APPENDIX H – INTERCONNECTION AREA SITING STUDY (PUBLIC)

November 29, 2018

Michael Svedeman
Manager, Project Development
Invenergy LLC
1401 17th Street, Suite 1100
Denver, CO 80202

Re: Deuel Harvest North Wind Farm Interconnection Area Siting Study, For Public Disclosure

Dear Mr. Svedeman:

INTRODUCTION

Deuel Harvest Wind Energy LLC (Deuel Harvest) plans to construct the Deuel Harvest North Wind Farm (Project), an up to 310.1-megawatt (MW) wind farm in Deuel County, South Dakota. Burns & McDonnell Engineering, Inc. (Burns & McDonnell) conducted a wetland delineation, threatened and endangered species habitat survey, Level III intensive cultural resources investigation, reconnaissance-level survey for historic-age non-archeological resources, and a prime farmland impact analysis for the Project.

Design changes resulted in the relocation of the proposed interconnection substation, a portion of the transmission line corridor, Project substation, temporary laydown yard, and Operations and Maintenance building (Interconnection Area). The Interconnection Area totaled approximately 30.2 acres. Burns & McDonnell conducted an analysis to evaluate for the presence of wetlands and other waterbodies, threatened and endangered species, cultural resources, historic-age non-archeological resources, and prime farmland within the Interconnection Area. The following summarizes the results of this analysis.

METHODS

Cultural Resources

[Text Redacted]

Historic Resources

Existing Data Review

[Text Redacted]

Historic-Age Non-Archaeological Resource Survey

[Text Redacted]

Waters of the U.S.

Existing Data Review

Burns & McDonnell reviewed available background information for the Interconnection Area prior to conducting a site visit. This available background information included a USGS 7.5-minute topographic map (Clear Lake Northeast quadrangle; USGS, 2015), U.S. Fish & Wildlife

Service (USFWS) National Wetland Inventory (NWI) data (USFWS, 1981), the USGS National Hydrography Dataset (NHD; USGS, 2004), U.S. Department of Agriculture (USDA) National Agriculture Imagery Program (NAIP) aerial photography (USDA, 2015a), and USDA NRCS 2015 SSURGO digital data for Deuel County, SD (USDA, 2015b). Maps generated from this available data are included as Figures A-4 and A-5 in Appendix A.

Wetland Delineation

A wetland delineation was completed on November 14, 2018, in accordance with the 1987 *Corps of Engineers Wetlands Delineation Manual* (1987 Manual; USACE, 1987) and the 2010 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region – Version 2.0* (Regional Supplement; USACE, 2010). Locations of identified features were surveyed using a sub-meter accurate global positioning system (GPS) unit (Figure A-6, Appendix A). Natural color photographs were taken onsite and are included in Appendix E (Photographs E-1 to E-5).

Threatened and Endangered Species

A review of the Interconnection Area was completed to evaluate habitat potentially capable of supporting the Dakota skipper (*Hesperia dacotae*), federally listed as a threatened species under the Endangered Species Act (ESA) (16 U.S.C. 1531-1544, 87 Stat. 884), as amended, and the Poweshiek skipperling (*Oarisma poweshiek*), federally listed as an endangered species. Coordination with the USFWS occurred prior to the start of the assessment (Burns & McDonnell, 2018). USFWS guideline used in this evaluation followed those detailed in Burns & McDonnell (2018) for the Project.

Desktop review of the digital information was completed to identify areas of native tallgrass prairie within the Interconnection Area that have the potential of containing suitable protected butterfly species habitat. Digital information included locations of potentially undisturbed native grasslands obtained from South Dakota State University (South Dakota State University, 2016), National Land Cover Data (NLCD; USDA, 2018), NAIP aerial photography (USDA, 2015a), USFWS NWI maps (USFWS, 1981), multiple years of Google Earth imagery (Google Earth, 2018), and USFWS conservation, grassland, and wetland easement locations obtained from Deuel Harvest.

A field assessment for potential suitable habitat for the Dakota skipper and Poweshiek skipperling was completed on November 14, 2018 during the same mobilization effort as the wetland delineation. A habitat evaluation flowchart that was developed by Dennis Skadsen, a USFWS-permitted surveyor for Dakota skippers and Poweshiek skipperlings (USFWS Permit TE65611B-0; Skadsen, 2017), was used in the field for identifying potential habitat suitable for supporting Dakota skippers and Poweshiek skipperlings, as discussed with the USFWS (Burns & McDonnell, 2018).

Prime Farmland
A desktop study was conducted to evaluate for the presence or absence of prime farmland within the Interconnection Area. This available data was collected from the USDA Natural Resources Conservation Service (NRCS) 2015 SSURGO digital data for Deuel County, South Dakota (USDA, 2015b).

RESULTS
Cultural Resources
[Text Redacted]

Historic Resources
[Text Redacted]

Waters of the U.S.
Existing Data Review
The existing USGS topographic map was reviewed to familiarize Burns & McDonnell wetland personnel with the topography and potential locations of wetlands and other waters of the U.S. (Figure A-4). The USGS topographic map indicates the Interconnection Area crosses a relatively flat area.

The NWI data indicates that three palustrine emergent (PEM) wetlands are located within the Interconnection Area. The 2015 aerial photograph indicates that the Interconnection Area consists of crop land (Figures A-5 and A-6). There are no NHD-indicated streams crossing the Interconnection Area.

