie planting area to allow undesirable seeds to pass from their digestive system. Water should be provided to livestock to reduce trail formation within the prairie planting area.

Appendix A
Grazing and Mowing Vegetation Management
Seed Mixes

Grazing Vegetation Management
Seed Mixes

Short Prairie Mix (Array)		
Grazing Vegetation Management Plan		
Species	Common Name	Qty (oz)
<i>Bouteloua curtipendula</i>	Side Oats Grama	48.00
<i>Elymus trachycaulus</i>	Slender wheatgrass	24.00
<i>Schizachyrium scoparium</i>	Little bluestem	48.00
<i>Sporobolus heterolepis</i>	Prairie dropseed	8.00
<i>Achillea millefolium</i>	Yarrow	1.50
<i>Allium stellatum</i>	Prairie onion	2.00
<i>Anemone canadensis</i>	Meadow/Canada	1.00
<i>Aquilegia canadensis</i>	Wild columbine	1.00
<i>Artemisia ludoviciana</i>	White sage	1.00
<i>Asclepias verticillata</i>	Whorled milkweed	2.00
<i>Chamaecrista fasciculata</i>	Partridge pea	4.00
<i>Geranium maculatum</i>	Wild geranium	2.00
<i>Pycnanthemum</i>	Virginia mountain mint	1.00
<i>Ratibida columnifera</i>	Upright coneflower	4.00
<i>Rudbeckia hirta</i>	Black-eyed Susan	4.00
<i>Oligoneuron album</i>	Stiff aster (goldenrod)	2.00
<i>Symphotrichum ericoides</i>	Heath aster	0.50
<i>Symphotrichum laeve</i>	Smooth blue aster	2.00
<i>Zizia aurea</i>	Golden alexanders	4.00

Tall Prairie Mix (Open)		
Grazing Vegetation Management Plan		
Species	Common Name	Qty (oz)
<i>Andropogon gerardii</i>	Big bluestem	16.00
<i>Bouteloua curtipendula</i>	Side Oats Grama	32.00
<i>Elymus canadensis</i>	Canada wild rye	32.00
<i>Elymus trachycaulus</i>	Slender wheatgrass	16.00
<i>Panicum virgatum</i>	Switch grass	4.00
<i>Schizachyrium scoparium</i>	Little bluestem	16.00
<i>Sorghastrum nutans</i>	Indian grass	8.00
<i>Sporobolus heterolepis</i>	Prairie dropseed	4.00
<i>Achillea millefolium</i>	Yarrow	1.00
<i>Allium stellatum</i>	Prairie onion	1.00
<i>Asclepias syriaca</i>	Common milkweed	2.00
<i>Chamaecrista fasciculata</i>	Partridge pea	4.00
<i>Heliopsis helianthoides</i>	False sunflower	4.00
<i>Liatris aspera</i>	Rough blazing star	1.00
<i>Liatris pycnostachya</i>	Prairie blazing star	1.00
<i>Monarda fistulosa</i>	Wild bergamot	0.50
<i>Oligoneuron rigidum</i>	Stiff goldenrod	2.00
<i>Pycnanthemum</i>	Virginia mountain	1.00
<i>Ratibida columnifera</i>	Upright coneflower	4.00
<i>Rudbeckia hirta</i>	Black-eyed Susan	4.00
<i>Solidago speciosa</i>	Showy goldenrod	1.00
<i>Symphotrichum</i>	Heath aster	0.50
<i>Symphotrichum laeve</i>	Smooth blue aster	1.00
<i>Verbena stricta</i>	Hoary vervain	1.00
<i>Zizia aurea</i>	Golden alexanders	3.00