The NRCS SSURGO digital data indicates that portions of four soil map units are located in the Interconnection Area (Figure A-5). All of the soil map units are included on local and national hydric soil lists:

- FmB – Forman-Aastad loams, 1 to 6 percent slopes
- Pc – Parnell-Vallers complex
- FtC – Forman-Buse-Aastad loams, 2 to 9 percent slopes
- FtD – Forman-Buse-Aastad loams, 2 to 15 percent slopes

Wetland Delineation
Two wetlands and no streams were identified during the wetland delineation efforts.

Wetland 1 (W-1). W-1 is a 0.40-acre PEM wetland (Figure A-6). Vegetation in W-1 was dominated by barnyard grass (*Echinochloa crus-galli*) and reed canary grass (*Phalaris arundinacea*). Wetland hydrology was indicated by a positive FAC neutral test, drainage

patterns, and a concave geomorphic position. The soil was highly disturbed due to agricultural practices, and hydric soil indicators were not observed. Per guidance of the Regional Supplement, hydric soil was assumed due to the presence of hydrophytic vegetation and wetland hydrology.

Wetland 2 (W-2). W-2 is a 0.31-acre PEM wetland (Figure A-6). Vegetation in W-2 was dominated by barnyard grass. Wetland hydrology was indicated by a positive FAC neutral test, drainage patterns, a concave geomorphic position, and the presence of standing water. A soil sample was not taken due to the presence of a restrictive layer (ice). Hydric soil is assumed due to the presence hydrophytic vegetation and wetland hydrology.

Threatened and Endangered Species

No potential suitable habitat for the Dakota skipper or Poweshiek skipperling was identified within the Interconnection Area. The Interconnection Area is located in actively farmed row-crop agriculture fields, is highly disturbed, and contains no native grassland within the Interconnection Area.

Prime Farmland

The Interconnection Area is located primarily in agriculture land. Of the 30.2 acres within the Interconnection Area, 16.5 acres are classified as prime farmland, 6.1 acres are classified as farmland of statewide importance, and, and 7.6 acres are classified as non-prime farmland (Figure A-7).

REFERENCES CITED

Burns & McDonnell. (2018). 2018 Protected Butterfly Species Report for the Deuel Harvest North Wind Farm. Deuel Harvest Wind Energy LLC.

Google Earth 6.2. (2018). Historical imagery data layer for Deuel County, South Dakota. Available online at: http://www.google.com/earth/index.html.

Skadsen, D. (2017). Flow Chart for Habitat Evaluation of Federally Protected Butterfly Habitat in Northeast South Dakota. Unpublished data.

South Dakota State University. (2016). Quantifying Undisturbed (Native) Lands in Eastern South Dakota: 2013. Available online at: https://openprairie.sdstate.edu/data_land-easternSD/1/.

U.S. Army Corps of Engineers. (1987). Corps of Engineers Wetland Delineation Manual. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Army Corps of Engineers. (2010). Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest (Version 2.0). Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Department of Agriculture. (2015a). NAIP 2015: Orthoimagery. Retrieved August 2018 from https://gdg.sc.egov.usda.gov/.

U.S. Department of Agriculture, Natural Resources Conservation Service. (2015b). Soil Survey Geographic (SSURGO) Database for Deuel County, South Dakota. Retrieved August 2018 from http://datagateway.nrcs.usda.gov/.

U.S. Department of Agriculture Natural Resource Conservation Service. (2018). GeoSpatial Data Gateway, National Land Cover Data. Available online at: https://datagateway.nrcs.usda.gov/GDGOrder_Contact.aspx.

U.S. Fish and Wildlife Service. (1981). *National Wetlands Inventory*. Retrieved August 2018 from http://www.fws.gov/wetlands/.

U.S. Geological Survey (2004). National Hydrography Dataset. Reston, VA.: U.S. Geological Survey

U.S. Geological Survey. (2015). Clear Lake Northeast quadrangle, South Dakota (1:24,000. 7.5 Minute Series). Washington D.C.: U.S. Geological Survey.

If you have any questions or require additional information, feel free to contact me by telephone at (816) 349-6770 or by e-mail at bgasper@burnsmcd.com.

Sincerely,

Bryan R. Gasper

Bryan Gasper
Senior Environmental Scientist

cc: Jack Middleton, Burns & McDonnell

APPENDIX A - FIGURES

[Figures A-1 through A-2 Redacted]

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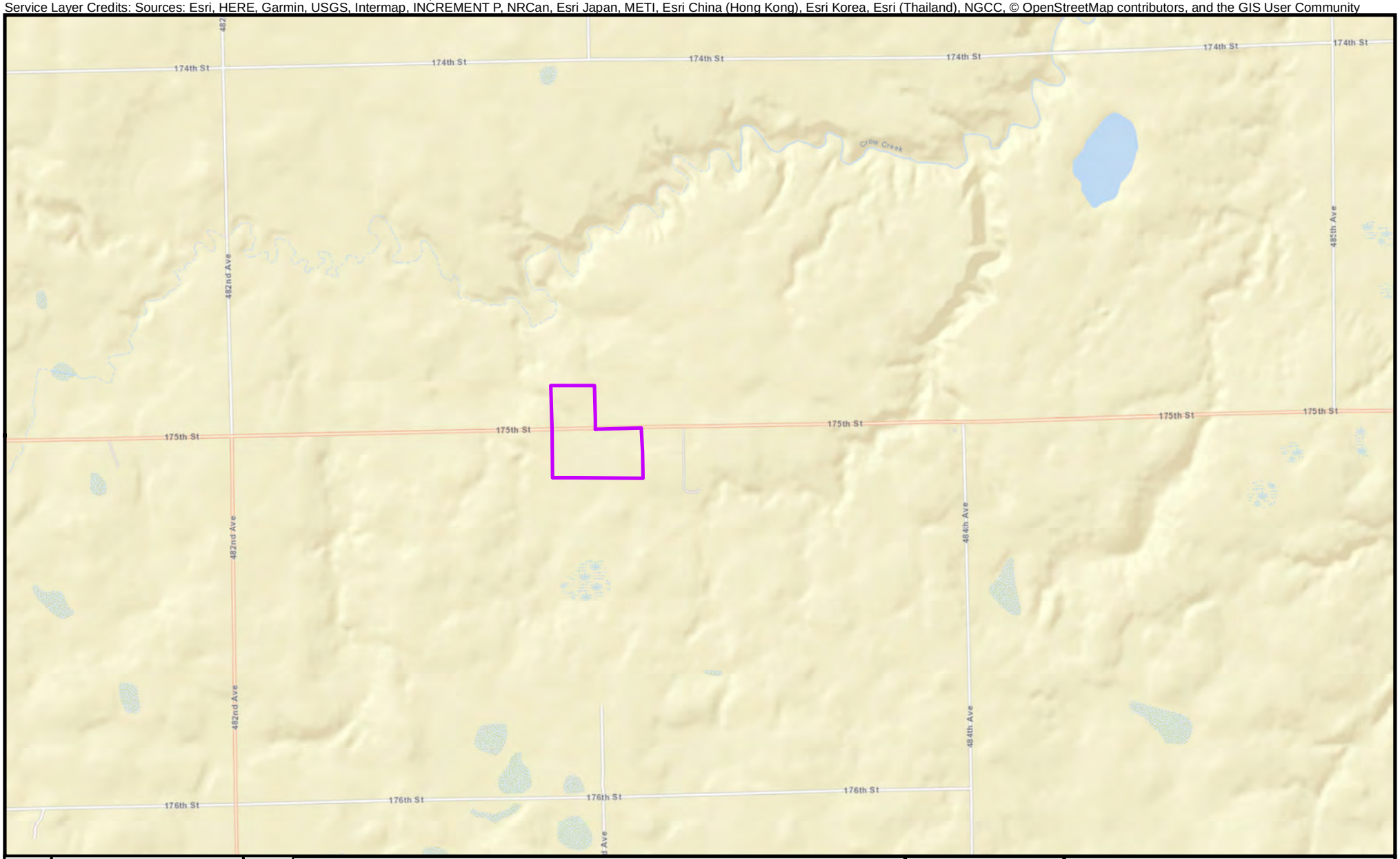

Figure A-3
General Location Map
Deuel Harvest North Wind Farm
Interconnection Area Siting Study
Deuel Harvest Wind Energy LLC
Deuel County, SD

Source: Burns & McDonnell Engineering Company, Inc.

Issued: 11/20/2018

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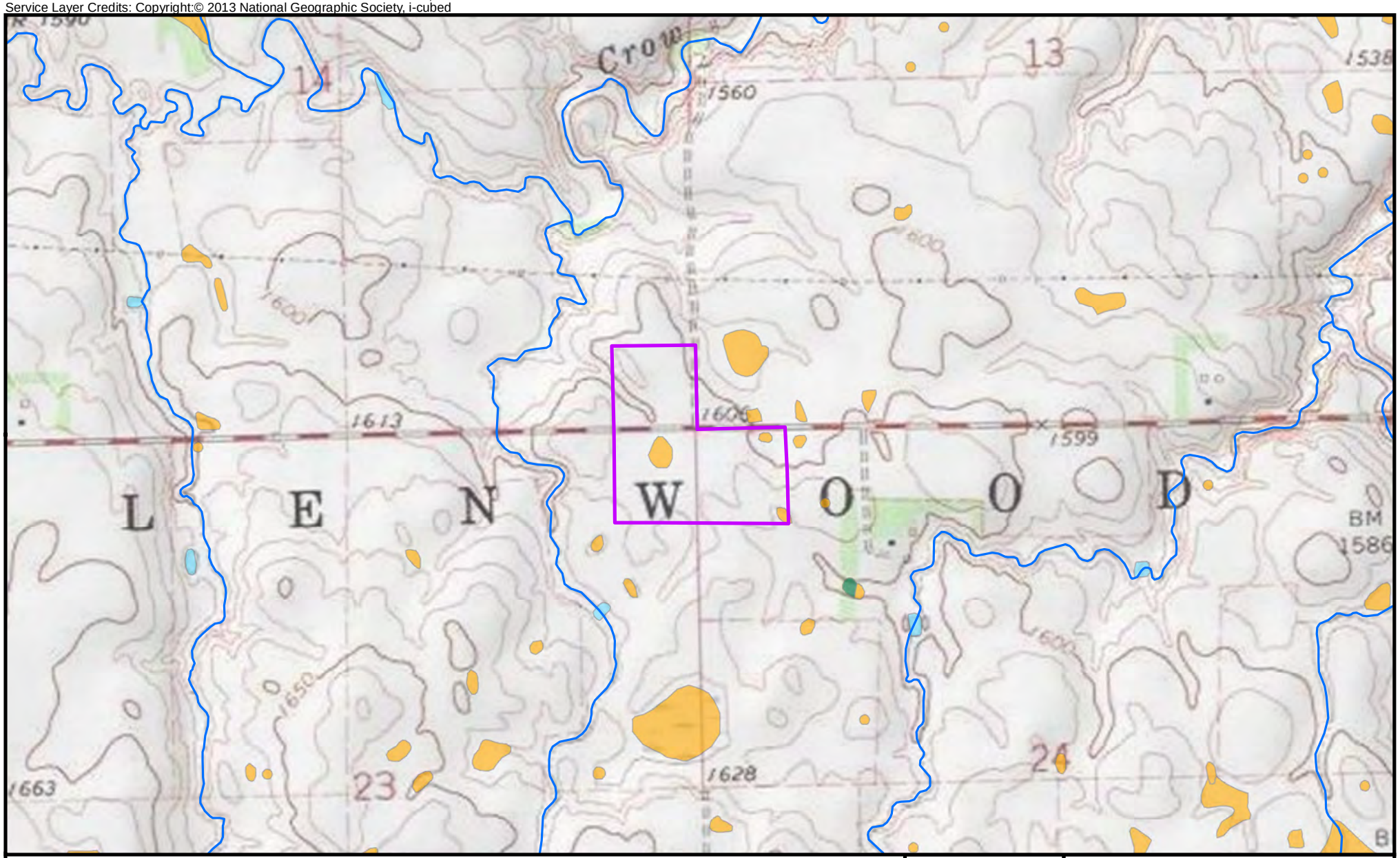