Wet Prairie Mix Grazing Vegetation Management Plan		
Species	Common Name	Qty (oz)
<i>Andropogon gerardii</i>	Big bluestem	40.00
<i>Bromus ciliatus</i>	Fringed brome	8.00
<i>Calamagrostis canadensis</i>	Blue joint grass	1.00
<i>Elymus virginicus</i>	Virginia wild rye	40.00
<i>Glyceria grandis</i>	Reed manna grass	2.00
<i>Glyceria striata</i>	Fowl manna grass	2.00
<i>Panicum virgatum</i>	Switch grass	4.00
<i>Poa palustris</i>	Fowl bluegrass	2.00
<i>Sorghastrum nutans</i>	Indian grass	18.00
<i>Spartina pectinata</i>	Prairie cord grass	4.00
<i>Carex pellita</i>	Broad leaved woolly sedge	1.00
<i>Carex stricta</i>	Common tussock sedge	1.00
<i>Carex vulpinoidea</i>	Fox sedge, Brown fox sedge	4.00
<i>Scirpus atrovirens</i>	Green bulrush	0.50
<i>Scirpus cyperinus</i>	Wool grass	0.50
<i>Anemone canadensis</i>	Meadow/Canada anemone	1.00
<i>Asclepias incarnata</i>	Swamp milkweed	4.00
<i>Doellingeria umbellata</i>	Flat-topped aster	1.50
<i>Eupatorium perfoliatum</i>	Common boneset	2.00
<i>Euthamia graminifolia</i>	Common grass-leaved goldenrod	1.00
<i>Eutrochium maculatus</i>	Spotted Joe Pye weed	2.00
<i>Helenium autumnale</i>	Sneezeweed	1.50
<i>Helianthus grosseserratus</i>	Sawtooth sunflower	4.00
<i>Liatris pycnostachya</i>	Prairie blazing star	1.00
<i>Lobelia siphilitica</i>	Great blue lobelia	0.50
<i>Mimulus ringens</i>	Monkey flower	0.20
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	1.30
<i>Symphotrichum puniceum</i>	Marsh aster	2.00
<i>Verbena hastata</i>	Blue vervain	4.00
<i>Vernonia fasciculata</i>	Common ironweed	2.00
<i>Veronicastrum virginicum</i>	Culver's root	1.00
<i>Zizia aurea</i>	Golden alexanders	3.00

Mowing Vegetation Management
Seed Mixes

Short Prairie Mix (Array)		
Mowing Vegetation Management Plan		
Species	Common Name	Qty (oz)
<i>Bouteloua curtipendula</i>	Side Oats Grama	48.00
<i>Elymus trachycaulus</i>	Slender wheatgrass	24.00
<i>Schizachyrium scoparium</i>	Little bluestem	48.00
<i>Sporobolus heterolepis</i>	Prairie dropseed	8.00
<i>Achillea millefolium</i>	Yarrow	0.50
<i>Allium stellatum</i>	Prairie onion	0.50
<i>Amorpha canescens</i>	Leadplant	0.50
<i>Anemone canadensis</i>	Meadow/Canada	0.50
<i>Aquilegia canadensis</i>	Wild columbine	0.50
<i>Artemisia ludoviciana</i>	White sage	0.50
<i>Asclepias verticillata</i>	Whorled milkweed	1.00
<i>Astragalus canadensis</i>	Canadian milk vetch	4.00
<i>Dalea candida</i>	White prairie clover	3.00
<i>Dalea purpurea</i>	Purple prairie clover	3.00
<i>Desmodium canadense</i>	Showy tick trefoil	4.00
<i>Geranium maculatum</i>	Wild geranium	0.50
<i>Pycnanthemum</i>	Virginia mountain mint	0.50
<i>Ratibida columnifera</i>	Upright coneflower	4.00
<i>Rudbeckia hirta</i>	Black-eyed Susan	4.00
<i>Oligoneuron album</i>	Stiff aster (goldenrod)	0.50
<i>Symphyotrichum ericoides</i>	Heath aster	0.50
<i>Symphyotrichum laeve</i>	Smooth blue aster	1.00
<i>Zizia aurea</i>	Golden alexanders	3.00