National Wetland Inventory (NWI)

- Palustrine aquatic bed (PAB)
- Palustrine forested (PFO)
- Palustrine emergent (PEM)

- National Hydrography Dataset (NHD) Feature
- Interconnection Area

NORTH

1,000 500 0 1,000

Scale in Feet

BURNS McDONNELL

Figure A-4
NWI Wetland and Topogroaphic Map
Deuel Harvest North Wind Farm
Interconnection Area Siting Study
Deuel Harvest Wind Energy LLC
Deuel County, SD

Source: ESRI, USFWS NWI Wetlands, USGS NHD, Burns & McDonnell Engineering Company, Inc

Issued: 11/20/2018

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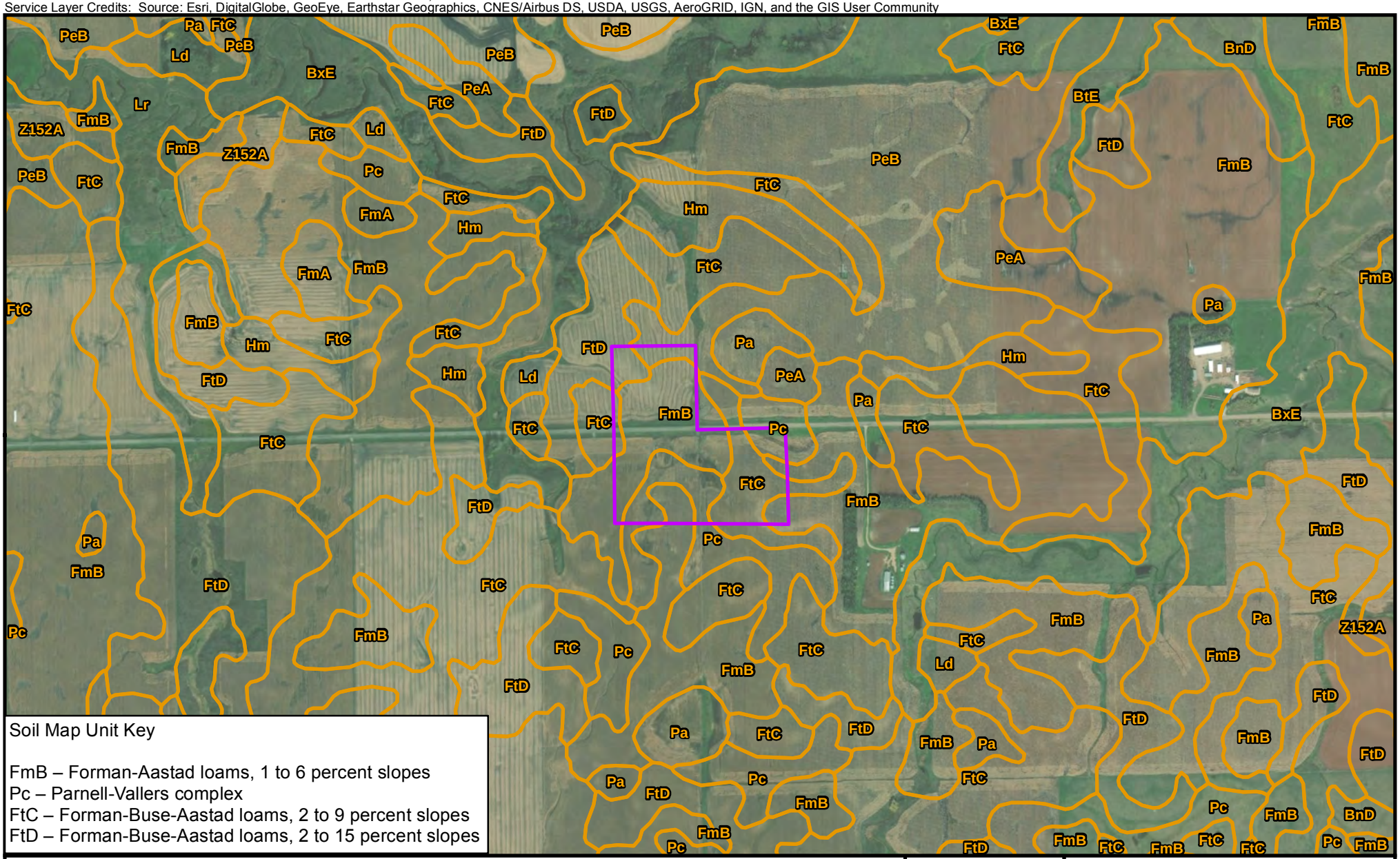

Figure A-5
NRCS SSURGO Soils and Aerial Map
Deuel Harvest North Wind Farm
Interconnection Area Siting Study
Deuel Harvest Wind Energy LLC
Deuel County, SD

Source: ESRI, NRCS SSURGO, Burns & McDonnell Engineering Company Inc.

Issued: 11/20/2018

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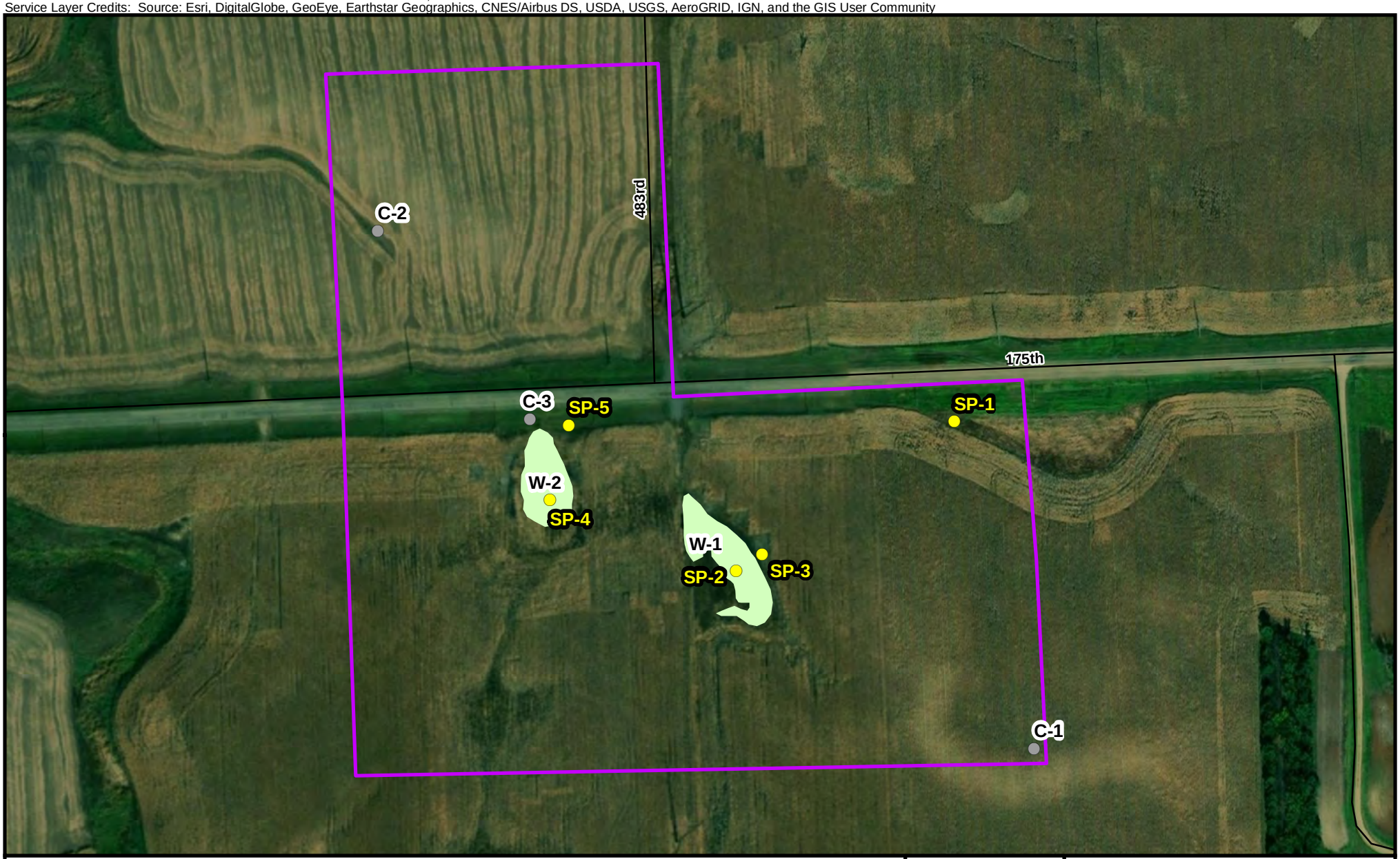
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Interconnection Area

Sample Plot (SP)

Photo Point (C)

Wetland Type (W)

Palustrine emergent (PEM)

NORTH

250 125 0 250

Scale in Feet

BURNS McDONNELL

Figure A-6
Location Map of Delineated Wetlands
Deuel Harvest North Wind Farm
Interconnection Area Siting Study
Deuel Harvest Wind Energy LLC
Deuel County, SD

Source: Burns & McDonnell Engineering Company Inc.