Tall Prairie Mix (Open)		
Mowing Vegetation Management Plan		
Species	Common Name	Qty
<i>Andropogon gerardii</i>	Big bluestem	16.00
<i>Bouteloua curtipendula</i>	Side Oats grama	32.00
<i>Elymus canadensis</i>	Canada wild rye	32.00
<i>Elymus trachycaulus</i>	Slender wheatgrass	16.00
<i>Panicum virgatum</i>	Switch grass	4.00
<i>Schizachyrium scoparium</i>	Little bluestem	16.00
<i>Sorghastrum nutans</i>	Indian grass	8.00
<i>Sporobolus heterolepis</i>	Prairie dropseed	4.00
<i>Achillea millefolium</i>	Yarrow	1.00
<i>Allium stellatum</i>	Prairie onion	1.00
<i>Asclepias syriaca</i>	Common milkweed	2.00
<i>Astragalus canadensis</i>	Canadian milk vetch	3.00
<i>Dalea candida</i>	White prairie clover	3.00
<i>Dalea purpurea</i>	Purple prairie clover	3.00
<i>Desmodium canadense</i>	Showy tick trefoil	3.00
<i>Heliopsis helianthoides</i>	False sunflower	3.00
<i>Liatris aspera</i>	Rough blazing star	1.00
<i>Liatris pycnostachya</i>	Prairie blazing star	1.00
<i>Monarda fistulosa</i>	Wild bergamot	0.50
<i>Oligoneuron rigidum</i>	Stiff goldenrod	0.50
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	0.50
<i>Ratibida columnifera</i>	Upright coneflower	3.00
<i>Rudbeckia hirta</i>	Black-eyed Susan	3.00
<i>Solidago speciosa</i>	Showy goldenrod	0.50
<i>Symphyotrichum ericoides</i>	Heath aster	0.50
<i>Symphyotrichum laeve</i>	Smooth blue aster	0.50
<i>Verbena stricta</i>	Hoary vervain	1.00
<i>Zizia aurea</i>	Golden alexanders	1.00

Wet Prairie Mix Mowing Vegetation Management Plan		
Species	Common Name	Qty (oz)
<i>Andropogon gerardii</i>	Big bluestem	40.00
<i>Bromus ciliatus</i>	Fringed brome	8.00
<i>Calamagrostis canadensis</i>	Blue joint grass	1.00
<i>Elymus virginicus</i>	Virginia wild rye	40.00
<i>Glyceria grandis</i>	Reed manna grass	2.00
<i>Glyceria striata</i>	Fowl manna grass	2.00
<i>Panicum virgatum</i>	Switch grass	4.00
<i>Poa palustris</i>	Fowl bluegrass	2.00
<i>Sorghastrum nutans</i>	Indian grass	18.00
<i>Spartina pectinata</i>	Prairie cord grass	4.00
<i>Carex pellita</i>	Broad leaved woolly sedge	1.00
<i>Carex stricta</i>	Common tussock sedge	1.00
<i>Carex vulpinoidea</i>	Fox sedge, Brown fox sedge	4.00
<i>Scirpus atrovirens</i>	Green bulrush	0.50
<i>Scirpus cyperinus</i>	Wool grass	0.50
<i>Anemone canadensis</i>	Meadow/Canada anemone	1.00
<i>Asclepias incarnata</i>	Swamp milkweed	2.00
<i>Desmodium canadense</i>	Showy tick trefoil	4.00
<i>Doellingeria umbellata</i>	Flat-topped aster	1.00
<i>Eupatorium perfoliatum</i>	Common boneset	2.00
<i>Euthamia graminifolia</i>	Common grass-leaved goldenrod	1.00
<i>Eutrochium maculatus</i>	Spotted Joe Pye weed	2.00
<i>Helenium autumnale</i>	Sneezeweed	2.00
<i>Helianthus grosseserratus</i>	Sawtooth sunflower	2.00
<i>Liatris pycnostachya</i>	Prairie blazing star	2.00
<i>Lobelia siphilitica</i>	Great blue lobelia	2.00
<i>Mimulus ringens</i>	Monkey flower	0.50
<i>Pycnanthemum virginianum</i>	Virginia mountain mint	0.50
<i>Symphyotrichum puniceum</i>	Marsh aster	0.50
<i>Verbena hastata</i>	Blue vervain	4.00
<i>Vernonia fasciculata</i>	Common ironweed	1.00
<i>Veronicastrum virginicum</i>	Culver's root	0.50
<i>Zizia aurea</i>	Golden alexanders	4.00