Issued: 11/20/2018

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Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

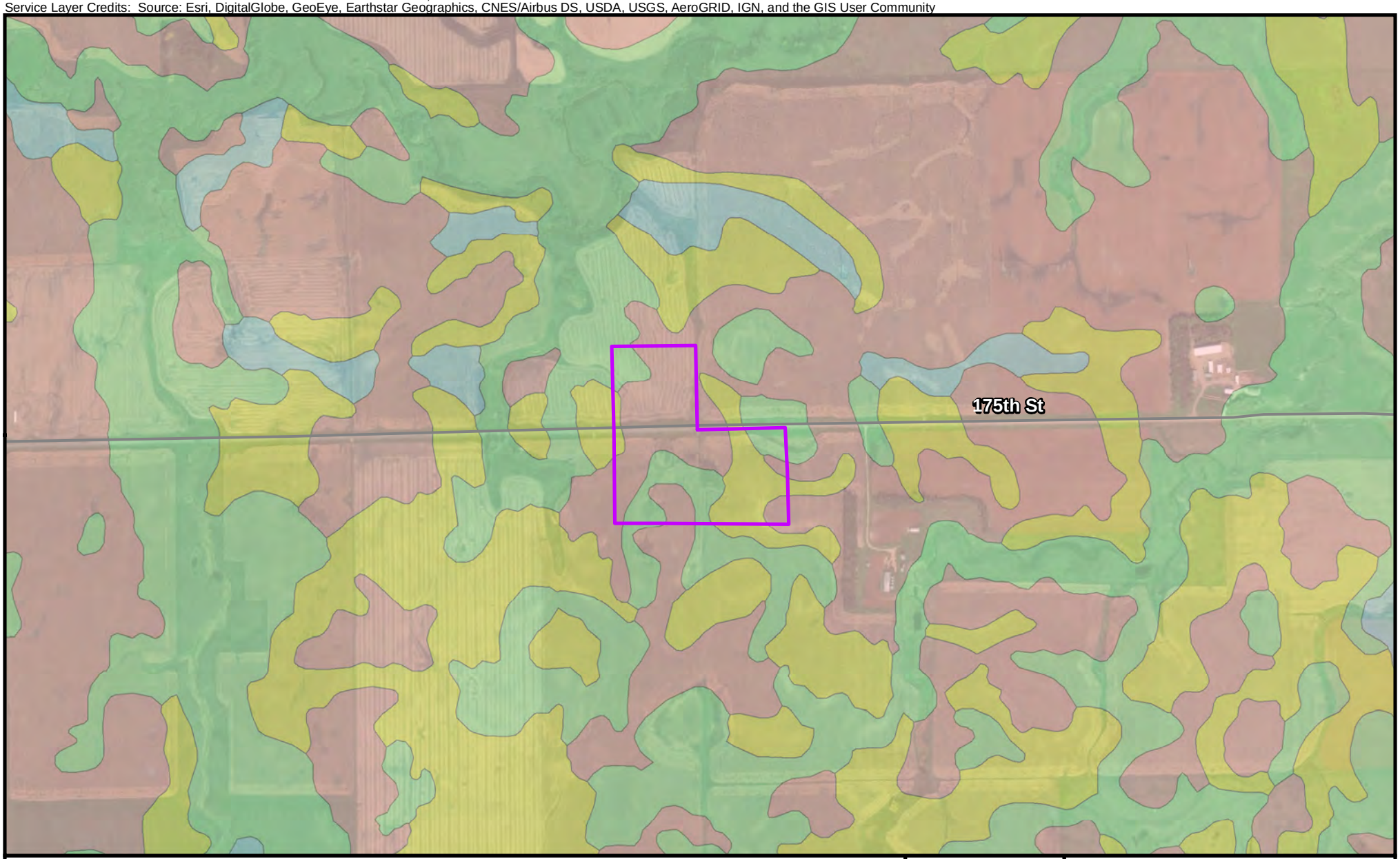


Figure A-7
NRCS Prime Farmland Map
Deuel Harvest North Wind Farm
Interconnection Area Siting Study
Deuel Harvest Wind Energy LLC
Deuel County, SD

Source: ESRI, NRCS SSURGO, Burns & McDonnell Engineering Company Inc.

Issued: 11/21/2018

APPENDIX B - HISTORIC PHOTOSHEET

[Photosheet Redacted]

APPENDIX C - HISTORIC INVENTORY TABLE

[Table Redacted]

APPENDIX D - WETLAND DETERMINATION DATA FORMS, MIDWEST REGION

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Deuel Harvest North Interconnection Area Siting Study | City/County: Deuel County | Sampling Date: 11/14/2018

Applicant/Owner: Deuel Harvest Wind Energy LLC | State: SD | Sampling Point: SP-1

Investigator(s): J. Kensinger, B. Salupo | Section, Township, Range: S24, T116N, R48W

Landform (hillslope, terrace, etc.) Toeslope | Local relief (concave, convex, none): Convex | Slope (%): 2 %

Subregion (LRR): M | Lat: 44.848158 | Long: -96.539165 | Datum: NAD83

Soil Map Unit Name: Parnell-Vallers complex | NWI Classification: N/A

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☐	☒
Hydric Soil Present?	☒	☐
Wetland Hydrology Present?	☐	☒
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland confirmation sample plot. The Palmer Drought Severity Index indicates that the area is experiencing moderately moist climate/hydrologic conditions.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Bromus inermis*	60 %	Y	FACU
2. *Xanthium strumarium*	10 %	N	FAC
3. *Echinochloa crus-galli*	10 %	N	FACW
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
	80 %	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.	%		
2.	%		
3.	%		
	0 %	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ Rapid Test for Hydrophytic Vegetation

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☐ Yes ☒ No

Remarks (Include photo numbers here or on a separate sheet): No tests passed. Photo E-1.

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-3	10YR 2/1	100					Clay Loam	
3-12	10YR 2/1	85	7.5YR 3/4	15	C	M	Clay Loam	
12-24	10YR 2/1	85	7.5YR 3/3	10	C	M	Clay Loam	
			10YR 6/1	5	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☒ Yes ☐ No

Remarks: Hydric soil indicator F6 is present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☐	☒	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: No indicators are present

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Deuel Harvest North Interconnection Area Siting Study City/County: Deuel County Sampling Date: 11/14/2018

Applicant/Owner: Deuel Harvest Wind Energy LLC State: SD Sampling Point: SP-2

Investigator(s): J. Kensinger, B. Salupo Section, Township, Range: S24, T116N, R48W

Landform (hillslope, terrace, etc.) depression Local relief (concave, convex, none): concave Slope (%): 2 %

Subregion (LRR): M Lat: 44.847439 Long: -96.540802 Datum: NAD83

Soil Map Unit Name: Parnell-Vallers complex NWI Classification: N/A

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☒	☐
Wetland Hydrology Present?	☒	☐
Is the Sampled Area within a Wetland?	☒	☐

Remarks: PEM (W-1). The Palmer Drought Severity Index indicates that the area is experiencing moderately moist climate/hydrologic conditions.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Echinochloa crus-galli*	60 %	Y	FACW
2. *Phalaris arundinacea*	30 %	Y	FACW
3. *Elymus trachycaulus*	15 %	N	FACU
4. *Setaria pumila*	10 %	N	FAC
5. *Helianthus annuus*	10 %	N	FACU
6.	%		
7.	%		
8.	%		
9.	%		
	125 %	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.	%		
2.	%		
3.	%		
	0 %	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ Rapid Test for Hydrophytic Vegetation

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks (Include photo numbers here or on a separate sheet): Rapid test passed. Photo E-2.

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-12	10YR 2/1	100					Silty Clay Loam	
12-24	10YR 2/1	95	10YR 3/3	5	C	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF 12)
- ☒ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☒ Yes ☐ No

Remarks: Hydric soil is assumed due to the presence of hydrophytic vegetation and wetland hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☒	☐	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Indicators B10, D2, and D5 are present.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Deuel Harvest North Interconnection Area Siting Study City/County: Deuel County Sampling Date: 11/14/2018

Applicant/Owner: Deuel Harvest Wind Energy LLC State: SD Sampling Point: SP-3

Investigator(s): J. Kensinger, B. Salupo Section, Township, Range: S24, T116N, R48W

Landform (hillslope, terrace, etc.) Terrace Local relief (concave, convex, none): Convex Slope (%): 2 %

Subregion (LRR): M Lat: 44.847516 Long: -96.540607 Datum: NAD83

Soil Map Unit Name: Forman-Aastad loams, 1 to 6 percent slopes NWI Classification: N/A

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☐	☒
Hydric Soil Present?	☐	☒
Wetland Hydrology Present?	☐	☒
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland plot adjacent to PEM (W-1). The Palmer Drought Severity Index indicates that the area is experiencing moderately moist climate/hydrologic conditions.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Herb Stratum (Plot size: 5')			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
	0 %	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.	%		
2.	%		
3.	%		
	0 %	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☐ Rapid Test for Hydrophytic Vegetation

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☐ Yes ☒ No

Remarks (Include photo numbers here or on a separate sheet): No vegetation present. Sample plot located in recently harvested row-crop agriculture field. Photo E-3.

SOIL

Sampling Point: SP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-2	10YR 2/1	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: frozen soil Depth (inches): 2

Hydric Soil Present?

☐ Yes ☒ No

Remarks:No indicator is met

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☐	☒	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: No indicators are present.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Deuel Harvest North Interconnection Area Siting Study City/County: Deuel County Sampling Date: 11/14/2018

Applicant/Owner: Deuel Harvest Wind Energy LLC State: SD Sampling Point: SP-4

Investigator(s): J. Kensinger, B. Salupo Section, Township, Range: S24, T116N, R48W

Landform (hillslope, terrace, etc.) Depression Local relief (concave, convex, none): Concave Slope (%): 4 %

Subregion (LRR): M Lat: 44.84785 Long: -96.542133 Datum: NAD83

Soil Map Unit Name: Parnell-Vallers complex NWI Classification: N/A

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☒	☐
Hydric Soil Present?	☒	☐
Wetland Hydrology Present?	☒	☐
Is the Sampled Area within a Wetland?	☒	☐

Remarks: PEM (W-2). The Palmer Drought Severity Index indicates that the area is experiencing moderately moist climate/hydrologic conditions.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Echinochloa crus-galli*	80 %	Y	FACW
2. *Cyperus esculentus*	10 %	N	FACW
3. *Xanthium strumarium*	10 %	N	FAC
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
	100 %	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.	%		
2.	%		
3.	%		
	0 %	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☒ Rapid Test for Hydrophytic Vegetation

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☒ Yes ☐ No

Remarks (Include photo numbers here or on a separate sheet): Rapid test passed. Photo E-4.

SOIL

Sampling Point: SP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF 12)
- ☒ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Ice Depth (inches): surface

Hydric Soil Present? ☒ Yes ☐ No

Remarks: No soil sample could be taken due to the presence of an ice layer. Hydric soil is assumed due to the presence of hydrophytic vegetation and wetland hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☒ Geomorphic Position (D2)
- ☒ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water present?	☒	☐	surface
Water Table present?	☒	☐	surface
Saturation Present? (includes capillary fringe)	☒	☐	surface
Wetland Hydrology Present?	☒	☐	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

Remarks: Indicators A1, A2, A3, B10, D2, and D5 are present.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Deuel Harvest North Interconnection Area Siting Study City/County: Deuel County Sampling Date: 11/14/2018

Applicant/Owner: Deuel Harvest Wind Energy LLC State: SD Sampling Point: SP-5

Investigator(s): J. Kensinger, B. Salupo Section, Township, Range: S24, T116N, R48W

Landform (hillslope, terrace, etc.) Terrace Local relief (concave, convex, none): Convex Slope (%): 1 %

Subregion (LRR): M Lat: 44.84823 Long: -96.541969 Datum: NAD83

Soil Map Unit Name: Forman-Aastad loams, 1 to 6 percent slopes NWI Classification: N/A

Are climate/hydrologic conditions on the site typical for this time of year? ☒ Yes ☐ No (If no, explain in Remarks)

	Vegetation	Soil	Hydrology
Significantly Disturbed?	☐	☐	☐
Naturally Problematic?	☐	☐	☐

Are "Normal Circumstances" present? ☒ Yes ☐ No

(If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

	Yes	No
Hydrophytic Vegetation Present?	☐	☒
Hydric Soil Present?	☐	☒
Wetland Hydrology Present?	☐	☒
Is the Sampled Area within a Wetland?	☐	☒

Remarks: Upland sample plot adjacent PEM (W-2). The Palmer Drought Severity Index indicates that the area is experiencing moderately moist climate/hydrologic conditions.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
	0 %	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Bromus inermis*	100 %	Y	FACU
2.	%		
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
	100 %	= Total Cover	
Woody Vine Stratum (Plot size: 30')			
1.	%		
2.	%		
3.	%		
	0 %	= Total Cover	

Dominance Test Worksheet:

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species	%	x 1 =	0
FACW species	%	x 2 =	0
FAC species	%	x 3 =	0
FACU species	%	x 4 =	0
UPL species	%	x 5 =	0
Column Totals:	0 %	(A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☐ Rapid Test for Hydrophytic Vegetation

☐ Dominance Test is >50%

☐ Prevalence Index is ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? ☐ Yes ☒ No

Remarks (Include photo numbers here or on a separate sheet): No tests passed. Photo E-5.

SOIL

Sampling Point: SP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-20	10YR 2/2	100					Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron-Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF 12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____ Depth (inches): _____

Hydric Soil Present?

☐ Yes ☒ No

Remarks: No indicator is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

	Yes	No	Depth (inches)
Surface Water present?	☐	☒	
Water Table present?	☐	☒	
Saturation Present? (includes capillary fringe)	☐	☒	
Wetland Hydrology Present?	☐	☒	

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections, etc.), if available:

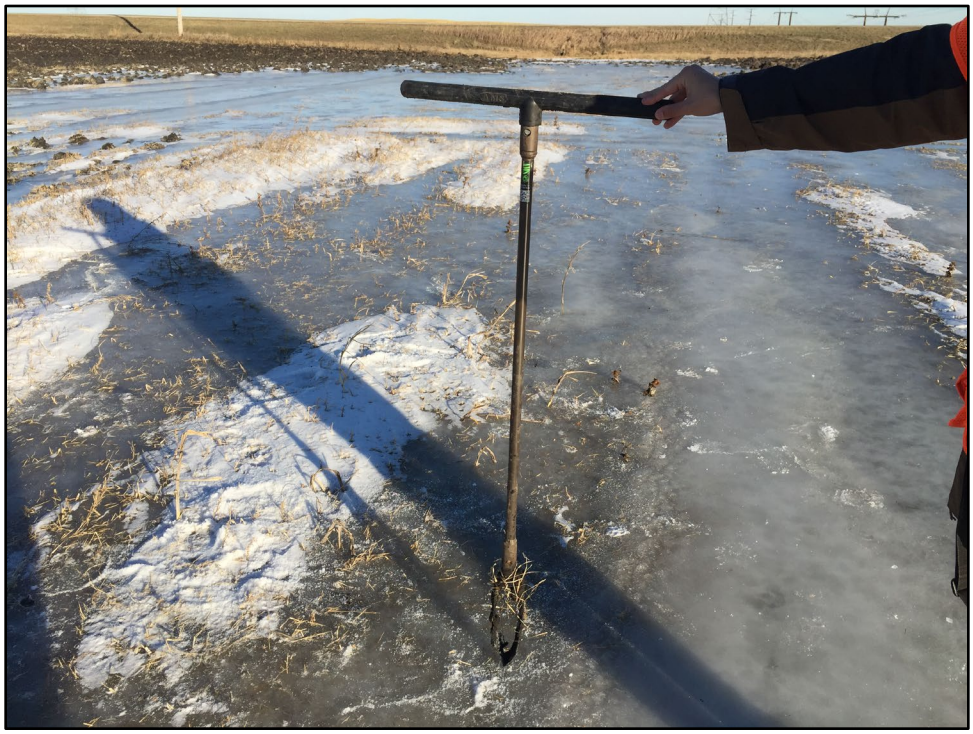
Remarks: No indicators are present.

APPENDIX E - WETLAND DELINEATION PHOTOSHEET

Photograph E-1: View of upland Sample Plot (SP)-1, facing east.

Photograph E-2: View of SP-2 in PEM Wetland (W)-1, facing north.

Photograph E-3: View of upland SP-3, facing west.



Photograph E-4: View of SP-4 in PEM W-2, facing north.

Photograph E-5: View of upland SP-5, facing south.